ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

GAF Dump
Site No.704011
City of Binghamton, Broome County
Final - January, 1990

Prepared for:
New York State
Department of
Environmental Conservation

50 Wolf Road, Albany, New York 12233-7010
Thomas C. Jorling, Commissioner

Division of Hazardous Waste Remediation
Michael J. O 'Toole Jr., P.E., Director

Prepared by:
Gibbs & Hill, Inc
11 Penn Plaza
New York, New York

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STATE OF NEW YORK
LEO S. APAR
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LICENSED PROFESSIONAL ENGINEER

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BUREAU OF HAZARDOUS SITE CONTROL
DIVISION OF HAZARDOUS WASTE REMEDIATION

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ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK
PHASE II INVESTIGATION

GAF DUMP
CITY OF BINGHAMTON, BROOME COUNTY
SITE NO. 704011

FINAL - JANUARY 1990

PREPARED FOR:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
50 WOLF ROAD
ALBANY, NEW YORK, 12233-7010

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I. EXECUTIVE SUMMARY

Gibbs & Hill, Inc. (G&H) has entered into a consulting services agreement with the New York State Department of Environmental Conservation (NYSDEC) Division of Hazardous Waste Remediation to conduct preliminary investigations (Phase I) and field investigations (Phase II) at inactive hazardous waste disposal sites in New York state. This report presents the results of the Phase II investigation of the GAF Dump site (NYSDEC site ID #704011) performed by G&H. A Phase I investigation of this site was completed in April 1986 by Wehran Engineering.

The GAF Dump site is a two-acre inactive disposal area located in the City of Binghamton, Broome County (Figure I-1). The site is adjacent to an Anitec Corporation facility which was formerly a GAF manufacturing plant. GAF retained ownership of the dump area when their plant was sold to Anitec in 1975. An abandoned paved parking lot makes up the eastern half of the site, while the western portion of the site is ungraded and covered with thick weeds. The site is located in a mixed commercial and residential neighborhood. To the west of the site is Veterans Memorial Park, to the north is a residential area, to the east is Spring Forest Cemetery, and to the south is the Anitec Corporation facility (Figure I-2). The area within a three mile radius of the site includes the Chenango River and several drinking water and industrial wells. The Binghamton water intake is located upstream on the Susquehanna River. A 66-inch storm sewer line known as Trout Brook, approximately 200 feet downslope from the dump site, flows in an easterly direction to the Chenango River.

Nearby wells include those on the eastern side of the Chenango River, the Johnson City well field 1.8 miles west of the site and Anitec production wells 500 feet south of the site.

The dump area was allegedly used during the time GAF owned and operated the plant to dispose of waste liquids from production of photographic material by dumping liquid directly onto the ground. There is no information available regarding when use of the site began. It is known that the plant has been in operation since World War II. It has been reported that GAF stopped disposing of wastes by 1975, [D.1 through D.7].

A Phase II investigation of the site was conducted to gather sufficient information to classify the site and to calculate the final Hazard Ranking System (HRS) scores. Field investigations included a site reconnaissance, a geophysical survey, installation of three groundwater monitoring wells, and collection of nine soil and four groundwater samples.

Groundwater and soil samples were analyzed to define the potential contamination at the GAF Dump site.

On August 4, 1988, a site reconnaissance of the area was undertaken by Gibbs & Hill. No signs of any hazardous waste or leachate were observed. However, results from the chemical analyses of collected samples (Tables IV-1 and IV-2) indicate releases of chloroethane, 2-butanone, and 1,2-dichlorethane from the site to the groundwater and the presence of higher than background concentrations of copper, lead, and zinc in the soil.

The final HRS scores for the GAF Dump site based on the results of this Phase II investigation have been calculated as follows:

S_M = 23.00

- S_{gw} = 39.80
- S_{sw} = 0.00
- S_a = 0.00

S_{DC} = 0.00

S_{FE} = N/A

The S_M score reflects the potential for harm due to migration of hazardous substances away from the facility. This score is the composite of scores for groundwater (S_{gw}), surface water (S_{sw}), and air (S_a) transport routes. The S_{FE} score reflects the potential for harm from substances that can explode or cause fires, and the S_{DC} score reflects the potential for harm from direct contact with hazardous substances.

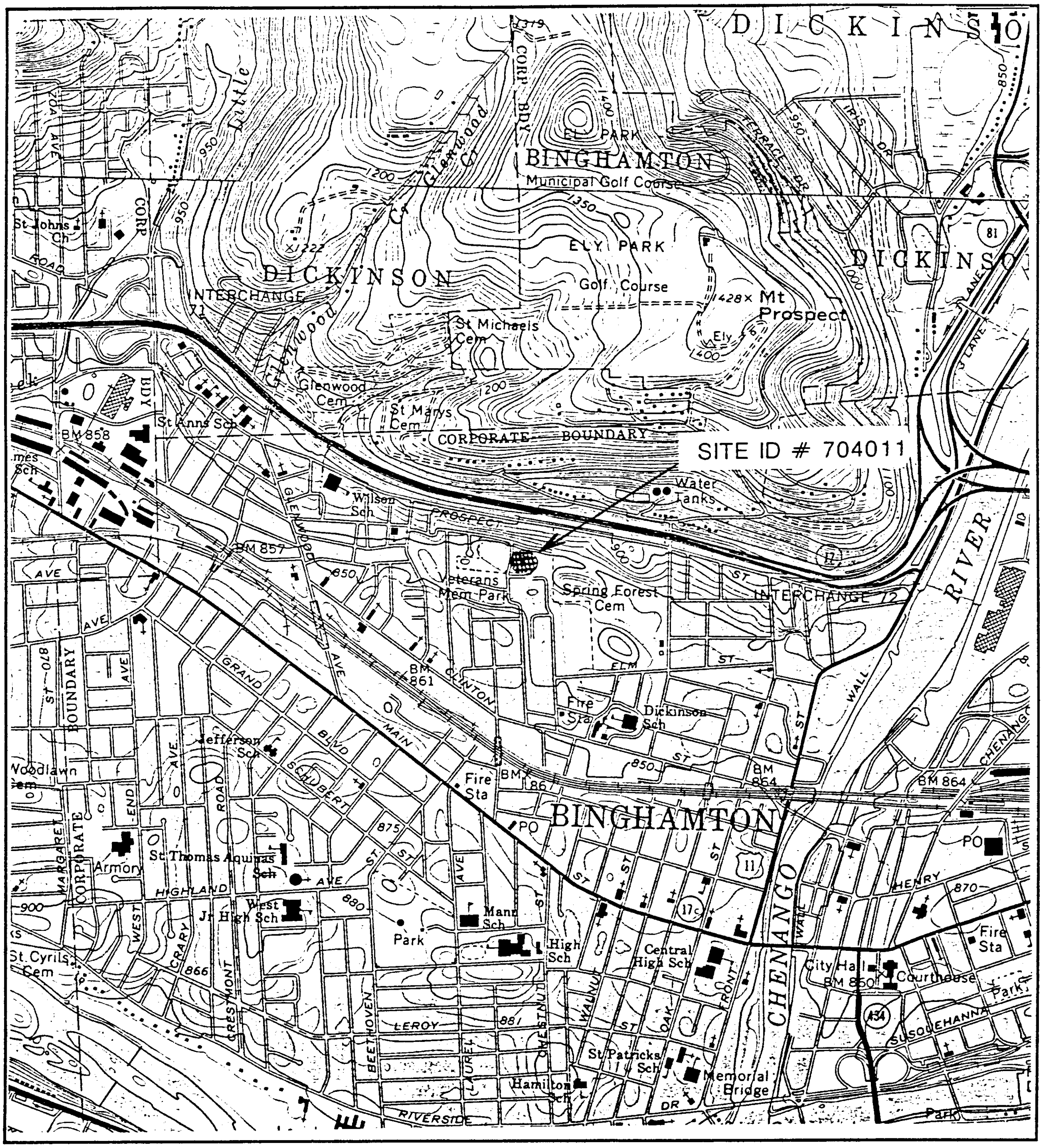


FIGURE I -1

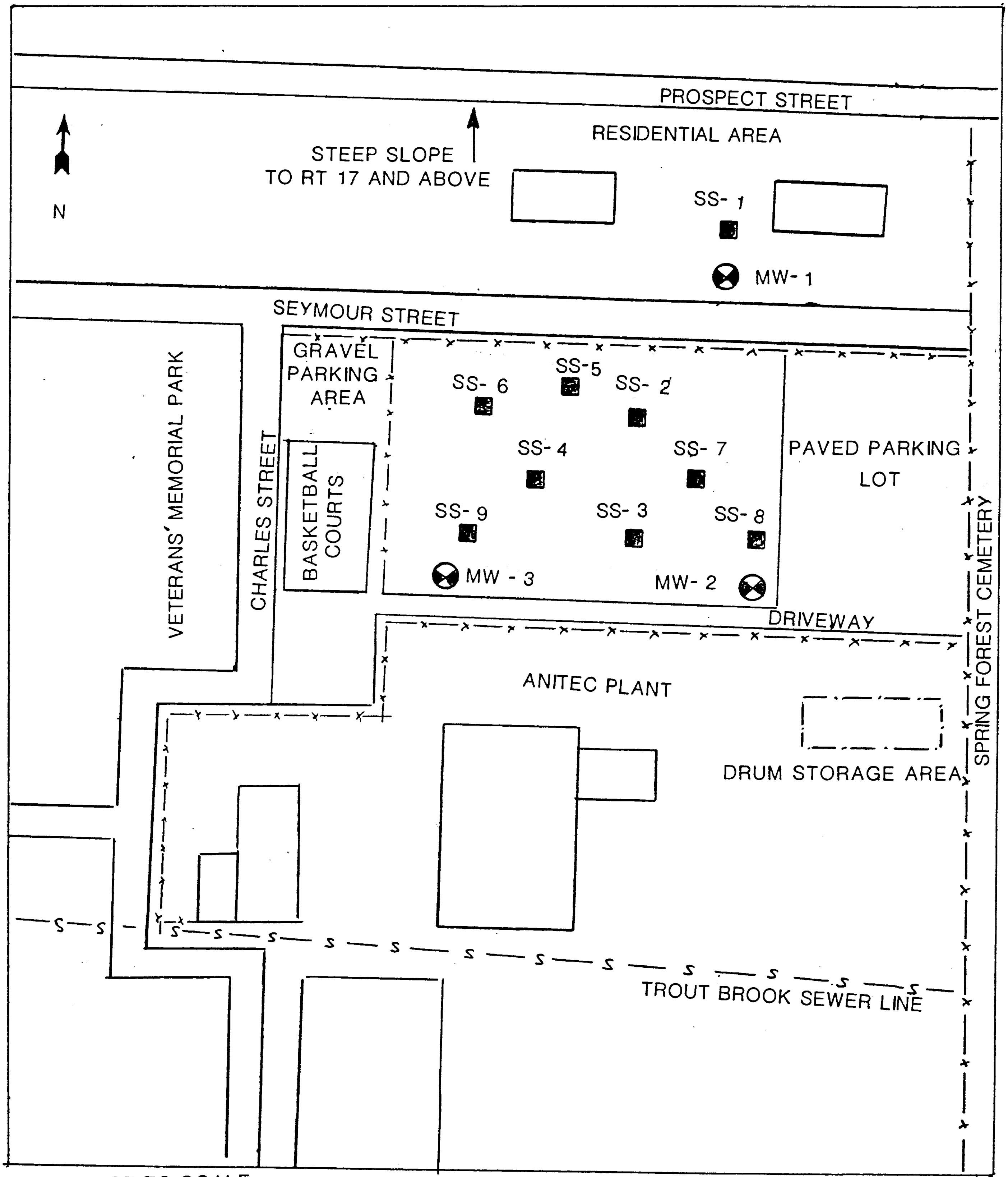
SITE LOCATION MAP
SITE: GAF DUMP SITE

COORDINATES: LAT. : 42° 06' 29" N
LONG.: 75° 55' 45" W

MAP SOURCE:
NEW YORK-BROOME COUNTY
U.S.G.S. MAP BINGHAMTON
WEST QUAD. AND CASTLE CREEK QUAD.
7.5 MINUTES SERIES
(1968 EDITION)

SCALE 1" = 2000'

GIBBS & HILL, INC.



NOT TO SCALE

FIGURE I-2

SITE SKETCH

SITE: GAF DUMP

Gibbs & Hill, Inc.

II. PURPOSE

The objective of a New York State Superfund Phase II investigation is to determine if contaminants are present at an inactive hazardous waste site which may have an adverse impact on human population and/or the environment.

The goal of the investigation was to collect the information required to classify the site and to develop final HRS scores. This included collecting the field data necessary to identify the occurrence and characteristics of contamination and to determine if a release of contaminants from the site has occurred. This information will be used by NYSDEC to determine if any imminent and/or significant environmental or health hazard exists. Specifically, these objectives were accomplished through the installation of groundwater monitoring wells and the sampling and analysis of groundwater and soil, in accordance with NYSDEC protocols and guidelines.

III. SCOPE OF WORK

A. INTRODUCTION

Gibbs & Hill, Inc. entered into a consulting services agreement on October 16, 1986 with the NYSDEC Division of Hazardous Waste Remediation to conduct preliminary investigations (Phase I) and field investigations (Phase II) at inactive hazardous waste disposal sites in New York State. G&H and its subcontractors completed Phase I investigations of 30 sites under the provisions of this agreement.

The original agreement was amended January 21, 1988 (Amendment 1) to include an additional 25 sites to receive Phase II investigations. This report presents the results of the Phase II investigation of the GAF Dump site (NYSDEC site ID #704011) performed by G&H. A Phase I investigation of this site was completed in April 1986 by Wehran Engineering.

The Phase II field investigations at the GAF Dump site began in August 1988 and were completed in February 1989. An updated work plan, approved by NYSDEC, was prepared by G&H to define the scope of drilling and sampling activities at the site (Appendix A). The Phase II investigation consisted of a review of relevant literature, field investigations and the preparation of final HRS scores. Field activities included an initial site reconnaissance, a geophysical investigation, installation of groundwater monitoring wells, and groundwater and soil sampling and analysis. The scope of work of the investigation is summarized in Table III-1.

B. GEOPHYSICAL SURVEY

Geophysical surveys were conducted at the GAF Dump site on August 10, 1988, by Roux Associates to characterize subsurface conditions. A magnetometer was used at proposed monitoring well locations to detect ferromagnetic objects which might be encountered during drilling. A resistivity survey was performed to determine the depth to the water table and to locate anomalies which could indicate groundwater quality changes resulting from the landfill. A terrain conductivity survey was performed to characterize shallow subsurface conditions. The summarized results of this survey are presented in Seciton IV, and the Survey Report is enclosed in Appendix A.

C. MONITORING WELL INSTALLATION

Three overburden monitoring wells were installed to establish the groundwater quality of the aquifer beneath the dump site.

The locations of these wells are shown on Figure I-2. The monitoring wells were installed by drilling with 6.25-in. I.D. hollow stem augers to depths ranging from 18 feet to 40 feet.

MONITORING WELL LOCATION AND SPECIFICATION

Well No.	Location	Boring Depth (ft)	Well Type
GW-1	Upgradient	40	Overburden
GW-2	Downgradient	18	Overburden
GW-3	Downgradient	20	Overburden

Each well was logged during the drilling activities and split spoon samples were taken at five-foot intervals during the drilling. Soil from the last split spoon sample of each well was collected and analyzed for grain size distribution. Aquifer characteristics were evaluated by slug tests. All monitoring well locations and elevations were surveyed, and the relative depths to groundwater were determined.

All field procedures, boring logs, well schematics, and grain size analyses are included in Appendix B.

D. GROUNDWATER SAMPLING AND ANALYSIS

Three groundwater samples, and one duplicate sample, were collected November 1, 1988. These samples were analyzed for Target Compound List (TCL) metals, volatiles, semi-volatiles and pesticides/PCBs. H2M Labs (Melville, New York) performed the analyses in accordance with November 1987 NYSDEC Contract Laboratory Protocols (CLP). OBG Laboratories (Syracuse, New York) performed an independent data validation. The chemical analytical results are discussed in Section IV and included in their entirety in Appendix C.2. The relevant field procedures are outlined in Appendix C.1.

E. SOIL SAMPLING AND ANALYSIS

Subsurface soil samples were collected from nine different locations. Seven of the samples were collected from a depth of 3 to 5 feet, one of these was a background sample collected from off-site (SS-1). The two remaining samples (SS-8 and SS-9) were collected from a depth of 8 to 10 feet. These two sampling points were located at the southernmost boundary of the site. Sample locations are shown on Figure I-2.

All nine soil samples were analyzed for TCL metals by H2M Labs in accordance with November 1987 NYSDEC CLP and the results validated by OBG Laboratories. The chemical results are discussed in Section IV. The field procedure is outlined in Appendix C.1

F. AIR SURVEY

In accordance with appropriate health and safety procedures, a photoionization detector (PID) was used to monitor the air in the working zone for organic vapors during site activities. In addition, split spoon samples were scanned with a PID immediately upon their removal from the split spoon.

G. SOURCE OF INFORMATION

The following individuals and agencies with knowledge of the site were contacted:

Charles Bien
Environmental Engineer
GAF Corp. Building No. 10
1361 Alps Road
Wayne, NJ 07470
Phone: (201) 377-3199
(201) 628-3501
Information Received: Site History

Don Wright
Environmental Engineer
Anitec Corp.
40 Charles Street
Binghamton, NY 13902-4444
Phone: (607) 774-3330
Information Received: Site History

Ron Slotkin
Underground Water Coordinator
Broome County Health Department
1 Wall Street
Binghamton, NY 13901
Phone: (607) 772-2887
Information Received: No information available

Frank Trent
Assistant Engineering Geologist
NYSDEC, Sub-Office, Region 7
Route 11, R.D. #1
Kirkwood, NY 13795
Phone: (607) 773-7763
Information Received: NYSDEC Files

Ben Conetta
EPA Region II
26 Federal Plaza
New York, New York 10278
Phone: (212) 264-6693
Information Received: EPA identification number

Allan Randall
USGS
Albany, New York
Phone: (518) 472-3108
Information Received: Geology of GAF dump area

Sam Iuobi
Anitec Corp
40 Charles Street
Binghamton, New York 13902-4444
Phone: (607) 774-3330
Information Received: Water levels of Anitec's wells

Carol Reschke
Community Ecologist
NYSDEC Wildlife Resources Center
Delmar, New York 12054
Phone:
Information Received: Critical habitat of an endangered species and national wildlife refuge location.

Debbie Kraybill
National Park Service
P.O. Box 37127
Washington, D.C. 20013-7127
Phone: (212) 343-9559
Information Received: National or state park, forest or wildlife reserve location.

James R. Covey, P.E.
Associate Sanitary Engineer
NYSDOH
The Governor Nelson A. Rockefeller Empire State Plaza
Albany, New York 12237
Phone: (518) 458-6731
Information Received: NYS Safewater Inventory Printouts.

Gregory Currier
Soil Conservation Services
Federal Bldg. Binghampton
Phone: (607) 773-2691
Information Received: Agricultural Land

TABLE III-1

SCOPE OF WORK

Task	Description
Record search and data compilation	Review Phase I information and any additional new information that is available.
Site reconnaissance	Note site changes since NYSDEC initial reconnaissance, assess access to monitoring well and sampling locations, and become familiar with the site.
Geophysical studies	Conduct geophysical survey. Based on the survey results, revise the location of monitoring wells.
Updated work plan	Revise preliminary NYSDEC work plan based on results of record search, site reconnaissance and geophysical studies. Prepare health and safety plan and define drilling and sampling protocols and procedures.
Monitoring wells	Install three overburden wells to depths ranging between 18 and 40 feet. Collect split spoon samples at five-foot intervals. Perform grain size analysis on deepest split spoon samples for each well. Develop wells to at least a turbidity of 50 NTU, or lowest possible, and perform permeability tests. Survey all monitoring well locations and elevations. Determine the relative depths to groundwater.

TABLE III-1 (Continued)

Sampling and analysis	
Groundwater	Collect groundwater samples from each well and one additional duplicate groundwater sample from a downgradient well. Analyze these samples for TCL metals, volatiles, semi-volatiles and pesticides/PCBs.
Soil	Collect nine subsurface soil samples, seven from a depth of 3 to 5 feet, including one background off-site sample, and two from 8 to 10 feet. Analyze soil samples for TCL metals.
Investigation Report	Prepare a report containing significant Phase I information, additional field data, final HRS scores, HRS documentation records, and site assessments.

IV. SITE ASSESSMENT

A. SITE DESCRIPTION AND HISTORY

The GAF dump site is a two-acre inactive disposal area located in the City of Binghamton, Broome County (Figure I-1). The site is adjacent to an Anitec Corporation facility which was formerly a GAF manufacturing plant. GAF retained ownership of the dump area when their plant was sold to Anitec Corporation in 1975. An abandoned paved parking lot makes up the eastern half of the site, while the western portion of the site is ungraded and covered with thick weeds. The site is located in a mixed commercial and residential neighborhood. To the west of the site is Veteran's Memorial Park, to the north is a residential area, to the east is Spring Forest Cemetery, and to the south is the Anitec Corporation facility (Figure I-2).

The site was allegedly used as a dump area during the time GAF owned and operated the plant. Liquids from production of photographic material were allegedly dumped directly onto the ground. GAF has no record or knowledge of anyone who can provide information concerning the type or quantity of wastes disposed at the site. There has not been, to GAF's knowledge, any health or environmental problem resulting from disposal of waste at the site. It is known that the plant facility has been in operation since World War II. It is estimated that GAF stopped disposing wastes by 1975. Twelve to sixteen years ago the site was filled with approximately ten feet of demolition debris and ciders and presumably covered with soil [D.3]. Gibbs & Hill's soil samples did not reveal any of these materials. However, soil samples from downgradient wells (MW-2 and MW-3) were dark grayish brown, with significant amounts of silt and some clay, indicative of a swampy environment [B.2]. The site is currently unused.

A 66-inch storm sewer line known as Trout Brook, approximately 200 feet downslope from the dump site, flows in an easterly direction to the Chenango River. In 1971 this storm sewer was sampled by the Broome County Health Department. The principal toxic waste found was silver. It was believed that the silver detected was the result of amounts of silver nitrate being discharged from the plant. Zinc was also found in some samples. These data are difficult to assess due to the lack of background data and sampling protocols [D.8 and D.9].

An Anitec Well No. 3 sample was analyzed in December 1982 for purgeable priority pollutants and none were detected. In March 1983, samples were taken from Anitec Well No. 5 and were analyzed for volatiles, semi-volatiles, and inorganics.

Concentration of methylene chloride, a chemical necessary in making plastic base for most films, was found at a level five times above the detection limit [D.10 and D.11].

On August 4, 1988 a site reconnaissance of the study area was undertaken by Gibbs & Hill. The eastern portion of the site is presently covered by an abandoned asphalt parking lot. The remaining western portion is ungraded and covered with thick weeds. No signs of any hazardous waste or leachate were observed. No containment practices were visible [Appendix A].

On August 10, 1988, Roux Associates conducted a geophysical survey. Results of the geophysical survey indicated that there were no buried ferromagnetic objects in the vicinity of the monitoring wells. The terrain conductivity survey located an area of higher readings for the upper 20 feet at the southwest portion of the site. The absence of large changes in resistivity at the 30 to 40 feet interval implies that a conductant leachate plume has not been detected at this depth [Appendix A, D.6].

B. TOPOGRAPHY

The site and surrounding area slope 4 percent toward the southern property boundary with Anitec Corporation. A residential neighborhood, located to the north on Prospect Street, is uphill of the site. An abandoned parking lot is immediately to the east of the investigated area. Veteran's Memorial Park is on the west and downhill of the site.

Trout Brook, approximately 200 feet downslope from the alleged dump site, flows in an easterly direction to the Chenango River. It has been converted to a closed storm sewer line.

The Johnson City well field is located 1.8 miles northwest of the site [Figure I-1]. Based on the regional hydrology, it appears that the well field is upgradient of the alleged dump area. The City of Binghamton water intake is located upstream on the Susquehanna River. The City also operates wells on the eastern side of the Chenango River.

Anitec Corporation installed five wells for cooling water supply approximately 500 feet south of the site (see Figures IV-2 and IV-3).

C. HYDROLOGY

1. Regional Hydrology

The triple cities of Binghamton, Johnson City, and Endicott are underlain by sedimentary rocks of Upper Devonian Age. The bedrock is mostly composed of fractured and slightly folded shales and siltstones. In the western part of the City of Binghamton and in Johnson City, adjacent to where the Susquehanna River flows, low hills of till or bedrock form an impermeable barrier three miles long that separates the river from the sand and gravel aquifer known as the Clinton Street-Ballpark aquifer. [D.14]

The Clinton Street-Ballpark aquifer, a federally designated sole source aquifer, is the most productive in the region and is the aquifer of concern in the study area. The aquifer was formed about 17,000 years ago as the last glacier retreated from south-central New York. Deep valleys, originally covered by streams, had been widened and deepened by advancing ice. While the glacier was melting, lakes formed between the remaining ice and older sediment down valley. Turbulent rivers of meltwater deposited outwash material beyond the margins of the ice sheets. Where the rivers entered lakes, silt, clay, and very fine sand settled to the lake bottom. The Clinton Street-Ballpark aquifer borders two major streams, the Chenango and the Susquehanna. Much of the sediment that was deposited west of the Chenango River in Binghamton and in Johnson City is permeable sand and gravel. In this region, groundwater easily move back and forth between the aquifer and the rivers. [D.14]

The Clinton Street-Ballpark aquifer underlies an urban area that is occupied primarily by houses and also includes some large commercial and industrial buildings. Possibly 20 to 30 percent of the land surface above the aquifer is covered by streets, paved parking lots and buildings. Even so, most precipitation infiltrates into the aquifer. After percolating downward to the water table, the water generally flows to the east until it reaches and seeps into the Chenango or Susquehanna River. Since at least the late 1940s, however, the water table has been lowered below river level in enough places that ground water no longer empties into the rivers but, instead leaves almost entirely through pumped wells. Much of the groundwater still originates from local precipitation, but now a large amount infiltrates from the rivers into the aquifer.

Approximately half the water withdrawn from the Clinton Street-Ballpark aquifer is used for municipal supply by Johnson City and its satellite water districts. The other half is used by industrial firms such as the Anitec Corporation for industrial processes [D.14].

2. Site Hydrology

Three borings were drilled at the GAF Dump site to assess the subsurface geology and to emplace monitoring wells. Boring MW-1, located just north of Seymour Street across from the dump site, revealed gravelly sands to 27 feet below the ground surface and compacted silty gravelly sands from 27 feet to 37 feet (bottom of hole). Boring MW-2, located on the southeast corner of the dump site, consisted of fine sand and silt to fifteen feet followed by a nine inch layer of gravelly sandy silts which were underlain by two feet of gray, highly plastic silty clay. Boring MW-3, located on the southwest corner of the dump site, revealed a layer of fine sand and silt to 10 feet, followed by a 10 feet of alternating clay and silty clay layers. Beyond this depth fine sands and silts were uncovered. [B.2]

The sands and gravels detected from the borings are indicative of the previously discussed glacial meltwater outwash material while the clays are indicative of localized glacial lake deposits. Soil samples from downgradient wells (MW-2 and MW-3) were dark grayish brown with significant amounts of silt and some clay, indicative of a swampy environment.

A grain size analysis was conducted on the deepest split spoon sample taken from each boring drilled. The analysis characterized the MW-1 split, spoon sample to be a gravelly sand and silt with a little clay, the MW-2 split spoon sample to be a silty fine sand with a trace of clay, and the MW-3 split spoon sample as silt with a trace of sand and little clay [B.2].

3. Hydraulic Conductivity

The hydraulic conductivity in the saturated zone was determined by a slug test. Results from the slug test show a hydraulic conductivity value of 2×10^{-4} cm/sec for MW-1, 4×10^{-4} cm/sec for MW-2, and 5×10^{-5} cm/sec for MW-3. These results are supported by the determination of hydraulic conductivity from grain size distribution analysis [B.1 and 2].

4. Groundwater Flow

Well data from the vicinity of the site indicate that regional groundwater is moderately close to the surface, within 50 feet, and flows in a south to southeast direction (D.14). The GAF Dump site monitoring well data suggest that localized groundwater flow is to the northeast (Figure

IV-1). However, it is highly unlikely that the local groundwater flow direction is to the northeast. [D.15]. To support this point, water elevation data were requested from Anitec Corporation. The information was used to provide another line of evidence for groundwater flow direction. (Figure 4-2)

The depth to water of five wells on the Anitec property located south of the GAF Dump site ranged from 32 feet to 44.33 feet [D.17]. Relative water elevations are presented in Figure IV-3. Nearby Anitec Corporation wells are being pumped at a rate considerable enough to affect the flow direction at the GAF site (D.15). Therefore, it is predicted that groundwater flow at the GAF site is south to southwest. It is not clear as to why the monitoring wells at the GAF site reflect a northeasterly flow direction. A probable explanation is that wells MW-2 and MW-3 are intercepting a shallow perched water-bearing zone. Clay layers encountered at depths between ten and fifteen feet suggest that the impermeable material is acting as a barrier and creating a local perched groundwater zone. GW-1 on the other hand is probably intercepting a deeper water-bearing zone. It was reported that a silty clay layer separates the groundwater into two water-bearing zones throughout the GAF/Anitec vicinity. This silty clay lens is not continuous and eventually pinches out. It is possible that the silty clay material encountered during drilling operations is from this lens. The two water-bearing zones are hydraulically connected with the upper zone feeding into the lower one [D.14&15].

A second possible explanation is MW-1 is placed in a highly compacted glacial till material and in an area of restricted groundwater flow. Hydraulic conductivity, due to the nature of the material, is greatly reduced. MW-2 and MW-3 are placed in loosely compacted silty sands where the groundwater flow is far less restricted than at MW-1 and hydraulic conductivity is much higher.

D. SITE CONTAMINATION ASSESSMENT

Potential contamination of the environment within the site boundary was evaluated by a review of the character of wastes suspected at the site and chemical analyses of samples.

The character of wastes suspected at the site was evaluated by a review of information from historical literature assembled in Appendix D.

Groundwater and soil contamination assessment was based on the criteria presented in the Section C.1. Tables IV-1,2&3 summarize the results from the chemical analyses performed at the GAF site. Results of analyses are reported in these tables for every analyte and sample if that analyte was detected in any concentration above Contract Detection Limit (CDL). However, an analyte detected but below CDL is not reported unless it was detected above CDL in another sample or is a contaminant of concern at the site.

1. Waste Characteristics

There is no information available for the original GAF plant process. However, the sensitive surface of photographic films and papers consists of microscopic grains of silver halide suspended in gelatin. Developing agents contain a reducing agent with an accelerator (such as phenolic agents), a preservative (sodium sulfate) and restrainer (potassium chloride). Widely used color sensitizers include cyanine dyes, merocyanines, benzooxazoles, benzothiazoles, cryptocyanine, and diethyl-para-phenylenediamine (D.16). Therefore, given the nature of the industrial production of photochemical products, the monitoring of the site could reveal the presence of metals (such as silver, lead, nickel, zinc, etc.), phenol, solvents (such as methylene chloride and other chlorinated solvents, acetone, toluene, xylene, benzene, etc.), and some of the chemicals previously mentioned.

2. Groundwater Contamination

Results from the chemical analysis of three groundwater samples and one duplicate are summarized in Tables IV-1 and IV-2. Five volatile organic compounds: methylene chloride (dichloromethane), acetone, 2-butanone, chloroethane (ethyl chloride), and 1,2-dichlorethane were found in the samples of groundwater. Concentrations of methylene chloride in samples GW-2, 3, and 4 are less than ten times the concentration in the trip blank. Concentrations of acetone, another common lab contaminant, in samples GW-2 (87 ug/l) and GW-3 (86 ug/l) are slightly higher than ten times the concentrations in the trip blank (8J ug/l) and approximately five times greater than the background sample concentration (18 ug/l). Methylene chloride and acetone are necessary in making the plastic base for most films; and therefore, their presence in groundwater samples was not surprising. However, we believe that the presence of these two compounds in downgradient samples (GW-2 and GW-3) is due to field or lab contamination.

Concentrations of chloroethane, 1,2-dichloroethane, and 2-butanone are greater than five times the concentrations of these compounds found in the associated blanks. In addition, these compounds were not detected in the upgradient water sample which indicates that the site is the source of this contamination. The concentrations of these compounds are above maximum contamination levels of organic compounds specified by the 10 NYCRR Subpart 5.1 (Table IV-4).

Pesticides/PCBs and semivolatiles were not detected in the groundwater samples.

The metal concentrations detected in the upgradient well (MW-1) were generally above or close to the concentrations detected in the downgradient wells (MW-2 and MW-3). The exception was silver, which exhibited concentrations in the downgradient wells MW-2 and MW-3 at thirty-two and nine times, respectively, above the background concentrations detected in the upgradient well (MW-1) which indicate that the site is the source of this contamination. Barium, cadmium, chromium, iron, lead, manganese, and zinc were detected in the groundwater of both downgradient and upgradient wells at concentrations significantly above the standards specified by the EPA 40 CFR 141 and 143 (Table

IV-4). Lead found in soil samples (in the range of 41.2 to 502 mg/kg) was not detected in high concentrations in groundwater samples. The concentration of lead in the downgradient well GW-2 was approximately two times greater than the concentration of lead in the upgradient well.

3) Soil Contamination

Nine subsurface soil samples were collected, seven from a depth of 3 to 5 feet, including one background off-site sample (SS-1) and two from 8 to 10 feet (SS-8 and SS-9). Sample locations as shown in Figure I-1, and results from the chemical analyses of soil samples are summarized in Table IV-3. The principal toxic contaminant found in soil was lead. The level of lead was thirteen times greater in sample SS-5 than the level detected in the background sample (SS-1). However, the concentration of lead in all other samples was less than ten times the level detected in the background sample. Low concentrations of copper and zinc were also found. The level of copper was eleven times greater in SS-2 and four times greater in SS-5 and SS-6 than the level detected in the background sample. The level of zinc was 5 times greater in SS-2, and two times greater in SS-5, than in the background level. Silver, found in significant concentrations in the groundwater, was in the soil only in concentrations below the background level.

4) Air Survey

Air quality surveys were conducted with a PID during the site reconnaissance, well installation, and sampling activities in accordance with appropriate health and safety precautions. A background level of 0.4 ppm was detected both on and around the site. No detectable levels of organic contaminants above background were registered on the meter.

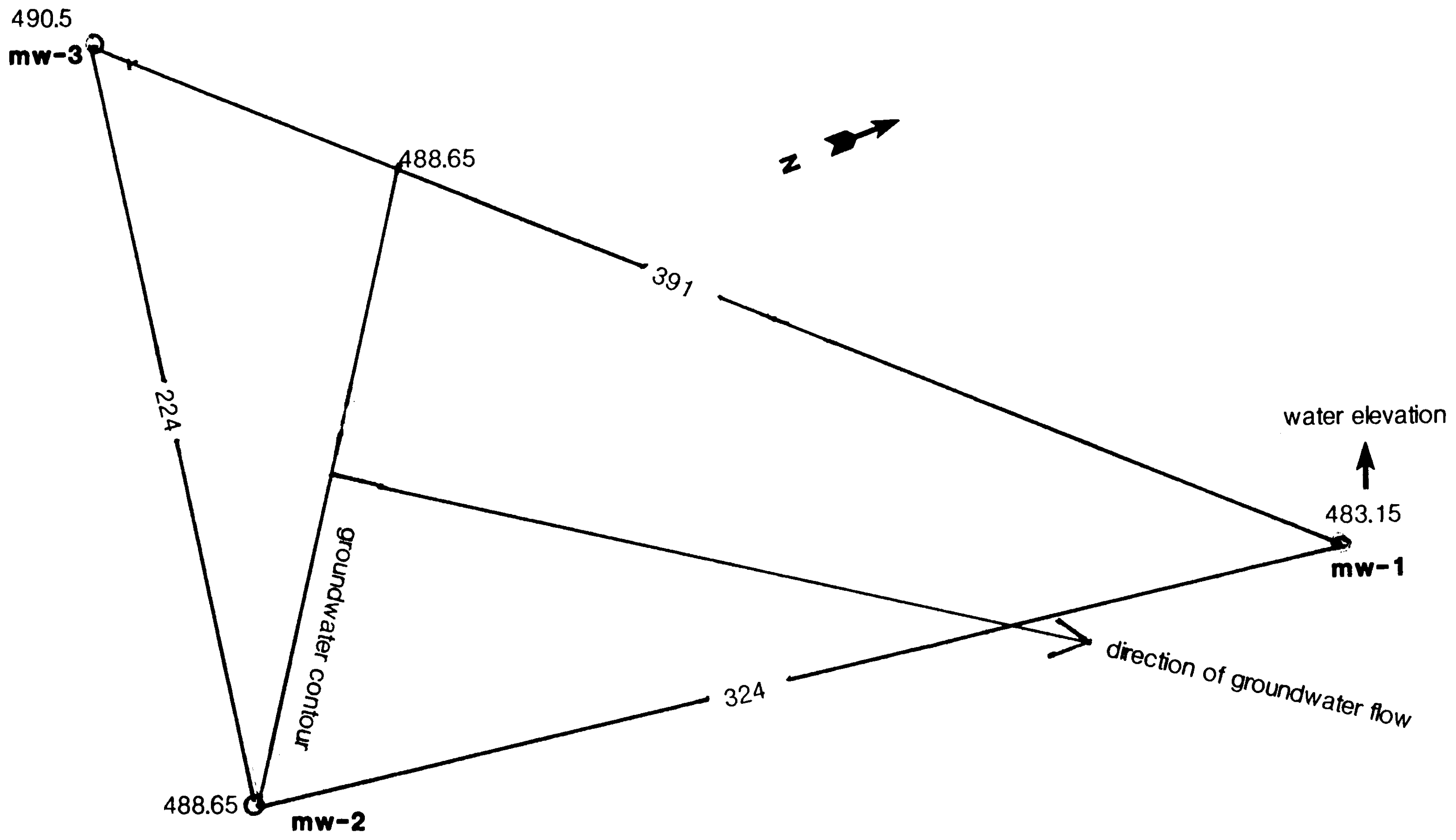
E. CONCLUSIONS

All tasks of the Phase II investigations for GAF Dump site have been completed. Sufficient data has been collected to prepare final HRS scores.

The groundwater analyses detected three organics - chloroethane, 2-butanone, and 1,2-dichlorethane, released from the site to the groundwater.

The principal TCL metal found in the groundwater is silver (GW-2 only). The only metal which appears to be in a slightly higher concentration than expected in the soil is lead (502 ug/l). Silver, found in the groundwater samples, was not detected in the soil in concentrations above the background concentration.

The results of this Phase II investigation indicate migration of contaminants from the site into the groundwater. Further investigations are recommended to determine the vertical and horizontal extent of contamination and the extent to which migration has occurred. It is also recommended that groundwater samples be collected and analyzed on a regular basis to monitor the migration of contaminants.



Scale 1 : 606

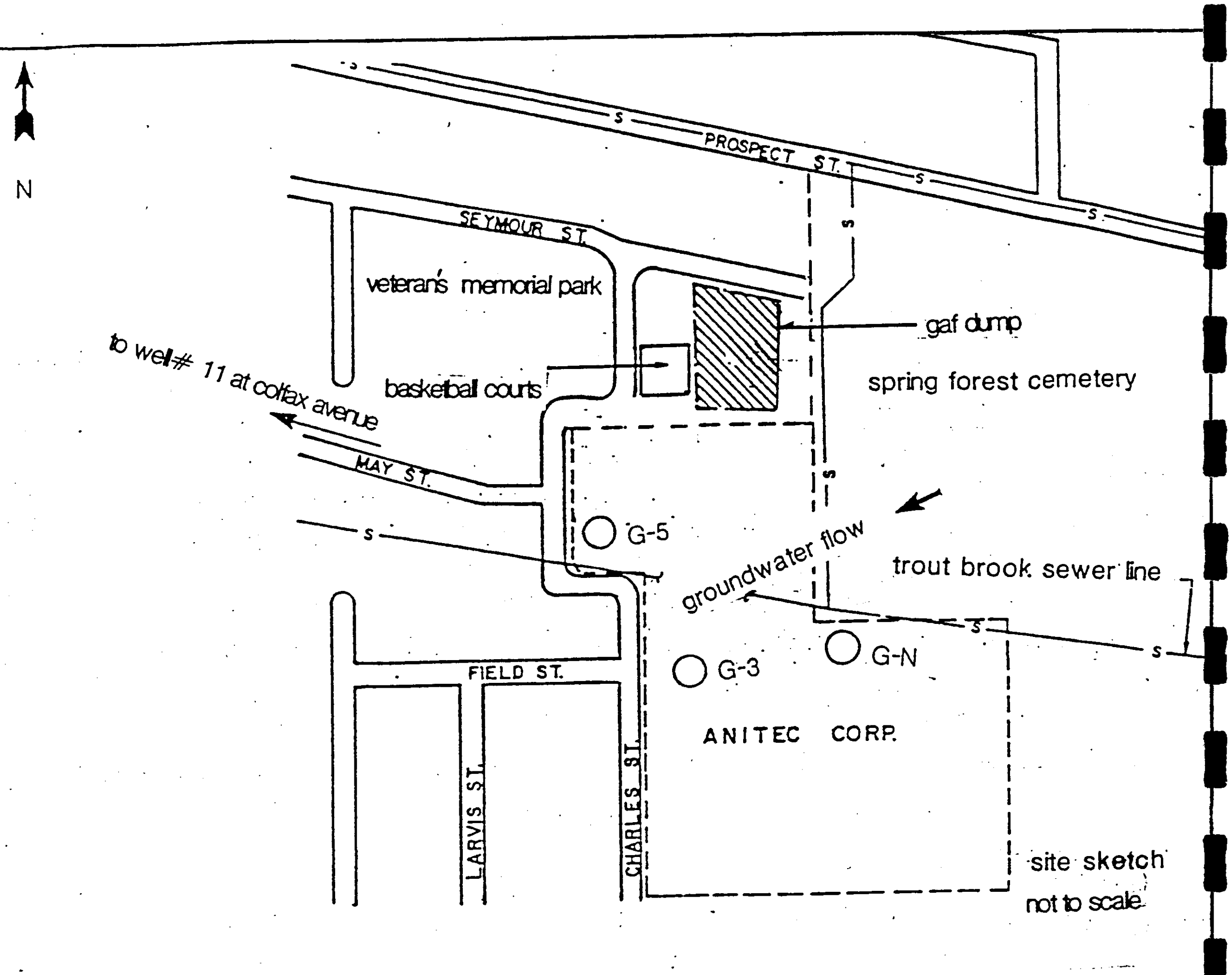
note: numerical values are in feet

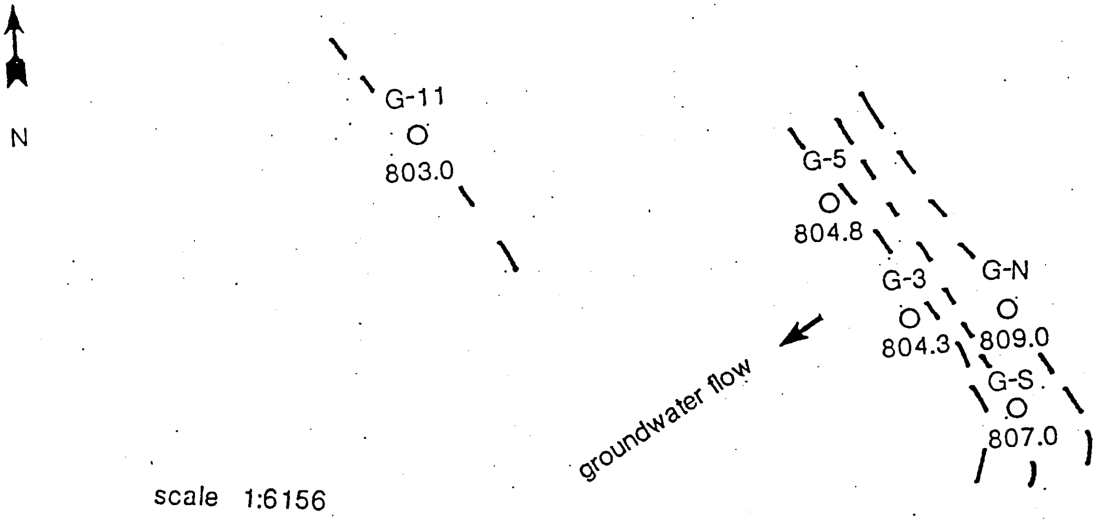
all elevations are in an arbritrary system

Groundwater Flow Diagram

Site: GAF DUMP | **Figure: IV-1**

Gibbs & Hill, Inc.





Groundwater Flow Diagram

Site: GAF (ANITEC WELLS)

Figure: IV-2

Gibbs & Hill, Inc.

Figure: Location of Observation Wells at the Anitec Corporation
(formerly the GAF Corporation)
note wells G-11, G-5, G-3, G-north, and G-south

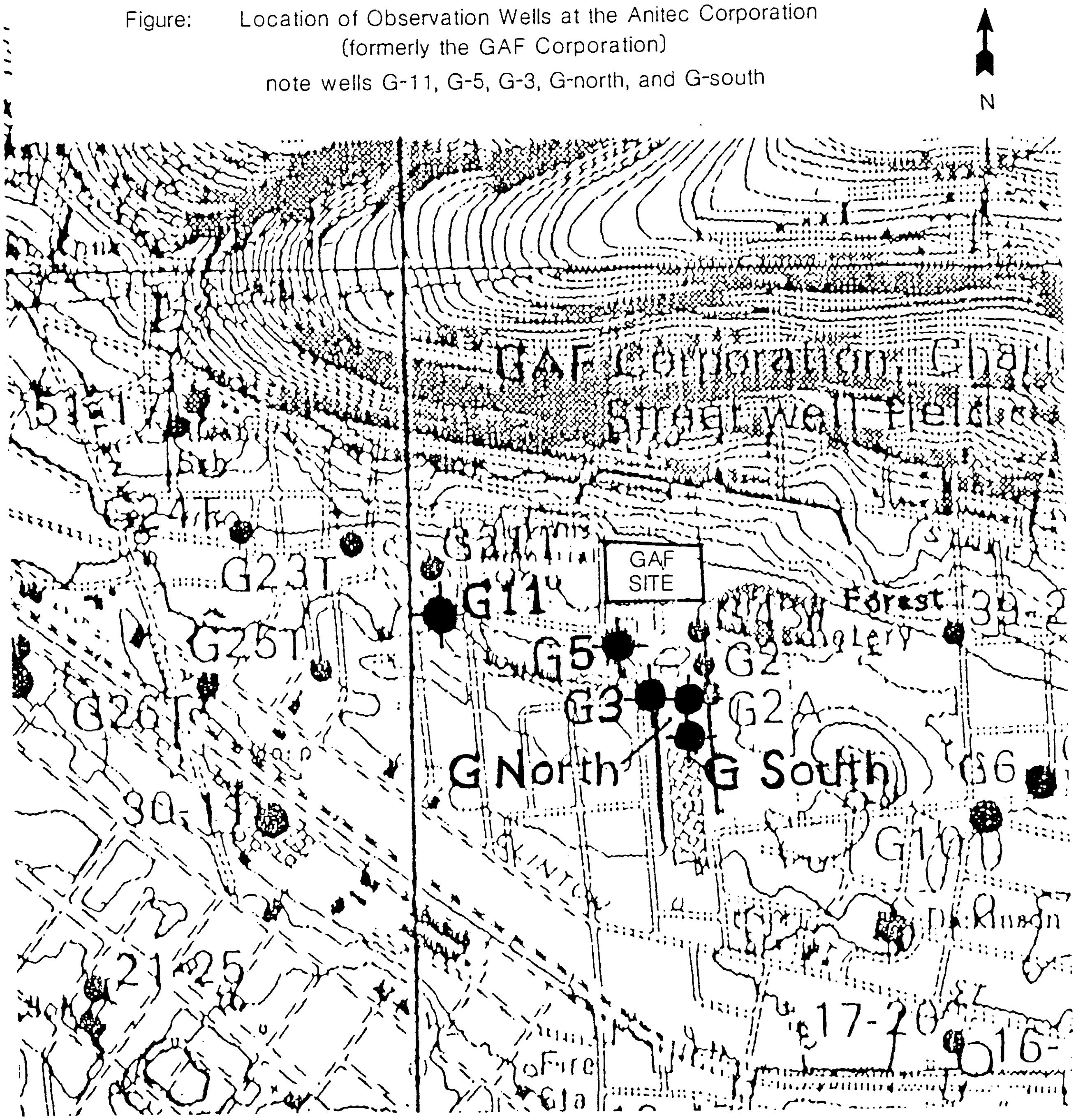
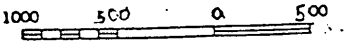


FIGURE IV-3

COORDINATES:
LONGITUDE:
LATITUDE:

SITE LOCATION MAP
SITE: GAF SITE

MAP SOURCE: Base from U.S. Geological Survey
Binghamton West, and Castle Creek, N.Y..



SCALE (FEET)

TABLE IV-1 - ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES - TOTAL TCL INORGANICS

(All data in micrograms/liter)
GAF DUMP

Analyte	Field Blank	GW-1	GW-2	GW-3	GW-4(1)
Aluminum	129	252,000	22,100	236,000	18,700
Antimony	ND	367	29	358	22
Arsenic	ND	54.6	17.6	60.5	16.2
Barium	1	2,200	1,600	1,000	1,420
Beryllium	ND	29	2	26	2
Cadmium	ND	196	8	160	5.5
Calcium	1,000	109,600	56,800	373,000	56,200
Chromium	ND	815	50	387	44
Cobalt	ND	329	10	291	3
Copper	ND	690	744	542	619
Iron	46	640,000	47,300	495,000	41,800
Lead	ND	320	770	260	630
Magnesium	300	110,800	14,900	234,000	14,100
Manganese	ND	14,000	769	9,470	740
Mercury	ND	ND	0.8	0.5	0.6
Nickel	ND	684	61.0	612	56
Potassium	200	21,400	12,900	19,700	12,600
Silver	ND	10	320	88	250
Sodium	300	27,600	162,500	192,600	173,800
Vanadium	ND	395	46	395	41
Zinc	2.0	1,460	2,250	1,760	1,980

(1) GW-4 is duplicate of GW-2

TABLE IV-2 ANALYTICAL RESULTS OF GROUNDWATER SAMPLES - ORGANICS

(All data in micrograms/liter)

GAF DUMP

Compound	Field Blank	Trip Blank	Method Blank	Sample No. GW-1	GW-2	GW-3	GW-4 (1)
Chloroethane	ND	ND	ND	ND	150	ND	120
Methylene Chloride	ND	20B	8	ND	95B	6B	81B
Acetone	8	8	ND	18	87	86	68
2-Butanone	ND	ND	ND	19	ND	75	ND
1,2-Dichloroethane	ND	ND	ND	ND	44	ND	38

Notes:

(1) GW-4 is duplicate of GW-2

ND - Not Detected

B - Contaminant also detected in Method Blank

J - Detected at less than contract required detection limit

WPENVR1:488

TABLE IV-3 - ANALYTICAL RESULTS FOR SOIL SAMPLES - TOTAL TCL INORGANICS

(All data in mg/kg)

GAF DUMP

Analyte	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9
Aluminum	9,530	4,860	8,160	8,330	7,700	10,100	7,500	9,060	12,500
Antimony	17.1	12.9	14.0	13.8	11.9	12.5	8.4	10.4	13.3
Arsenic	9.4	5.6	5.3	3.4	6.8	6.2	9.5	5.5	7.6
Barium	177	181	135	58.5	176	166	130	98.9	46.7
Beryllium	1.2	1.0	0.89	0.86	0.90	1.0	1.1	0.85	1.1
Cadmium	3.2	1.4	1.2	1.2	1.2	1.1	1.2	1.2	1.2
Calcium	31,700	4,400	57,800	68,300	39,500	25,700	37,400	35,000	522
Chromium	12.4	26.3	15.3	18.1	21.3	21.7	16.3	18.5	18.3
Cobalt	ND	ND	7.8	6.9	ND	8.1	ND	ND	8.7
Copper	30.6	3,510	40.2	23.2	153	136	57.0	38.3	20.7
Iron	18,200	28,400	15,800	14,800	19,200	21,500	16,700	16,200	21,700
Lead	41.2	334	144	60	502	164	142	130	15.5
Magnesium	6,050	859	8,450	5,580	7,340	10,000	6,530	5,300	3,650
Manganese	912	318	416	379	368	492	486	390	452
Mercury	0.4	0.8	ND	ND	0.4	ND	ND	ND	ND
Nickel	17.6	55.9	16.7	18.7	24.8	22.0	16.8	17.5	21.6
Potassium	1,180	455	1,130	1,030	990	1,160	989	1,170	1,370
Selenium	8.8	ND	ND	ND	ND	ND	ND	ND	ND
Silver	7.6	2.3	1.1	0.58	2.0	1.9	0.65	0.57	0.59
Sodium	6,320	4,480	2,190	2,210	2,200	2,190	2,120	2,120	2,060
Vanadium	14.7	17.7	18.7	14.8	16.9	18.1	17.4	21.9	19.1
Zinc	166	797	118	135	291	182	106	117	56.3

ND - Not detected

TABLE IV-4

FEDERAL AND STATE WATER STANDARDS AND GOALS

TCL VOLATILE ORGANICS

CAS Number	Compound	Contract Detection Limit [ug/l]	[A] EPA 40CFR141 MCL* [ug/l]	[A] EPA 40CFR141 MCLG** [ug/l]	[B] 10 NYCRR Subpart 5.1 MCL* [ug/l]	[C] 6 NYCRR 702 Standard [ug/l]	[D] 6 NYCRR 703 Standard [ug/l]
74-87-3	Chloromethane	10			5	50	5
74-83-9	Bromomethane	10			5	50	5
75-01-4	Vinyl Chloride	10	2	0	2	50	2
75-00-3	Chloroethane	10			5	50	5
75-09-2	Methylene Chloride	5			5	50	5
67-64-1	Acetone	10			50	50	50
75-15-0	Carbon Disulfide	5			50	50	50
75-35-4	1,1-Dichloroethene	5	7	7	5	50	5
75-34-3	1,1-Dichloroethane	5			5	50	5
540-59-0	1,2-Dichloroethene (total)	5			10	50	10
67-66-3	Chloroform	5	[1]		[2]	0.2	[2]
107-06-2	1,2-Dichloroethane	5	5	0	5	0.8	5
78-93-3	2-Butanone	10			50	50	50
71-55-6	1,1,1-Trichloroethane	5	200	200	5	50	5
56-23-5	Carbon Tetrachloride	5	5	0	5	50	5
108-05-4	Vinyl Acetate	10			50	50	50
75-27-4	Bromodichloromethane	5	[1]		[2]	50	[2]
78-87-5	1,2-Dichloropropane	5			5	0.6	5
10061-01-5	cis-1,3-Dichloropropene	5			5	50	5
79-01-6	Trichloroethene	5	5	0	5	50	5
124-48-1	Dibromochloromethane	5	[1]		[2]	50	[2]
79-00-5	1,1,2-Trichloroethane	5			50	50	50
71-43-2	Benzene	5	5	0	50	50	ND[4]
10061-02-6	trans-1,3-Dichloropropene	5			5	50	5
75-25-2	Bromoform	5	[1]		[2]	50	[2]
108-10-1	4-Methyl-2-pentanone	10			5	50	5
591-78-6	2-Hexanone	10			5	50	5
127-18-4	Tetrachloroethene	5			5	50	5
79-34-5	1,1,2,2-Tetrachloroethane	5			5	50	5
108-88-3	Toluene	5			5	50	5
108-90-7	Chlorobenzene	5			5	20[3]	5
100-41-4	Ethylbenzene	5			5	50	5
100-42-5	Styrene	5			5	50	5
1330-20-7	Xylene (total)	5			15	50	15

[1] 100 ug/l for the total of these four compounds for community water systems serving greater than 10,000 persons and which add a disinfectant (oxidant) to the water.

[2] 100 ug/l for the total of these four compounds for community water systems.

[3] Sources of water for drinking, culinary or food processing purposes - aquatic life protection: 5 ug/l. Primary contact recreation: 5 ug/l.

[4] Not detectable by tests or analytical determinations referenced in 6 NYCRR 703.4.

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Maximum Contaminant Level Goal - "nonenforceable health goal."

TABLE IV-4

FEDERAL AND STATE WATER STANDARDS AND GOALS

TCL SEMI-VOLATILE ORGANICS

CAS Number	Compound	Contract Detection Limit [ug/l]	[A] EPA 40CFR141 MCL* [ug/l]	[A] EPA 40CFR141 MCLG** [ug/l]	[B] 10 NYCRR Subpart 5.1 MCL* [ug/l]	[C] 6 NYCRR 702 Standard [ug/l]	[D] 6 NYCRR 703 Standard [ug/l]
108-95-2	Phenol	10			50	1	50
111-44-4	bis(2-Chloroethyl)ether	10			50	50	1
95-57-8	2-Chlorophenol	10			50	50	50
541-73-1	1,3-Dichlorobenzene	10			5	20[1]	5
106-46-7	1,4-Dichlorobenzene	10	75	75	5	30[1]	4.7
100-51-6	Benzyl alcohol	10			50	50	50
95-50-1	1,2-Dichlorobenzene	10			5	50[1]	4.7
95-48-7	2-Methylphenol	10			50	50	50
39638-32-9	bis(2-Chloroisopropyl)ether	10			50	50	50
106-44-5	4-Methylphenol	10			50	50	50
621-64-7	N-Nitroso-di-n-propylamine	10			50	50	50
67-72-1	Hexachloroethane	10			50	50	50
98-95-3	Nitrobenzene	10			50	30	50
78-59-1	Isophorone	10			50	50	50
88-75-5	2-Nitrophenol	10			50	50	50
105-67-9	2,4-Dimethylphenol	10			50	50	50
65-85-0	Benzoic acid	50			50	50	50
111-91-1	bis(2-Chloroethoxy)methane	10			50	50	50
120-83-2	2,4-Dichlorophenol	10			50	0.3	50
120-82-1	1,2,4-Trichlorobenzene	10			5	10[1]	5
91-20-3	Naphthalene	10			50	10	50
106-47-8	4-Chloroaniline	10			50	50	50
87-68-3	Hexachlorobutadiene	10			5	0.5	5
59-50-7	4-Chloro-3-methylphenol	10			50	50	50
91-57-6	2-Methylnaphthalene	10			50	50	50
77-47-4	Hexachlorocyclopentadiene	10			50	1[2]	50
88-06-2	2,4,6-Trichlorophenol	10			50	50	50
95-95-4	2,4,5-Trichlorophenol	50			50	50	50
91-58-7	2-Chloronaphthalene	10			50	10	50
88-74-4	2-Nitroaniline	50			50	50	50
131-11-3	Dimethylphthalate	10			50	50	50
208-96-8	Acenaphthylene	10			50	50	50
606-20-2	2,6-Dinitrotoluene	10			50	50	50

[1] Sources of water for drinking, culinary or food processing purposes
- aquatic life protection: 5 ug/l; primary contact recreation: 5 ug/l

[2] Sources of water for drinking, culinary or food processing purposes
- aquatic life protection: 0.45 ug/l; primary contact recreation: 0.45 ug/l

[3] Sources of water for drinking, culinary or food processing purposes
- aquatic life protection: 0.4 ug/l; primary contact recreation: 0.4 ug/l

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Maximum Contaminant Level Goal - "nonenforceable health goal."

TABLE IV-4

FEDERAL AND STATE WATER STANDARDS AND GOALS

TCL SEMI-VOLATILE ORGANICS

CAS Number	Compound	Contract Detection Limit [ug/l]	[A] EPA 40CFR141 MCL* [ug/l]	[A] EPA 40CFR141 MCLG** [ug/l]	[B] 10 NYCRR Subpart 5.1 MCL* [ug/l]	[C] 6 NYCRR 702 Standard [ug/l]	[D] 6 NYCRR 703 Standard [ug/l]
99-09-2	3-Nitroaniline	50			50	50	50
83-32-9	Acenaphthene	10			50	20	50
51-28-5	2,4-Dinitrophenol	50			50	50	50
100-02-7	4-Nitrophenol	50			50	50	50
132-64-9	Dibenzofuran	10			50	50	50
121-14-2	2,4-Dinitrotoluene	10			50	50	50
84-66-2	Diethylphthalate	10			50	50	50
7005-72-3	4-Chlorophenyl-phenylether	10			50	50	50
86-73-7	Fluorene	10			50	50	50
100-01-6	4-Nitroaniline	50			50	50	50
534-52-1	4,6-Dinitro-2-methylphenol	50			50	50	50
86-30-6	N-Nitroso-diphenylamine	10			50	50	50
101-55-3	4-Bromophenyl-phenylether	10			50	50	50
118-74-1	Hexachlorobenzene	10			50	50	0.35
87-86-5	Pentachlorophenol	50			50	1[3]	21
85-01-8	Phenanthrene	10			50	50	50
120-12-7	Anthracene	10			50	50	50
84-74-2	Di-n-butylphthalate	10			50	50	50
206-44-0	Fluoranthene	10			50	50	50
129-00-0	Pyrene	10			50	50	50
85-68-7	Butylbenzylphthalate	10			50	50	50
91-94-1	3,3'-Dichlorobenzidine	20			50	50	50
56-55-3	Benzo(a)anthracene	10			50	50	50
218-01-9	Chrysene	10			50	50	50
117-81-7	bis(2-Ethylhexyl)phthalate	10			50	0.6	4.2
117-84-0	Di-n-octylphthalate	10			50	50	50
205-99-2	Benzo(b)fluoranthene	10			50	50	50
207-08-9	Benzo(k)fluoranthene	10			50	50	50
50-32-8	Benzo(a)pyrene	10			50	50	50
193-39-5	Indeno(1,2,3-cd)pyrene	10			50	50	50
53-70-3	Dibenzo(a,h)anthracene	10			50	50	50
191-24-2	Benzo(g,h,i)perylene	10			50	50	50

[1] Sources of water for drinking, culinary or food processing purposes
- aquatic life protection: 5 ug/l; primary contact recreation: 5 ug/l

[2] Sources of water for drinking, culinary or food processing purposes
- aquatic life protection: 0.45 ug/l; primary contact recreation: 0.45 ug/l

[3] Sources of water for drinking, culinary or food processing purposes
- aquatic life protection: 0.4 ug/l; primary contact recreation: 0.4 ug/l

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Maximum Contaminant Level Goal - "nonenforceable health goal."

TABLE IV-4

FEDERAL AND STATE WATER STANDARDS

TCL INORGANICS

CAS Number	Analyte	Contract Detection Limit [ug/l]	[A] EPA 40CFR141 MCL* [ug/l]	[E] EPA 40CFR143 SMCL** [ug/l]	[B] 10 NYCRR Subpart 5.1 MCL* [ug/l]	[C] 6 NYCRR 702 Human [ug/l]	[C] 6 NYCRR 702 Aquatic [ug/l]	[C] 6 NYCRR 702 PCR*** [ug/l]	[D] 6 NYCRR 703 Standard [ug/l]
7429-90-5	Aluminum	200					100	100	
7440-36-0	Antimony	60							
7440-38-2	Arsenic	10	50		50	50	190	190	25
7440-39-3	Barium	200	1000		1000	1000			1000
7440-41-7	Beryllium	5					1100[2]	1100[2]	
7440-43-9	Cadmium	5	10		10	10	0.9[3]	0.9[3]	10
7440-70-2	Calcium	5000							
7440-47-3	Chromium	10	50		50	50	163[3]	163[3]	50
7440-48-4	Cobalt	50					5	5	
7440-50-8	Copper	25		1000	1000	200	9.2[3]	9.2[3]	1000
7439-89-6	Iron	100		300	300[1]	300	300	300	300[1]
7439-92-1	Lead	5	50		50	50	2.2[3]	2.2[3]	25
7439-95-4	Magnesium	5000				35000			
7439-96-5	Manganese	15		50	300[1]	300			300[1]
7439-97-6	Mercury	0.2	2		2	2			2
7440-02-0	Nickel	40					76.8[3]	76.8[3]	
7440-09-7	Potassium	5000							
7782-49-2	Selenium	5	10		10	10	1	1	10
7440-22-4	Silver	10	50		50	50	0.1	0.1	50
7440-23-5	Sodium	5000							
7440-28-0	Thallium	10					8	8	
7440-62-2	Vanadium	50					14	14	
7440-66-6	Zinc	20		5000	5000	300	30	30	5000
	Cyanide	10				100	5.2	5.2	

[1] If both are present, the total of both concentrations may not exceed 500 ug/l.

[2] For water with hardness greater than 75 ppm. Standard is 11 ug/l for water with hardness less than or equal to 75 ppm.

[3] For water with hardness of 75 ppm. See 6 NYCRR 702 for determination of standard for other hardnesses.

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Secondary Maximum Contaminant Level - same definition as MCL except "not Federally enforceable but intended as guidelines for the States."

*** Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

TABLE IV-4

FEDERAL AND STATE WATER STANDARDS

TCL PESTICIDES AND PCB's

CAS Number	Compound	Contract Detection Limit [ug/l]	[A] EPA 40CFR141 MCL* [ug/l]	[B] 10 NYCRR Subpart 5.1 MCL* [ug/l]	[C] 6 NYCRR 702 Human [ug/l]	[C] 6 NYCRR 702 Aquatic [ug/l]	[C] 6 NYCRR 702 PCR** [ug/l]	[D] 6 NYCRR 703 Standard [ug/l]
319-84-6	alpha-BHC	0.05			50	0.01	0.01	ND[2]
319-85-7	beta-BHC	0.05			50	0.01	0.01	ND[2]
319-86-8	delta-BHC	0.05			50	0.01	0.01	ND[2]
58-89-9	gamma-BHC (Lindane)	0.05	4	4	50	0.01	0.01	ND[2]
76-44-8	Heptachlor	0.05			0.009	0.001	0.001	ND[2]
309-00-2	Aldrin	0.05			0.001[1]	0.001[1]	0.001[1]	ND[2]
1024-57-3	Heptachlor epoxide	0.05			0.009	0.001	0.001	ND[2]
959-98-8	Endosulphan I	0.05			50	50	50	
60-57-1	Dieldrin	0.10			0.001[1]	0.001[1]	0.001[1]	ND[2]
72-55-9	4,4'-DDE	0.10			0.01	0.001	0.001	ND[2]
72-20-8	Endrin	0.10	0.2	0.2	0.2	0.002	0.002	ND[2]
33213-65-9	Endosulphan II	0.10			50	50	50	
72-54-8	4,4'-DDD	0.10			0.01	0.001	0.001	
1031-07-8	Endosulphan sulfate	0.10			50	50	50	ND[2]
50-29-3	4,4'-DDT	0.10			0.01	0.001	0.001	
53494-70-5	Endrin ketone	0.10			50	50	50	
72-43-5	Methoxychlor	0.5	100	50	35	0.03	0.03	35
5103-71-9	alpha-Chlordane	0.5			50	50	50	
5103-74-2	gamma-Chlordane	0.5			50	50	50	
8001-35-2	Toxaphene	1.0		5	50	50	50	ND[2]
12674-11-2	AROCLOR-1016	0.5			0.01	0.001	0.001	0.1
11104-28-2	AROCLOR-1221	0.5			0.01	0.001	0.001	0.1
11141-16-5	AROCLOR-1232	0.5			0.01	0.001	0.001	0.1
53469-21-9	AROCLOR-1242	0.5			0.01	0.001	0.001	0.1
12672-29-6	AROCLOR-1248	0.5			0.01	0.001	0.001	0.1
11097-69-1	AROCLOR-1254	1.0			0.01	0.001	0.001	0.1
11096-82-5	AROCLOR-1260	1.0			0.01	0.001	0.001	0.1

[1] 0.001 ug/l for the total of these two compounds.

[2] Not detectable by tests or analytical determinations referenced in 6 NYCRR 703.4.

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

TABLE IV-4

STATE SOIL REGULATIONS

TCL INORGANICS

CAS Number	Analyte	[F] Common Range in Soil [mg/kg]	[G] 6 NYCRR Part 360 4.4 MC* [mg/kg]
7429-90-5	Aluminum		
7440-36-0	Antimony	2 - 10	
7440-38-2	Arsenic	1 - 50	
7440-39-3	Barium	100 - 3000	
7440-41-7	Beryllium	0.1 - 40	
7440-43-9	Cadmium	0.01 - 0.7	25
7440-70-2	Calcium	700 - 36000[1]	
7440-47-3	Chromium	1 - 1000	1000
7440-48-4	Cobalt	1 - 40	
7440-50-8	Copper	2 - 100	1000
7439-89-6	Iron	5000 - 50000[1]	
7439-92-1	Lead	2 - 200	1000
7439-95-4	Magnesium	1200 - 15000[1]	
7439-96-5	Manganese	200 - 10000[1]	
7439-97-6	Mercury	0.01 - 0.3	10
7440-02-0	Nickel	5 - 500	200
7440-09-7	Potassium	1700 - 33000[1]	
7782-49-2	Selenium	0.1 - 2	
7440-22-4	Silver	0.01 - 5	
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium	20 - 500	
7440-66-6	Zinc	10 - 300	2500
	Cyanide		

[1] Source: "The Nature and Properties of Soils," Buckman, H., Brady, N., Macmillan Co., New York, New York, 1969.

* "Maximum Concentration, ppm, dry weight basis."

TABLE IV-4

FEDERAL AND STATE STANDARDS AND GOALS

NOTES TO REGULATIONS

[A] Environmental Protection Agency National Primary Drinking Water Regulations (as of 7/17/89)

Applied to results of all water sample analyses.

[B] Chapter 1 of Title 10 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Part 5, Drinking Water Supplies, Subpart 5-1, Public Water Supplies (as of 11/28/88)

Applied to results of drinking water sample analyses.

[C] Chapter 10 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Division of Water Resources, Article 2, Part 702, Appendix 31, Ambient Water Quality Standards - "The standards adopted herein relate to the condition of waters as affected by the discharge of sewage, industrial wastes or other wastes." (as of 7/5/85)

For sources of water for drinking, culinary or food processing purposes and human life protection, unless otherwise noted.

Applied to results of surface water sample analyses for surface water that is not a source of drinking water.

[D] Chapter 10 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Division of Water Resources, Article 2, Part 703.5(a)(2) and (3), Classes and quality standards for groundwaters - "The purpose of these classes, quality standards, and effluent standards and/or limitations is to prevent pollution of groundwaters and to protect the groundwaters for use as a potable water." (as of 7/5/85)

Applied to results of all groundwater sample analyses regardless of groundwater use.

[E] Environmental Protection Agency National Secondary Drinking Water Regulations (as of 9/26/88)

Applied to results of all water sample analyses.

[F] Source: "Review of In-Place Treatment Techniques for Contaminated Surface Soils," Volume 2, EPA-540/2-84-0036, November 1984, except as noted.

Applied to results of soil sample analyses.

[G] Chapter 360 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Solid Waste Management Facilities, Section 360-4.4(a), "Sewage sludge and septage destined for land application" (as of 12/31/88)

Applied to results of soil and sediment sample analyses.

A. NARRATIVE SUMMARY

A. NARRATIVE SUMMARY

The GAF Dump is located in the City of Binghamton, Broome County, New York. The site is approximately two acres in size and is located in a mixed commercial and residential neighborhood. The site is adjacent to an Anitec Corporation facility which was formerly GAF Manufacturing plant. However, GAF retained ownership of the dump site when the plant was sold. The Johnson City well field, serving 19,600 people, is located 1.8 miles west of the site. The City of Binghamton water intakes are east and south of the site on the Susquehanna River. No fresh water wetland is within a 1-mile radius.

The site allegedly received liquid photochemical wastes from production of photographic material during the time GAF operated the plant. No methods of containment were used during landfill operation.

Contamination of the groundwater and soil was detected during the Phase II investigation. Some analyzed metals were detected in the groundwater of downgradient as well as upgradient wells at concentrations significantly above the NYSDEC drinking water standards. Three organic compounds (chloroethane, 1,2 dichloroethane and 2-butanone) were detected in the groundwater. The results of the soil samples show concentration of iron, lead, manganese, and copper at levels greater than the level of the background samples.

B. SITE LOCATION MAP

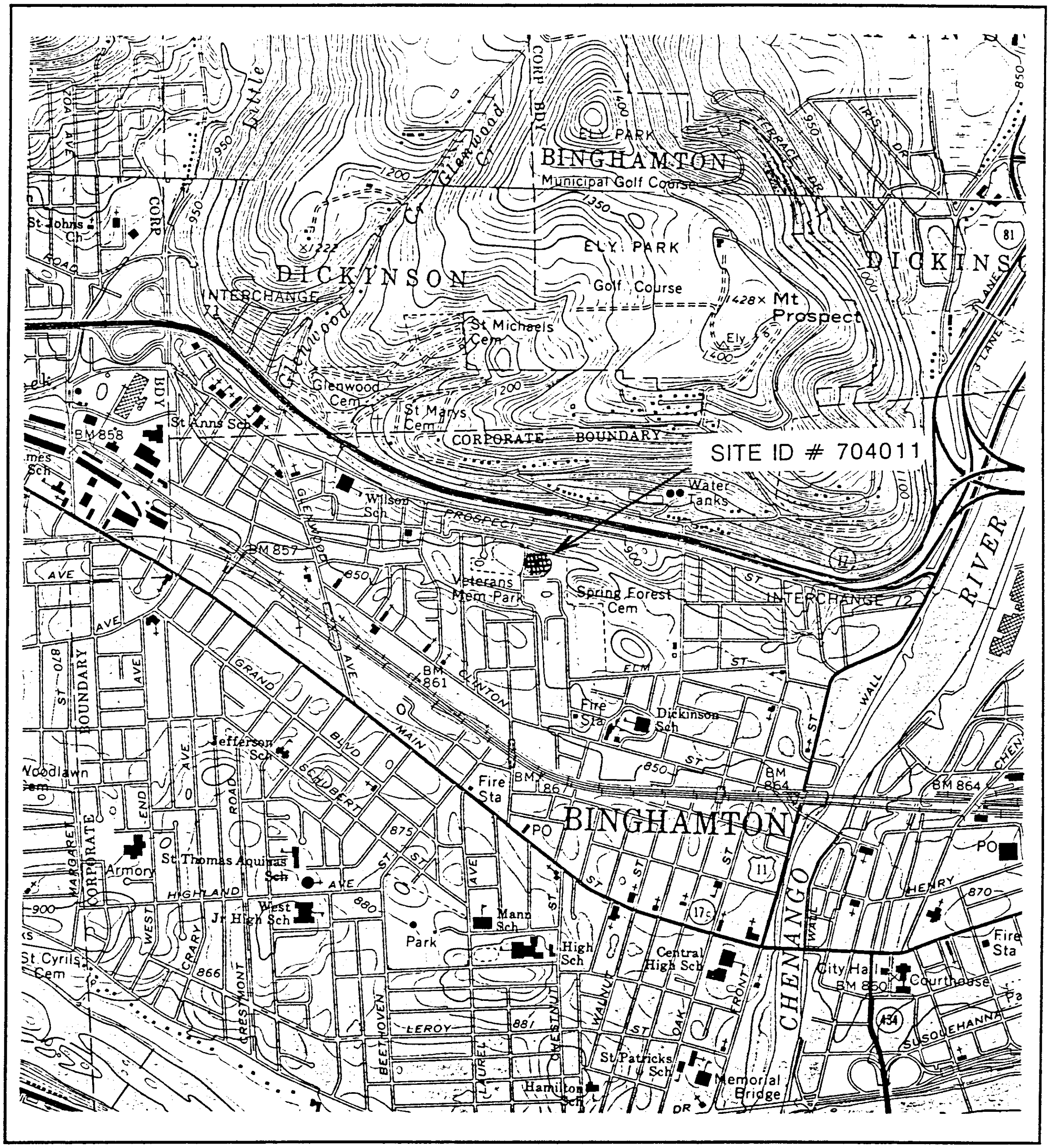


FIGURE I -1

SITE LOCATION MAP
SITE: GAF DUMP SITE

COORDINATES: LAT. : 42° 06' 29" N
LONG.: 75°55' 45" W

MAP SOURCE:
NEW YORK-BROOME COUNTY
U.S.G.S. MAP BINGHAMTON
WEST QUAD. AND CASTLE CREEK QUAD.
7.5 MINUTES SERIES
(1968 EDITION)

SCALE 1" = 2000'

GIBBS & HILL, INC.

C. UPDATED WORKSHEETS

Facility name: GAF Dump

Location: Charles Street, City of Binghamton, Broome County

EPA Region: II

Person(s) in charge of the facility: GAF Corporation, Wayne, NJ

Name of Reviewer: A. Kostic

Date: June 2, 1989

General description of the facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Inactive facility was allegedly used as a disposal area for industrial photochemical waste. No containment practices are in evidence.

Scores: S_M = 23.00 (S_{gw} = 39.80 S_{sw} = 0.00 S_a =0.00)
S_{FE} = N/A
S_{DC} = 0.00

FIGURE 1
HRS COVER SHEET

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 [✓ 45]	1	45	45	3.1
If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 [✓ 3]	2	6	6	
Net Precipitation	0 1 [✓ 2] 3	1	2	3	
Permeability of the Unsaturated Zone	0 1 [✓ 2] 3	1	2	3	
Physical State	0 1 2 [✓ 3]	1	3	3	
Total Route Characteristics Score			13	15	
3 Containment	0 1 2 [✓ 3]	1	3	3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 [✓ 12] 15 18	1	12	18	
Hazardous Waste Quantity	0 [✓ 1] 2 3 4 5 6 7 8	1	1	8	
Total Waste Characteristics Score			13	26	
5 Targets					3.5
Ground Water Use	0 1 2 [✓ 3]	3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 [✓ 30] 32 35 40	1	30	40	
Total Targets Score			39	49	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			22,815	57,330	
7 Divide line 6 by 57,330 and multiply by 100		S_{gw} =	39.80		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	[✓ 0] 45	1	0	45	4.1
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	[✓ 0] 1 2 3	1	0	3	
1-yr. 24-hr. Rainfall	0 1 [✓ 2] 3	1	2	3	
Distance to Nearest Surface Water	0 1 [✓ 2] 3	2	4	6	
Physical State	0 1 2 [✓ 3]	1	3	3	
	Total Route Characteristics Score		9	15	
3 Containment	[✓ 0] 1 2 3	1	0	3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	[✓ 0] 3 6 9 12 15 18	1	0	18	
Hazardous Waste Quantity	0 [✓ 1] 2 3 4 5 6 7 8	1	1	8	
	Total Waste Characteristics Score		19	26	
5 Targets					4.5
Surface Water Use	0 1 [✓ 2] 3	3	6	9	
Distance to a Sensitive Environment	[✓ 0] 1 2 3	2	0	6	
Population Served/Distance to Water Intake Downstream	[✓ 0] 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	Total Targets Score		6	55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			0.00	64,350	
7 Divide line 6 by 64,350 and multiply by 100	S_{sw} = 0.00				

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
$\boxed{1}$ Observed Release	[✓ 0] 45	1	0	45	5.1
Date and Location:					
Sampling Protocol:					
If line $\boxed{1}$ is 0, the $S_a = 0$. Enter on line $\boxed{5}$. If line $\boxed{1}$ is 45, then proceed to line $\boxed{2}$.					
$\boxed{2}$ Waste Characteristics					5.2
Reactivity and Incompatibility	[✓ 0] 1 2 3	1	0	3	
Toxicity	[✓ 0] 1 2 3	3	0	9	
Hazardous Waste Quantity	[✓ 0] 1 2 3 4 5 6 7 8	1	0	8	
	Total Waste Characteristics Score		0	20	
$\boxed{3}$ Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 [✓ 24] 27 30	1	24	30	
Distance to Sensitive Environment	[✓ 0] 1 2 3	2	0	6	
Land Use	0 1 2 [✓ 3]	1	3	3	
	Total Targets Score		27	39	
$\boxed{4}$ Multiply $\boxed{1}$ x $\boxed{2}$ x $\boxed{3}$			0.00	35,100	
$\boxed{5}$ Divide line $\boxed{4}$ by 35,100 and multiply by 100		S_a =	0.00		

FIGURE 9
AIR ROUTE WORK SHEET

	s	s^2
Groundwater Route Score (S_{gw})	39.80	1,584.04
Surface Water Route Score (S_{sw})	0.00	0.00
Air Route Score (S_a)	0.00	0.00
$S_{gw}^2 + S_{sw}^2 + S_a^2$	▨	1,584.04
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$	▨	39.80
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} \bigg/ 1.73 = S_M =$	▨	23.00

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Fire and Explosion Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi- plier	Score	Max. Score	Ref. (Section)
1 Containment	1 3	1		3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
	Total Targets Score			24	
4 Multiply 1 x 2 x 3				1,440	
5 Divide line 4 by 1,440 and multiply by 100	S_{FE} = N/A				

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

*S_{FE} is scored only if a Fire Marshal has certified that the site is a fire and explosion threat or field observation documented a fire and explosion threat. Since neither of these is true, S_{FE} is not scored

Direct Contact Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Incident	[✓ 0] 45	1	0	45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 2 [✓ 3]	1	3	3	8.2
3 Containment	[✓ 0] 15	1	0	15	8.3
4 Waste Characteristics Toxicity	[✓ 0] 1 2 3	5	0	15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 2 3 [✓ 4] 5	4	16	20	
Distance to a Critical Habitat	[✓ 0] 1 2 3	4	0	12	
Total Targets Score			16	32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			0.00	21,600	
7 Divide line 6 by 21,600 and multiply by 100			S_{DC} = 0.00		

FIGURE 12
DIRECT CONTACT WORK SHEET

D. UPDATED DOCUMENTATION RECORDS

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference. Include the location of the document.

FACILITY NAME: GAF Dump

LOCATION: City of Binghamton, Broome County

DATE SCORED: June 15, 1989

PERSON SCORING: A. Kostic/A. Longoria

PRIMARY SOURCE(S) OF INFORMATION, Investigation, FIT, etc.):

Groundwater and soil chemical analyses, site visit, site representative interview, NYSDEC file.

FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

Sa - No air sampling data available.

COMMENTS OR QUALIFICATIONS:

No surface water samples were collected because there is no surface water in the vicinity of the site which would be directly impacted by surface run-off.

GROUNDWATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

Chloroethane, 1,2 dichloroethane, 2-butanone [6].

Score = 45

Rationale for attributing the contaminants to the facility:

Results of chemical analyses show that these compounds were not detected in the upgradient water sample and were detected in downgradient water samples at more than three times detection limits. The concentrations of these compounds are greater than five times the concentrations found in the associated blanks [6].

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

Clinton Street-Ballpark aquifer. Unconsolidated deposits of sand, gravel and occasional silt and clay lenses, Pleistocene age. The Clinton-Street-Ballpark aquifer is reported to be more than 40 feet at its thickest point [5,7].

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

Depths from the ground surface to the water table range from 6.3 to 31.0 feet [5].

Depth from the ground surface to the lowest point of waste disposal/storage:

Wastes poured out on ground surface [4]. The lowest point of waste disposal is unknown. For purpose of scoring, assumed a minimum of 6 feet [1].

Score = 3

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

39 inches [1]

Mean annual lake or seasonal evaporation (list months for seasonal):

27.5 inches [1]

Net precipitation (subtract the above figures):

11.5 inches [1]

Score = 2

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Sand and gravel with occasional lenses of silt and clay [5].

Permeability associated with soil type:

$4x10^{-4}$ cm/sec. (well MW-2) [8].

Score = 2

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

Liquids [4]

Score = 3

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

No known containment [4].

Method with highest score:

No liner or leachate control.

Score = 3

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Chloroethane, 1,2-dichloroethane, 2-butanone

Compound with highest score:

1,2-dichloroethane [1]

Score = 12

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Total quantity of waste disposed is unknown. For scoring purposes assumed minimum non-zero quantity [4,9].

Basis of estimating and/or computing waste quantity:

Letter, T.H. Teitel. Associate Counsel, GAF Corporation, to Mr. Chen, November 27, 1984 [9].

Score = 1

5 TARGETS

Groundwater Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

> Drinking water (Johnson City Water Works) and industrial (Anitec Corp.). There are no alternative sources of water supply within a 3-mile radius [2,7,10].
>
> Score = 3

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

> Johnson City well field is located 1.8 miles northwest of the site [3].

Distance to above well or building:

> 1.8 miles [3]
>
> Score = 2

Population Served by Groundwater Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

> 19,600 [2,10]

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

> No irrigation being done within a 3-mile radius [11].

Total population served by ground water within a 3-mile radius:

> 19,600
>
> Score = 5
>
> Matrix Score = 30

SURFACE WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

> None. No surface water analysis has been performed as a part of this Phase II investigation. No surface water was detected on or adjacent to the site. Trout Brook storm sewer cannot be considered surface water [6,3].
>
> Score = 0

Rationale for attributing the contaminants to the facility:

> Not applicable.

* * *

2 ROUTE CHARACTERISTICS

Facility Slope and Invervening Terrain

Average slope of facility in percent:

> 4 percent [3]

Name/description of nearest downslope surface water:

> Chenango River [3]

Average slope of terrain between facility and above-cited surface water body in percent:

> Less than 1 percent [3]

Is the facility located either totally or partially in surface water?

> No [3]
>
> Score = 0

Is the facility completely surrounded by areas of higher elevation

No [3]

1-Year, 24-Hour Rainfall in Inches

2.25 inches [1]

Score = 2

Distance to Nearest Downslope Surface Water

4,500 feet [3]

Score = 2

Physical State of Waste

Liquids [4]

Score = 3

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

> Liquid wastes from production of photographic material were allegedly dumped directly onto the ground of an area depressed below grade. Depression was filled with rubble and presumably covered with soil [13].

Method with highest score:

Landfill has adequate cover material [1].

Score = 0

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

None. Wastes are not introduced to the surface water route due to adequate cover material.

Compound with highest score:

N/A

Score = 0

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Zero.

Basis of estimating and/or computing waste quantity:

Wastes are not introduced to the surface water route due to adequate cover (containment score is zero) [1].

Score = 0

* * *

5 TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Recreation and transportation [2,10,13]

Score = 2

Is there tidal influence?

No

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland if 2 miles or less:

N/A

Distance to 5-acre (minimum) freshwater wetland if 1 mile or less:

None present [13]

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

None [12]

Score = 0

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or a 1 mile (static water bodies) downstream of the hazardous substances and population served by each intake:

None. (Water supply intake for Binghamton City Water is located upstream on the Susquehanna River above the confluence with the Chenango) [2,10,16].

Score = 0

Computation of Land area irrigated by above-cited intake(s) and conversion of population (1.5 people per acre):

None [11]

Total population served:

N/A

Name/description of nearest of above water bodies:

N/A

Distance to above-cited intakes measured in stream miles:

N/A

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

No documentation of an observed release has been obtained. No air samples have been taken. Field measurements taken with a PID indiated no readings above background levels.

Date and location of detection of contaminants:

N/A

Methods used to detect the contaminants:

N/A

Rationale for attributing the contaminants to the site:

N/A

Score = 0

* * *

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

N/A

Score = 0

Most incompatible pair of compounds:

N/A

Toxicity

Most toxic compound:

N/A

Score = 0

Hazardous Waste Quantity

Total quantity of hazardous waste:

N/A

Score = 0

Basis of estimating and/or computing waste quantity:

N/A

* * *

3 TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi	[✓ 0 to 1 mi]	0 mi to 1/2 mi	0 to 1/4 mi
	10,817	2,287	448

Population is based on 3.8 persons per house and, in part, on population density for Binghamton (5,371 people/sq. mi.) [14]. The highest score was obtained for 0 to 1 mi radius [14].

Score = 24

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland if 2 miles or less:

N/A

Distance to 5-acre (minimal) fresh-water wetland if 1 mile or less:

There is no freshwater wetland within 1 mile radius [13].

Distance to critical habitat of an endangered species if 1 mile or less:

N/A [12]

Score = 0

Land Use

Distance to commercial/industrial area if 1 mile or less:

On-site [3]

Score = 3

Distance to national or state park, forest, or wildlife reserve if 2 miles or less:

N/A [12]

Score = 0

Distance to residential area if 2 miles or less:

40 feet [3]

Score = 3

Distance to agricultural land in production within past 5 years if 1 mile or less:

None [17]

Score = 0

Distance to prime agricultural land in production within past 5 years if 2 miles or less:

None [17]

Score = 0

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

No [15]

Score = 0

FIRE AND EXPLOSION*

1 CONTAINMENT

Hazardous substances present:

N/A

Type of containment if applicable:

N/A

* * *

2 WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

No measurements taken.

Ignitability

Compound used:

N/A

Reactivity

Most reactive compound:

N/A

Incompatibility

Most incompatible pair of compounds:

N/A

---

*S_{FE} is scored only if a Fire Marshal has certified that the site is a fire and explosion threat or field observation documented a fire and explosion threat. Since neither of these is true, S_{FE} is not scored.

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

N/A

Basis of estimating and/or computing waste quantity:

N/A

* * *

3 TARGETS

Distance to Nearest Population

N/A

Distance to Nearest Building

N/A

Distance to Sensitive Environment

Distance to wetlands:

N/A

Distance to critical habitat:

N/A

Land Use

Distance to commercial/industrial area if 1 mile or less:

N/A

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

N/A

Distance to residential area, if 2 miles or less:

N/A

Distance to agricultural land in production within past 5 years, if 1 mile or less:

N/A

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

N/A

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

N/A

Population Within 2-Mile Radius

N/A

Buildings Within 2-Mile Radius

N/A

DIRECT CONTACT

1 OBSERVED INCIDENT

Date, location, and pertinent details of incident:

No documentation of direct contact causing injury to humans or animals [4].

Score = 0

2 ACCESSIBILITY

Describe type of barrier(s):

Fencing is present, but accessible along south side.

Score = 3

* * *

3 CONTAINMENT

Type of containment if applicable:

Liquid wastes from production of photographic material were allegedly dumped directly onto the ground of an area depressed below grade. Depression was filled with rubble and presumably covered with soil.

Score = 0

* * *

4 WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

None

Compound with highest score:

N/A

Score = 0

5 TARGETS

Population within one-mile radius

At least 10,817 persons [14].

Score = 4

Distance to critical habitat (of endangered species)

Not within 1 mile [12].

Score = 0

HRS DOCUMENTATION REFERENCES

HRS DOCUMENTATION REFERENCES

If the entire reference is not available for public review in the EPA regional files on this site, indicate where the reference may be found:

Reference Number	Description of References	Page
1	HRS, A Users Manual, (HW-10) USEPA, 1984	V-34
2	New York State Atlas of Community Water System Sources, New York State Department of Health, 1982	V-35
3	NYS DOT Quadrangle Map, United States Department of the Interior Geological Survey, 1986	I-5
4	DEC Site Report, D.13	D-33
5	Drilling Logs, B.2	B-8
6	Sample Analyses, Table IV-1,2,3&4	V-38
7	A.D. Randall, USGS., D.14	D-35
8	Permeability Tests, B.2	B-8
9	Letter T.H. Teitel to M. Chen, November 23, 1984	V-41
10	New York State Public Water System Inventory Printouts, State of New York, Department of Health, Bureau of Public Water Supply Protection, 02/08/89	V-42
11	Personal Communication, Lee Nelson, County Cooperative Extension, May 21, 1986	V-43
12	Letter: Carol Rascke, NYSDEC, Wildlife Resources Center, to N. Hinsey, Gibbs & Hill, May 2, 1989	V-44
13	Phase I Investigations, Wehran Engineering, April 1986	V-47
14	1980 Census of Population and USGS Map	V-48
15	Department of Interior, National Park Service, Printouts, 1989	V-52
16	Telephone Conversation Memorandum	V-53
17	Telephone Conversation Record	V-54

REF. 1

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual

(HW-10)

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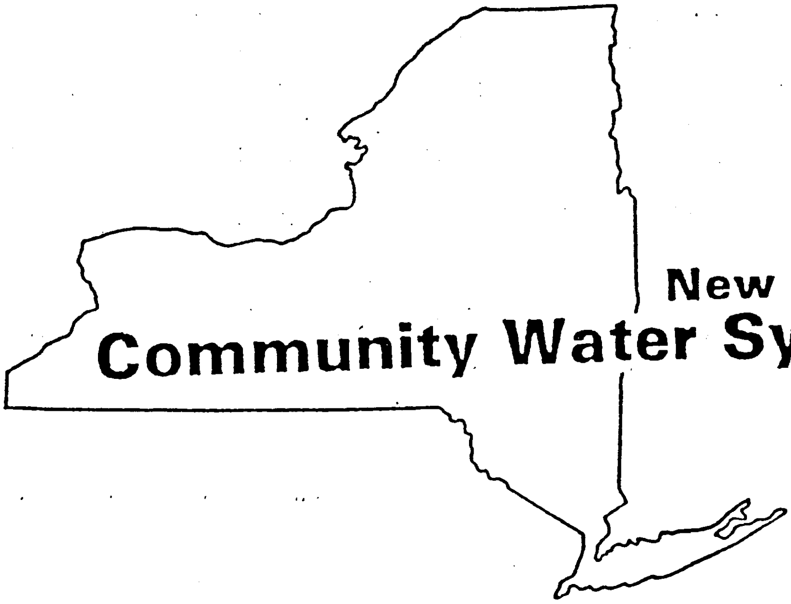
United States
Environmental Protection
Agency

1984

V-34

REF. 2



New York State Atlas of
Community Water System Sources
1982

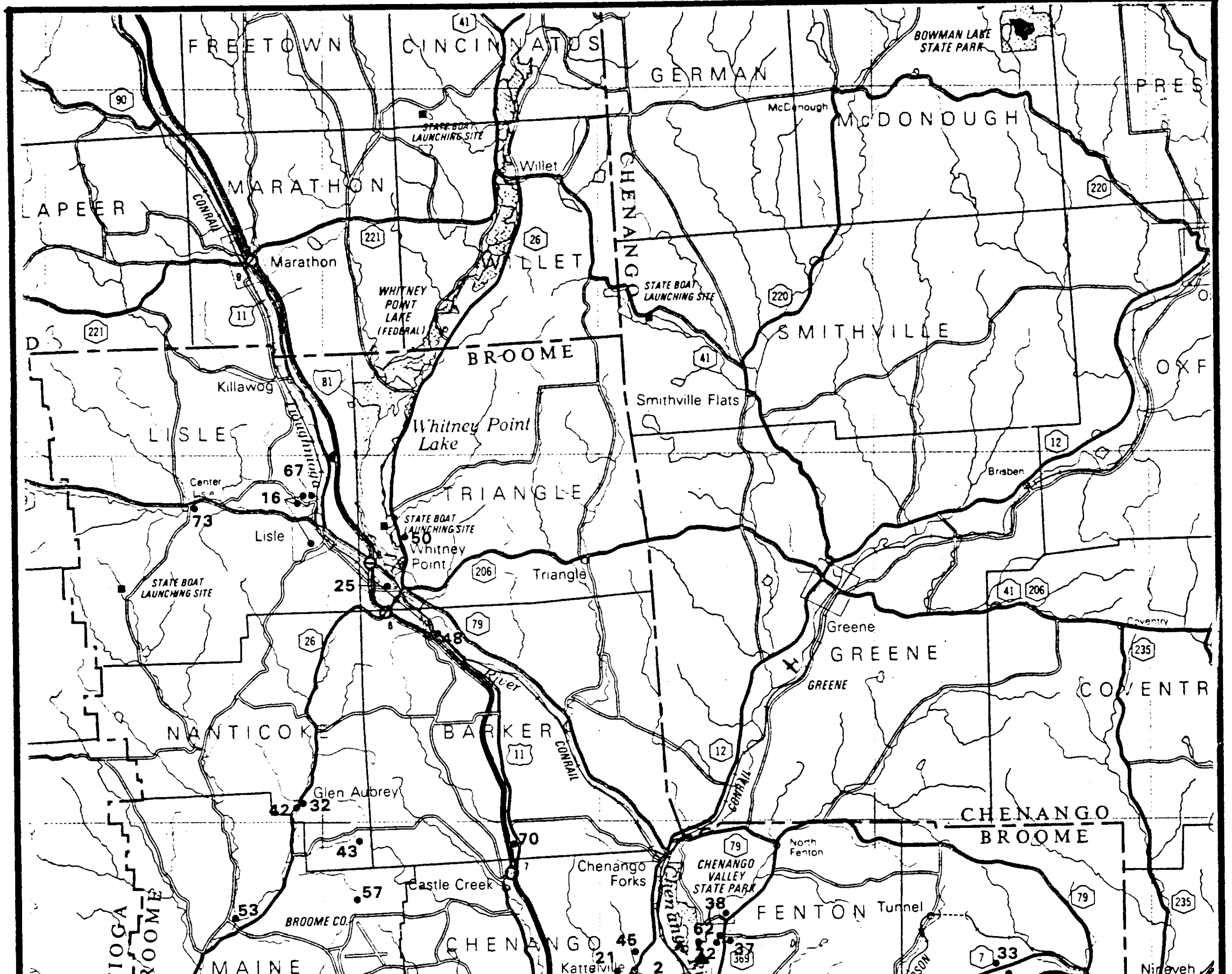
NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

BROOME COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
Municipal Community			
1	Afton Village (Chenango Co, Page 22)		Wells (Springs)
2	Applewood Acres	280	Wells
3	Binghamton City	60000	Susquehanna River, Wells
4	Chenango Water District #1	2072	Wells
5	Chenango Water District #3	680	Wells
6	Chenango Water District #7	NA	Wells
7	Chenango Water District #14	272	Wells
8	Chenango Water District #14 (Woodland Park)	225	Wells
9	Conklin Water District #2	1868	Wells
10	Deposit Village	1897	Big Hollow Brook Reservoir, Wells
11	Endicott Municipal Water Works	45000	Wells
12	Hillcrest Water District #1	3356	Wells
X 13	Johnson City Water Works	17126	Wells
14	Keeler Avenue Water Association	104	Wells
15	Kirkwood Water District #4	256	Wells
16	Lisle Village	500	Wells (Springs)
17	Masler Water Supply	90	Wells
18	Pennview (Chenango Water District #10)	35	Wells
19	River Road Water Association	40	Wells
20	Riverside Co-op Water Association	110	Wells
21	Runacre Estates (Chenango Water District #11)	180	Wells
22	Vestal Water District #1	8760	Wells
23	Vestal Water District #4	3700	Wells
24	Vestal Water District #5	900	Wells
25	Whitney Point Village	1100	Wells
26	Windsor Village	1400	Wells
Non-Municipal Community			
27	Binghamton Mobile Estates	250	Wells
28	Blue Ridge Mobile Home Park	75	Wells
29	Blue Stone Mobile Home Park	30	Spring
30	Bolebruchs Mobile Home Park	25	Wells
31	Country Court Mobile Home Park	NA	Wells
32	Country Estates Mobile Home Court	170	Wells
33	Country Manor	60	Wells
34	D & G Trailer Park	25	Wells
35	Deluxe Mobile Park	60	Wells
36	Edison Road Mobile Court	150	Wells
37	Fenton Mobile Estates	210	Wells
38	Forest Manor Residential Development	200	Wells
39	Forestview Mobile Homes Park	150	Wells
40	Fountain Bleau Court	360	Wells
41	Glendale Court	30	Wells
42	Green Valley Mobile Lodge	120	Wells
43	Haist Mobile Home Park	80	Wells
44	Hayes Service Court	36	Wells
45	Heaths Trailer Park	150	Wells
46	Hickory Ridge Trailer Park	46	Wells
47	Hillside Park	NA	Wells
48	Hust Trailer Park	NA	Wells
49	Kirkwood Trailer Park	60	Wells
50	Lakeside Lodge	NA	Wells
51	Lillian Diamond Trailer Park	NA	Wells
52	Maine Mobile Court	NA	Wells
53	Manns Mobile Community	NA	Wells
54	Maple Run Mobile Home Park	NA	Wells
55	MBM Mobile Home Court	NA	Wells
56	Meadows Mobile Home Park	NA	Wells
57	Mount Ettrick Terrace	NA	Wells
58	Mount Mobile Home Community	63	Wells
59	Mountain View Mobile Home Park	NA	Wells
60	Nanticoke Valley Mobile Court	270	Wells
61	Occanum Falls Court	NA	Wells
62	Orshals	1000	Wells
63	Pennview Apartments	68	Wells
64	Perts Mobile Home Park	NA	Wells
65	Pride Manor Mobile Home Park	NA	Wells
66	Rush Trailer Park	NA	Wells
67	Shady Maple Trailer Park	60	Wells
68	Tuscarora Mobile Village	40	Wells
69	Twin Acre Terrace	34	Wells
70	Valley Vista	44	Wells
71	Village Court	NA	Wells
72	Virginia City Mobile Home Court	NA	Wells
73	Wal Mar	24	Wells
74	Westview Trailer Park	NA	Wells
75	Whispering Pines Mobile Home Court	NA	Wells
76	Wooded Estates	NA	Wells

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982



SCALE 1:250,000

5 0 5 MILES

NORTH

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

TABLE IV-1 - ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES - TOTAL TCL INORGANICS
(All data in micrograms/liter)
GAF DUMP

Analyte	Field Blank	GW-1	GW-2	GW-3	GW-4 (1)
Aluminum	129	252,000	22,100	236,000	18,700
Antimony	ND	367	29	358	22
Arsenic	ND	54.6	17.6	60.5	16.2
Barium	1	2,200	1,600	1,000	1,420
Beryllium	ND	29	2	26	2
Cadmium	ND	196	8	160	5.5
Calcium	1,000	109,600	56,800	373,000	56,200
Chromium	ND	815	50	387	44
Cobalt	ND	329	10	291	3
Copper	ND	690	744	542	619
Iron	46	640,000	47,300	495,000	41,800
Lead	ND	320	770	260	630
Magnesium	300	110,800	14,900	234,000	14,100
Manganese	ND	14,000	769	9,470	740
Mercury	ND	ND	0.8	0.5	0.6
Nickel	ND	684	61.0	612	56
Potassium	200	21,400	12,900	19,700	12,600
Silver	ND	10	320	88	250
Sodium	300	27,600	162,500	192,600	173,800
Vanadium	ND	395	46	395	41
Zinc	2.0	1,460	2,250	1,760	1,980

(1) GW-4 is duplicate of GW-2

WPENVR1:488

TABLE IV-2 ANALYTICAL RESULTS OF GROUNDWATER SAMPLES - ORGANICS

(All data in micrograms/liter)

GAF DUMP

Compound	Field Blank	Trip Blank	Method Blank	Sample No. GW-1	GW-2	GW-3	GW-4 (1)
Chloroethane	ND	ND	ND	ND	150	ND	120
Methylene Chloride	ND	20B	8	ND	95B	6B	81B
Acetone	8	8	ND	18	87	86	68
2-Butanone	ND	ND	ND	19	ND	75	ND
1,2-Dichloroethane	ND	ND	ND	ND	44	ND	38

Notes:

(1) GW-4 is duplicate of GW-2

ND - Not Detected

B - Contaminant also detected in Method Blank

J - Detected at less than contract required detection limit

WPENVR1:488

TABLE IV-3 - ANALYTICAL RESULTS FOR SOIL SAMPLES - TOTAL TCL INORGANICS

(All data in mg/kg)

GAF DUMP

Analyte	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9
Aluminum	9,530	4,860	8,160	8,330	7,700	10,100	7,500	9,060	12,500
Antimony	17.1	12.9	14.0	13.8	11.9	12.5	8.4	10.4	13.3
Arsenic	9.4	5.6	5.3	3.4	6.8	6.2	9.5	5.5	7.6
Barium	177	181	135	58.5	176	166	130	98.9	46.7
Beryllium	1.2	1.0	0.89	0.86	0.90	1.0	1.1	0.85	1.1
Cadmium	3.2	1.4	1.2	1.2	1.2	1.1	1.2	1.2	1.2
Calcium	31,700	4,400	57,800	68,300	39,500	25,700	37,400	35,000	522
Chromium	12.4	26.3	15.3	18.1	21.3	21.7	16.3	18.5	18.3
Cobalt	ND	ND	7.8	6.9	ND	8.1	ND	ND	8.7
Copper	30.6	3,510	40.2	23.2	153	136	57.0	38.3	20.7
Iron	18,200	28,400	15,800	14,800	19,200	21,500	16,700	16,200	21,700
Lead	41.2	334	144	60	502	164	142	130	15.5
Magnesium	6,050	859	8,450	5,580	7,340	10,000	6,530	5,300	3,650
Manganese	912	318	416	379	368	492	486	390	452
Mercury	0.4	0.8	ND	ND	0.4	ND	ND	ND	ND
Nickel	17.6	55.9	16.7	18.7	24.8	22.0	16.8	17.5	21.6
Potassium	1,180	455	1,130	1,030	990	1,160	989	1,170	1,370
Selenium	8.8	ND	ND	ND	ND	ND	ND	ND	ND
Silver	7.6	2.3	1.1	0.58	2.0	1.9	0.65	0.57	0.59
Sodium	6,320	4,480	2,190	2,210	2,200	2,190	2,120	2,120	2,060
Vanadium	14.7	17.7	18.7	14.8	16.9	18.1	17.4	21.9	19.1
Zinc	166	797	118	135	291	182	106	117	56.3

ND - Not detected

D.9

GAF CORPORATION
1361 Alps Road
Wayne NJ 07470
201 628 3000

Mr. Manden Chen
Bureau of Hazardous Site Control
Division of Solid and Hazardous
Waste
N.Y. Department of Environmental
Conservation
Albany, N.Y. 12233-0001

November 27, 1984

RECEIVED
DEC 0[illegible] 1984
BUREAU OF [illegible] CONTRO
DIVISION OF [illegible]
HAZARDO[illegible]

Re: GAF-Dump ID# 704011
Binghamton/Broome County

Dear Sirs:

GAF has searched its records in response to DEC's September 28 request for information concerning the Binghamton site. GAF has attempted to compile all currently available information consistent with the Environmental Conservation Law (ECL), Section 27-1307.

As provided by Section 27-1307(2), GAF cannot fully comply with DEC's request for information because no records remain. GAF has no knowledge of records or of anyone who can provide information concerning the types or quantities of wastes deposited at Binghamton.

Consequently, GAF is also without information about the period of operation, description of practices, including testing, monitorin or remedial action. There has not been, to GAF's knowledge, any health or environmental problem resulting from disposal of waste at this site.

This response follows a significant effort to locate records which may have provided additional information. Please contact me at (201) 628-4021 if you have any additional questions concerning this matter.

Sincerely yours,

Jeffrey H. Teitel

Jeffrey H. Teitel
Associate Counsel

JHT:er

cc: C.F. Bien

Leonard Pascolli
201-628

REF. 10

02/08/89
SDW007

NEW YORK STATE DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

SELECTED PUBLIC WATER SYSTEM INVENTORY

COUNTY (03) BROOME
REGION - WESTERN (SYRACUSE)
PROGRAM CODE- 100
COMMUNITY

PC	STA NO	TYPE	PUBLIC WATER SYSTEM	LOCATION	SC	CD	POPULATION	SOURCE	FED ID NO	INSPECTION
100	00095000	01	BINGHAMTON CITY	BINGHAMTON (C)	A	03	000055860	S G	0001651	4/27/88
100	00096000	08	BINGHAMTON WD #1	BINGHAMTON (T)	A	03	000000248	P	0001652	7/13/88
100	01591000	08	BINGHAMTON WD #2	BINGHAMTON (T)	A	03	000000215	P	0001685	7/13/88
100	01592000	08	BINGHAMTON WD #3	BINGHAMTON (T)	A	03	000000420	P	0001696	7/13/88
100	02104000	08	BINGHAMTON WD #4	BINGHAMTON (T)	A	03	000000080	P	0001699	7/13/88
100	02105000	08	BINGHAMTON WD #5	BINGHAMTON (T)	A	03	000000625	P	0001700	7/13/88
100	02106000	08	BINGHAMTON WD #6	BINGHAMTON (T)	A	03	000000144	P	0001701	7/13/88
100	02107000	08	BINGHAMTON WD #7	BINGHAMTON (T)	A	03	000000077	P	0001702	7/13/88
100	02990000	08	CHENANGO W D#23	CHENANGO (T)	A	03	000000020	G	0021350	0/00/00
100	01659000	08	CHENANGO WD #10 (PENNVIEW)	CHENANGO (T)	A	03	000000035	G	0001688	10/20/87
100	00241000	08	CHENANGO WD #11 (RUNACRE EST)	CHENANGO (T)	A	03	000000180	G	0001658	10/20/87
100	02048001	08	CHENANGO WD #15	CHENANGO (T)	A	03	000000151	P	0011220	8/22/84
100	02859000	08	CHENANGO WD #17	CHENANGO (T)	A	03	000000080	G	0020021	10/20/87
100	02860000	08	CHENANGO WD #19	CHENANGO (T)	A	03	000000018	P	0020022	8/23/84
100	02868000	08	CHENANGO WD #20	CHENANGO (T)	A	03	000000080	G	0020179	1/22/86
100	02907000	08	CHENANGO WD #21	CHENANGO (T)	A	03	000000125	P	0020912	0/00/00
100	02908000	08	CHENANGO WD #22	CHENANGO (T)	A	03	000000183	P	0020913	0/00/00
100	01872000	08	CHENANGO WD #24	CHENANGO (T)	A	03	000000100	P	0001690	10/23/85
100	00236000	08	CHENANGO WD NO1	CHENANGO (T)	A	03	000001700	G	0001653	10/20/87
100	01873000	08	CHENANGO WD NO14	CHENANGO (T)	A	03	000000795	G	0001691	10/20/87
100	02048000	08	CHENANGO WD NO3	CHENANGO (T)	A	03	000000680	P	0001692	8/22/84
100	02533000	08	CHENANGO WD NO7	CHENANGO (T)	A	03	000000340	P	0001693	8/22/84
100	02906000	08	CHOCONUT CENTER WATER IMP. #1	UNION (T)	A	03	000001085	P	0020870	0/00/00
100	00292001	08	CONKLIN WD NO1	CONKLIN	A	03	000000132	P	0011212	8/15/84
100	00292000	08	CONKLIN WD NO2	CONKLIN	A	03	000001868	G	0001660	12/08/87
100	00292002	08	CONKLIN WD NO3	CONKLIN (T)	A	03		P	0011213	8/15/84
100	00345000	03	DEPOSIT VILLAGE	SANFORD (T)	A	03	000002080	S G	0001663	7/27/88
100	02050001	08	DICKINSON WD #5	DICKINSON (T)	A	03	000000123	P	0011221	6/18/84
100	02682000	08	DICKINSON WD #6	DICKINSON (T)	A	03	000000091	P	0011222	6/18/84
100	00356000	08	DICKINSON WD NO 2	DICKINSON (T)	A	03	000000056	P	0001664	6/18/84
100	01662000	08	DICKINSON WD NO 7	DICKINSON (T)	A	03	000000298	P	0010143	6/18/84
100	02050000	08	DICKINSON WD NO1	DICKINSON (T)	A	03	000000798	P	0001696	6/18/84
100	02049000	08	DICKINSON WD NO3	DICKINSON (T)	A	03	000001467	P	0001695	9/21/82
100	00418000	03	ENDICOTT MUNICIPAL WATER WORKS	UNION (T)	A	03	000043495	G	0001665	7/28/88
100	00618000	08	HILLCREST WD NO 1	FENTON (T)	A	03	000002098	G	0001667	7/06/88
100	00685000	03	JOHNSON CITY WATER WORKS	UNION (T)	A	03	000019600	G	0001668	6/03/87
100	00238000	07	KEELER AVENUE WATER ASSOC	CHENANGO (T)	A	03	000000104	G	0001655	7/07/88
100	00239002	08	KIRKWOOD WD #1-VALLEY VISTA	KIRKWOOD (T)	A	03	000000068	P	0011208	6/19/84
100	00239003	08	KIRKWOOD WD #3 - LANGDON PARK	KIRKWOOD (T)	A	03	000000140	P	0011209	6/19/84
100	00239000	08	KIRKWOOD WD #4	KIRKWOOD (T)	A	03	000000256	G P	0011206	11/05/86
100	00239001	08	KIRKWOOD WD #4 EXT #1	KIRKWOOD (T)	A	03	000000076	P	0011207	7/12/88
100	00239004	08	KIRKWOOD WD NO3	KIRKWOOD (T)	A	03	000000966	P	0011210	6/19/84
100	00239005	08	KIRKWOOD WD NO3 EXT 1	KIRKWOOD (T)	A	03	000000152	P	0011211	6/19/84

V-42

REF. 10

REF. 11

TELEPHONE CONVERSATION MEMORANDUM

CLIENT NYSDEC Phase I Round 3

PROJ. No. 04339 EX

PROJECT GAF Dump

DATE May 21, 1986

TIME 2:35 p.m.

CALL [✓ TO]/FROM Lee Nelson

REPRESENTING Cooperative Extension, Horticulture Division

PHONE No. (607) 772-8953

SUMMARY OF CONVERSATION:

Lee Nelson is aware of no such irrigation practices being done within a three mile radius from aquifer of concern of the GAF site. Outside of the City, she is aware of strawberry fields being irrigated, but is over a three mile radius.

COPIES TO:

BY: Stephen R. Petrisko

Stephen R. Petrisko

WEHRAN ENGINEERING
CONSULTING ENGINEERS

REF. 12

New York State Department of Environmental Conservation
Information Services
Wildlife Resources Center
Delmar, New York 12054

Thomas C. Jorling
Commissioner

May 2, 1989

Norman W. Hinsey
Gibbs and Hill, Inc.
11 Penn Plaza
New York, N.Y. 10001-2059

Dear Mr. Hinsey:

We have reviewed the Significant Habitat Program and the Natural Heritage Program files with respect to fourteen (14) inactive hazardous waste sites in various counties in New York State.

We have identified the following potential concerns:

1. Cardwell Condenser Corp. Site - Bay Shore West quadrangle - There is a designated Significant Coastal Fish and Wildlife Habitat (SCFWH) in Great South Bay. The Great South Bay SCFWH has records of Least tern (Sterna antillarum), a federally-listed endangered species. A brief report on this site is enclosed. This site is officially designated under the New York State Department of State's Coastal Management Program; coastal consistency requirements have to be met for projects that might adversely impact the habitat, whether or not the project is actually within the designated area. More information regarding this designation and the consistency requirements may be obtained by contacting:

    Mr. Thomas Hart, NYS Dept. of State, Coastal Management Program
    162 Washington Ave., Albany, N.Y. 12231 (518) 474-3642

    There are four historic records of rare plants in this area. (see enclosed list for occurrences on the Bay Shore West quadrangle). None of these species are federally-listed.

2. Site 356013, Poughkeepsie quadrangle - The Poughkeepsie Deepwater Habitat SCFWH is officially designated under the Coastal Management Program described above. The same Coastal consistency requirements apply to this site. This SCFWH includes habitat for Shortnose sturgeon (Acipenser brevirostrum), a federally-listed endangered species. A brief report describing this site is enclosed.

    There are three historic records of rare plants in this area (see enclosed list for occurrences on the Poughkeepsie quadrangle). None of these species are federally-listed.

New York Natural Heritage Program is supported in part
by The Nature Conservancy

3. Hercules site, Kingston East quadrangle -
This site is within a deer wintering area (Sig. Hab. #DC56-101), a significant wildlife habitat.

4. Site 344028, Sloatsburg Quad -
There is a 1977 report of bog turtle (Clemmys muhlenbergii), a state-endangered species, within 1 mile of the site (see enclosed list).

5. Cornwall Landfill, site #336011, Cornwall quadrangle -
There are three significant wildlife habitats in the vicinity, a waterfowl concentration area, a raptor concentration area, and an anadromous fish concentration area. (see enclosed list).

6. Site 314062, Copake quadrangle -
There is an occurrence of a rare wetland community, a rich shrub fen, in the vicinity (see enclosed list).

7. C & D Batteries, site #336001, Port Jervis North quadrangle -
There are records of copperhead (Agkistrodon contortrix, Heritage rank of S3) and timber rattlesnake (Crotalus horridus, ranked S3), a state-threatened species in the vicinity. There are also significant occurrences of two communities: Appalachian calcareous rocky summit and hemlock northern hardwood forest (see enclosed list).

8. East Greenbush Landfill, East Greenbush quadrangle -
The Papscanee Marsh and Creek SCFWH is officially designated under the Coastal Management Program described above. The same coastal consistency requirements apply to this site. A brief report describing this site is enclosed.

We did not identify any other potential impacts on endangered, threatened or special concern wildlife species, rare animal or natural community occurrences, or other significant habitats on or adjacent to the other six sites.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals, plants and natural communities and/or significant wildlife habitats. You should contact our regional offices(s), Division of Regulatory Affairs, at the address(es) enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State law.

If this project is still active one year from now we recommend that you contact us again so that we may update this response.

If we can be of further assistance please do not hesitate to contact us.

Sincerely,

Carol Reschke

Carol Reschke
Community Ecologist
NY Natural Heritage Program

CR:jp
Encs.
cc: T. Hart
R. Miller
A. Breisch
H. Knoch, Reg. 1
G. Cole, Reg. 3
Q. VanNortwich, Reg. 4
J. Proud, Reg. 7

1 REF. 13

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK

PHASE I INVESTIGATIONS

GAF DUMP

BINGHAMTON,BROOME COUNTY, NEW YORK

Site Code:704011

APRIL 1986

Prepared for:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD, ALBANY, NEW YORK 12233
HENRY G. WILLIAMS, COMMISSIONER

Division of Solid and Hazardous Waste
NORMAN H. NOSENCHUCK, P.E. DIRECTOR

WEHRAN ENGINEERING, P.C.
Middletown & Grand Island, New York

V-47

REF. 14

1980 Census of Population

VOLUME 1
CHARACTERISTICS OF THE POPULATION

CHAPTER A

Number of Inhabitants

PART 34

NEW YORK

PC80-1-A34

Issued February 1982

U.S. Department of Commerce
Malcolm Baldrige, Secretary
Joseph R. Wright, Jr.,
Deputy Secretary
Robert G. Dederick,
Assistant Secretary for
Economic Affairs

BUREAU OF THE CENSUS
Bruce Chapman,
Director

Data Index

This index provides a summary listing of the tables in which the particular data are presented. For a listing of the individual tables and their page numbers, see page 1.

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Table 25. Population, 1960 to 1980, and Land Area and Population Density for 1980 for Places of 2,500 or More—Con.

[For meaning of symbols, see introduction]

Places	Population			1980 land area		Population per—	
	1980	1970	1960	Square miles	Square kilometers	Square mile	Square kilometer
NEW YORK—Con.							
Big Flats (CDP)	2 892	2 509	...	3.7	9.6	782	301
Binghamton city	55 860	64 123	75 941	10.4	26.9	5 371	2 077
Blasdell village	3 288	3 910	3 909	1.0	2.6	3 288	1 265
Bohemia (CDP)	9 308	8 926	...	8 6	22.2	1 082	419
Brentwood (CDP)	44 321	[1]28 327	15 387	9.8	25.5	4 523	1 738
Briarcliff Manor village	7 115	6 521	5 105	5.8	15.0	1 227	474
Brighton (CDP)	35 776	...	...	15.1	39.2	2 369	913
Brightwaters village	3 286	3 808	3 193	1.0	2.6	3 286	1 264
Brinckerhoff (CDP)	3 030	2 094	...	1.2	3.1	2 525	977
Brockport village	9 776	7 878	5 256	2.0	5.3	4 888	1 845
Bronxville village	6 267	6 674	6 744	1.0	2.6	6 267	2 410
Brookville village	3 290	3 212	1 468	4.2	10.8	783	305
Buffalo city	357 870	462 768	532 759	41.8	108.3	8 561	3 304
Calverton–Roanoke (CDP)	4 952	...	...	30.9	80.1	160	62
Camden village	2 667	2 936	2 694	2.3	6.0	1 160	445
Canandaigua city	10 419	10 488	9 370	4.7	12.2	2 217	854
Canastota village	4 773	5 033	4 896	3.2	8.4	1 492	568
Canisteo village	2 679	2 772	2 731	1.1	2.8	2 435	957
Canton village	7 055	6 398	5 046	2.2	5.8	3 207	1 216
Carle Place (CDP)	5 470	6 326	...	0.9	2.3	6 078	2 378
Carthage village	3 6[illegible]	3 889	4 216	1.9	4.9	1 917	743
Catskill village	4 718	5 317	5 825	2.9	7.4	1 627	638
Cayuga Heights village	3 170	3 130	2 788	1.8	4.7	1 761	674
Cazenovia village	2 599	3 031	2 584	2.2	5.7	1 181	456
Cedarhurst village	6 162	6 941	6 954	1.0	2.6	6 162	2 370
Centereach (CDP)	30 136	9 427	8 524	8.8	22.7	3 425	1 328
Center Moriches (CDP)	5 703	3 802	2 521	5 6	14 5	1 018	393
Centerport (CDP)	6 576	...	...	3 4	8 7	1 934	756
Central Islip (CDP)	19 734	36 391	...	12.2	31.5	1 618	626
Cheektowaga (CDP)	92 145	...	...	24.9	64.6	3 701	1 426
Chittenango village	4 290	3 605	3 180	2.1	5.5	2 043	780
Clifton Knolls (CDP)	5 636	5 771	...	2.9	7.5	1 943	751
Cobleskill village	5 272	4 368	3 471	2.9	7.4	1 818	712
Cohoes city	18 144	18 653	20 129	3.8	9.8	4 775	1 851
Cold Spring Harbor (CDP)	5 336	[1]5 450	1 705	3.7	9.7	1 442	550
Colonie village	8 869	8 701	6 992	3 5	9.1	2 534	975
Commack (CDP)	34 719	[1]24 138	9 613	10.6	27.5	3 275	1 263
Congers (CDP)	7 123	5 928	...	3.2	8.3	2 226	858
Copiague (CDP)	20 132	19 632	14 081	3.2	8.2	6 291	2 455
Coram (CDP)	24 752	...	...	13.6	35.2	1 820	703
Corinth village	2 702	3 267	3 193	2.8	7.3	965	370
Corning city	12 953	15 792	17 085	3.2	8.3	4 048	1 561
Cornwall on Hudson village	3 164	3 131	2 785	2.3	6.0	1 376	527
Cortland city	20 138	19 621	19 181	4 1	10.6	4 912	1 900
Coxsackie village	2 78[illegible]	2 399	2 849	2.5	6.6	1 114	422
Croton-on-Hudson village	6 889	7 523	6 812	4.8	12.4	1 435	556
Crown Heights (CDP)	3 225	3 292	...	1 1	2.9	2 932	1 112
Cutchogue–New Suffolk (CDP)	2 788	...	...	9.3	24 1	300	116
Dannemora village	3 770	3 735	4 835	1.2	3 1	3 142	1 216
Dansville village	4 979	5 436	5 460	2.5	6.5	1 992	766
Deer Park (CDP)	30 394	[1]32 274	16 726	6.1	15.9	4 983	1 912
Delhi village	3 374	3 017	2 307	1.5	3.9	2 249	865
Delmar (CDP)	8 423	...	...	3.6	9.2	2 340	916
Depew village	19 819	22 158	13 580	5.1	13.2	3 886	1 501
De Witt (CDP)	9 024	10 032	...	3.2	8.2	2 820	1 100
Dix Hills (CDP)	26 693	10 050	...	15.8	40.8	1 689	654
Dobbs Ferry village	10 053	10 353	9 260	2.2	5.8	4 570	1 733
Dolgeville village	2 602	2 872	3 058	1.8	4.7	1 446	554
Dunkirk city	15 310	16 855	18 205	4.6	11.9	3 328	1 287
East Aurora village	6 803	7 033	6 791	2.5	6.5	2 721	1 047
East Cayuga Heights (CDP)	2 630	2 611	...	1.1	2.9	2 391	907
Eastchester (CDP)	20 305	23 750	...	3.3	8.5	6 153	2 389
East Farmingdale (CDP)	5 522	...	...	5.8	15.0	952	368
East Glenville (CDP)	6 537	5 898	...	7.4	19.2	883	340
East Hills village	7 160	[1]8 624	7 184	2.1	5.4	3 410	1 326
East Islip (CDP)	13 852	6 861	...	4.0	10.4	3 463	1 332
East Massapequa (CDP)	13 987	15 926	14 779	2.4	6.1	5 828	2 293
East Meadow (CDP)	39 317	46 290	46 036	6.6	17.2	5 957	2 286
East Middletown (CDP)	4 330	2 640	1 752	3.4	8.9	1 274	487
East Northport (CDP)	20 187	12 392	8 381	4.2	11.0	4 806	1 835
East Patchogue (CDP)	18 139	8 092	...	8.5	21.9	2 134	828
East Quogue (CDP)	3 668	1 143	...	3.5	9.0	1 048	408
East Rochester village	7 596	8 347	8 152	1.5	4.0	5 064	1 899
East Rockaway village	10 917	[1]11 795	10 721	1.0	2.6	10 917	4 199
East Syracuse village	3 412	4 333	4 708	1.5	3.9	2 275	875
East Williston village	2 708	2 808	2 940	0.7	1.8	3 869	1 504
Eden (CDP)	3 000	2 962	2 366	5.3	13.6	566	221
Ellenville village	4 405	4 482	5 003	2.0	5.2	2 203	847
Elmira city	35 327	39 945	46 517	7.1	18.4	4 976	1 920
Elmira Heights village	4 279	4 906	5 157	1.1	2.8	3 890	1 528
Elmira Heights North (CDP)	2 659	2 906	2 528	1.3	3.4	2 045	782
Elmont (CDP)	27 592	29 363	30 138	3.4	8.7	8 115	3 171
Elmsford village	3 361	3 911	3 795	1.0	2.6	3 361	1 293
Elwood (CDP)	11 847	15 031	...	4.8	12.4	2 468	955
Endicott village	14 457	16 556	18 775	3.1	8.0	4 664	1 807
Endwell (CDP)	13 745	15 999	...	3.9	10 0	3 524	1 375
Fairmount (CDP)	13 415	15 317	...	3.6	9.4	3 726	1 427
Fairport village	5 970	6 474	5 507	1.5	3.9	3 980	1 531
Fairview (CDP)	5 852	8 517	8 626	3.6	9.4	1 626	623
Falconer village	2 778	2 983	3 343	1.3	3.3	2 137	842
Farmingdale village	7 946	9 297	6 128	1 1	2.8	7 224	2 838

Places	Population			1980 land area		Population per—	
	1980	1970	1960	Square miles	Square kilometers	Square mile	Square kilometer
NEW YORK—Con.							
Farmingville (CDP)	13 398	...	...	4.5	11.6	2 977	1 155
Fayetteville village	4 709	4 996	4 311	1.7	4 4	2 770	1 070
Fernwood (CDP)	3 640	3 659	2 108	4 0	10 4	910	350
Firthcliffe (CDP)	4 430	4 025	2 824	2 9	7.6	1 528	583
Floral Park village	16 805	18 466	17 499	1.4	3.6	12 004	4 668
Flower Hill village	4 558	4 486	4 594	1.6	4.1	2 849	1 112
Fort Edward village	3 561	3 733	3 737	1.8	4.7	1 978	758
Fort Plain village	2 555	2 809	2 809	1.4	3.6	1 825	710
Fort Salonga (CDP)	9 550	...	...	8.6	22.2	1 110	430
Frankfort village	2 995	3 305	3 872	1.0	2.6	2 995	1 152
Franklin Square (CDP)	29 051	32 156	32 483	2.9	7 5	10 018	3 873
Fredonia village	11 126	10 326	8 477	5.1	13.2	2 182	843
Freeport village	38 272	40 374	34 419	4.6	11.9	8 320	3 216
Fulton city	13 312	14 003	14 261	3.5	9.1	3 803	1 463
Garden City village	22 927	25 373	23 948	5.3	13 7	4 326	1 674
Garden City Park (CDP)	7 712	7 488	...	1.0	2.5	7 712	3 085
Gardnertown (CDP)	4 238	4 614	...	4.9	12 8	865	331
Gates–North Gates (CDP)	15 244	...	...	1.2	3.0	12 703	5 081
Geneseo village	6 746	5 714	3 284	2 4	6.2	2 811	1 088
Geneva city	15 133	[1]16 793	17 286	3.6	9.3	4 204	1 627
Glen Cove city	24 618	25 770	23 817	6.4	16.7	3 847	1 474
Glenham (CDP)	2 832	2 720	...	1.2	3 1	2 360	914
Glens Falls city	15 897	17 222	18 580	3 8	9.9	4 183	1 606
Glens Falls North (CDP)	6 956	...	...	8 3	21 4	838	325
Gloversville city	17 836	19 677	21 741	4 6	11.9	3 877	1 499
Goshen village	4 874	4 342	3 906	3 3	8 5	1 477	573
Gouverneur village	4 285	4 574	4 946	1 9	4 9	2 255	874
Gowanda village	2 713	3 110	3 352	1 5	3 9	1 809	696
Granville village	2 696	2 784	2 715	1.5	3 9	1 797	691
Great Neck village	9 168	[1]10 798	10 171	1.4	3.6	6 549	2 547
Great Neck Estates village	2 936	3 131	3 262	0 8	2 1	3 670	1 398
Great Neck Plaza village	5 604	[1]6 043	4 948	0 3	0.8	18 680	7 005
Greece (CDP)	16 177	...	...	1.1	2.8	14 706	5 778
Green Island village	2 696	3 297	3 533	0 9	2.4	2 996	1 123
Greenlawn (CDP)	13 869	[1]8 493	5 422	3 8	9.9	3 650	1 401
Greenville (CDP)	8 706	...	...	3 0	7 7	2 902	1 131
Greenwood Lake village	2 809	2 262	1 236	1.7	4.4	1 652	638
Hamburg village	10 582	10 215	9 145	2.4	6.2	4 409	1 707
Hamilton village	3 725	3 636	3 348	1.9	4.9	1 961	760
Hampton Bays (CDP)	7 256	1 862	1 431	10.6	27.5	685	264
Harris Hill (CDP)	5 087	...	...	4.9	12.6	1 038	404
Harrison village	23 046	...	...	16 0	41 5	1 440	555
Hartsdale (CDP)	10 216	12 226	...	2 5	6.5	4 086	1 572
Hastings-on-Hudson village	8 573	9 479	8 979	2.0	5.2	4 287	1 649
Hauppauge (CDP)	20 960	13 957	...	10.2	26 5	2 055	791
Haverstraw village	8 800	8 198	5 771	1 9	4.9	4 632	1 796
Haviland (CDP)	3 578	3 447	...	3 7	9 7	967	369
Hawthorne (CDP)	5 010	...	...	1 7	4 3	2 947	1 165
Hempstead village	40 404	39 411	34 641	3 8	9.8	10 633	4 123
Herkimer village	8 383	8 960	9 396	2.7	7.0	3 105	1 198
Herricks (CDP)	8 123	9 112	...	1.2	3.0	6 769	2 708
Hewlett (CDP)	6 986	6 796	...	0.9	2.3	7 762	3 037
Hicksville (CDP)	43 245	[1]49 820	50 405	6.6	17.2	6 552	2 514
Highland (CDP)	3 967	2 184	2 931	4.6	11.9	862	333
Highland Falls village	4 187	4 638	4 469	1.1	2.8	3 806	1 495
Hillcrest (CDP)	5 733	5 357	...	1.5	3.9	3 822	1 470
Hillis (CDP)	2 591	2 750	...	1.6	4.2	1 619	617
Hilton village	4 151	2 440	1 334	1.0	2.7	4 151	1 537
Holbrook (CDP)	24 382	...	...	6 7	17.3	3 639	1 409
Holtsville (CDP)	13 515	...	...	0.8	2.2	16 894	6 143
Homer village	3 635	4 143	3 622	1.6	4.1	2 272	887
Hoosick Falls village	3 609	3 897	4 023	1.6	4.2	2 256	859
Hornell city	10 234	12 144	13 907	10.3	26.6	994	385
Horseheads village	7 348	7 989	7 207	3 7	9.6	1 986	765
Horseheads North (CDP)	3 081	2 753	...	10.2	26 4	302	117
Hudson city	7 986	8 940	11 075	2.3	6.0	3 472	1 331
Hudson Falls village	7 419	7 917	7 752	1.9	4.8	3 905	1 546
Huntington (CDP)	21 727	[1]12 601	11 255	8.4	21.7	2 587	1 001
Huntington Station (CDP)	28 769	28 817	23 438	5.4	14.0	5 328	2 055
Hurley (CDP)	4 892	4 081	...	5.4	14.1	906	347
Hyde Park (CDP)	2 550	2 805	1 979	2.0	5.3	1 275	481
Ilion village	9 450	9 808	10 199	2.4	6.2	3 938	1 524
Inwood (CDP)	8 228	8 433	10 362	1.7	4.4	4 840	1 870
Irondequoit (CDP)	57 648	...	...	15.9	41.1	3 626	1 403
Irvington village	5 774	5 878	5 494	3.3	8.5	1 750	679
Island Park village	4 847	5 396	3 846	0.4	1.0	12 118	4 847
Islip (CDP)	13 438	7 692	...	3.9	10.2	3 446	1 317
Islip Terrace (CDP)	5 588	...	...	1.3	3.4	4 298	1 644
Ithaca city	28 732	26 226	28 799	5.6	14.5	5 131	1 982
Jamestown city	35 775	39 795	41 818	9.0	23 3	3 975	1 535
Jamestown West (CDP)	2 680	2 491	...	2.5	6.5	1 072	412
Jefferson Valley–Yorktown (CDP)	13 380	9 008	...	7.0	18.2	1 911	735
Jericho (CDP)	12 739	14 010	10 795	4.2	10.9	3 033	1 169
Johnson City village	17 126	18 025	19 118	4.5	11.7	3 806	1 464
Johnstown city	9 360	10 045	10 390	3.4	8.8	2 753	1 064
Kenmore village	18 474	20 980	21 261	1.4	3.6	13 196	5 132
Kings Park (CDP)	16 131	5 555	4 949	6.2	16.1	2 602	1 002
Kings Point village	5 234	[1]5 614	5 410	3.6	9.3	1 454	563
Kingston city	24 481	25 544	29 260	7.4	19.2	3 308	1 275
Lackawanna city	22 701	28 657	29 564	5.7	14 8	3 983	1 534

V-49

REF. 14

DOCUMENTATION RECORDS FOR HRS
AIR ROUTE - TARGETS

Population Within 4-Mile Radius

Radius	Area	Area x Density	Houses x 3.8	Total	Score
1/4	3/8 x Area	395	53	448	21
1/2	4/8 x Area	2,108	179	2,287	21
1	5/8 x Area	10,547	270	10,817	24

R = 1/4 mile Area = 0.196 sq. mi.
R = 1/2 mile Area = 0.785 sq. mi.
R = 1 mile Area = 3.142 sq. mi.

Density = 5,371 people/sq. mi.

Note: The highest score for 0-4 mile radius is 21. Score = 24 was obtained for radius 0-1 mile, and therefore population for 0-4 mile was not calculated. [1]

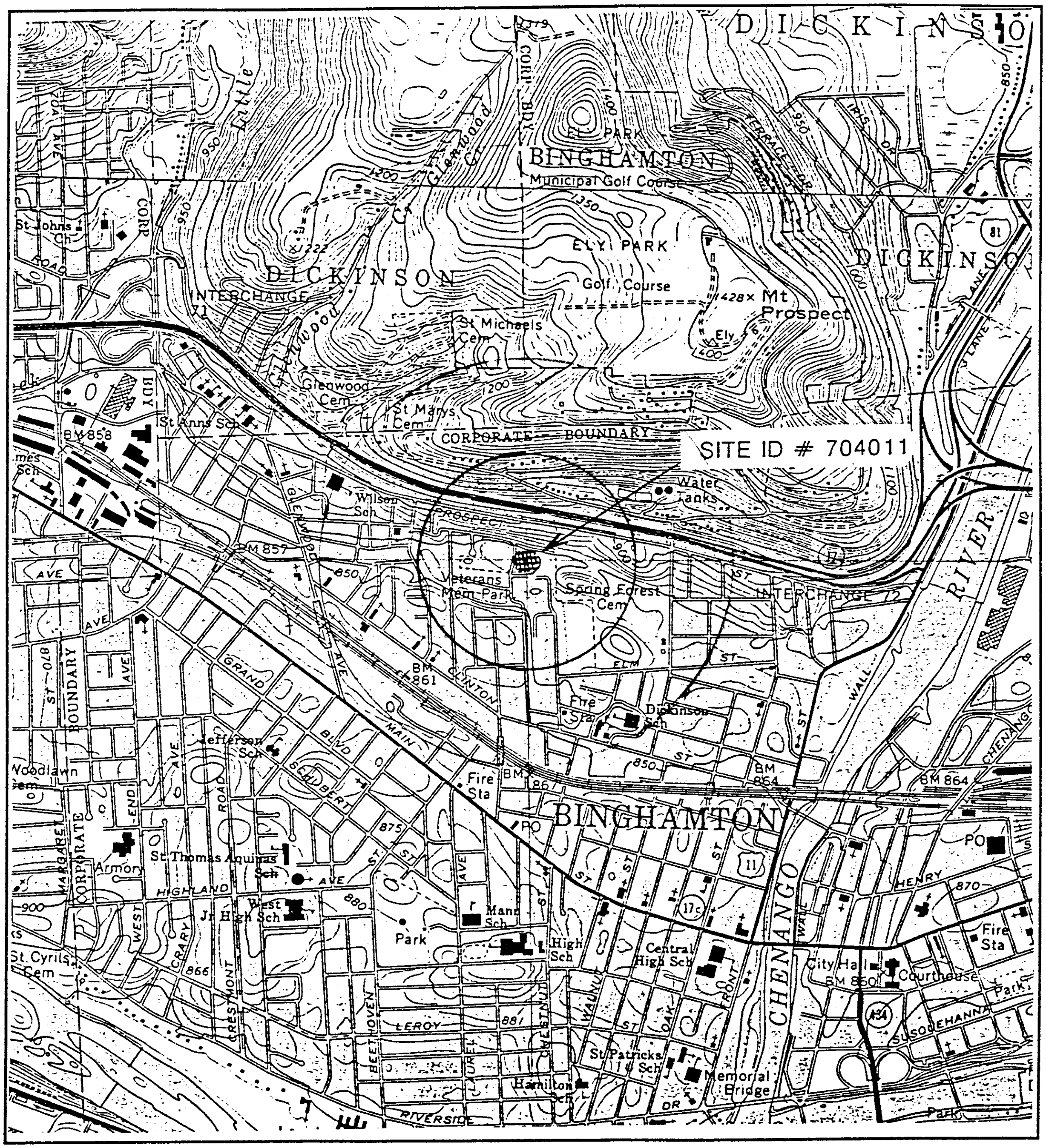


FIGURE I -1

SITE LOCATION MAP
SITE: GAF DUMP SITE

COORDINATES: LAT. : 42° 06' 29" N
LONG.: 75° 55' 45" W

MAP SOURCE:
NEW YORK-BROOME COUNTY
U.S.G.S. MAP BINGHAMTON
WEST QUAD. AND CASTLE CREEK QUAD.
7.5 MINUTES SERIES
(1968 EDITION)

SCALE 1" = 2000'

GIBBS & HILL, INC.

WASO-34
(May 1987)

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

TRANSMITTAL STATEMENT

REF. 15

From:
(In reply refer to)
413

National Register of Historic Places
National Park Service, P.O. Box 37127
Department of the Interior
Washington, D.C. 20013-7127

Date 31 March 1989

To:

Norman Hinsey
Gibbs and Hill
11 Penn Plaza
New York, NY 10001

☐ We are enclosing:

☐ We are sending under separate cover:

NUMBER	ITEM	DESCRIPTION
2	Print-outs, Properties listed and determined eligible for listing in New York	

COMMENTS

If we can be of further assistance, please call us at 202-343-9559.

NAME AND TITLE

Debbie Kraybill

SIGNATURE

V-52

D.16

TELEPHONE CONVERSATION MEMORANDUM

CLIENT NYSDEC Phase I Round 3

PROJ. No. 04339 EX

PROJECT GAF Dump

DATE May 17, 1985

TIME 3:40 p.m.

CALL TO/FROM Claudia Stollman

REPRESENTING Broome County
Environmental Mgt. Cour

PHONE No. (607) 772-2116

SUMMARY OF CONVERSATION:

Re: Location of City of Binghamton Water Supply Intake

City uses Susquehana River water above confluence with Chenango River.

John Kowalchyk no longer there.

COPIES TO:

BY: Fran Geissler (fm)

Fran Geissler

WEHRAN ENGINEERING
CONSULTING ENGINEERS

Telephone Conversation Record

Date: 12/15/89

Time: 11 AM

Call by: Alex Kostic (Name) of Gibbs & Hill, Inc. (Company)

Answer by: Gregory Currier (Name) of Soil Conservation Services (Company)
607/773-2691

Contract No: 5583-157

Subject discussed: Agricultural Land

SUMMARY OF DISCUSSION, DECISIONS AND COMMITMENTS

Mr. G. Currier informed me that there was no agricultural land in production within the past 5 years within a 2-mile radius from the GAF dump site.

/nsa

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Site Inspection Report

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE NYD	02 SITE NUMBER 002239465

II. SITE NAME AND LOCATION

01 SITE NAME *(Legal, common, or descriptive name of site)* GAF Dump	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER Seymour Street				
03 CITY Binghamton	04 STATE NY	05 ZIP CODE 13902	06 COUNTY Broome	07 COUNTY CODE	08 CONG DIST

09 COORDINATES LATITUDE 42° 06' 29". N LONGITUDE 75° 55' 45". W

10 TYPE OF OWNERSHIP *(Check one)*
☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION 08 / 04 / 88 MONTH DAY YEAR	02 SITE STATUS ☐ ACTIVE ☒ INACTIVE	03 YEARS OF OPERATION Mid-1940's / Mid-1970's ___ UNKNOWN BEGINNING YEAR ENDING YEAR

04 AGENCY PERFORMING INSPECTION *(Check all that apply)*
☐ A. EPA ☐ B. EPA CONTRACTOR ______ *(Name of firm)* ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ______ *(Name of firm)*
☐ E. STATE ☒ F. STATE CONTRACTOR Gibbs & Hill *(Name of firm)* ☐ G. OTHER ______ *(Specify)*

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Alex Kostic	Senior Env. Engineer	Gibbs & Hill	(212) 216-6000
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Albert Longoria	Geologist	Gibbs & Hill	(212) 216-6000
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
C.F. Bien	Consultant	1361 Alps Rd, Wayne, NJ 07470	(201) 628-3500
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY *(Check one)* ☒ PERMISSION ☐ WARRANT	18 TIME OF INSPECTION 10:00 AM	19 WEATHER CONDITIONS Cloudy, 80°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT Norman Hinsey	02 OF *(Agency/Organization)* Gibbs & Hill			03 TELEPHONE NO. ( )
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM Alex Kostic	05 AGENCY	06 ORGANIZATION Gibbs & Hill	07 TELEPHONE NO. (212) 216-6000	08 DATE 02 / 15 / 89 MONTH DAY YEAR

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

☐ A. SOLID
☐ B. POWDER, FINES
☐ C. SLUDGE
☐ D. OTHER ____________ *(Specify)*
☐ E. SLURRY
☒ F. LIQUID
☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

TONS ____________
CUBIC YARDS ____________
NO. OF DRUMS ____________

03 WASTE CHARACTERISTICS *(Check all that apply)*

☒ A. TOXIC
☐ B. CORROSIVE
☐ C. RADIOACTIVE
☒ D. PERSISTENT
☒ E. SOLUBLE
☐ F. INFECTIOUS
☒ G. FLAMMABLE
☐ H. IGNITABLE
☐ I. HIGHLY VOLATILE
☐ J. EXPLOSIVE
☐ K. REACTIVE
☐ L. INCOMPATIBLE
☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS	unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	unknown		
IOC	INORGANIC CHEMICALS	unknown		
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	unknown		

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	t 1,2 dichlorethylene	156-60-5	spilled onto ground surface	unknown	
OCC	trichloroethylene	79-01-6	spilled onto ground surface	unknown	
MES	silver		spilled onto ground surface	unknown	
MES	Cadmium		spilled onto ground surface	unknown	
OCC	phenol	108-95-2	spilled onto ground surface	unknown	

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

Gibbs & Hill Site Reconnaisance Report, 8/4/89
Phase I Investigations Report, Wehran Engineering, April 1986

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NYD	002239465

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION
02 ☒ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 19,600
04 NARRATIVE DESCRIPTION

Groundwater analyses detected three organics. Several metals were found to be above NYS Sanitary Code for Drinking Water.

01 ☒ B. SURFACE WATER CONTAMINATION
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

Site is 200' uphill from Trout Brook storm sewer (66") which discharges to Chenango River. Site has no leachate control system.

01 ☒ C. CONTAMINATION OF AIR
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

No detection of contamination of air using PID during Gibbs & Hill Engineering Site Reconnaisance, August 4, 1988, and well drilling from 10/8/88 to 10/28/88.

01 ☒ D. FIRE/EXPLOSIVE CONDITIONS
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

None noted during field activities.

01 ☒ E. DIRECT CONTACT
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______
04 NARRATIVE DESCRIPTION

No direct contact has been documented, causing injury to humans or animals. No workers on-site. Cover material presumably placed over waste.

01 ☒ F. CONTAMINATION OF SOIL
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: unknown (Acres)
04 NARRATIVE DESCRIPTION

Waste liquids were allegedly spilled out of 55-gallon drums onto soil surface. Soil analyses show silver and lead.

01 ☐ G. DRINKING WATER CONTAMINATION
02 ☐ OBSERVED (DATE: ______) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 19,600
04 NARRATIVE DESCRIPTION

Under certain environmental conditions, potential exists for cone depression to change groundwater flow gradient such that flow is from site towards Johnson City.

01 ☒ H. WORKER EXPOSURE/INJURY
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: None
04 NARRATIVE DESCRIPTION

No worker exposure/injury has been documented.

01 ☒ I. POPULATION EXPOSURE/INJURY
02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: None
04 NARRATIVE DESCRIPTION

None known. Site is closed.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NYD	002239465

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA   02 ☐ OBSERVED (DATE: ________)   ☐ POTENTIAL   ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None noted or reported.

01 ☐ K. DAMAGE TO FAUNA   02 ☐ OBSERVED (DATE: ________)   ☐ POTENTIAL   ☐ ALLEGED
04 NARRATIVE DESCRIPTION (include name(s) of species)

None noted or reported.

01 ☐ L. CONTAMINATION OF FOOD CHAIN   02 ☐ OBSERVED (DATE: ________)   ☐ POTENTIAL   ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None noted or reported.

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums)   02 ☐ OBSERVED (DATE: ________)   ☐ POTENTIAL   ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________   04 NARRATIVE DESCRIPTION

Wastes from the plant were allegedly dumped directly onto the ground. Dump area was presumably filled with rubble and covered with soil.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY   02 ☐ OBSERVED (DATE: ________)   ☐ POTENTIAL   ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None noted or reported.

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs   02 ☐ OBSERVED (DATE: ________)   ☐ POTENTIAL   ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None noted or reported.

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING   02 ☐ OBSERVED (DATE: ________)   ☐ POTENTIAL   ☐ ALLEGED
04 NARRATIVE DESCRIPTION

None noted or reported.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

None noted or reported.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 19,600

IV. COMMENTS

Most obvious threat is to groundwater supply and population utilizing groundwater.

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)

- o Wehran Engineering
  Site Inspection, Phase I Report
- o NYSDEC File Documents

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☒ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☒ F. LANDFILL	Unknown	
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☒ I. OTHER waste poured on surface	unknown	

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER none (Specify)

05 OTHER

☐ A. BUILDINGS ON SITE

06 AREA OF SITE

2 (Acres)

07 COMMENTS

Waste liquids allegedly spilled out of drums onto ground surface.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☒ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

None. Liquids disposed on soil surface.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS

Site fenced in, but accessible along south side.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

Gibbs & Hill Site Reconnaisance Report
Phase I Report, Wehran Engineering, April 1986

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. ☐	B. ☒
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A. ☐	B. ☐	C. ☐
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE

A. 1.8 (mi)

B. ______ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☒ A. ONLY SOURCE FOR DRINKING

☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)

☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)

☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 19,600

03 DISTANCE TO NEAREST DRINKING WATER WELL 1.8 (mi)

04 DEPTH TO GROUNDWATER 30-50 (ft)

05 DIRECTION OF GROUNDWATER FLOW Southwest

06 DEPTH TO AQUIFER OF CONCERN 30-50 (ft)

07 POTENTIAL YIELD OF AQUIFER 2.5 MGD (gpd)

08 SOLE SOURCE AQUIFER ☒ YES ☐ NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

Ref. D. 14

10 RECHARGE AREA

☒ YES ☐ NO

COMMENTS Area is urbanized. Recharge is restricted due to pavement.

11 DISCHARGE AREA

☐ YES ☒ NO

COMMENTS None

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE

☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES

☐ C. COMMERCIAL, INDUSTRIAL

☒ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Chenango River	☐	1.0 (mi)
Susquehanna River	☐	1.6 (mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 10,817 NO. OF PERSONS	B. 53,246 NO. OF PERSONS	C. 73,900 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.02 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE ______

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0.02 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

Within a 3-mile radius, 19,600 people are known to be using groundwater supplies.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE *(Check one)*

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☒ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK *(Check one)*

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☒ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK: >50 (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE: unknown (ft)

05 SOIL pH: unknown

06 NET PRECIPITATION: 11.5 (in)

07 ONE YEAR 24 HOUR RAINFALL: 2.25 (in)

08 SLOPE

SITE SLOPE: 4 %

DIRECTION OF SITE SLOPE: southerly

TERRAIN AVERAGE SLOPE: 4 %

09 FLOOD POTENTIAL

SITE IS IN none YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS *(5 acre minimum)*

ESTUARINE A. N/A (mi)

OTHER B. None (mi)

12 DISTANCE TO CRITICAL HABITAT *(of endangered species)*

______ (mi)

ENDANGERED SPECIES: None

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL A. adj. (mi)

RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES B. adj. (mi)

AGRICULTURAL LANDS

PRIME AG LAND C. none (mi)

AG LAND D. none (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is located in a mixed commercial and residential neighborhood in the north central region of the City of Binghamton. Immediately to the east is Spring Forest Cemetery, to the south is the Anitec Corp. plant facility, and to the immediate west and downhill is Veterans Memorial Park. A residential neighborhood to the north on Prospect Street is uphill and upgradient of the site.

VII. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

Gibbs & Hill Site Reconnaisance Report
Phase I Report, Wehran Engineering, April 1986

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	Four	H2M Laboratory	Available
SURFACE WATER	None		
WASTE	None		
AIR	None		
RUNOFF	None		
SPILL	None		
SOIL	Nine	H2M Laboratory	Available
VEGETATION	None		
OTHER	None		

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
PID measurements	No readings above background
pH	Groundwater samples
Conductivity	Groundwater samples
Temperature	Groundwater samples

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF ____________________ (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS Gibbs & Hill, 11 Penn Plaza, New York, NY 10001

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Gibbs & Hill drilling and sampling logs.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
GAF Corp.			
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**	**10 STREET ADDRESS** *(P.O. Box, RFD #, etc.)*	**11 SIC CODE**
1361 Alps Road			
05 CITY	**06 STATE** / **07 ZIP CODE**	**12 CITY**	**13 STATE** / **14 ZIP CODE**
Wayne	NJ / 07470		

PARENT COMPANY *(If applicable)*: columns 08–14 above.

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**	**10 STREET ADDRESS** *(P.O. Box, RFD #, etc.)*	**11 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**	**12 CITY**	**13 STATE** / **14 ZIP CODE**

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**	**10 STREET ADDRESS** *(P.O. Box, RFD #, etc.)*	**11 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**	**12 CITY**	**13 STATE** / **14 ZIP CODE**

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**	**10 STREET ADDRESS** *(P.O. Box, RFD #, etc.)*	**11 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**	**12 CITY**	**13 STATE** / **14 ZIP CODE**

III. PREVIOUS OWNER(S) *(List most recent first)*

IV. REALTY OWNER(S) *(If applicable, list most recent first)*

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**	**03 STREET ADDRESS** *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**	**05 CITY**	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**	**03 STREET ADDRESS** *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**	**05 CITY**	**06 STATE** / **07 ZIP CODE**

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**	**03 STREET ADDRESS** *(P.O. Box, RFD #, etc.)*	**04 SIC CODE**
05 CITY	**06 STATE** / **07 ZIP CODE**	**05 CITY**	**06 STATE** / **07 ZIP CODE**

V. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

Gibbs & Hill Site Reconnaissance Report

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE NYD

02 SITE NUMBER 002239465

II. CURRENT OPERATOR *(Provide if different from owner)*

01 NAME Site is closed

02 D+B NUMBER

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*

04 SIC CODE

05 CITY

06 STATE

07 ZIP CODE

08 YEARS OF OPERATION

09 NAME OF OWNER

OPERATOR'S PARENT COMPANY *(If applicable)*

10 NAME

11 D+B NUMBER

12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*

13 SIC CODE

14 CITY

15 STATE

16 ZIP CODE

III. PREVIOUS OPERATOR(S) *(List most recent first; provide only if different from owner)*

01 NAME GAF Corp.

02 D+B NUMBER

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)* 1361 Alps Road

04 SIC CODE

05 CITY Wayne

06 STATE NJ

07 ZIP CODE 07470

08 YEARS OF OPERATION

09 NAME OF OWNER DURING THIS PERIOD

01 NAME

02 D+B NUMBER

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*

04 SIC CODE

05 CITY

06 STATE

07 ZIP CODE

08 YEARS OF OPERATION

09 NAME OF OWNER DURING THIS PERIOD

01 NAME

02 D+B NUMBER

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*

04 SIC CODE

05 CITY

06 STATE

07 ZIP CODE

08 YEARS OF OPERATION

09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES *(If applicable)*

10 NAME

11 D+B NUMBER

12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*

13 SIC CODE

14 CITY

15 STATE

16 ZIP CODE

10 NAME

11 D+B NUMBER

12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*

13 SIC CODE

14 CITY

15 STATE

16 ZIP CODE

10 NAME

11 D+B NUMBER

12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*

13 SIC CODE

14 CITY

15 STATE

16 ZIP CODE

IV. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

Gibbs & Hill Site Reconnaisance, 8/4/88

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

II. ON-SITE GENERATOR

01 NAME GAF Corp.	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.) 1361 Alps Road	04 SIC CODE

05 CITY Wayne	06 STATE NJ	07 ZIP CODE 07470

III. OFF-SITE GENERATOR(S)

01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED 02 DATE 03 AGENCY
04 DESCRIPTION
No documentation of any action found.

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ D. SPILLED MATERIAL REMOVED 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ E. CONTAMINATED SOIL REMOVED 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ F. WASTE REPACKAGED 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ G. WASTE DISPOSED ELSEWHERE 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ H. ON SITE BURIAL 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ I. IN SITU CHEMICAL TREATMENT 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ J. IN SITU BIOLOGICAL TREATMENT 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ K. IN SITU PHYSICAL TREATMENT 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ L. ENCAPSULATION 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ M. EMERGENCY WASTE TREATMENT 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ N. CUTOFF WALLS 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ P. CUTOFF TRENCHES/SUMP 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

01 ☐ Q. SUBSURFACE CUTOFF WALL 02 DATE 03 AGENCY
04 DESCRIPTION
Undocumented

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NYD	002239465

II PAST RESPONSE ACTIVITIES *(Continued)*

01 ☐ R. BARRIER WALLS CONSTRUCTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ S. CAPPING/COVERING 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ T. BULK TANKAGE REPAIRED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ U. GROUT CURTAIN CONSTRUCTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ V. BOTTOM SEALED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ W. GAS CONTROL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ X. FIRE CONTROL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ Y. LEACHATE TREATMENT 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ Z. AREA EVACUATED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ 1. ACCESS TO SITE RESTRICTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ 2. POPULATION RELOCATED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
Undocumented

01 ☐ 3. OTHER REMEDIAL ACTIVITIES 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

None

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

Gibbs & Hill Site Reconnaisance, 8/4/88

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE NYD | 02 SITE NUMBER 002239465

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

None

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Gibbs & Hill Site Reconnaisance, 8/4/88

EPA FORM 2070-13 (7-81)

APPENDIX A

WORK PLAN UPDATE

Work Plan Update

Phase II Investigation

GAF Dump
Site No. 704011

Submitted to **NYSDEC** September 15, 1988

Gibbs & Hill, Inc.

CONTENTS

I. DEC WORK PLAN

Phase II Work Plan

GAF Dump

City of Binghamton/Broome County

Site ID #704011

Based on this work plan, the consultant must develop a detailed cost estimate for each task identified on Table 1. The cost estimate and work plan will be incorporated into the cost plus fixed fee contract with a limiting upset figure. Unless it is otherwise stated, work shall conform to the concept of Schedule 4, Exhibits 1 (Generic Work Plan - State Superfund Program - Phase II Investigations) and 3 (Guidelines for Exploratory Boring, Monitoring Well Installation, and Documentation of these Activities) of the contract document.

A copy of this work plan and Exhibits 1 and 3 of the contract must be taken to the field by the consultant during Phase II field activities, since these documents are crucial to proper implementation of Departmental field protocols. Through his actions, the field representative will display familiarity with the provisions of the work plan and exhibits. Failure to provide any of the above documents at the New York State Department of Environmental Conservation (NYSDEC) representative's request, or for the consultant to show inadequate comprehension of their contents are sufficient grounds for NYSDEC to halt Phase II field work.

Introduction

The GAF Dump is a one-acre site located in the City of Binghamton behind the former GAF manufacturing plant, now owned by Anitec Corporation. GAF retained ownership of the dump area when their plant was sold to Anitec.

The site was used for dumping construction debris and there are piles of cinders scattered about. GAF allegedly used the site to dispose of waste liquids from the production of photographic material by dumping 55-gallon drums of liquid directly onto the ground. GAF denies this allegation.

Since the site is located in a populous neighborhood, and Johnson City, located west of the site, draws groundwater from the aquifer of concern, a Phase II investigation will be performed.

A Phase I investigation by Wehran Engineering was completed in April, 1986.

Objective

The objective of this Phase II investigation is to collect the information required to classify the site for further action and to develop a final HRS score. This includes collecting the field data necessary to identify the occurrence and characteristics of contamination and if a release of contaminants from the site has occurred. This information will be used to determine if any imminent and/or significant environmental or health hazard exists. Specifically, these objectives will be accomplished through the drilling of test borings, installation of groundwater monitoring wells, and sampling and analysis of groundwater, surface water, soil, wastes, and sediments (where any or all of these media are applicable).

For the purpose of report preparation, the consultant is to compile all pertinent file information and data obtainable from the NYSDEC and various other agencies.

Site Reconnaissance

Representatives of NYSDEC met with GAF's consultant on November 1, 1985 and inspected the GAF Dump site in order to familiarize staff with the site and to discuss locations for sampling and boring/monitoring well installation.

The site is located at the east corner of Charles and Seymour Streets and abuts Spring Forest Cemetery. Approximately one third of the site consists of a paved parking lot. Based on the topography of the cemetery, it appears that the paved area was probably never filled in. However, a slope from the west side of the site down to a gravel parking area and basketball courts indicates that at least a section of the site may have been filled at one time.

Access to the site will not be difficult since the terrain is flat and it is located adjacent to two roads. A chain link fence surrounds the site and entrance must be made through a gate at the north site of the paved area. GAF Corporation has the key to that gate.

Based on the site inspection, a sketch was prepared showing the proposed monitoring well and sampling locations (see Figure 1).

Field Investigation

This project has been divided into specific tasks, summarized in Table 1. Field efforts to complete this investigation are described in greater detail below.

Geophysics: The goals of the geophysical survey are to characterize the subsurface geology, locate contaminant plumes, define the boundaries of buried waste, and to determine groundwater flow direction. In addition, buried metal objects, such as drums, gas lines, water lines, and metal waste, may also be located.

For the GAF Dump a geophysical survey will be conducted using a grid to sufficiently characterize subsurface conditions of the site and site-related areas (e.g. background and downgradient). The starting point of the grid will be located from an established reference point so that the survey may be repeated if elected. The consultant must determine the best geophysical method to meet the goals of the investigation and submit a work plan for the Bureau's review.

In addition to the geophysical survey, a magnetometer survey will also be conducted on site to locate buried water mains, gas, electric, or telephone lines which may be present. The magnetometer survey will be used to supplement the geophysical data and to investigate proposed monitoring well locations for obstructions.

Since final placement of monitoring wells is contingent on the results of the geophysical investigation, reduced geophysical data and a written interpretation of it shall be present at the site in the field representative's possession, and fully understood by the representative, at the time of drilling and placement of monitoring wells.

Test Borings and Monitoring Wells: Monitoring wells will be installed to provide data pertinent to both water chemistry and characterization of the stratigraphy and groundwater regime at the site.

Well construction shall adhere strictly to the NYSDEC protocols enumerated in Exhibit 3 of the Phase II Generic Work Plan. (This exhibit is also included in the contract). These protocols govern not only well installation and development, but classification and physical testing of soil, containment of drill cuttings and fluids, recording blow counts, etc. They also govern the proper procedures regarding decontamination of drilling equipment, split spoon samplers, and all other downhole materials.

It is anticipated that 2-inch I.D. monitoring wells will be installed at the approximate locations shown in Figure 1, using hollow-stem augers large enough to facilitate placement of downhole materials with a tremie, as required in Schedule 4, Exhibit 3 of the consultant contract.

Finalized well locations will depend on the results of the geophysical study and local conditions. The consultant, in conjunction with NYSDEC representatives, shall determine the final well locations in the field, as necessary. The consultant will provide an experienced engineer, geologist, or other adequately experienced technical staff to be on site at all times during drilling activities and monitoring well construction.

Three test borings/monitoring wells will be installed on the GAF Dump site. Refer to Figure 1 for approximate well locations.

It is anticipated that groundwater will be encountered at approximately thirty to forty feet below ground surface. The site lies over the Clinton Street - Ballpark aquifer, a section of the Endicott-Johnson City valley-fill aquifer that is separated from the Susquehanna River by deposits of till. The site lies on the northern edge of the aquifer, where glacial outwash deposits thin out and the valley wall rises. As a result, the thickness of the aquifer beneath the GAF site is expected to be only 20 to 40 feet.

The area to the east of the Spring Forest Cemetery consists of a kettlehole filled by low permeability peat, muck, silt, and clay deposited over the mixed sand and gravel aquifer to a thickness of twenty feet or more. A tongue of this low permeability deposit reaches to the GAF Dump and ends in the vicinity of Veteran's Memorial Park, immediately to the west of the site. This can be seen in the 1935 topographic map where the area that is now the park was then a swamp.

Groundwater flow in the immediate vicinity of the site appears to flow south, toward Anitec's on-site wells (used for cooling water). Past groundwater pumpage has caused drawdown of the water table to a point that the gradient, which originally flowed to the east toward the Chenango River, is reversed, causing induced recharge from the Chenango River. In particular, this recharge affects several industrial wells located southeast of the site, between the Chenango and Spring Forest Cemetery, but it may also affect Anitec wells located at the main plant, south of the site. Other sources of aquifer recharge are precipitation, local streams, and inflow from outlying areas. A cone of depression exists around Anitec's on-site wells.

One of Johnson City's drinking water wells draws from a major buried aquifer approximately one and a half miles to the northwest of the site. Though the buried aquifer is separated from the upper aquifer by low permeability deposits of lake silt and fine sand, the potentiometric surface around this well indicates local drawdown conditions. It is, however, unlikely that any potential contamination from the GAF Dump would make its way to this well due to the separation between the sites and the cone of depression caused by Anitec's industrial wells.

The single upgradient well will be located to the north of the site either along the south side of Seymour Street or perhaps across the street in an empty lot. A third option exists just north of the gravel parking lot at the corner of Charles and Seymour Streets.

Two downgradient wells will be located south of the site close to Anitec's plant. There may be some difficulty in well placement, since there is a paved road (approximately fifteen feet wide) along the southern fence line of the site. Since the parking lot is fenced in and no longer used, it may be possible to drill the wells through the pavement in order to take them as far away from the old disposal area as possible. Wells placed on Anitec's property would most likely interfere with plant operation, so this option is not being pursued.

The two downgradient wells will be placed to gain the best information on site stratigraphy and groundwater flow. If a contaminant plume is identified through the geophysical survey, at least one of the wells will be placed to sample from that plume.

If borings are not completed on the same day they are started, a mechanism to ensure their integrity will be devised. The consultant will provide NYSDEC with their plan for this contingency.

During drilling operations, the open hole and split spoon samples will be monitored with an HNU or OVA (or similar instrument). If the site is found or suspected of discharging gases near or above explosive limits, then drilling operations will be monitored with an explosimeter/oxygen meter.

Following construction of the monitoring wells, each well will be developed as soon as it has fully stabilized and as soon as practically possible before or during the drilling operation at the next well. Groundwater elevations will be taken in each well before and immediately following proper development. Each well will be developed to the point that the turbidity of the recovered well water is 50 Nephelometric Turbidity Units (NTU's) or less. A nephelometer shall be brought to the field for the purpose of making this measurement. A signed statement stating that the turbidity in each well was 50 NTU or less immediately after development will be provided to NYSDEC if a Department representative is not present when measurements are made.

Permeability testing of each monitoring well will be performed after well development. The slug test method is preferable, where a known volume of water is introduced to the well and the water level recovery is recorded.

Well locations and elevations for all on-site wells will be surveyed by a licensed surveyor to allow for accurate water level measurements and development of groundwater contour maps. Each well elevation will be determined relative to a USGS datum, if available within 200 feet of the site, or a permanent point set in the field. The top-of-casing measurement for each well will be accurate to the nearest 0.01 foot, and the ground surface adjacent to the well shall be measured to the nearest 0.1 foot. The distance between wells will be measured to a two-foot accuracy.

Prominent surface water levels will also be measured to the nearest 0.01 foot in order to augment groundwater measurements, particularly when the surface water is known or believed to represent an above-ground extension of the water table.

All well locations in Figure 1 are approximate. Final locations will be determined after the geophysical analysis has been performed and data has been reduced and interpreted. Completed well logs shall be prepared and submitted with the Phase II report.

Refer to the Generic Work Plan and Exhibits 3 and 4 for specific monitoring well construction and soil classification requirements.

Sampling and Analysis: Where required by NYSDEC, sampling and chemical analyses will be performed by the consultant. This includes split spoon samples for chemical analysis when it is suspected or confirmed by HNU or OVA that soils are contaminated. During all sampling episodes, the consultant will follow the QA/QC and chain-of-custody protocols as referred to in the Generic Work Plan and as described in the New York State Contract Laboratory Protocols document. NYSDEC's chosen sampling locations (which may be upgraded or modified by the consultant) are indicated in Figure 1, with sampling and chemical analyses summaries specified in Tables 2 and 3, respectively.

Where dilution of any Phase II sample is to be done by the chemical analytical laboratory prior to analysis, NYSDEC is to be advised immediately. The concern is that a component of low concentration, but of significant environmental impact, could become so diluted that is presence in the final extract will not be detected.

During this contact, the NYSDEC chemist will discuss alternatives with the laboratory's chemist on how best to conduct the analysis. NYSDEC chemist is Mr. John Rankin, telephone (518) 457-3252.

Although a method or extra work may be agreed upon by both chemists, clearance for any extra cost must be obtained by the consultant from the NYSDEC contract manager. Such cost will be paid from the contingency amount in the contract, and clearance must be confirmed by NYSDEC in writing.

At least one sample each from the three monitoring wells will be collected for laboratory analysis. Surface water does not exist, per se, at this site. A 66-inch storm sewer line runs underground beneath Anitec's plant to its discharge point at the Chenango River. It is known as the Trout Brook line, perhaps due to incorporation of a stream by the same name. The topographical map shows a small stream which disappears from the map in the vicinity of Wilson School, south of Prospect Street.

It would seem inappropriate to sample this flow as surface water, since any contamination found could not positively be attributed to the GAF Dump. Water from this line was sampled by the Broome County Health Department in 1971 and was found to seriously violate state pollution control laws. The water in the line was determined to represent industrial wastes, cooling water wastes, and storm water from the then GAF plant, plus a small amount of storm water from a portion of Prospect Street.

Since it is not known whether these conditions still exist, it will suffice to say that surface water sampling will not occur at the GAF Dump site.

The alleged waste disposal practice (i.e. dumping liquid on the ground surface) suggests that limited soil sampling should be done in lieu of surface water sampling. Samples shall be taken from various depths by using a hand auger. A total of six soil samples will be taken from a depth of three to four feet at locations spread around the site. In addition, soil samples from the two downgradient locations shall be taken at a depth of ten feet. One additional sample shall be taken from off-site for background information.

These nine soil samples will be analyzed for Hazardous Substance List (HSL) metals. GAF's representative indicated that GAF dumped silver smelting slag on-site in 1964, and sampling of Trout Brook detected silver and zinc. Other heavy metal wastes used by GAF Corp. may be detected in soil samples.

Where determined by NYSDEC or the consultant's field representative that additional chemical analyses are required for soil samples from well drilling activities, the consultant must be prepared to obtain such samples for shipment to a laboratory. Pricing for this activity must be included. For costing purposes, assume one sample per well for analysis.

Water samples will be analyzed for volatile organics (VOA's), pesticides/PCB's, base-neutral-acids (BNA's), and HSL metals. Refer to Table 3 for details on chemical analysis of samples. One trip blank (VOA only) and one field blank will be analyzed with the water samples.

Air monitoring, consisting of a site survey with a detection instrument such as an HNU or OVA, shall occur upon arrival at the site. This air monitoring is separate from monitoring that is part of the health and safety plan. If a source of air contamination is identified, the air will be sampled using appropriate equipment to determine the nature and concentration of the contaminant. Upwind air samples will also be analyzed at the same time. Wind direction must be continuously monitored and documented during any sampling and analysis of air samples.

Health and Safety Plan

The consultant will observe the provisions of the health and safety plan during drilling and sampling activities.

It is anticipated that Level D protection will be necessary on the site. If, during the investigation, it is determined that the level of protection should be upgraded, the consultant shall prepare a site-specific health and safety plan appropriate for the level of protection required.

Report

The report shall follow the format outlined in the Phase II Generic Work Plan, and shall be in accordance with Article 49 of the consultant contract.

Quality Assurance Plan

The Quality Assurance Plan will be submitted as a separate document.

Table 1

Phase II Work Plan - Task Description

GAF Dump

Tasks		Description of Task
II-A	Prepare and update work plan	Will be done by NYSDEC.
II-B	Conduct records search/data compilation	Review Phase I information and any additional information.
II-C	Site reconnaissance	Has been done by NYSDEC.
II-D	Conduct geophysical studies	Conduct geophysical survey. Based on the study, revise the location of monitoring wells, if needed, for approval by NYSDEC.
II-E	Install and develop monitoring wells	Install three wells. The borings will be drilled to a depth of approximately 50 feet.
	Soil samples during drilling	During drilling, soil samples collected at 5-ft. intervals, and at changes in lithologies. Perform grain size analysis and Atterberg limits. Rock core samples collected continuously.
II-F	Perform sampling and analysis	Refer to Tables 2, 3 and "Sampling and Analysis".
II-G	Conduct site assessment	A preliminary site contamination assessment will be conducted to complete the final HRS score and HRS documentation records.
II-H	Report preparation	Prepare final report containing significant Phase I information, additional field data, final HRS score, HRS documentation records, and site assessments.
II-I	Project management	Project coordination, administration and reporting.

Table 2

Phase II Work Plan - Sampling Summary

GAF Dump

Designation	Location	Aquifer Screened	Approx. Boring Depth (ft)	Length of Screen (ft)
Groundwater				
GW-1	Upgradient	Overburden	50	10
GW-2	Downgradient	Overburden	50	10
GW-3	Downgradient	Overburden	50	10
Surface Water				
None				
Sediment				
None				
Soil (refer to Figure 1 and text of work plan)				
SS-1 to SS-9				
Leachate				
None				

NOTE: Locations, aquifer screened, approximately boring depth, length of screen are based on existing data and are the basis of the cost estimate. These criteria may change based on the results of the geophysical surveys and/or field conditions.

TABLE 3
NYSDEC - RECOMMENDED CHEMICAL ANALYSES - GAF Dump

	Type of Analyses(1)				
Type of Sample	HSL(2) Metals	HSL(3) Volatiles	HSL(4) Semi-Volatiles	HSL(5) Pesticides/PCBs	Spike/Duplicate(6)
Groundwater(7)	4	4	4	4	1/1
Surface Water	---	---	---	---	---
Sediment	---	---	---	---	---
Soil	9	---	---	---	1/1
Blanks (Trip and Field)	1	2	1	1	---

(1) Complete identification per NYSDEC Generic Work Plan, Section 3(b)(ii)(B). Field pH, conductivity and temperature measurements will be conducted on all water samples. Also pH, specific conductance, Chemical Oxygen Demand (COD), Total Dissolved Solids (TDS) and Total Suspended Solids (TSS) measurements will be made at the laboratory for all water samples.

(2) HSL Metals - Preparation and analysis of the 15 Task 1 and 9 Task 2 inorganic compounds using the specified CLP methods.

(3) HSL Volatiles - Preparation and analysis using the CLP specified GC/MS method for HSL purgeable organics plus a library search for and the quantification of any additional non-HSL compounds (the CLP requires the library search only for the 10 non-HSL compounds of largest apparent concentration).

(4) HSL Semi-Volatiles - Preparation and Analysis using the CLP specified GC/MS method for HSL Extractable Base/Neutral and Acid Organic compounds plus a library search for and the quantification of any additional non-HSL compounds (the CLP requires the library search only for the 20 non-HSL compounds of largest apparent concentration).

(5) HSL Pesticides/PCBs - Preparation and pre-extraction of the HSL organochloride pesticides and polychlorinated biphenyls using the CLP specified GC-ECD method

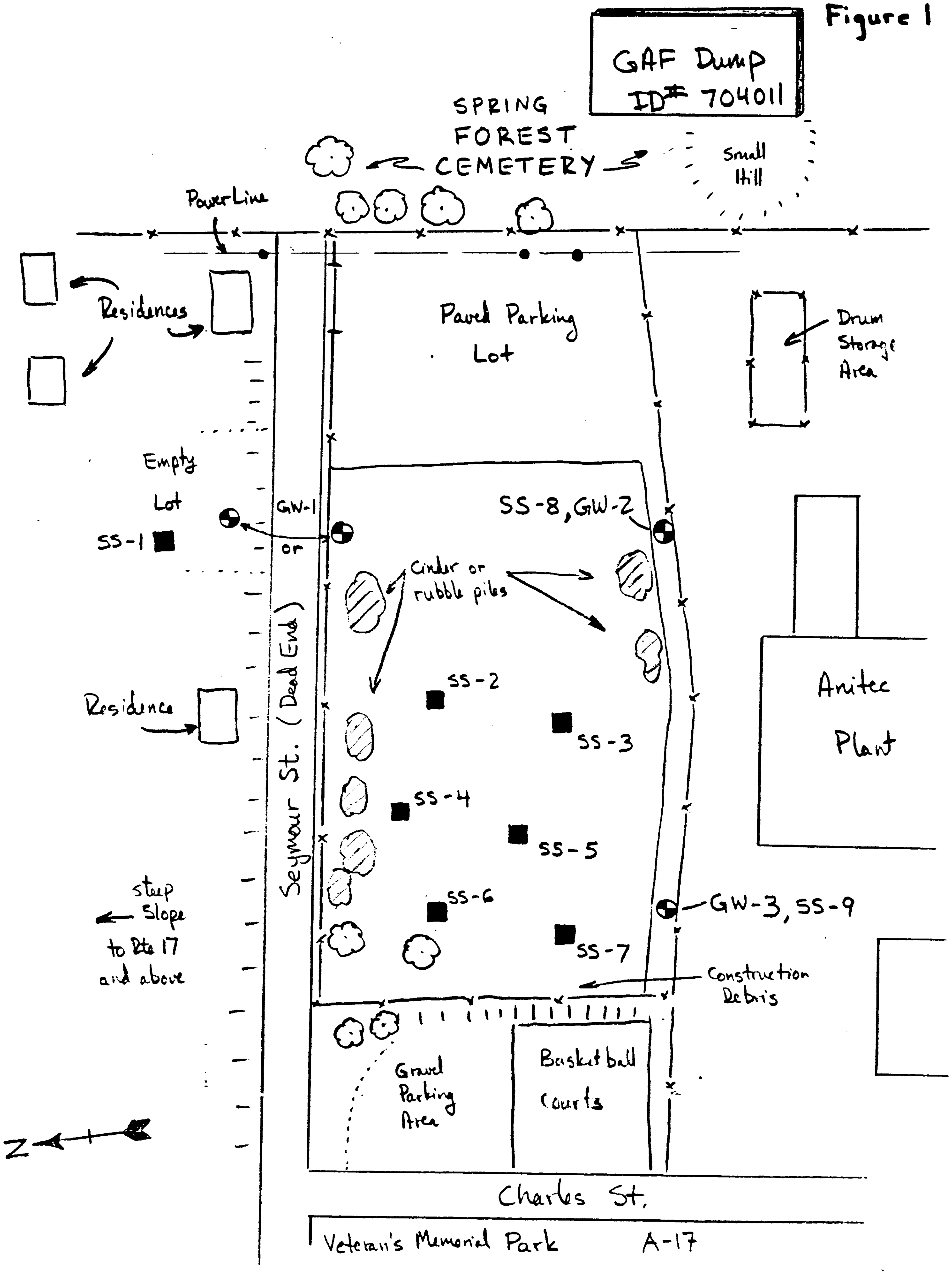
(6) Superfund and Contract Laboratory Protocol, January 1985, requires at least one spiked sample analysis and one duplicate sample analysis from each group of samples of a similar matrix type for each case of samples or for each 20 samples received, whichever is more frequent.

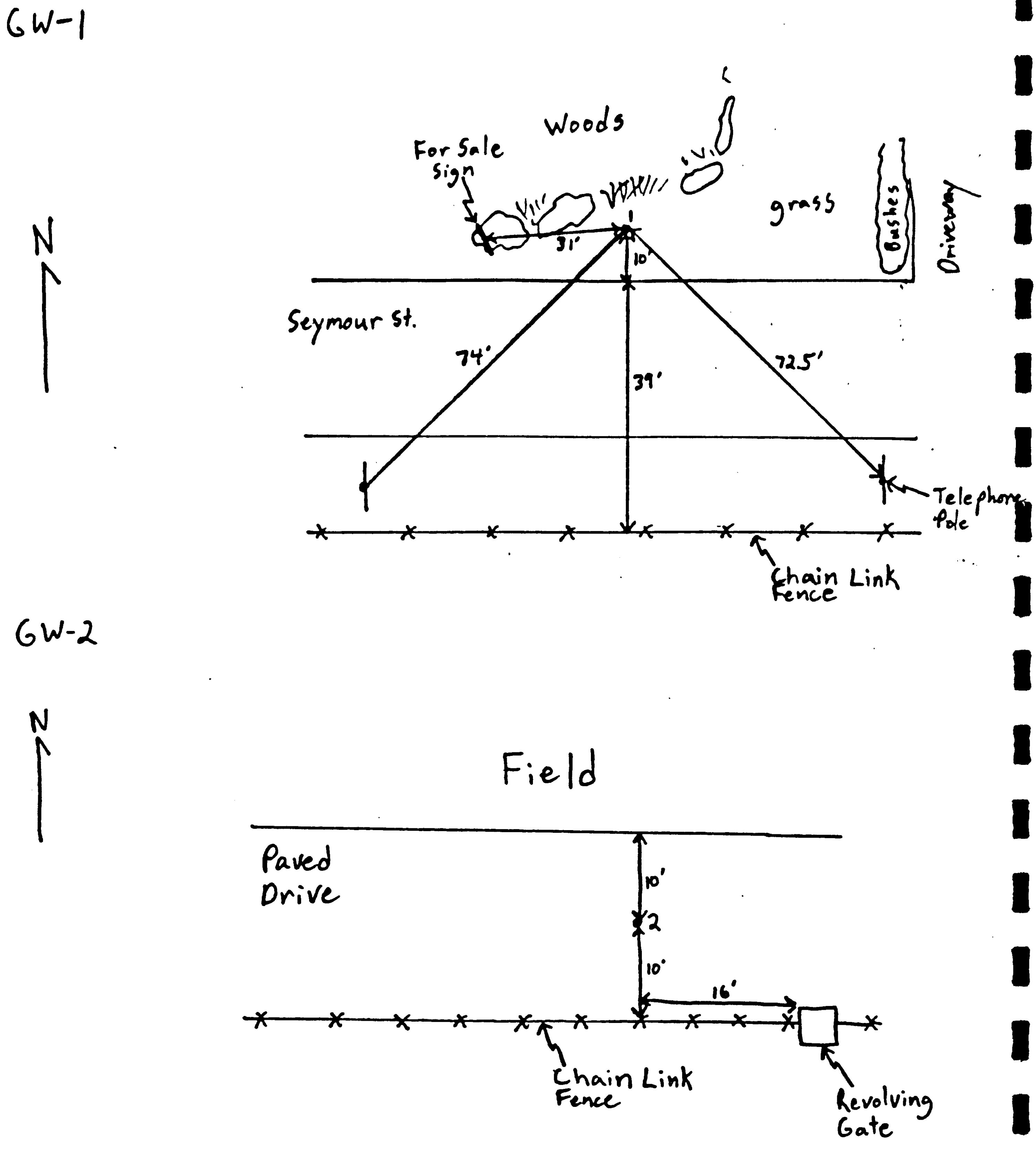
--- Designates that no samples are to be analyzed.

(7) The reason for one additional groundwater sample is that a duplicate sample must be obtained from a monitoring well chosen at random. That duplicate sample must not be identified as a duplicate to the laboratory, but must be assigned an identifier similar to other groundwater samples.

The Bureau requires the blind analysis of a duplicate sample for each site by the laboratory, to confirm the integrity of all sampling and analytical activities.

Figure 1

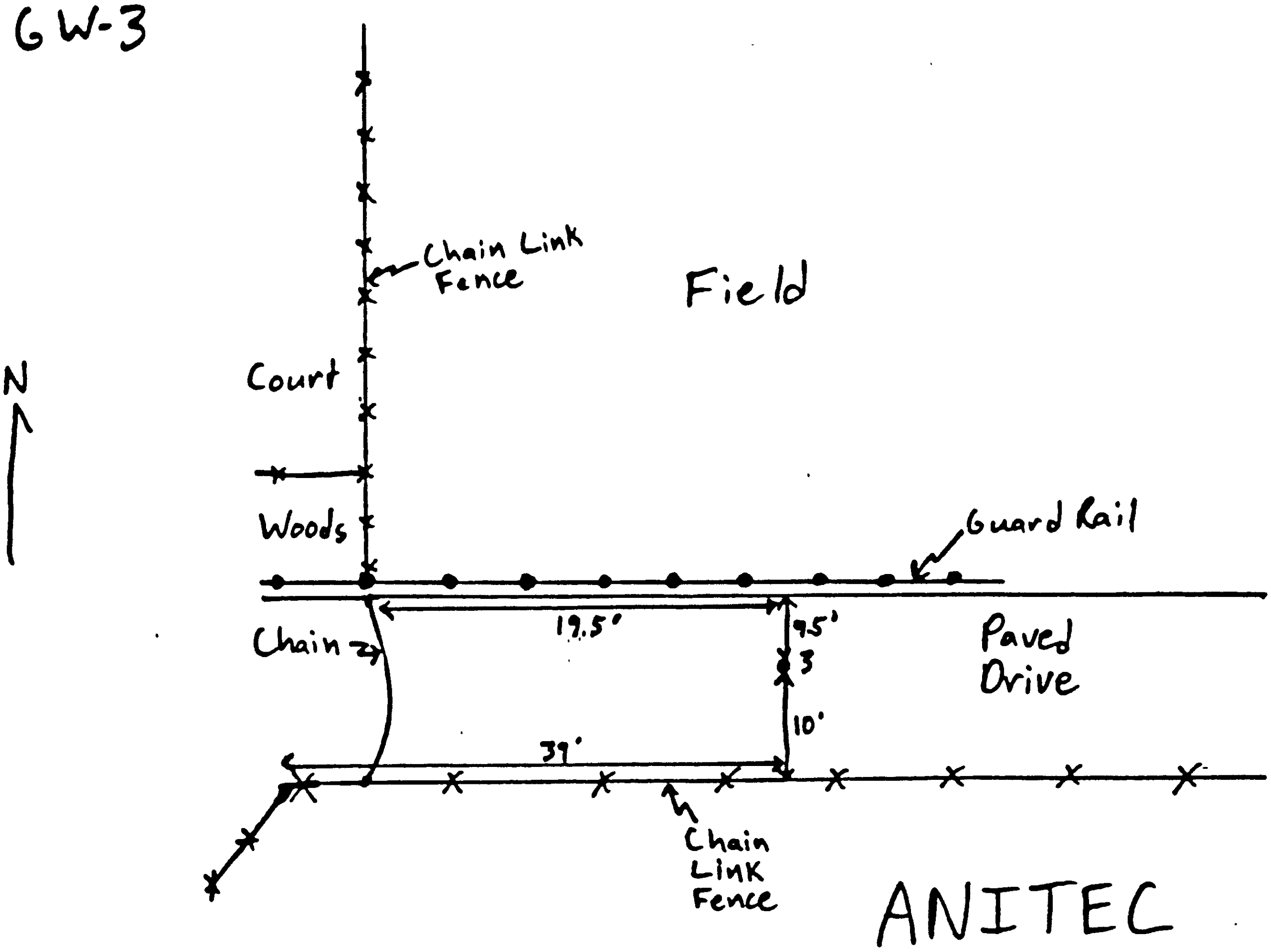

GAF Dump
ID# 704011
SPRING FOREST CEMETERY
Small Hill
Power Line
Residences
Paved Parking Lot
Drum Storage Area
Empty Lot
GW-1
or
SS-1
SS-8, GW-2
Cinder or rubble piles
SS-2
SS-3
SS-4
SS-5
SS-6
SS-7
GW-3, SS-9
Residence
Seymour St. (Dead End)
Anitec Plant
steep Slope to Rte 17 and above
Construction Debris
Gravel Parking Area
Basketball Courts
Charles St.
Veteran's Memorial Park
N



SITE SKETCH 2
DETAILS

Figure 3.

GW-3



SITE SKETCH 3
DETAILS

IV. GEOPHYSICAL REPORT

CONSULTING GROUND-WATER
GEOLOGISTS AND ENGINEERS
ROUX ASSOCIATES INC
ROUX
THE HUNTINGTON ATRIUM
775 PARK AVENUE
SUITE 255
HUNTINGTON, NEW YORK 11743

IV-1

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Geophysical Survey
Phase II Investigations
GAF Dump
City of Binghamton/Broome County
Site ID #704011

Prepared For
Gibbs & Hill

August 1988

Prepared By

ROUX ASSOCIATES, INC.
Huntington Atrium
775 Park Avenue
Suite 255
Huntington, New York 11743

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CONTENTS

FIGURES

TABLES

INTRODUCTION

Geophysical surveys were conducted at the GAF Dump site on August 10, 1988 to characterize subsurface conditions. A magnetometer was used at proposed monitoring well locations to detect ferromagnetic objects which might be encountered during drilling. A resistivity survey was performed to determine the depth to the water table and to locate anomolies which could indicate ground-water quality changes resulting from the landfill. A terrain conductivity survey was performed to characterize shallow subsurface conditions.

METHODS OF INVESTIGATION

Magnetometer

The Schonstedt Model GA-52B flux-gate magnetometer used for the survey provides a continuous audio signal which increases from the idling frequency of 40 H_z as surface and/or subsurface ferromagnetic material is approached.

The well locations were furnished by the NYSDEC as shown on Figure 1. At each proposed well location, an area of approximately 300 square feet was screened in detail with the magnetometer. If no detections of ferromagnetic material were made within the survey area, the location center was marked with red spray paint indicating the proposed well number. If detections were made, the surrounding area was screened until a clear location was found. Before leaving the area, distances from permanent site markers were recorded.

Terrain Conductivity

A Geonics Model EM-31D non-contacting terrain conductivity meter was used to locate anomolies in ground conductivity. The instrument has a nominal operational depth of about six meters. Readings, given in millimhos per meter, are influenced by shallow materials more strongly than by those located deeper.

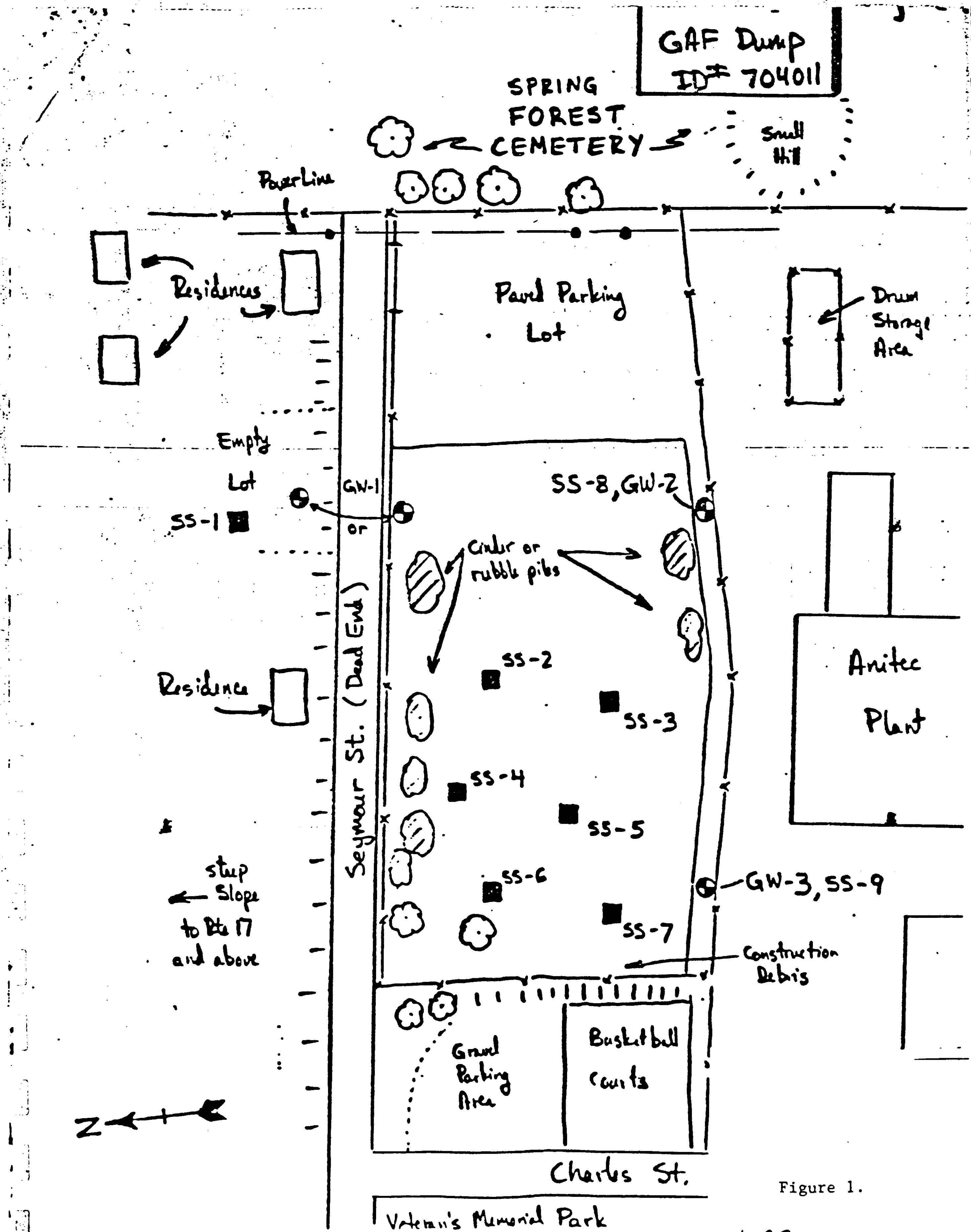
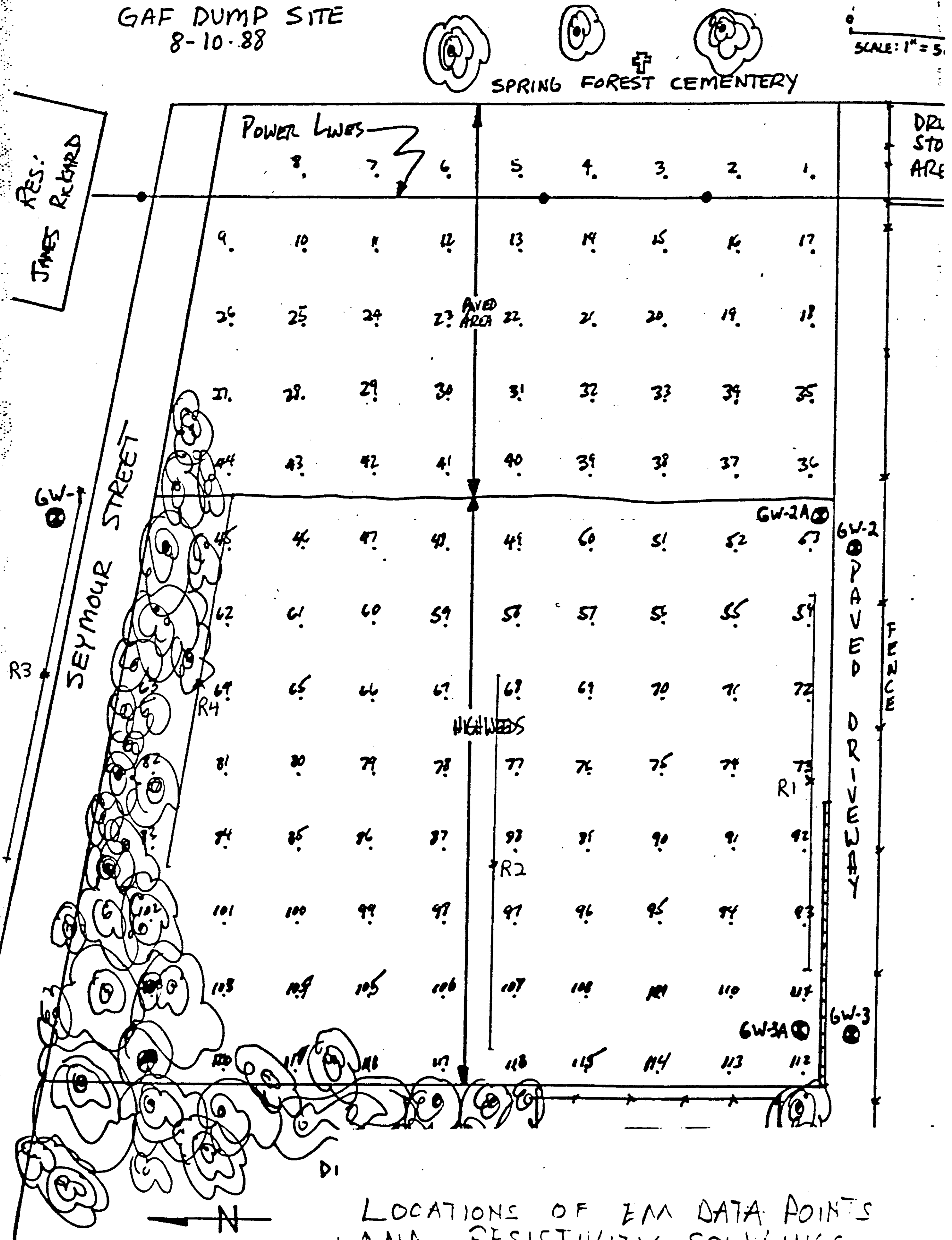

GAF Dump
ID# 704011
SPRING FOREST CEMETERY
Small Hill
Power Line
Residences
Paved Parking Lot
Drum Storage Area
Empty Lot
GW-1
or
SS-1
SS-8, GW-2
Cinder or rubble piles
Residence
Seymour St. (Dead End)
SS-2
SS-3
Anitec Plant
SS-4
SS-5
steep Slope to Rte 17 and above
SS-6
SS-7
GW-3, SS-9
Construction Debris
Gravel Parking Area
Basketball courts
Z
Charles St.
Veteran's Memorial Park

Figure 1.



LOCATIONS OF EM DATA POINTS AND RESISTIVITY SOUNDINGS

Figure 2.

The survey was conducted with the instrument set up to record the quadrature component of the magnetic field. A 30-by-30 foot grid pattern was referenced to permanent site locations so that the survey may be reproduced if necessary. To detect nearby lateral changes in conductivity, two readings were taken at each grid node, perpendicular to each other. The instrument was calibrated according to the manufacturers specifications prior to the survey.

Resistivity

A Bison 2350B resistivity meter was used to measure earth resistivity. The Lee Electrode Arrangement was used exclusively. The instrument was calibrated according to the manufacturers specifications prior to the survey. Soundings were performed using ten foot electrode spacing increments beginning at ten feet and ending at the fifty foot spacing.

DISCUSSION OF RESULTS

Magnetometer

A magnetometer survey was conducted at the locations of the proposed monitoring wells to detect potential drilling obstructions. No buried ferromagnetic anomolies were detected at the proposed well locations (Figure 2, and Figures 3-5).

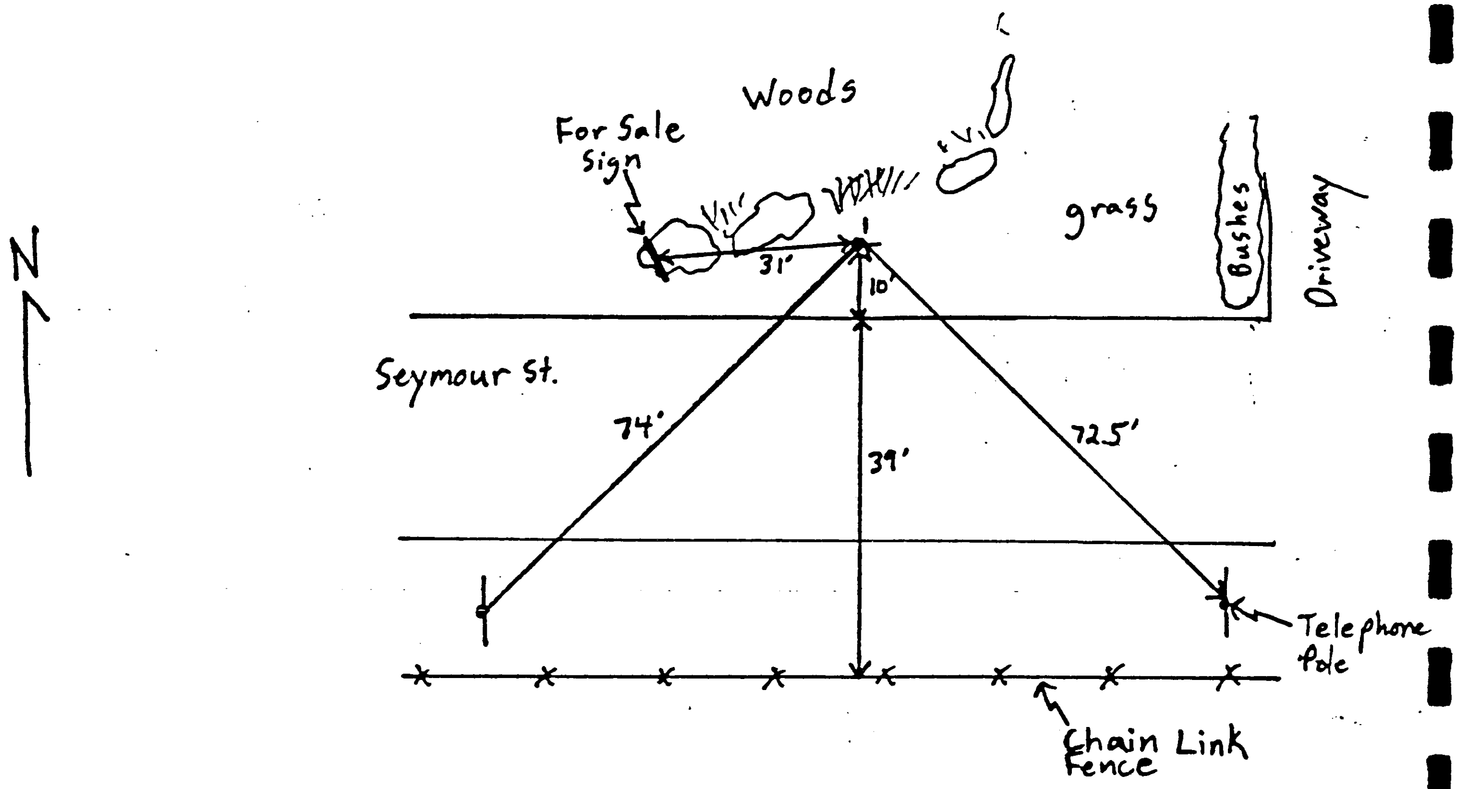
Terrain Conductivity

The EM-31 is a geophysical instrument which induces a magnetic field to characterize terrain conductivity. The instrument will respond to changes in geology, ground-water quality and man-made conductive objects to a depth of about six meters. Interpretation of the data is limited because information regarding these factors was not available.

A terrain conductivity survey was conducted using a 30-by-30 foot grid which was keyed into locations of existing monitoring wells so that the survey may be reproduced at some later date if necessary.

Data point locations and readings are shown on Figure 2 and data are presented in Table 1. Figure 6 shows contoured EM-31 data. Higher areally extensive terrain conductivity was recorded at the southwest portion of the site. The area corresponds with that

GW-1



GW-2

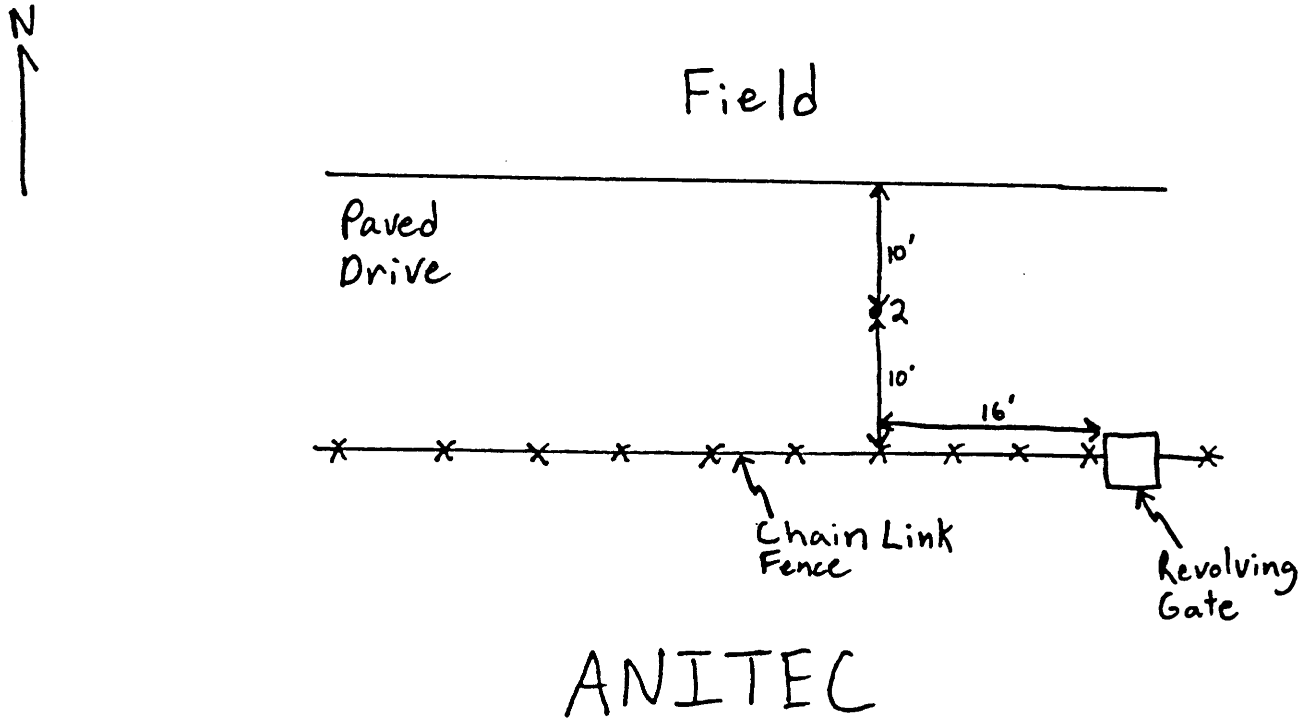
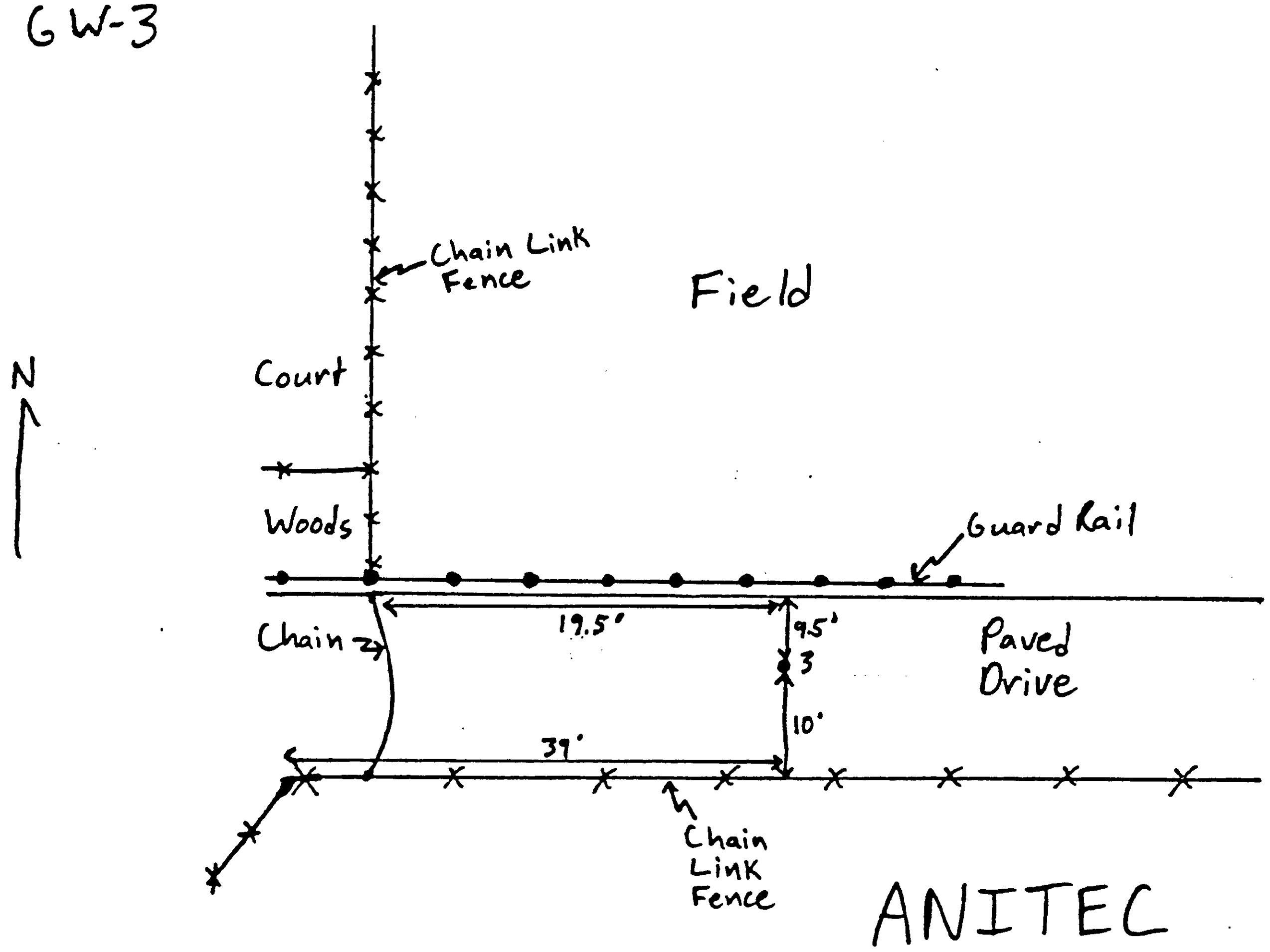


Figure 3.

GW-3



Alternate GW-2

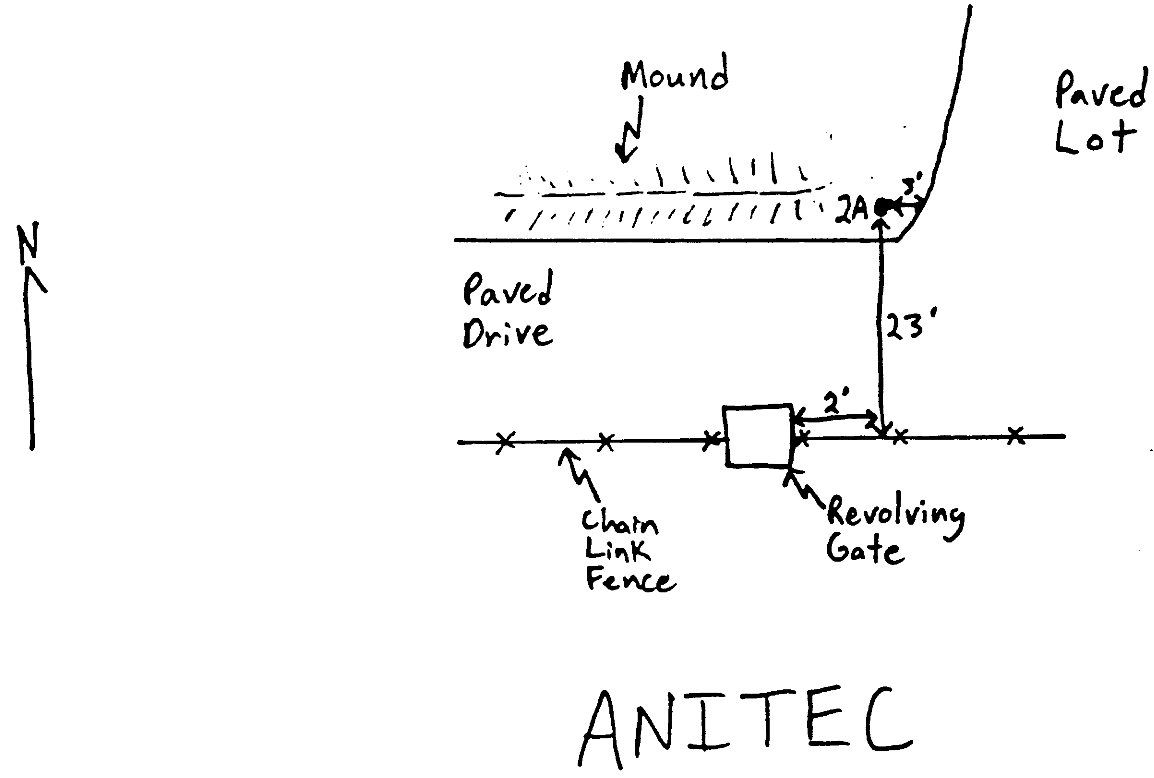


Figure 4.

Alternate GW-3

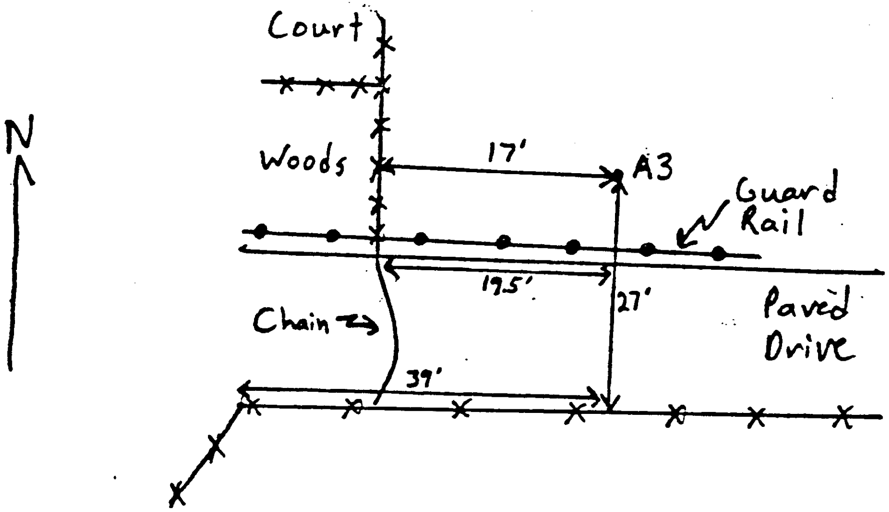
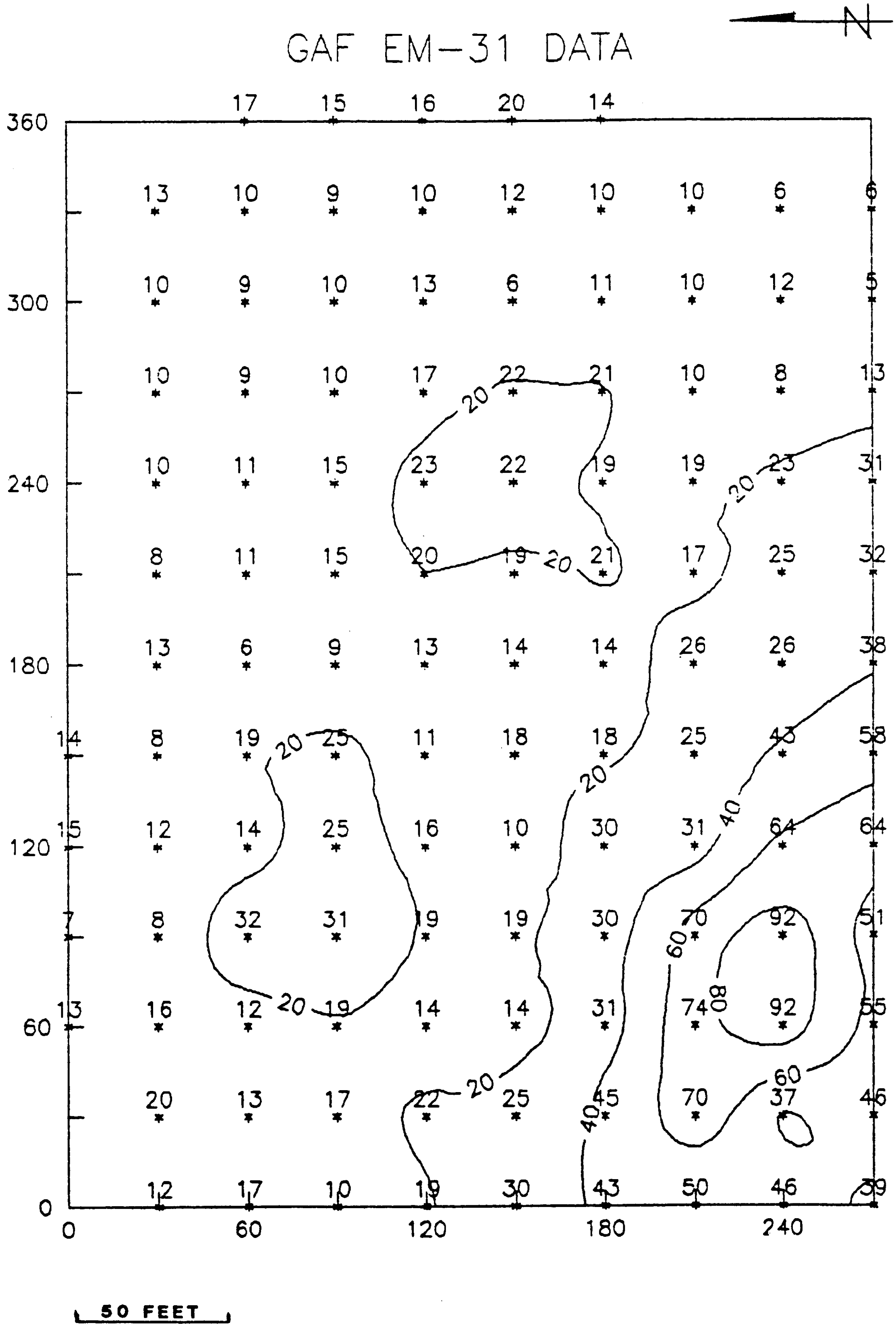


Figure 5.



GAF EM-31 DATA

Terrain Conductivity
IN mmhos/m

Figure 6.

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Table 1.

TERRAIN CONDUCTIVITY DATA SHEET

GEONICS EM31 - QUADRATURE-PHASE COMPONENT SURVEY

CLIENT - GIBBS & HILL OPERATOR(S)- DAY, SHEEHAN

SURVEY DATE - 8/10/88

LOCATION -GAF DUMP NYSDEC # 704011

COMMENTS -WEATHER - SUNNY 80'S

AREA GRID SURVEY

DATA POINT NAME	"p"(1) METER READING	METER SCALE	"p" READING (mmhos/m)	"t"(2) METER READING	METER SCALE	"t" READING (mmhos/m)	AVERAGE READING (mmhos/m)
1	1.50	30	15.00	-	-	-	-
2	1.70	30	17.00	-	-	-	-
3	1.20	30	12.00	-	-	-	-
4	2.15	30	21.50	0.66	10	6.60	14.05
5	2.30	30	23.00	1.75	30	17.50	20.25
6	1.75	30	17.50	1.45	30	14.50	16.00
7	1.90	30	19.00	1.10	30	11.00	15.00
8	2.25	30	22.50	1.10	30	11.00	16.75
9	1.30	30	13.00	1.20	30	12.00	12.50
10	0.94	10	9.40	0.96	10	9.60	9.50
11	0.93	10	9.30	0.84	10	8.40	8.85
12	1.05	30	10.50	1.00	30	10.00	10.25
13	1.15	30	11.50	1.20	30	12.00	11.75
14	1.00	30	10.00	1.00	30	10.00	10.00
15	0.91	10	9.10	1.10	30	11.00	10.05
16	0.92	10	9.20	0.36	10	3.60	6.40
17	0.78	10	7.80	0.48	10	4.80	6.30
18	0.35	10	3.50	0.64	10	6.40	4.95
19	1.20	30	12.00	1.20	30	12.00	12.00
20	1.00	30	10.00	1.00	30	10.00	10.00
21	0.96	10	9.60	1.20	30	12.00	10.80
22	0.45	30	4.50	0.75	30	7.50	6.00
23	1.30	30	13.00	1.30	30	13.00	13.00
24	0.90	30	9.00	1.05	30	10.50	9.75
25	0.90	30	9.00	0.90	30	9.00	9.00
26	0.80	30	8.00	1.15	30	11.50	9.75
27	1.00	30	10.00	1.05	30	10.50	10.25
28	0.93	30	9.30	0.80	30	8.00	8.65
29	0.97	30	9.70	1.05	30	10.50	10.10
30	1.70	30	17.00	1.75	30	17.50	17.25

(1) - READING TAKEN WITH INSTRUMENT AXIS IN A NORTH-SOUTH DIRECTION.
(2) - READING TAKEN WITH INSTRUMENT AXIS IN AN EAST-WEST DIRECTION.

Table 1. (cont.)

TERRAIN CONDUCTIVITY DATA SHEET

GEONICS EM31 - QUADRATURE-PHASE COMPONENT SURVEY

CLIENT - GIBBS & HILL OPERATOR(S)- DAY, SHEEHAN

SURVEY DATE - 8/10/88

LOCATION -GAF DUMP NYSDEC # 704011

COMMENTS -WEATHER - SUNNY 80'S

AREA GRID SURVEY

DATA POINT NAME	"p"(1) METER READING	METER SCALE	"p" READING (mmhos/m)	"t"(2) METER READING	METER SCALE	"t" READING (mmhos/m)	AVERAGE READING (mmhos/m)
31	2.20	30	22.00	2.15	30	21.50	21.75
32	2.05	30	20.50	2.10	30	21.00	20.75
33	1.20	30	12.00	0.85	30	8.50	10.25
34	0.68	10	6.80	0.91	10	9.10	7.95
35	1.20	30	12.00	1.40	30	14.00	13.00
36	2.80	30	28.00	0.33	100	33.00	30.50
37	2.20	30	22.00	2.30	30	23.00	22.50
38	1.90	30	19.00	1.95	30	19.50	19.25
39	1.80	30	18.00	2.00	30	20.00	19.00
40	1.50	30	15.00	2.80	30	28.00	21.50
41	2.40	30	24.00	2.25	30	22.50	23.25
42	1.50	30	15.00	1.40	30	14.00	14.50
43	1.15	30	11.50	1.05	30	10.50	11.00
44	1.05	30	10.50	1.00	30	10.00	10.25
45	1.20	30	12.00	0.48	10	4.80	8.40
46	1.40	30	14.00	0.84	10	8.40	11.20
47	1.50	30	15.00	1.50	30	15.00	15.00
48	1.95	30	19.50	2.00	30	20.00	19.75
49	1.90	30	19.00	1.80	30	18.00	18.50
50	1.70	30	17.00	2.55	30	25.50	21.25
51	1.80	30	18.00	1.60	30	16.00	17.00
52	2.40	30	24.00	2.50	30	25.00	24.50
53	0.30	100	30.00	0.34	100	34.00	32.00
54	0.35	100	35.00	0.41	100	41.00	38.00
55	2.60	30	26.00	2.55	30	25.50	25.75
56	2.55	30	25.50	2.55	30	25.50	25.50
57	1.40	30	14.00	1.40	30	14.00	14.00
58	1.25	30	12.50	1.60	30	16.00	14.25
59	1.10	30	11.00	1.40	30	14.00	12.50
60	1.20	30	12.00	0.62	10	6.20	9.10

(1) - READING TAKEN WITH INSTRUMENT AXIS IN A NORTH-SOUTH DIRECTION.
(2) - READING TAKEN WITH INSTRUMENT AXIS IN AN EAST-WEST DIRECTION.

Table 1. (cont.)

TERRAIN CONDUCTIVITY DATA SHEET

GEONICS EM31 - QUADRATURE-PHASE COMPONENT SURVEY

CLIENT - GIBBS & HILL OPERATOR(S)- DAY, SHEEHAN

SURVEY DATE - 8/10/88

LOCATION -GAF DUMP NYSDEC # 704011

COMMENTS -WEATHER - SUNNY 80'S

AREA GRID SURVEY

DATA POINT NAME	"p"(1) METER READING	METER SCALE	"p" READING (mmhos/m)	"t"(2) METER READING	METER SCALE	"t" READING (mmhos/m)	AVERAGE READING (mmhos/m)
61	0.76	10	7.60	0.50	10	5.00	6.30
62	1.40	30	14.00	1.25	30	12.50	13.25
63	1.30	30	13.00	1.40	30	14.00	13.50
64	0.84	10	8.40	0.78	10	7.80	8.10
65	1.90	30	19.00	1.80	30	18.00	18.50
66	2.40	30	24.00	2.50	30	25.00	24.50
67	1.15	30	11.50	1.10	30	11.00	11.25
68	1.70	30	17.00	1.90	30	19.00	18.00
69	1.75	30	17.50	1.75	30	17.50	17.50
70	2.45	30	24.50	2.50	30	25.00	24.75
71	0.44	100	44.00	0.42	100	42.00	43.00
72	0.55	100	55.00	0.60	100	60.00	57.50
73	0.66	100	66.00	0.61	100	61.00	63.50
74	1.80	30	18.00	1.10	300	110.00	64.00
75	0.30	100	30.00	0.32	100	32.00	31.00
76	0.32	100	32.00	2.75	30	27.50	29.75
77	1.30	30	13.00	0.72	10	7.20	10.10
78	1.60	30	16.00	1.60	30	16.00	16.00
79	2.15	30	21.50	2.90	30	29.00	25.25
80	1.40	30	14.00	1.40	30	14.00	14.00
81	1.25	30	12.50	1.20	30	12.00	12.25
82	1.90	30	19.00	1.10	30	11.00	15.00
83	0.73	10	7.30	0.68	10	6.80	7.05
84	1.20	30	12.00	0.30	30	3.00	7.50
85	0.32	100	32.00	0.32	100	32.00	32.00
86	0.32	100	32.00	0.30	100	30.00	31.00
87	1.90	30	19.00	1.95	30	19.50	19.25
88	1.90	30	19.00	1.90	30	19.00	19.00
89	0.30	100	30.00	0.30	100	30.00	30.00
90	0.72	100	72.00	0.68	100	68.00	70.00

(1) - READING TAKEN WITH INSTRUMENT AXIS IN A NORTH-SOUTH DIRECTION.
(2) - READING TAKEN WITH INSTRUMENT AXIS IN AN EAST-WEST DIRECTION.

Table 1. (cont.)

TERRAIN CONDUCTIVITY DATA SHEET

GEONICS EM31 - QUADRATURE-PHASE COMPONENT SURVEY

CLIENT - GIBBS & HILL OPERATOR(S)- DAY, SHEEHAN

SURVEY DATE - 8/10/88

LOCATION -GAF DUMP NYSDEC # 704011

COMMENTS -WEATHER - SUNNY 80'S

AREA GRID SURVEY

DATA POINT NAME	"p"(1) METER READING	METER SCALE	"p" READING (mmhos/m)	"t"(2) METER READING	METER SCALE	"t" READING (mmhos/m)	AVERAGE READING (mmhos/m)
91	1.10	300	110.00	0.74	100	74.00	92.00
92	0.52	100	52.00	0.50	100	50.00	51.00
93	0.62	100	62.00	0.48	100	48.00	55.00
94	0.92	100	92.00	0.92	100	92.00	92.00
95	0.76	100	76.00	0.72	100	72.00	74.00
96	0.30	100	30.00	0.32	100	32.00	31.00
97	1.80	30	18.00	0.90	30	9.00	13.50
98	1.90	30	19.00	0.90	30	9.00	14.00
99	1.95	30	19.50	1.80	30	18.00	18.75
100	2.20	30	22.00	2.05	30	2.05	12.03
101	1.55	30	15.50	1.60	30	16.00	15.75
102	1.25	30	12.50	1.30	30	13.00	12.75
103	1.60	30	16.00	2.35	30	23.50	19.75
104	1.30	30	13.00	1.30	30	13.00	13.00
105	1.75	30	17.50	1.70	30	17.00	17.25
106	2.10	30	21.00	2.20	30	22.00	21.50
107	2.65	30	26.50	2.35	30	23.50	25.00
108	0.46	100	46.00	0.44	100	44.00	45.00
109	1.10	300	110.00	0.30	300	30.00	70.00
110	0.36	100	36.00	0.38	100	38.00	37.00
111	0.52	100	52.00	0.40	100	40.00	46.00
112	0.42	100	42.00	0.36	100	36.00	39.00
113	0.44	100	44.00	0.48	100	48.00	46.00
114	0.49	100	49.00	0.51	100	51.00	50.00
115	0.43	100	43.00	0.42	100	42.00	42.50
116	0.32	100	32.00	0.28	100	28.00	30.00
117	1.95	30	19.50	1.75	30	17.50	18.50
118	1.70	30	17.00	0.24	10	2.40	9.70
119	1.70	30	17.00	1.75	30	17.50	17.25
120	1.10	30	11.00	1.35	30	13.50	12.25

(1) - READING TAKEN WITH INSTRUMENT AXIS IN A NORTH-SOUTH DIRECTION.
(2) - READING TAKEN WITH INSTRUMENT AXIS IN AN EAST-WEST DIRECTION.

Table 1. (cont.)

TERRAIN CONDUCTIVITY DATA SHEET

GEONICS EM31 - QUADRATURE-PHASE COMPONENT SURVEY

CLIENT - GIBBS & HILL OPERATOR(S)- DAY, SHEEHAN

SURVEY DATE - 8/10/88

LOCATION -GAF DUMP NYSDEC # 704011

COMMENTS -WEATHER - SUNNY 80'S

AREA GRID SURVEY

DATA POINT NAME	"p"(1) METER READING	METER SCALE	"p" READING (mmhos/m)	"t"(2) METER READING	METER SCALE	"t" READING (mmhos/m)	AVERAGE READING (mmhos/m)

DATA POINTS 1,2,3 - COULD NOT OBTAIN ACCURATE READINGS FOR THE "t" AXIS ORIENTATION.

(1) - READING TAKEN WITH INSTRUMENT AXIS IN A NORTH-SOUTH DIRECTION.
(2) - READING TAKEN WITH INSTRUMENT AXIS IN AN EAST-WEST DIRECTION.

projected by the NYSDEC in the Phase II Work Plan to be the downgradient edge of the site. The proposed locations for GW-2 and GW-3 are situated within this area of higher conductivity.

Resistivity

The resistivity survey was conducted using multi depth soundings. Locations and directional orientation of electrode arrays are shown on Figure 2, and data are presented in Tables 2-5 and Figures 7-10.

Depth to groundwater was projected in the Phase II Work Plan to be about 30 to 40 feet below ground surface. The data do not suggest large changes in resistivity at that interval. Also, there are no patterns relating the four soundings. The site is complex geophysically.

At sounding 1, a decrease in apparent resistivity between the 10 and 20 foot electrode spacing was followed by constant readings through 50 feet. The location of sounding 1 corresponds with the area of high conductivity located with the EM-31. Sounding 2 is characterized by a decrease in resistivity through the 40 foot spacing followed by a slight increase to 50 feet. Sounding 3 shows an increase in apparent resistivity through 50 feet while sounding 4 shows consisting apparent resistivity at the 10, 20, 40, 50 foot spacings with a slight increase at 30 feet.

Table 2.

RESISTIVITY DATA SHEET

SOUNDING SURVEY
BISON 2350-B (WENNER ARRAY - LEE ELECTRODE ARRANGEMENT)

APPARENT RESISTIVITY = K(V/I)
(K = 2 a)

CLIENT - GIBBS AND HILL, INC.

OPERATOR - DAY, SHEEHAN

DATE - AUGUST 10, 1988

ARRAY AZIMUTH SEE ATTACHED FIGURE

LOCATION - GAF DUMP, SOUNDING # 1

COMMENTS - LOCATION OF CENTER ELECTRODE: SHOWN ON THE ATTACHED SCALE FIGURE.

WEATHER: HOT, HUMID

	LEE LEFT			LEE RIGHT			FULL			
[a] ELECTRODE SPACING (FT) X	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	CUMULATIVE RESISTIVITY (OHM-FT)
10	424	0.10	424	161	0.10	161	626	0.10	626	626
20	31	0.10	62	18	0.10	36	50	0.10	100	726
30	177	0.01	53	137	0.01	41	336	0.01	101	827
40	131	0.01	52	141	0.01	56	288	0.01	115	942
50	92	0.01	46	102	0.01	51	210	0.01	105	1,047

Table 3.

RESISTIVITY DATA SHEET

SOUNDING SURVEY
BISON 2350-B (WENNER ARRAY - LEE ELECTRODE ARRANGEMENT)

APPARENT RESISTIVITY = K(V/I)
(K = 2 a)

CLIENT - GIBBS AND HILL, INC.

OPERATOR - DAY, SHEEHAN

DATE - AUGUST 10, 1988

ARRAY AZIMUTH SEE ATTACHED FIGURE

LOCATION - GAF DUMP, SOUNDING # 2

COMMENTS - LOCATION OF CENTER ELECTRODE: SHOWN ON THE ATTACHED SCALE FIGURE.

WEATHER: HOT, HUMID

	LEE LEFT			LEE RIGHT			FULL			
[a] ELECTRODE SPACING (FT) X	[2 V/I] DIAL READING (OHMS) X	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	[2 V/I] DIAL READING (OHMS) X	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	[2 V/I] DIAL READING (OHMS) X	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	CUMULATIVE RESISTIVITY (OHM-FT)
10	17	1.00	170	18	1.00	180	39	1.00	390	390
20	630	0.01	126	691	0.01	138	146	0.10	292	682
30	300	0.01	90	396	0.01	119	763	0.01	229	911
40	226	0.01	90	298	0.01	119	553	0.01	221	1,132
50	228	0.01	114	251	0.01	126	516	0.01	258	1,390

Table 4.

RESISTIVITY DATA SHEET

SOUNDING SURVEY
BISON 2350-B (WENNER ARRAY - LEE ELECTRODE ARRANGEMENT)

APPARENT RESISTIVITY = K(V/I)
(K = 2 a)

CLIENT - GIBBS AND HILL, INC.

OPERATOR - DAY, SHEEHAN

DATE - AUGUST 10, 1988

ARRAY AZIMUTH SEE ATTACHED FIGURE

LOCATION - GAF DUMP, SOUNDING # 3

COMMENTS - LOCATION OF CENTER ELECTRODE: SHOWN ON THE ATTACHED SCALE FIGURE.

WEATHER: HOT, HUMID

	LEE LEFT			LEE RIGHT			FULL			
[a] ELECTRODE SPACING X (FT)	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	CUMULATIVE RESISTIVITY (OHM-FT)
10	329	0.01	33	299	0.01	30	838	0.01	84	84
20	292	0.01	58	207	0.01	41	587	0.01	117	201
30	329	0.01	99	218	0.01	65	643	0.01	193	394
40	348	0.01	139	214	0.01	86	658	0.01	263	657
50	336	0.01	168	191	0.01	96	612	0.01	306	963

Table 5.

RESISTIVITY DATA SHEET

SOUNDING SURVEY
BISON 2350-B (WENNER ARRAY - LEE ELECTRODE ARRANGEMENT)

APPARENT RESISTIVITY = K(V/I)
(K = 2 a)

CLIENT - GIBBS AND HILL, INC.

OPERATOR - DAY, SHEEHAN

DATE - AUGUST 10, 1988

ARRAY AZIMUTH SEE ATTACHED FIGURE

LOCATION - GAF DUMP, SOUNDING # 4

COMMENTS - LOCATION OF CENTER ELECTRODE: SHOWN ON THE ATTACHED SCALE FIGURE.

WEATHER: HOT, HUMID

	LEE LEFT			LEE RIGHT			FULL			
[a] ELECTRODE SPACING X (FT)	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	[2 V/I] DIAL READING X (OHMS)	SCALE MULT. =	[2 a(V/I)] APPARENT RESISTIVITY (OHM-FT)	CUMULATIVE RESISTIVITY (OHM-FT)
10	220	0.10	220	195	0.10	195	452	0.10	452	452
20	778	0.01	156	955	0.01	191	221	0.10	442	894
30	658	0.01	197	98	0.10	294	191	0.10	573	1,467
40	457	0.01	183	516	0.01	206	110	0.10	440	1,907
50	424	0.01	212	273	0.01	137	902	0.01	451	2,358

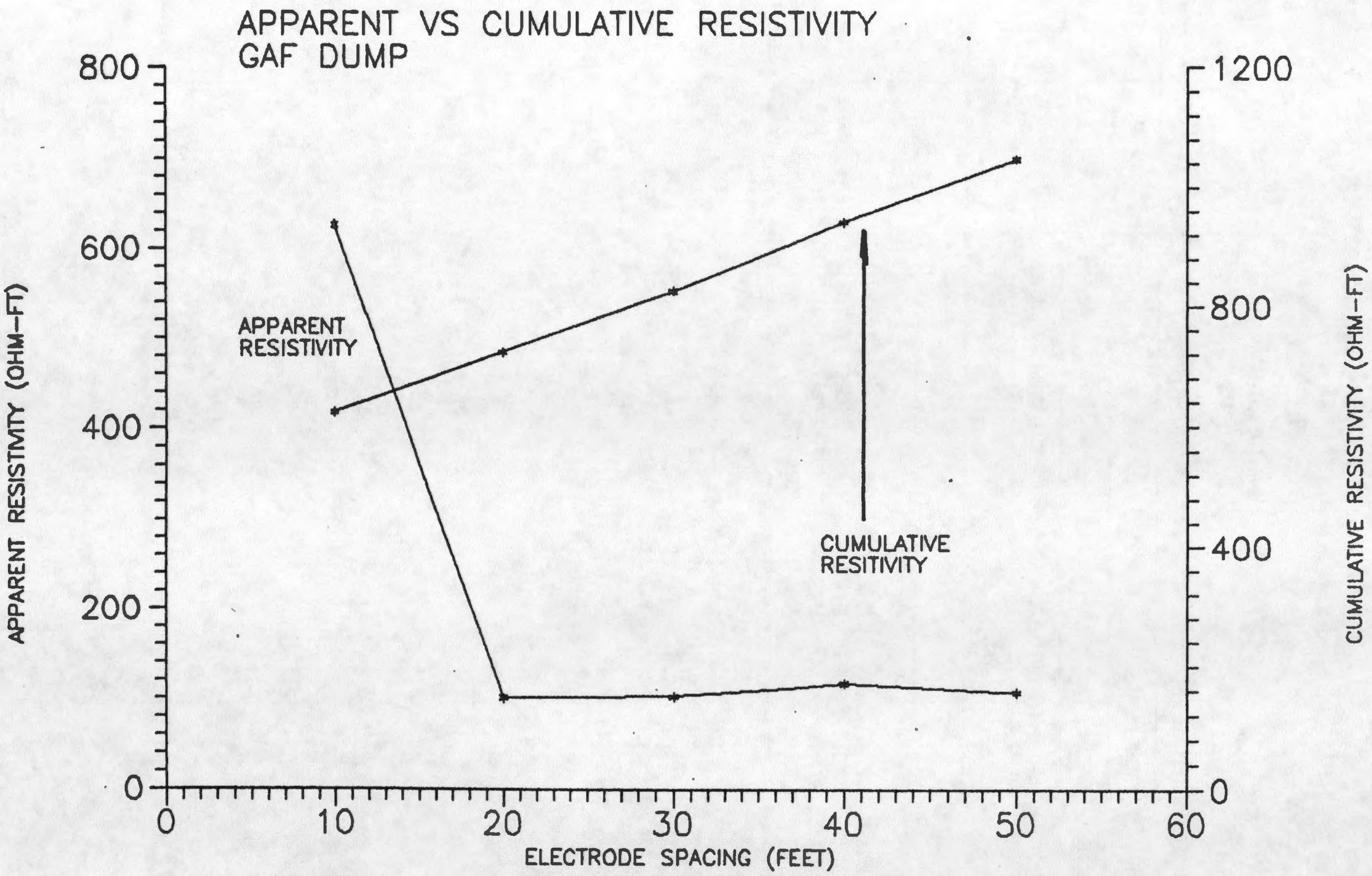


FIGURE 7. RESISTIVITY SOUNDING 1

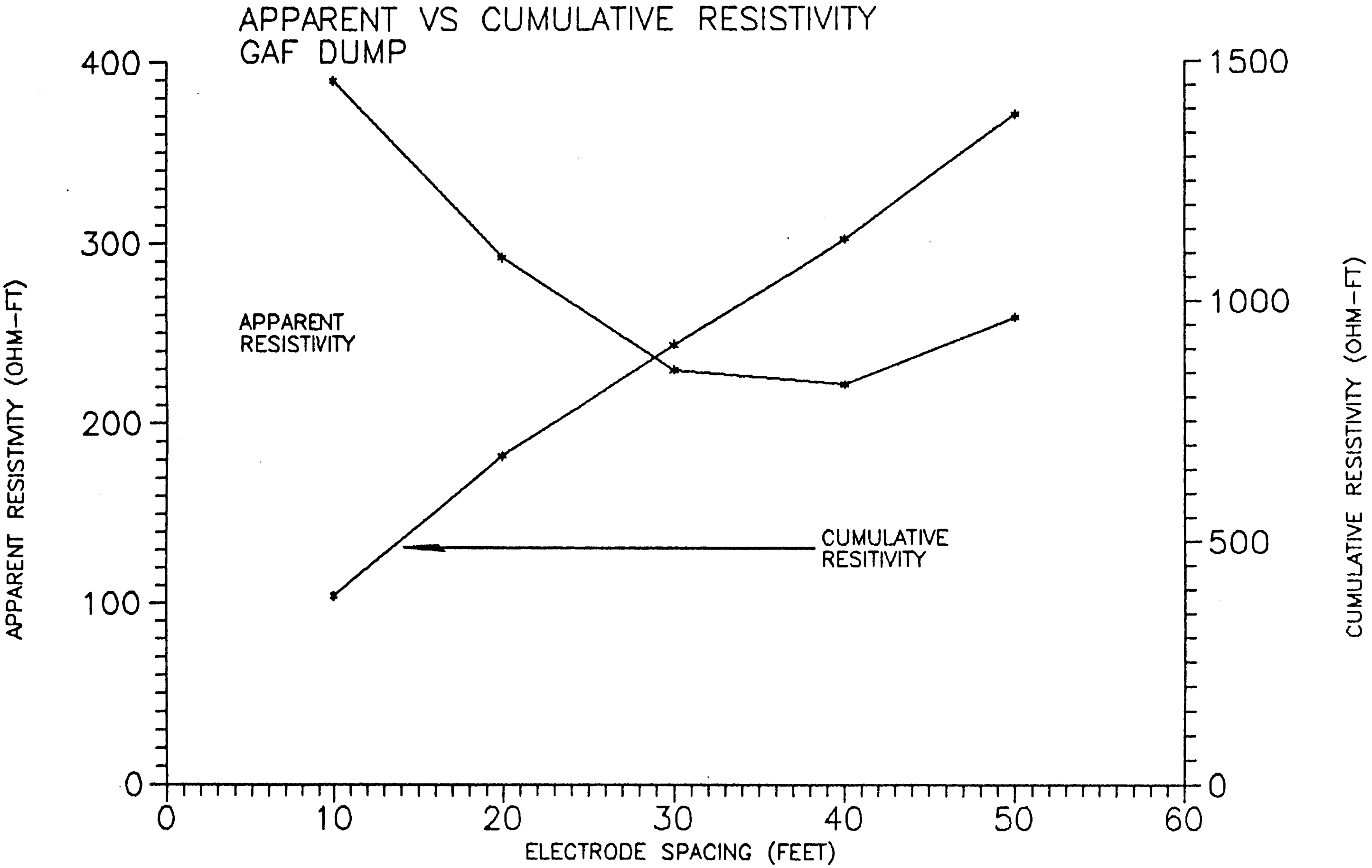


FIGURE 8 . RESISTIVITY SOUNDING 2

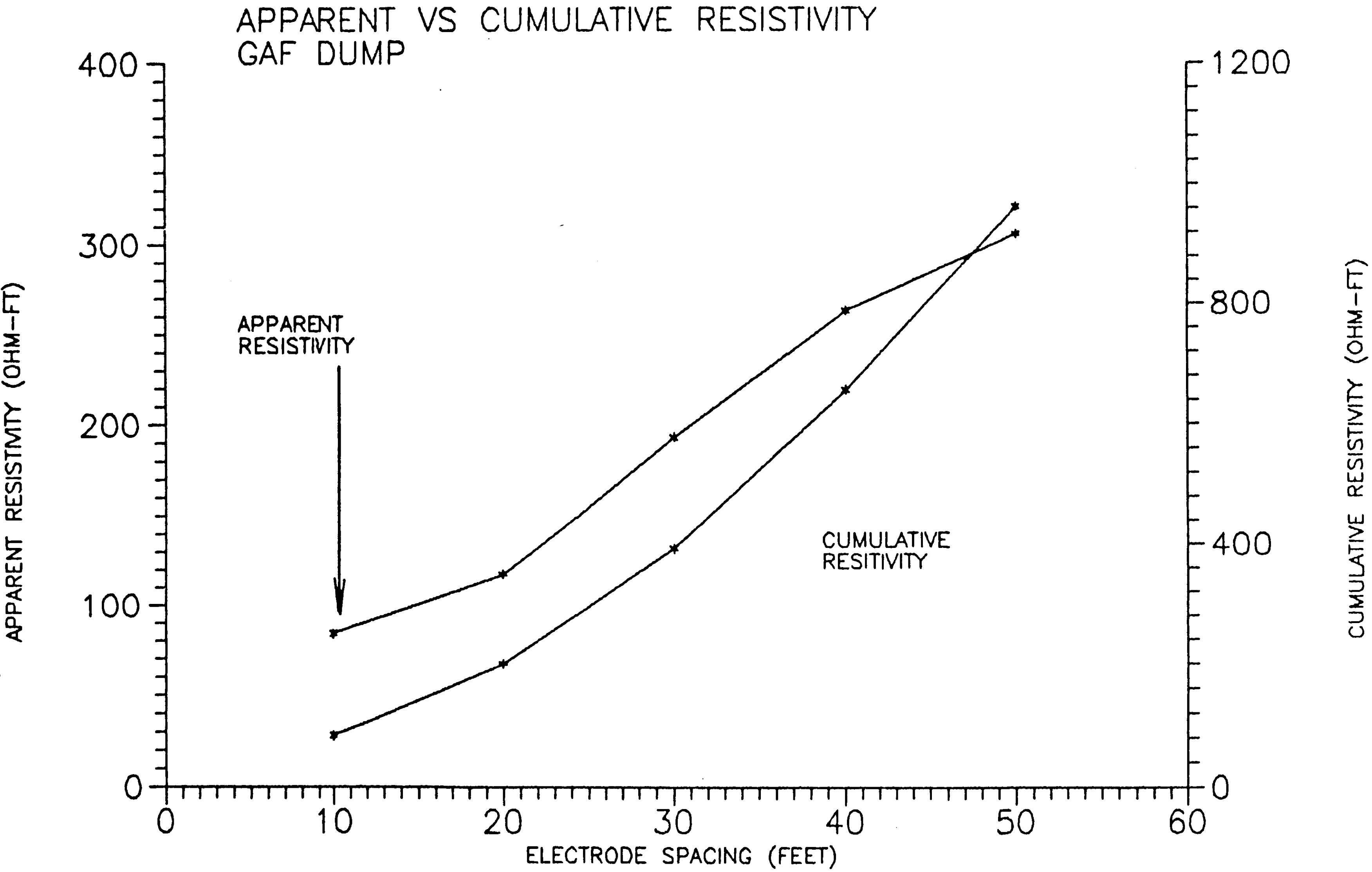


FIGURE 9. RESISTIVITY SOUNDING 3

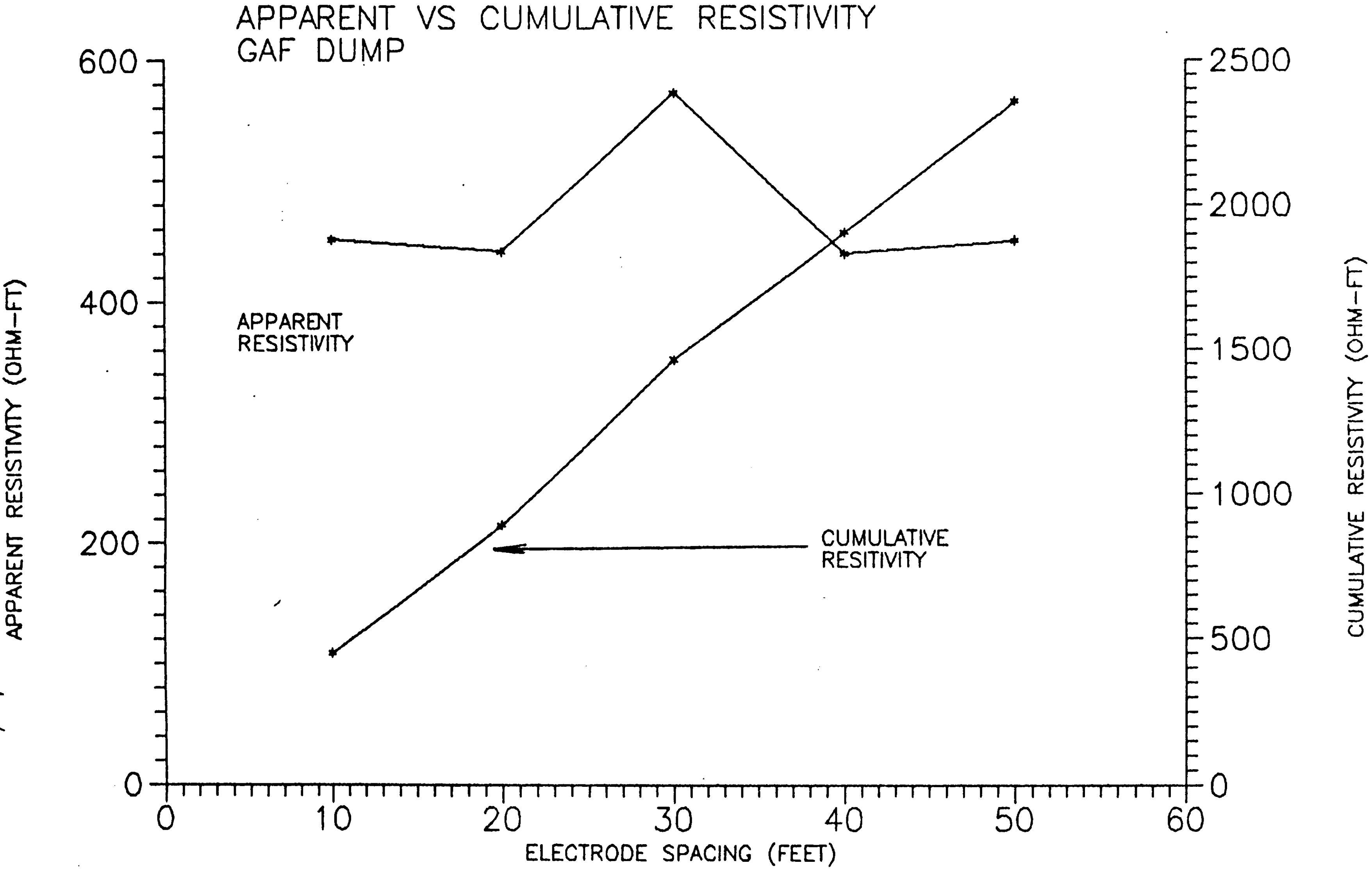
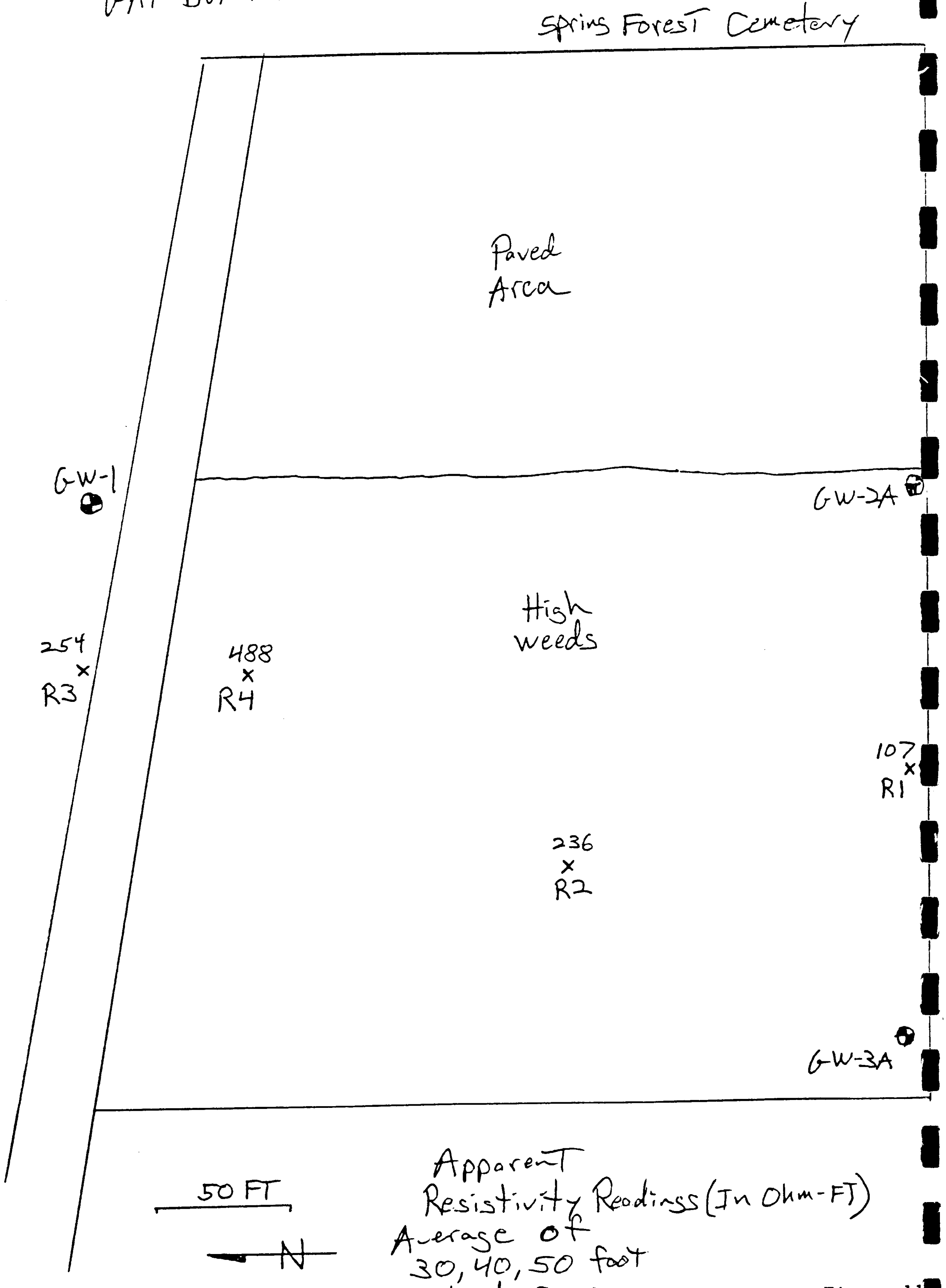


FIGURE 10 . RESISTIVITY SOUNDING 4

GAF DUMP Site



Apparent Resistivity Readings (In Ohm-FT)
Average of 30, 40, 50 foot Electrode Spacings

Figure 11

Assuming that the water table is located as estimated by the NYSDEC, an average of the 30, 40, and 50 foot spacings will characterize the resistivity of the saturated zone at each sounding location. Figure 11 shows that the average apparent resistivity for the saturated zone increases toward the north within the site boundaries.

SUMMARY OF FINDINGS

Results of the geophysical survey indicate that there are no buried ferromagnetic objects in the vicinity of the proposed monitoring wells. The terrain conductivity survey located an area of higher readings for the upper 6 meters at the southwest portion of the site. Resistivity data for the estimated saturated zone suggest that there is a general decrease between the projected upgradient and downgradient site boundaries.

Respectfully Submitted,
ROUX ASSOCIATES, INC.

Peter C Breen
Peter C. Breen
Hydrogeologist

Paul H. Roux
Paul H. Roux
President

V. DRILLING PROTOCOLS

The monitoring wells will be drilled in the following order:

(1) GW-1
(2) GW-2
(3) GW-3

See Appendix A for drilling protocols.

Note: Depth to groundwater was projected in the Phase II Work Plan to be 30 to 40 feet below ground surface. Geophysical data suggests that groundwater depth may be deeper than projected.

VI. SAMPLING PROTOCOLS

II. Site Specific Sampling Order

Field Data Sheet 1 of 2

Site Name: GAF DUHP

Date:

Weather: Temp.:

Humidity:

Precipitation:

Wind Speed/Direction:

Sampling Team Members

Name	Title

a)
b)
c)

Sample Order	Station Location No.	Sampling Device	Laboratory Sample ID. No.	Comp.	Grab	GW	Sed.	Soil	Leachate	SW	Remarks
1	SS-8	Soil Sampler						X			
2	SS-9	"						X			
3	SS-1	Hand Auger						X			
4	SS-2	"						X			
5	SS-3	"						X			
6	SS-4	"						X			
7	SS-5	"						X			
8	SS-6	"						X			
9	SS-7	"						X			
10	Trip Blank					X					
11	Field Blank					X					
12	GW-1	Bailer				X					
13	GW-2	"				X					

See Appendix B for Sampling Protocols

II. Site Specific Sampling Order

Field Data Sheet 2 of 2

Site Name: GAF DUMP

Date:

Weather: Temp.:
Humidity:
Precipitation:
Wind Speed/Direction:

Sampling Team Members
Name Title

a)
b)
c)

Sample Order	Station Location No.	Sampling Device	Laboratory Sample ID. No.	Comp.	Grab	GW	Sed.	Soil	Leachate	SW	Remarks
14	GW-3	Bailer				x					
15	GW-3	"				x					Field duplicate

GAF DUMP SITE

SPLIT SPOON SAMPLES

One split spoon sample will be taken from GW-2 and GW-3 monitoring wells, (SS-8 and SS-9). The soil samples from the GW-2, and GW-3 wells will be taken from the following depth:

GW-2: 10 ft.
GW-3: 10 ft.

Laboratory analysis of these samples will include a matrix spike and duplicate. The split spoon samples will be taken during the last day of drilling and will be included with other soil samples (SS-1 thru SS-7) in the same matrix.

GRAIN SIZE SAMPLES

One soil sample shall be collected from each monitoring well to be anayzed for grain size distribution. These samples shall be taken from the last spilt spoon sample of each well.

VII. HEALTH & SAFETY PLAN

V. SITE SPECIFIC HEALTH AND SAFETY PLAN

A. GENERAL INFORMATION

SITE NAME: GAF Dump NY ID. NO.: 704011

LOCATION: Seymour St., Binghampton, NY 13905-2115

CONTACT NAME: Charles Bien

ADDRESS: GAF Corporation, 1361 Alps Rd, Wayne NJ 07470

PHONE NO.: 1-201-377-3199

G&H's PROJECT MANAGER:

NAME: Norman Hinsey

PHONE NO.: (212) 216-7839

NYS DEC CONTACT:

NAME: Lawrence Alden

PHONE NO.: (518) 457-0639

B. SITE CHARACTERISTICS

FACILITY FUNCTION: See Work Plan, Paragraph - Introduction

PHASE I COMPLETED: YES X NO ____

STATUS: ACTIVE ________ INACTIVE __X__

UNKNOWN ________

WASTE CHARACTERISTICS: See Work Plan, Paragraph - Introduction

RECOMMENDED LEVEL OF PROTECTION: LEVEL A _____ LEVEL B _____

LEVEL C _____ LEVEL D __X__

MONITORING EQUIPMENT: PID (HNu) _X_ MAX. LEVEL 5 ppm*

(*In the event air monitoring results indicate an increase above 5 ppm of total organic vapor, all work activities will cease, the NYS DEC will be notified, and a join decision will be made on the altering of the SOP.)

WORKING ZONE: 25 ft around monitoring wells

Site Secured Yes ____ No _X_

Sketch attached Yes ____ No _X_

SITE SPECIFIC CONCERNS: (utility lines, dike integrity, telephone lines, etc.) None

C. GIBBS & HILL STANDARD HEALTH AND SAFETY PLAN

G&H's STANDARD HEALTH AND SAFETY PLAN FOR REMEDIAL INVESTIGATION: Attached See Appendix C

Not Attached ____________

EMERGENCY INFORMATION

Emergency Response Agencies:

- Hospital: General Hospital, Binghampton

Has the hospital been contacted? [✓ Yes] No
Do they handle chemical accidents? [✓ Yes] No
Do they have an emergency room? [✓ Yes] No
What are business hours? 24 HRS
General telephone: (607) 771-2200
Emergency room telephone: (607) 771-2230
Location: Park & Mitchell Avenue, Binghampton

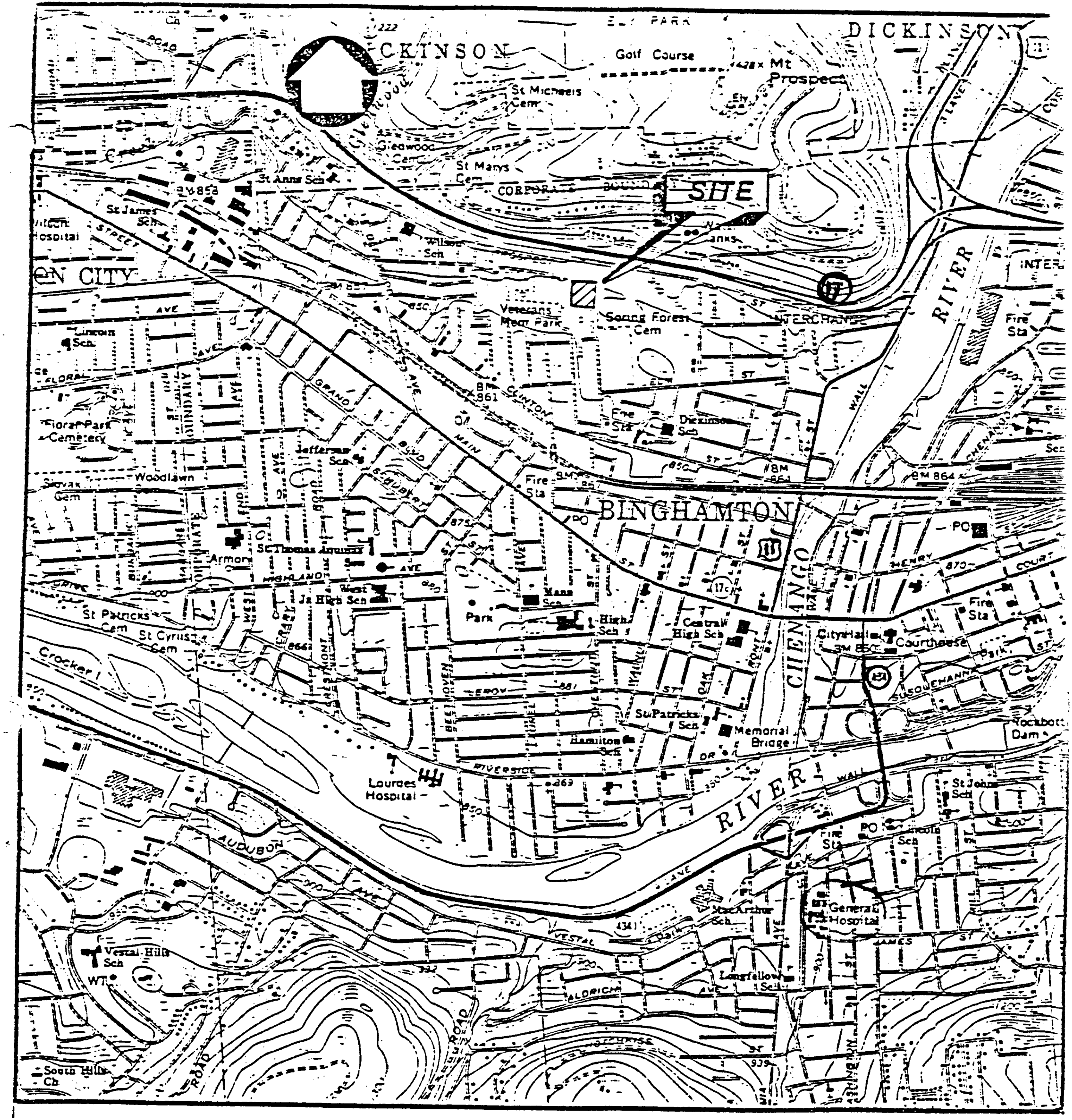
Site to hospital route: Take Vestel Parkway (Rt. 434) East to Park & Mitchell Avenue

Is the route map attached: [✓ Yes] No
Nearest Site Phone Location: Anitec Corp
Phone Direction/Map Attached: Yes [✓ No]

	Phone No.
• Ambulance	N/A
• Police	(607) 775-1241
• Fire Department	(607) 625-2215
• Posion Control Center	1-800-535-0525
• CHEMTREC	1-800-424-9300
• USCG/DOT National Response Center:	1-800-424-8802

Emergency Contacts

		Phone No.
o NYCDEC Project Manager:	Marsden Chen	1-518-457-0639
o NYCDEC Project Engineer:	Lawrence Alden	1-518-457-0639
o G&H Project Manager:	Norman Hinsey	1-212-216-7839
o G&H Corporate Health & Safety Officer:	R. Barbour	1-212-216-6647



SCALE: 1"=2000'

TOPOGRAPHY TAKEN FROM
1968
BINGHAMTON, N.Y
U.S.G.S. QUADRANGLE
7.5 MIN SERIES

MAP LOCATION

FIGURE 1

SITE LOCATION MAP

GAF DUMP SITE

LAT.42°06'29"N LONG.75°55'45"W

APPENDIX B

B.1 PROCEDURES

1. Drilling and Well Installation

Monitoring wells were drilled and installed to provide data pertinent to both water chemistry and characterization of the stratigraphy and ground water regime at the site. Drilling was performed by Layne Northern Company.

One well (GW-1) was installed at presumed upgradient locations on the north side of the dumping pit to provide representative samples of the groundwater flowing into the area. This monitoring well was installed by drilling with 6.25-inch hollow-stem augers until refusal (at approximately 25 feet because of boulders), at which time rotary wash method was used to advance the remainder of the boring.

Two additional monitoring wells (GW-2 and GW-3) were drilled to monitor downgradient flow direction and water quality. The monitoring wells were installed by drilling with 6.25-inch hollow-stem augers.

A ten-foot section of #10 slotted PVC screen (2-inch I.D.) was installed at the bottom of each well, and was connected to the surface with a 2-inch, flush joint Sch 40 PVC riser. A sand pack was extended to approximately two feet above the screen. Bentonite pellets and bentonite slurry seals, each approximately one foot thick, were placed on top of the sand pack. The remaining annular space was filled with a cement/bentonite grout. Steel protective casings (with locking covers) were set over each monitoring well riser and secured into the ground with concrete. See Section B-2 for well schematics.

Split spoon samples were collected at five-foot intervals for the purpose of soil characterization. Soil sample descriptions, sampler blow counts and soil recovery records for all wells are shown in boring logs (Section B.2).

Each well was developed by pumping water with an inertial pump to remove from the screen pack formation the maximum practical quantity of sediment and other fine materials in order to produce a satisfactory amount of sediment-free water. Wells GW-1, GW-2, and GW-3 were developed for more than one hour each. A nephelometer was employed to measure the clarity of groundwater during development. The recommended turbidity of 50 NTU could not be reached [approximately 200 Nephelometric Turbidity Units (NTU) were measured for all wells during and after development] due to the fine-grained nature of the material within the screened interval (silt and clay with some sand and gravel). The well sand pack could not retain small particles, especially those in the form of colloides, and clear water could not be obtained.

Inertial Pump

The pump is composed of one-piece molded ABS plastic body, foot valve, a flexible polyethylene tubing, and a stainless steel levered handle. A gasoline powered motor drive was used in place of the levered handle where large volumes of water were removed from the wells. The operating principle of the pump is based on the inertia of a column of water contained within a riser tubing. The pump is operated by a continuous up and down movement of the tubing. The water within the tubing will move upward in pulses and ultimately discharge at the surface.

2. Slug Test

A slug test was performed to determine in situ hydraulic conductivity values. A standard method of performing a slug test is to instantaneously drop a clean weight down the well to displace the water and measure the water level as it returns to original level. The weight used was a dedicated teflon bailer with disposable polypropylene disposable cord, filled with distilled water.

The rate of the groundwater level change was recorded by measuring the depth to the water below the top of the casing after the start of the test until the original level of water table was restored.

Groundwater elevation was measured and recorded prior to any testing. All water elevation measurements were performed with an electronic water level indicator.

The Hvorslev method was used to calculate the permeability, K (cm/sec):

$$K= \frac{r^2 \ln(L/R)}{2\ LTo}$$

Where:

r= radius of a PVC riser, cm

L= length of screen beneath static water level, cm

R= radius of sand pack, cm

To= elapsed time, t, at (H-h)/(H-Ho) = 0.37 sec.

H= reference datum, cm

Ho= water level at equilibrium, cm

h= water level at time t, cm

t= elapsed time, sec.

(R. Allan Freeze and J.A. Cherry, Groundwater, Prentice Hall Inc., pp. 339) [D.19]

3. Grain Size Analysis

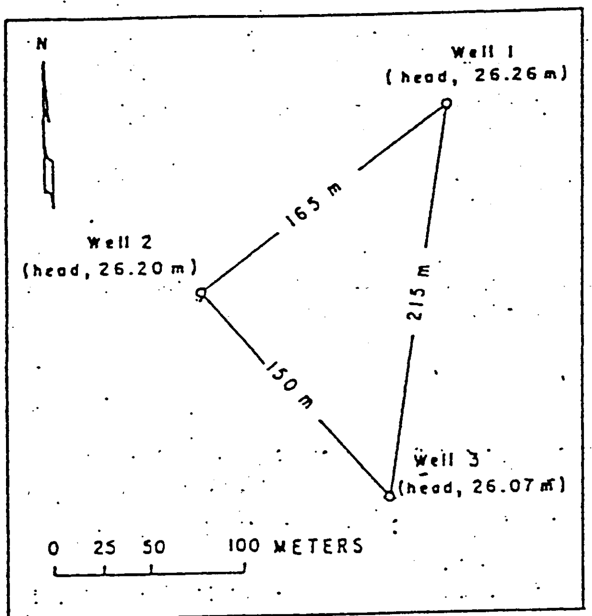
Grain size distribution analyses were performed by Geo-Tech Associates (Fanwood, New Jersey). Analyses were conducted on the last split spoon samples collected from each overburden well. All analyses were performed in accordance with ASTM Method No. D422. The percentage of each grain size component was determined. Results of these analyses were plotted on a particle size distribution graph.

A hydrometer analysis was not performed on those samples having less than 20 percent silts and clays (i.e., material passing through the number 200 sieve).

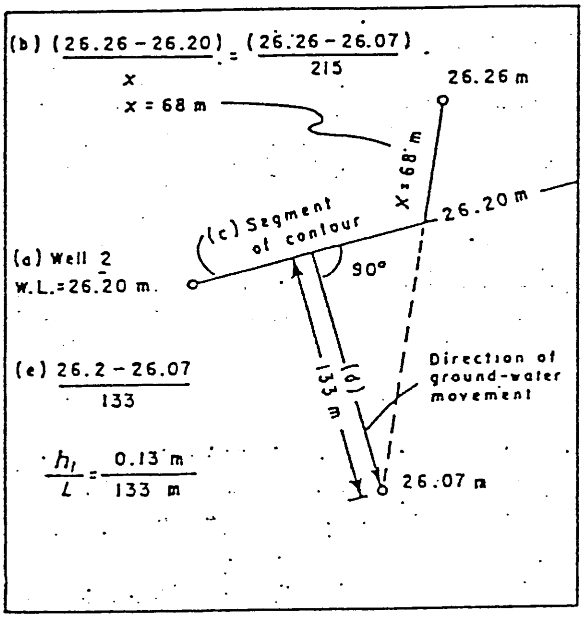
The interrelationship between grain size and hydraulic conductivity can be used for the estimation of conductivity values. An empirical relation based on Morris and Johnson's (1967) Representative Values of Hydraulic Conductivity and Masch and Denny's (1966) determination of saturated hydraulic conductivity from grain-size gradation curves [D.20] was used to estimate conductivity values and correlate them to observed values in the field.

4. Determination of Groundwater Flow Direction

The following diagrams present the triangulation method for determinating groundwater flow direction.



(2)



(3)

Both the direction of ground-water movement and the hydraulic gradient can be determined if the following data are available for three wells located in any triangular arrangement such as that shown on sketch 2:

1. The relative geographic position of the wells.
2. The distance between the wells.
3. The total head at each well.

Steps in the solution are outlined below and illustrated in sketch 3:

a. Identify the well that has the intermediate water level (that is, neither the highest head nor the lowest head).

b. Calculate the position between the well having the highest head and the well having the lowest head at which the head is the same as that in the intermediate well.

c. Draw a straight line between the intermediate well and the point identified in step b as being between the well having the highest head and that having the lowest head. This line represents a segment of the water-level contour along which the total head is the same as that in the intermediate well.

d. Draw a line perpendicular to the water-level contour and through either the well with the highest head or the well with the lowest head. This line parallels the direction of ground-water movement.

e. Divide the difference between the head of the well and that of the contour by the distance between the well and the contour. The answer is the hydraulic gradient.

(Source: US Dept. of the Interior, US Geological Survey, Water Supply Paper 2220, pp. 11)

B.2 RESULTS

DRILLING SUMMARY REPORT

Site Name: GAF Dump
Site I.D.: 704011
Date(s): 10/17 - 10/28/88
Present: Albert Longoria (G&H)
Larry Alden (NYSDEC)
Driller: Layne Northern Company

Well Summary

1. Relocation of Well

GW-1 - Relocated approximately 30 ft. to the east of original location. Original location was sited incorrectly on someone elses property.

GW-2 - Relocated 10 ft to the north. Permission to install the well on the access road could not be obtained.

GW-3 - Relocated 10 ft to the north. Permission to install the well on the access road could not be obtained.

2. Well Data

	Boring Depth (ft)	Depth to Water*, (ft)
GW-1	40	31.02
GW-2	18	6.27
GW-3	20	8.25

* Depth to water refers to feet below ground surface.

3. Well Development

Each well developed more than one hour by pump (capacity 4.2 gpm). Groundwater turbidity more than 200 NTUs.

4. In-Situ Permeability Test Results

Well No.	Permeability, cm/sec
GW-1	5.7×10^{-4}
GW-2	1.3×10^{-3}
GW-3	1.0×10^{-4}

HYDRAULIC CONDUCTIVITY VALUES FROM THE MORRIS AND JOHNSON TABLE

Well No.	Hydraulic Conductivity cm/sec
MW-1	$5\text{-}9 \times 10^{-5}$
MW-2	3×10^{-3}
MW-3	9×10^{-5}

MW-1 has a field hydraulic conductivity of 6×10^{-4} cm/sec while the estimated hydraulic conductivity value from the Morris and Johnson table was taken as a range from coarse sand to silt, 5×10^{-2} to 9×10^{-5}. Using the grain size analysis data it was difficult to narrow the range. The comparison of field and estimated hydraulic conductivities for MW-1 is, therefore, not very strong.

MW-2 had a field hydraulic conductivity of 1×10^{-3}. The estimate, based on grain size analysis data was considered a fine sand with some silt. The hydraulic conductivity chosen from the Morris and Johnson table was 3×10^{-3} cm/sec. and substantiates the slug test field value.

The hydraulic conductivity value for MW-3 was 1 x 10^{-4} cm/sec. From the grain size analysis data, the MW-3 sample was composed of 80% silt. The hydraulic conductivity of silt, 9.0 x 10^{-5} cm/sec. was, therefore, chosen from the Morris and Johnson table as a representative estimate for MW-3. As in MW-2, the estimated hydraulic conductivity for MW-3 substantiates the slug test field value.

FIELD SURVEY VISIT REPORT

SITE: GAF Dump

DATE: Dec. 29, 1988

CHIEF OF PARTY: Hubert Yuen

SURVEY PARTY:
John McWilliams
H. Yuen

HAZARD:

Level D Protection

WEATHER: 32°F
CLOUDY

PERSONNEL AT SITE: HUBERT YUEN
JOHN McWILLIAMS

NUMBER OF WELLS: 3
NUMBER OF BORINGS:
OTHER:

SURVEY DATA:

Horizontal Control, Reference Plane: ARBITRARY HORIZONTAL CONTROL SYSTEM

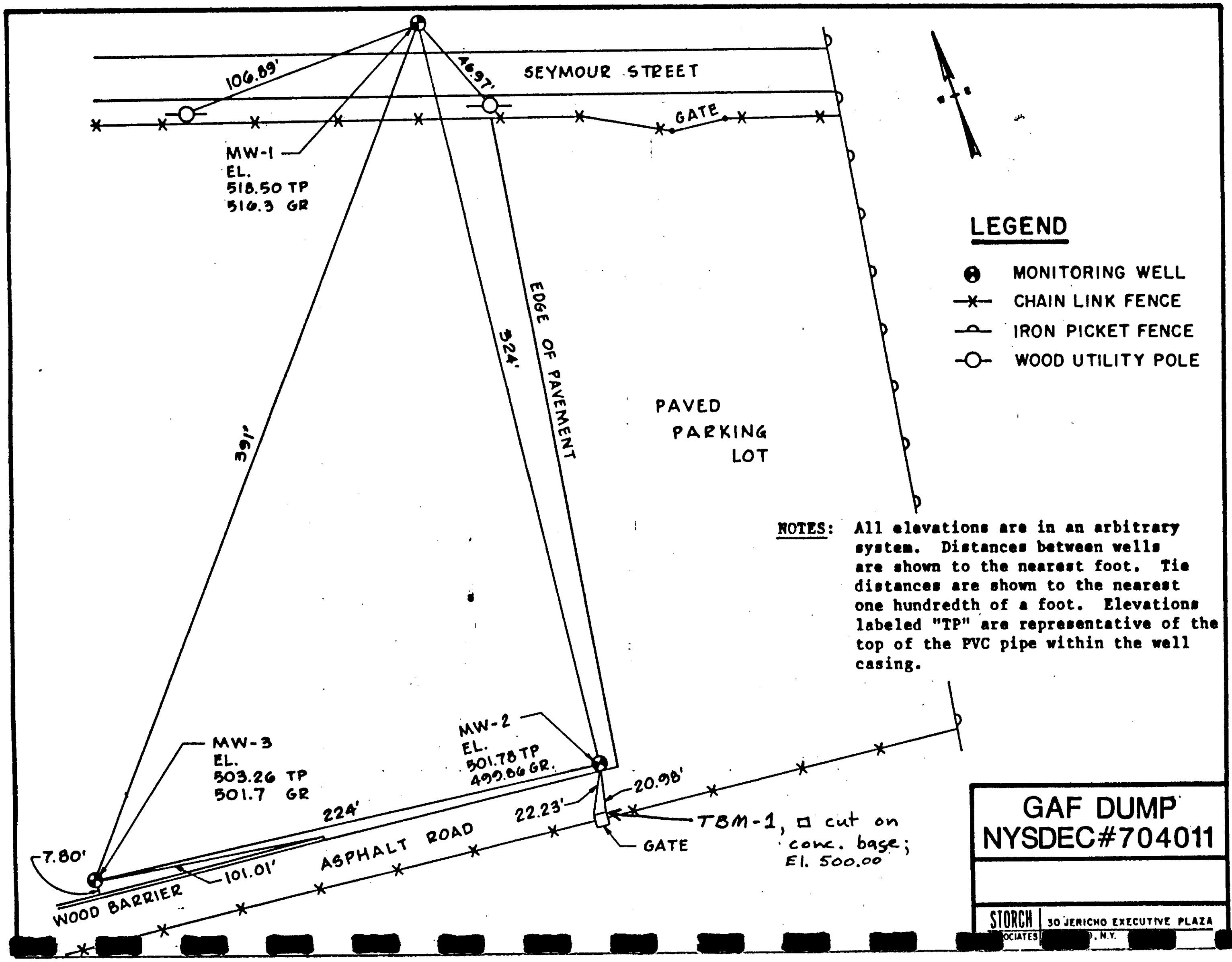
Vertical Control, Datum: ARBITRARY

Bench Mark TBM-1 Elev. 500.00

COMMENTS:

TBM1 A SQUARE CUT ON CONCRETE BASE OF GATE. (see sketch)

STORCH ASSOCIATES
30 Jericho Executive Plaza
Jericho, New York 11753



NOTES: All elevations are in an arbitrary system. Distances between wells are shown to the nearest foot. Tie distances are shown to the nearest one hundredth of a foot. Elevations labeled "TP" are representative of the top of the PVC pipe within the well casing.

BORING LOG

Sheet 1 of 1

PROJECT: GAF Dump - Phase II	PROJECT NO. 704011	BORING NO. GW-1
Location:	Coord:	Ground Elev:
Contractor: Layne - Northern	Date Started: 10/18/88	G.W.L. Hour: Date:
Inspector: A. Longoria	Date Completed: 10/26/88	G.W.L. Hour: Date:
Notes:		

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	HNu	Graphic Symbol	Description and Remarks
0	SS-1										No sample taken.
5	SS-2				6 8	14 6	15"	—	0.4	SW	poorly sorted gravelly sands with less than 15% silts & clays. Sands range from fine to very coarse (1/8mm to 2.0mm). Gravels are subrounded to angular and range from granules to pebbles (2 - 20mm). Color is dark yellowish brown
10	SS-3				4 8	8 20	17"		0.4	SW	Top 8" is a poorly sorted gravelly sand with little fines. Sands are fine to very coarse (1/8 to 2.0mm) Gravels (15 - 20%) are subrounded to angular granules and pebbles (2mm to 10mm). Color is dark yellowish brown (10YR 4/4 ; dry) Bottom 9" is a poorly sorted gravelly sand (1/8 to >2 mm). Color is olive brown
15	SS-5				2 22	19 18	18"		0.4	SW	poorly sorted gravelly sands with little silts & clays (< 15%). Sands range from fine to very coarse (1/8 to 2mm). Gravels (<20%) are subangular to angular pebbles (2 to 20 mm) Color is olive brown. Material is moderately compact.
20	SS-6				7 20	12 13	8"		0.4	SW	poorly sorted gravelly sands. Sands are subangular to angular ranging from very fine to very coarse (1/16 to 2 mm). Gravels are angular pebbles (>2 to 20mm). Color is olive brown. Material is moderately compact.
25	SS-7				19 30	26 72	20"		0.4	SW GM	Highly compacted poorly sorted gravelly sands. Sands are angular ranging from very fine to very coarse (1/16 to 2mm). Gravels are angular pebbles (2 to 20mm). Color is olive (5Y 5/4 ; damp). Bottom 11" is moderately to highly compact with more silts & clays (> 15%). Color is olive ; moist).
30	SS-8				6	150	8"		0.4	GM	spoon advanced only 8". Highly compacted gravelly sands with significant amounts of silts & clays. Gravels are 40mm in diameter with coarse to very coarse sands (1/2 to 2mm). Fines are < 1/16 mm (> 20%). Color is olive gray
35	SS-9	37			150		4"		0.4	GM/GC	Spoon advanced only 6". Gravelly sand with silts & clays (>20%). Sands are fine to coarse (1/16mm to 2 mm). Gravels are fragmented chips of cobbles (5-7mm). Very highly compacted material.
40											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

BORING LOG

Sheet 1 of 1

PROJECT: GAF Dump | PROJECT NO. | BORING NO. GW-3

Location: | Coord: | Ground Elev:

Contractor: | Date Started: 10/27/88 | G.W.L. | Hour: | Date:

Inspector: A. Longoria | Date Completed: 10/28/88 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	HNu	Graphic Symbol	Description and Remarks
0	SS-1								0.4		No sample taken
5	SS-2				4 3	3 4	18"		0.4	SC	very fine sand To silt (1/4 to < 1/16mm). Organic rich. Color is dark grayish brown (2.5 / 4/2; moist). Contains some gravel (2 to 5%; 10 to 30 mm). low to medium plasticity.
10	SS-3				2 8	3 9	17"		0.4	OL	silty clays (< 1/16mm) of medium to high plasticity. Color is very dark grayish brown (2.5Y 3/2; wet). Contains some gravel in upper 2" (10-20mm). lower 10" contains less silt and more clays. plasticity is increasing in lower 10". Slight color difference; dark grayish brown (; wet).
15	SS-4				1 1	1 1	18"		0.4	CH	Inorganic clays with high plasticity (< 1/16mm). color is gray (; wet).
20	SS-5	22			2 5	4 7	17"		0.4	SM	fine sands to silt (1/4 mm To < 1/16mm). Color is dark grayish brown (; wet).
25											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

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Gibbs & Hill, Inc

BORING LOG

Sheet 1 of 1

PROJECT: GAF - Phase II
PROJECT NO.
BORING NO. GW-2
Location:
Coord:
Ground Elev:
Contractor:
Date Started: 10/26/88
G.W.L. Hour: Date:
Inspector: A. Longoria
Date Completed: 10/27/88
G.W.L. Hour: Date:
Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	HNu	Graphic Symbol	Description and Remarks
0	SS-1										No sample taken
5	SS-2				10 13	18 11	18"		0.4	OL	Very fine sand to silt (1/8 to < 1/16mm). Rich with organic matter. Color is very dark grayish brown (10YR 3/2; dry). Sample contains minor amounts of gravel (2 to 5%; 10 to 15 mm in diameter). Mostly organic rich soil with low plasticity.
10	SS-3				6 5	5 4	15"		0.4	OL	Very fine sand to silt (1/8 to < 1/16mm). Some clay is present (10%; < 1/16mm). Color is black (2.5Y N2/; wet). Contains wood fragments and minor amounts of gravel (2 to 5% 10-20 mm. Mostly organic rich soil with low to moderate plasticity
15	SS-5				1 2	1 1	17"		0.4	OH	Two layers - Upper 9" contains gravelly sandy silts (≈ 2mm to < 1/16mm). Color is black (2.5 Y N2/; wet). Bottom 8" contains medium to high plasticity silty clays (< 1/16 mm). Color is dark grayish brown (; wet).
20	SS-6	22			1 1	1 1	19"		0.4	CH	Inorganic silty clays of high plasticity (< 1/16mm). Color is gray (; wet).
25											
30											
35											
40											

I.D. Casing
Wgt. Hammer on Casing
Material Notations
I.D. Spoon
Wgt. Hammer on Spoon
Type Core Drill
Drop Hammer on Casing
Core Dia.
Drop Hammer on Spoon
Sample & Test Notations

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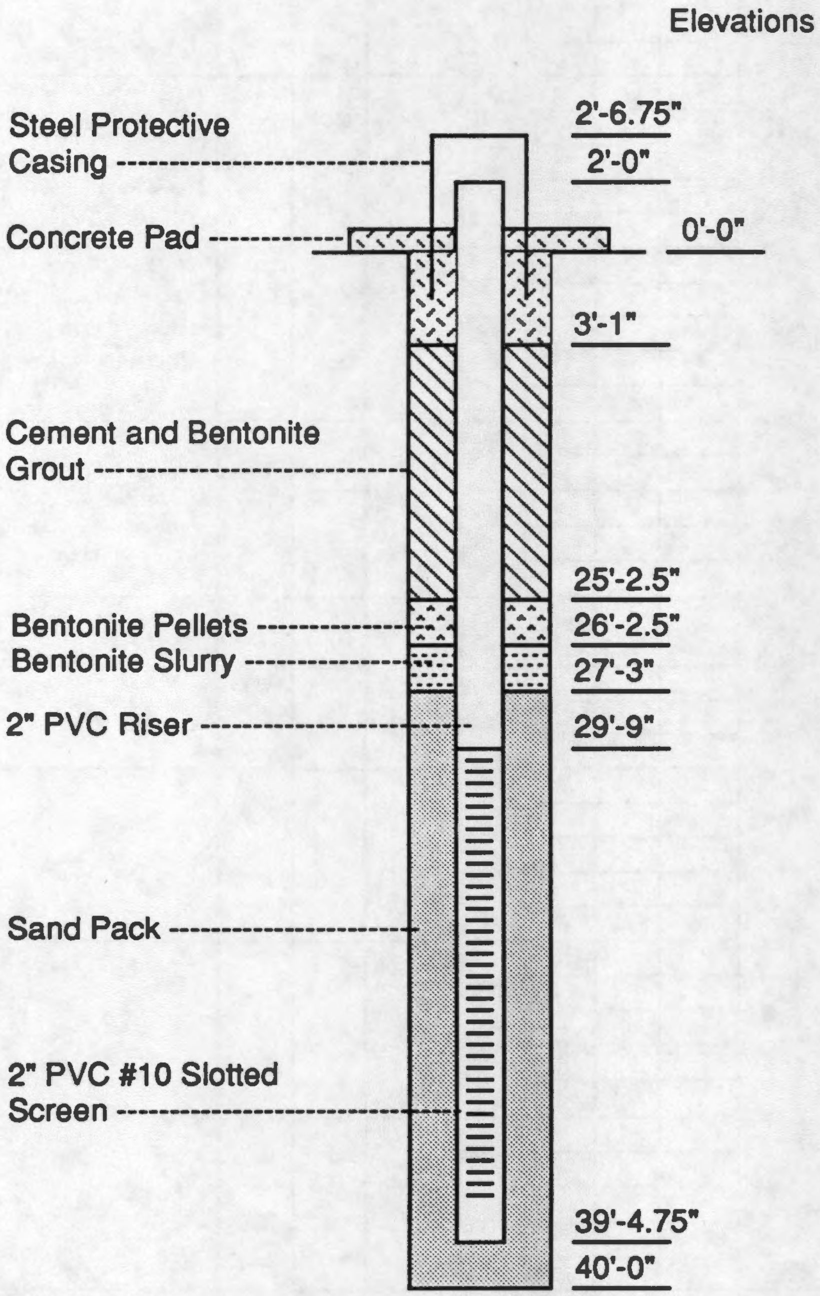
Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site GAF Dump ·
Well No. MW-1
Date Installed 10/26/88

Water Level from
Top of Casing 33'-7"
Date 4/21/89 Time

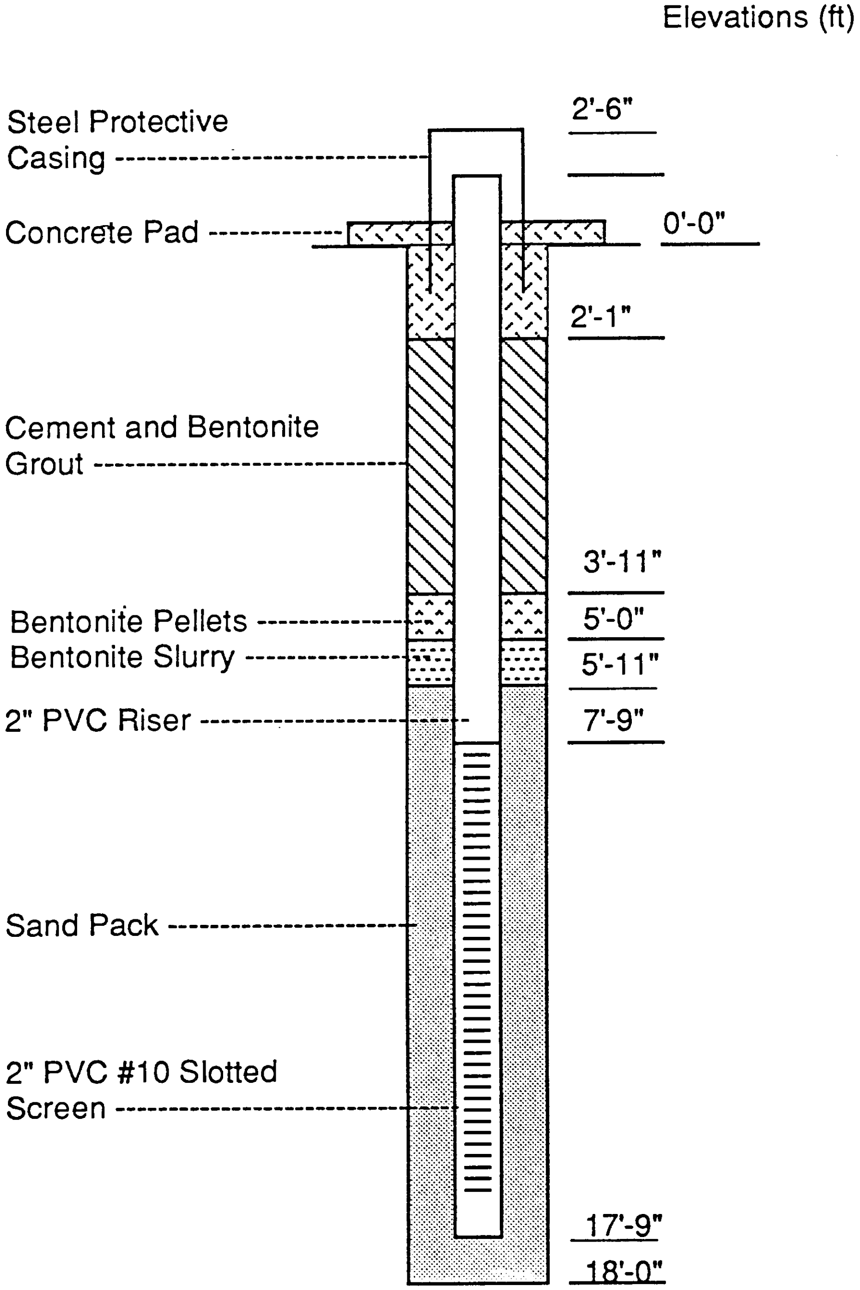


Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site GAF Dump
Well No. MW-2
Date Installed 10/27/88

Water Level from Top of Casing 7'-0"
Date 10/27/88 Time

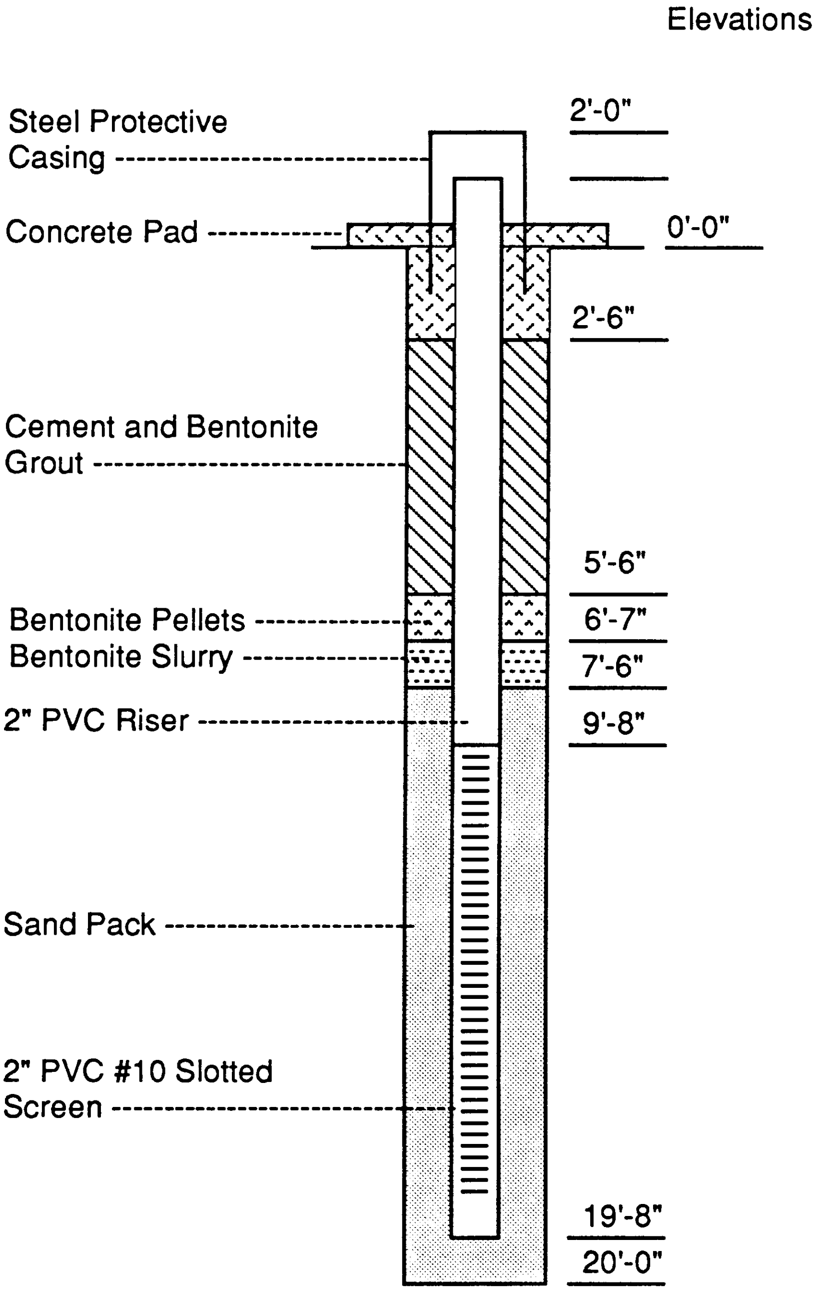


Gibbs & Hill, Inc.

OVERBURDEN WELL CONSTRUCTION SCHEMATIC

Site GAF Dump
Well No. MW-3
Date Installed 10/28/88

Water Level from
Top of Casing 10'-2"
Date 4/21/89 Time



Gibbs & Hill, Inc.

Gibbs & Hill, Inc. JOB NO.: 5583- CLIENT: NYSDEC

SITE NAME: GAF

SUBJECT: Determination of Permeability of Soil in Situ

DATE OF TEST:

WELL NO.: 1

REF.: J. Cherry & R. Freeze, GROUNDWATER, Prentice-Hall, 1979.

TYPE OF TEST: SLUG TEST

METHOD:

$$K = \frac{r^2 \ln (L/R)}{2LT_o}$$

K = permeability (cm/sec)

r = radius of stanpipe (cm)

L = length of screen beneath static water level (cm)

R = radius of sand pack (cm)

T_0 = basic time lag (sec)

T_0 = elapsed time at (H-h)/(H-Ho) = 0.37 (sec)

H = reference datum (cm)

Ho = water level at equilibrum (cm)

h = water level at time t (cm)

t = elapsed time (sec)

WELL DATA:

r = 2.54 cm.

L = 304.8 cm.

R = 13.02 cm.

To = 210 sec.

CALCULATION:

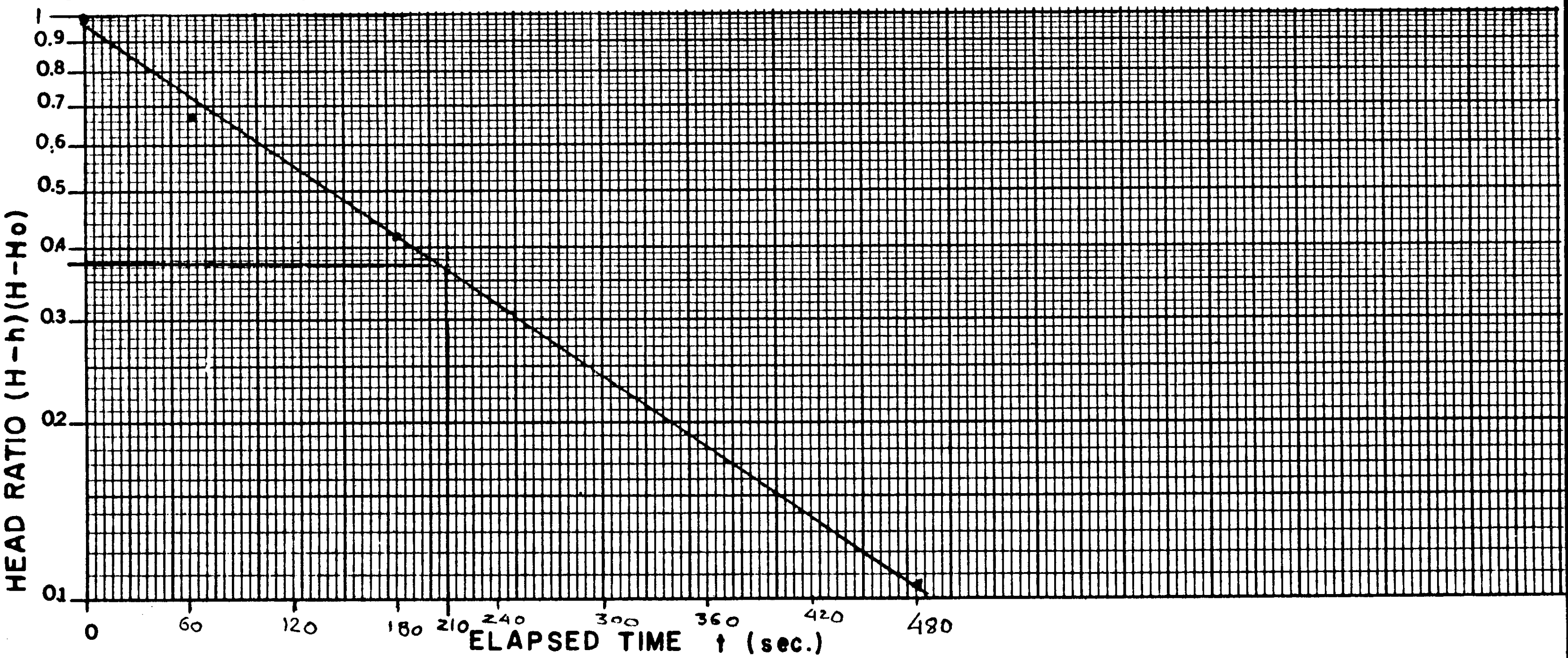
$$K = \frac{(2.54)^2 \ln (304.8 / 13.02)}{2 (304.8) (210)}$$

= 2×10⁻⁴ cm/sec

TEST DATA:

t	(H-h) (H-Ho)
0	1.0
60	0.67
180	0.42
480	0.105
900	0.0

TEST DATA POINTS AND BEST-FIT LINE:



Gibbs & Hill, Inc. JOB NO.:5583- CLIENT: NYSDEC

SITE NAME: GAF

SUBJECT: Determination of Permeability of Soil in-Situ

DATE OF TEST: WELL NO.: 2

REF.: J. Cherry & R. Freeze, GROUNDWATER, Prentice-Hall, 1979.

TYPE OF TEST: SLUG-TEST

METHOD:

$$K = \frac{r^2 \ln (L/R)}{2 L T_0}$$

K = permeability (cm/sec)

r = radius of standpipe (cm)

L = length of screen beneath static water level (cm)

R = radius of sand pack (cm)

T_0 = basic time lag (sec)

T_0 = elapsed time at (H-h)/(H-Ho) = 0.37 (sec)

H = reference datum (cm)

Ho = water level at equilibrum (cm)

h = water level at time t (cm)

t = elapsed time (sec)

WELL DATA:

r = 2.54 cm.

L = 304.8 cm.

R = 13.02 cm.

To = 86 sec.

CALCULATION:

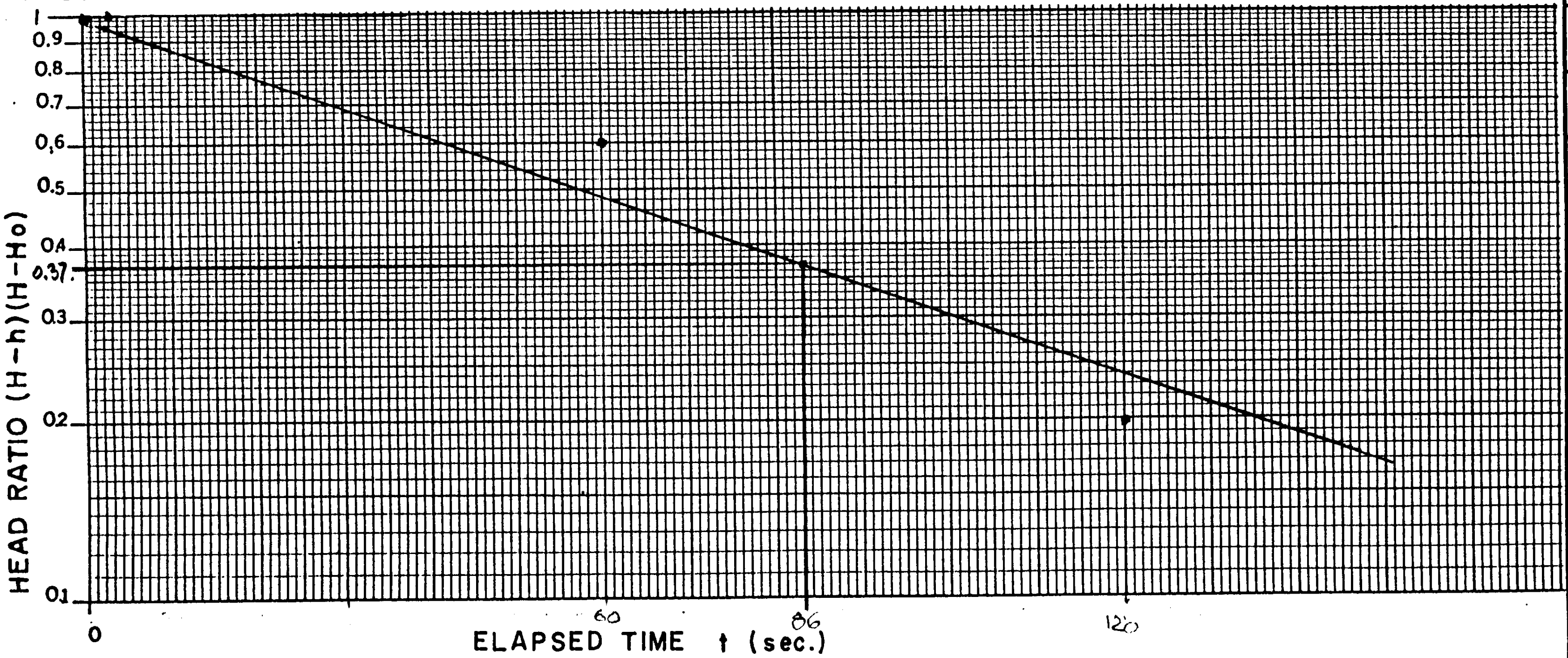
$$K = \frac{(2.54)^2 \ln (304.8/13.02)}{2(304.8 \times 86)}$$

$= 4 \times 10^{-4}$ cm/sec

TEST DATA:

t	(H-h)/(H-Ho)
0	1
60	0.6
120	0.2
180	0

TEST DATA POINTS AND BEST-FIT LINE:



Gibbs & Hill, Inc. JOB NO. :5583- CLIENT : NYSDEC

SITE NAME: GAF

SUBJECT: Determination of Permeability of Soil in-Situ

DATE OF TEST: WELL NO.: 3

REF.: J. Cherry & R. Freeze, GROUNDWATER, Prentice-Hall, 1979.

TYPE OF TEST: Slug Test

METHOD:

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

K = permeability (cm/sec)

r = radius of standpipe (cm)

L = length of screen beneath static water level (cm)

R = radius of sand pack (cm)

T_0 = basic time lag (sec)

T_0 = elapsed time at $(H-h)/(H-H_o) = 0.37$ (sec)

H = reference datum (cm)

Ho = water level at equilibrum (cm)

h = water level at time t (cm)

t = elapsed time (sec)

WELL DATA:

r = 2.54 cm.

L = 304.8 cm.

R = 13.02 cm.

To = 732 sec.

CALCULATION:

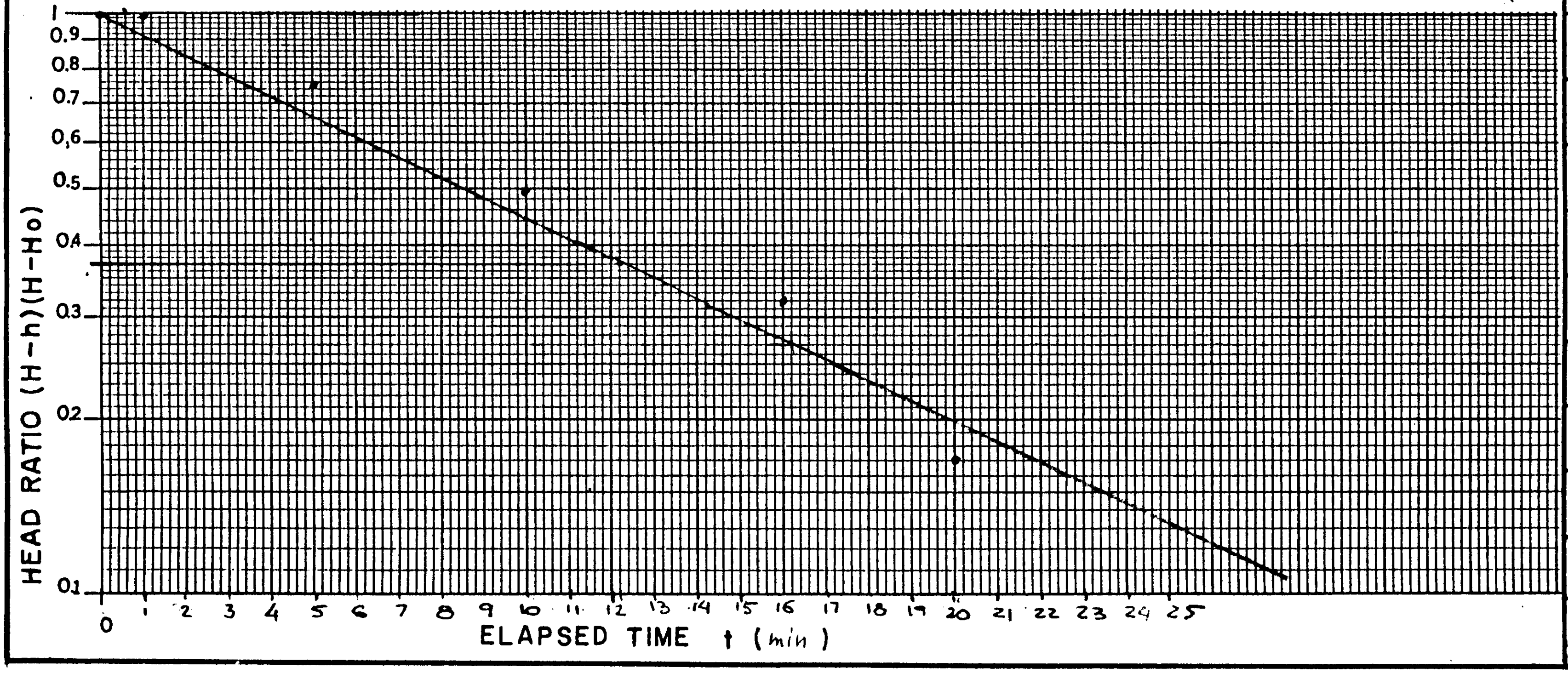
$$K = \frac{(2.54)^2 \ln(304.8/13.02)}{2(304.8 \times 732)}$$

$= 5 \times 10^{-5}$ cm/sec

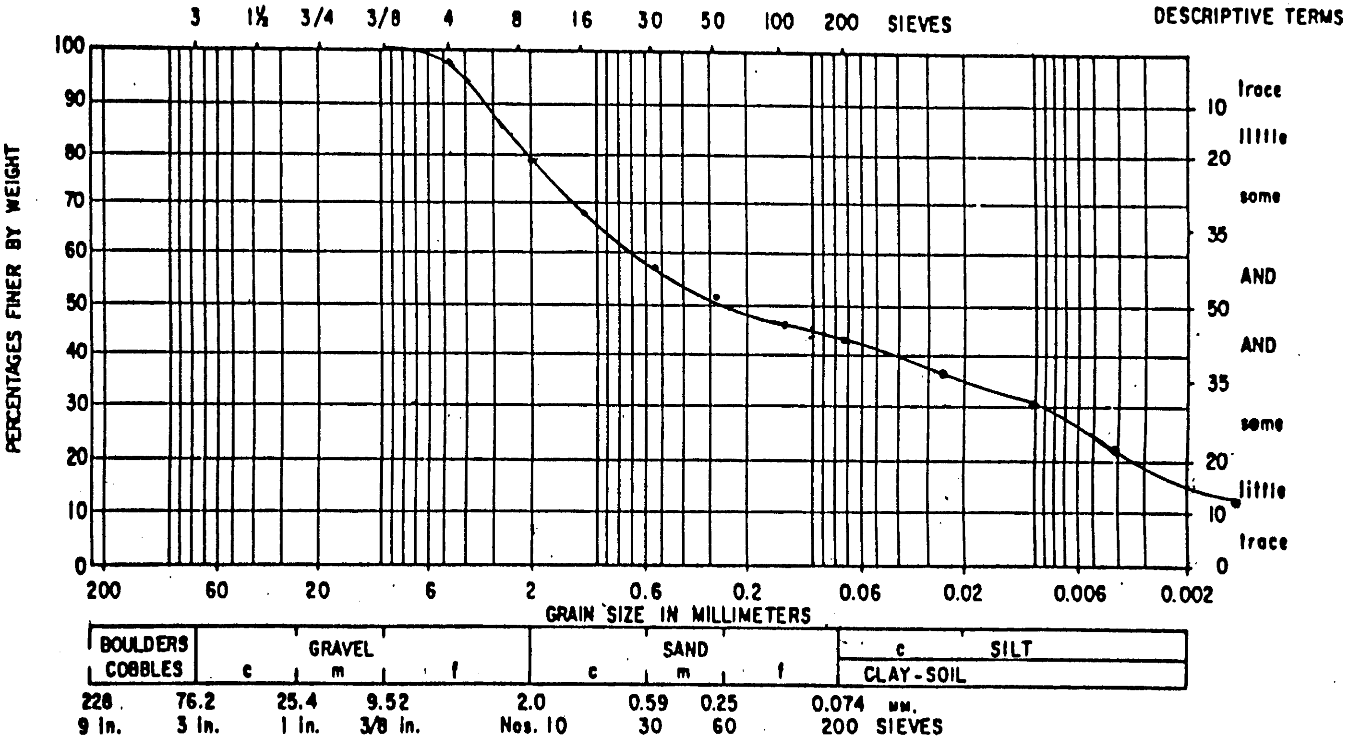
TEST DATA:

t	$\frac{(H-h)}{(H-H_o)}$
0	1
1	1
5	0.75
10	0.5
15	0.33
20	0.17
25	0.0

TEST DATA POINTS AND BEST-FIT LINE:



GRAIN SIZE ANALYSIS



Project: Gibbs & Hill, Inc.

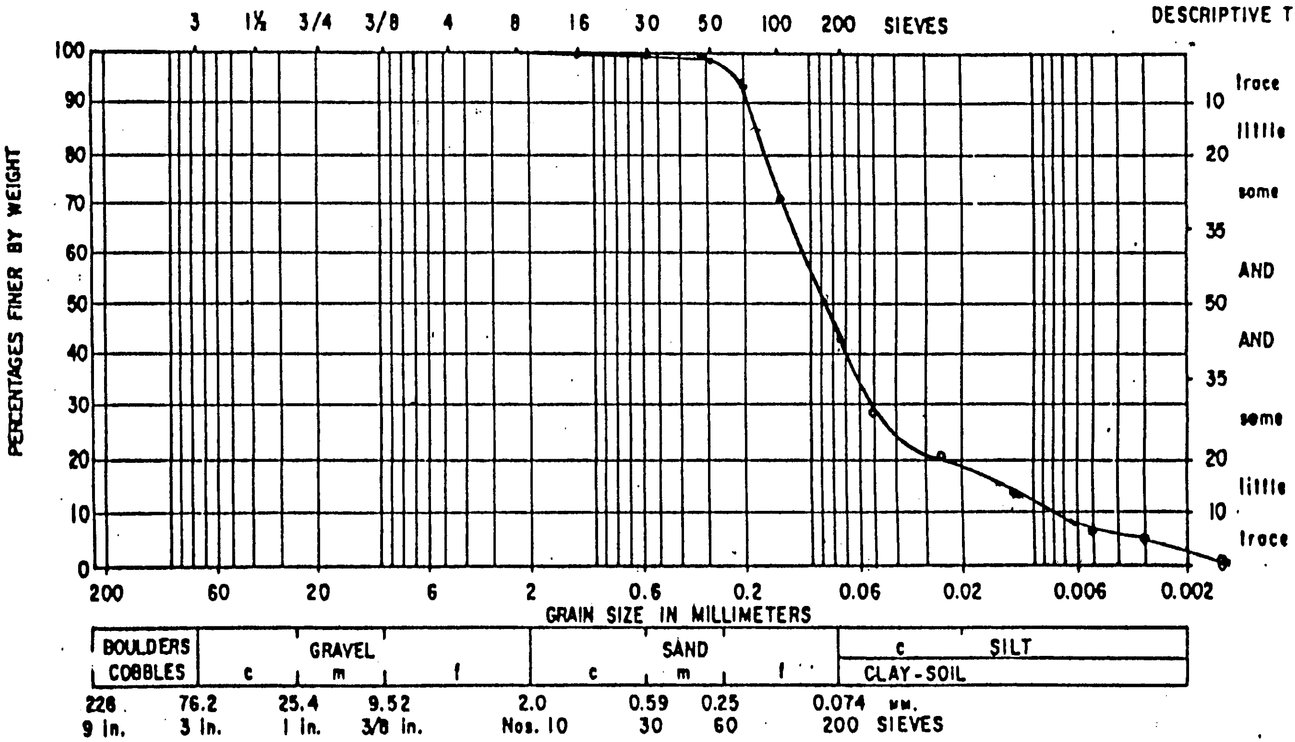
Site: GAF, ID # 704011

Boring: GW-1

Depth: 35' - 37'

B-24

GRAIN SIZE ANALYSIS



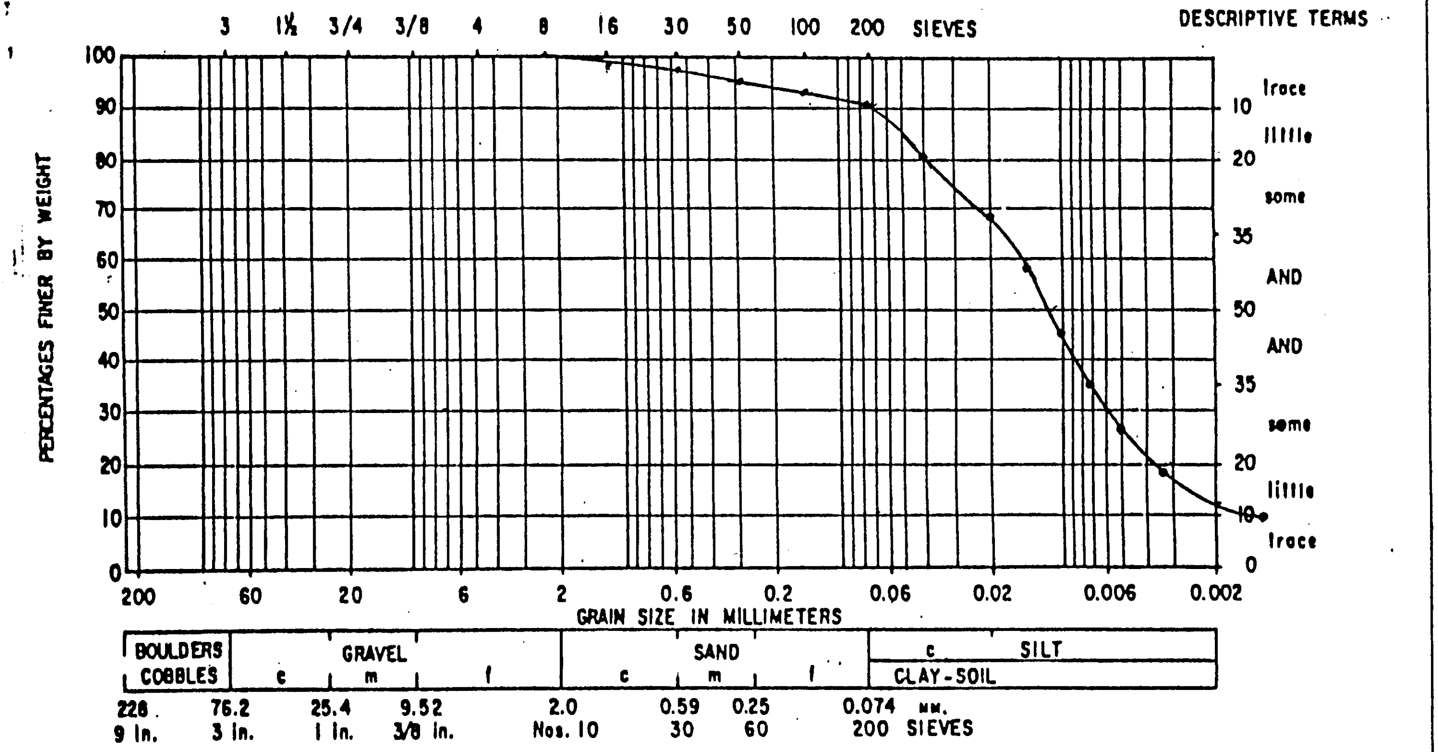
Project: Gibbs & Hill, Inc.

Site: GAF, ID # 704011

Boring: GW-2

Depth: 18' - 20'

GRAIN SIZE ANALYSIS



Project: Gibbs & Hill, Inc.

Site: GAF, ID # 704011

Boring: GW-3

Depth: 20' - 22'

APPENDIX C

SAMPLING AND ANALYSIS

C.1 PROCEDURES

1. Sampling Methodology

The sampling plan was prepared by Gibbs & Hill as a part of the updated work plan. It identifies the number of each sample type to be collected and describes collection methods to be utilized. The sampling plan specifies each sampling location and gives a sketch with roughly indicated sampling locations for illustrative purpose. The sampling locations were given code numbers for identification.

In order to ensure a smooth and proper sampling process in the field, the following preparations and steps were taken:

- Coordination with the laboratory to ensure adequate number of laboratory cleaned containers were provided, with the necessary preservatives according to the appropriate protocols.

- All instruments to be used in the field were checked to ensure working order. All instruments were calibrated before going to the site.

- Sampling equipment was cleaned in accordance with the cleaning procedure outlined on Page C-4.

During the sampling events, the following elements were implemented:

- Chain of custody procedures were followed.
- Accurate sampling log was maintained.
- No sampling containers other than those provided by the laboratory were used.
- A field blank and a trip blank accompanied aqueous samples.
- Prior to sampling, laboratory supplied deionized water was poured over sampling equipment and collected into field blank bottles.
- Well purging was performed. A minimum of three well volumes of water were evacuated.
- Prior to filling the sample bottles, the groundwater was analyzed for temperature, specific conductance and pH.
- Groundwater sample collection occurred immediately following well development. Samples were collected from the inertial pump except samples for VOA. Dedicated teflon bailers with disposable polypropylene suspension cords were used to collect samples for VOA. Care was

taken to minimize the potential for volatilization during the transfer of the sample from the bailer to the bottle. No headspace or air bubbles were allowed in these samples.

- Samples were capped, labeled (well no., site location, type of sample, collection date and time) and placed in ice filled coolers.
- All samples were stored and maintained at less than 4°C and delivered to the laboratory within 48 hours.

Cleaning Procedure

All sampling equipment was thoroughly cleaned before use in accordance with the following procedure:

1. Non-phosphate detergent and tap water wash
2. Tap water rinse
3. Distilled water rinse
4. Acetone (pesticide grade) rinse
5. Hexane rinse
6. Distilled water rinse
7. Air dry

After this procedure was accomplished, the sampling equipment was wrapped in aluminum foil, placed in a plastic bag, and kept in its wrapping until use.

2. Chemical Analysis

A quality assurance program was developed in the Work Plan to ensure that the precision and accuracy of the groundwater sample analyses were not impacted by sampling, sample handling, and equipment decontamination procedures. This program was based on the collection of the field blank samples for laboratory analysis and the maintenance of a trip blank.

A trip blank determines if sample bottles (empty or full) have been exposed to airborne contaminants in transport or on-site. A trip blank (an aliquot of deionized, analyte-free water which was placed in a container and sealed at the laboratory) accompanied the sampler to each sampling site. The trip blanks were handled, transported, and analyzed (for VOA) in the same manner as the samples acquired that day except that the sample containers themselves were not opened in the field.

A field blank was prepared for each sampling episode. The purpose of a field blank is to provide an additional check on possible sources of contamination beyond those intended for the trip blank. At the field location, in the most contaminated area, the analyte-free water was passed through a sampling device into an empty set of containers. By being opened in the field and transferred over a cleaned sampling device, the field blank was also indicative of atmospheric conditions and/or equipment conditions that might potentially affect the quality of the associated samples. The field blanks were transported, handled, and analyzed as routine groundwater samples.

All sample analyses were performed by H2M Laboratory following the procedures outlined in the New York State Contract Laboratory Protocol (CLP) of November 1987. The analyses included are the following:

- TCL (Target Compound List) Inorganics - Preparation and analysis of inorganic compounds using the specified CLP methods. The analyses are performed on unfiltered samples. Results of the analyses represent <u>total</u> metals.

- TCL Volatiles - Preparation and analysis using the CLP specified GC/MS (Gas Chromatograph/Mass Spectrometer) method for TCL purgeable organics plus a library search for and the quantification of any additional non-TCL compounds (the CLP requires the library search only for the ten non-TCL compounds of largest apparent concentration).

- TCL Semi-Volatiles - Preparation and analysis using the CLP specified GC/MS method for TCL extractable base/neutral and acid organic compounds plus a library search for and the quantification of any additional non-TCL compounds (the CLP requires the library search only for the 20 non-TCL compounds of largest apparent concentration).

- TCL Pesticides/PCBs - Preparation and pre-extraction of the organo-chloride pesticides and polychlorinated biphenyls using the CLP specified Gas Chromatograph/Electron Capture Detection (GC/ECD) method.

The CLP used for the analyses specified the quality control measures which were employed including:

- A duplicate sample obtained from a monitoring well chosen at random. That sample was not identified as a duplicate to the laboratory, but was assigned an identifier similar to other groundwater samples. The Bureau of Hazardous Site Control requires the blind analyses of a duplicate groundwater sample for each site by the laboratory to confirm the integrity of all sampling and analytical activities.

- The CLP requires at least one spiked sample analysis and one spiked duplicate sample analysis from each group of samples of a similar matrix type for each case of samples or for each 20 samples received, whichever is more frequent.

- A method blank for each category was used to assess the level of possible laboratory background contamination.

OBG Laboratories, Inc. performed validation of data submitted by H2M Laboratory. For validation of analytical data, the CLP guidelines for validation of laboratory data were followed.

3. Guidelines for Evaluating Chemical Analyses

The assessment of a chemical analysis is made to determine the existence and magnitude of contamination problems and criteria to determine whether or not a quantitative evidence exists of an "observed release" of contaminants to the environment. The following criteria, based on USEPA Laboratory Data Validation, February 1, 1988 [D.18] have been applied for evaluation of any blank associated with the samples:

- For all pollutants the method blank must contain less than Contract Required Quantitation Limits (CRQL) of any single organic pollutant and less than Instrument Detection Limits (IDL) of any single inorganic pollutant. If a method blank exceeds this criterion, the analytical system is considered as "out-of-control".

- Trip and field blank are evaluated as if they are "true" samples. The presence of the analyte in the field/trip blank is an indication of possible field/trip introduced contamination.

- If contaminants are detected in blanks, then sample results are considered "significant" when concentration of the compound in the sample exceeds ten times the amount in any blank for common lab contaminants (methylene chloride, acetone, toluene, 2-butanone and common phthalate esters), or five times the amount for other compounds.

To determine whether or not quantitative evidence exists of an "observed release", the following guidelines have been applied:

- If a contaminant is measured in a sample at a concentration equal to or greater than ten times that of the contaminant in the background sample, then the contaminant is considered to be at a significantly higher level than the background level, and quantitative evidence exists for an observed release.

- If no background concentration is detected (background sample results are below CRQL), then the analytical results for contamination of the sample must be three or more times the CRQL to be considered at a significantly higher level than the background level.

To determine the magnitude of a water body contamination problem, sample results are compared to the following federal and New York State water quality standards or guidelines:

- Environmental Protection Agency National Primary Drinking Water Regulations (as of 7/17/89).

  Applied to results of all water sample analyses.

- Chapter 1 of Title 10 of the Official Compilation of Codes, Rules, and Regulations of the State of New York, Part 5, Drinking Water Supplies, Subpart 5-1, Public Water Supplies (as of 11/28/88).

  Applied to results of drinking water sample analyses.

- Chapter 10 of Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York, Division of Water Resources, Article 2, Part 702, Appendix 31, Ambient Water Quality Standards - "The standards adopted herein relate to the condition of waters as affected by the discharge of sewage, industrial wastes, or other wastes" (as of 7/5/85).

  Applied to results of surface water sample analyses for surface water that is not a source of drinking water.

- Chapter 10 of Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York, Division of Water Resources, Article 2, Part 703.5(a)(2) and (3), Classes and Quality Standards for Groundwaters - "The purpose of these classes, quality standards, and effluent standards and/or limitations is to prevent pollution of groundwaters and to protect the groundwaters for use as a potable water" (as of 7/5/85).

Applied to results of all groundwater sample analyses regardless of groundwater use.

To determine the magnitude of soil and sediment contamination, soil and sediment results are compared to the common range of inorganics in uncontaminated soils as listed in the USEPA publication, Review of In-Place Treatment Techniques for Contaminated Surface Soils (EPA-5400/2-84-0036, November 1984, p. 79).

4. Air Survey

The Photoionization Detector (PID) was used to monitor the presence of volatile organic contaminants in the ambient air at the hazardous waste site. The measurements were evaluated to determine the proper health and safety requirements to be implemented during the site reconnaissance, and during drilling activities. Prior to daily activities, PID measurements were taken along perimeter of the GAF Dump site and readings were logged. Background levels remained at 0.4 ppm.

All split spoon samples were scanned with the PID immediately upon opening of the split spoon samples to assess potential for high levels of volatile organic contamination. The results of these readings are attached with the boring log of each well. No readings were measured in excess of 0.4 ppm.

The meter was calibrated before each day with a benzene standard. Organic vapor emanating from the surface was determined by holding the probe 6"-12" above the surface for 30 seconds. During the drilling procedure, each split-spoon soil sample was tested by holding the probe at approximately 1-inch from the soil sample. Readings were registered when the instrument stabilized. In all monitoring events, the readings were at the background level.

C.2 RESULTS

GROUNDWATER SAMPLING REPORT

SITE: GAF

ID NO.: 704011

DATE: 10/28/89

SAMPLERS: A. Kostic and A. Longoria

NYS DEC REPRESENTATIVE: L. Alden

WEATHER: Cloudy, around 50°F

WELL DATA

Well No.	Depth of the Well, ft.	Depth to Water(2)	Total Volume Evacuated
GW-1	40	33'-7"	Note (1)
GW-2	18	8'-5"	Note (1)
GW-3	20	10'-2"	Note (1)

GROUNDWATER SAMPLED BY: a) inertial pump, for all analyses except VOA, b) dedicated teflon bailers for VOA analysis.

FIELD TEST DATA

Well No.	Temp. °C	Conductivity Micromhos	pH	Odor
GW-1	12.0	50	7.2	No
GW-2	15.0	80	7.2	No
GW-3	13.5	250	7.2	No

Note

1) Wells were developed by inertial pump for one hour. Pump capacity = 4.2 gpm.

2) Depth to water refers to feet below top of protective casing.

WPENVR1:619

OBG
LABORATORIES, INC.

April 27, 1989

Mr. Lawrence Alden
New York State
Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

Re: Data Validation
File: 4398-1-517

Dear Mr. Alden:

Thw purpose of this letter is to comment on the data validated for the Gibbs & Hill Phase II investigation. OBG Laboratories responsibility was to review the data to verify its compliance with NYSDEC CLP requirements. The useability of the data to satisfy the objectives of the investigation is not within our purview, however, we are willing to make a comment as to whether the excursions are major or minor. The ultimate decision lies with the regulatory agency responsible for oversight. The enclosed text provides comments on each site validated. Future packages will include qualatative statements about the overall package.

Should there be any further questions on this matter, please feel free to contact Mr. Norman Hinsey of Gibbs & Hill or myself.

Very truly yours,

OBG Laboratories, Inc.

David R. Hill

David R. Hill
Vice President

cc. Mr. Norman Hinsey, Gibbs & Hill, Inc. ✓
    Mr. Stanley Isaacson, H2M Labs, Inc.
    Mr. Iqbal Singh, IMS Engineers, Inc.

OBG Laboratories, Inc.
Box 4942 / 1304 Buckley Road / Syracuse, New York 13221 / (315) 457-1494

Data Validation
Overall Comments

There are major and minor excursions of the CLP deliverables which qualify data. The following comments reflect our experience as analytical chemists reviewing hazardous waste data. Each data package has questions which need to be addressed and are documented in the validation report. Generally, the reports are technically sound and most of the errors are typographical and/or transfering information from one form to another.

→ GAF Dump Site - The excursions are minor and the data is useable with qualifiers.

RCA Rocky Point Site - The excursions are minor, however, the laboratory control sample for inorganics need to be addressed to use the metals data.

South Montclair Site - There are no major excursions, however, the volatile results should be reviewed to verify that the proper identification was applied.

Homer Village Site - The excursions are minor and the data is useable with qualifiers.

Armstrong Site - There was a major excursion in the area of holding times for volatiles and three pesticide samples. The other excursions are minor and should not significantly effect the interpretation.

Mirabito Site - The comments cited for the Armstrong Site are the same for this site.

Sealright Site - The data is of good quality with several minor excursions.

Taylor Site - The comments for this site are the same as the Sealright Site

Central Suffolk Site - Volatile continuing calibration problems require qualifiers for certain compounds. The other excursions are minor and the data is useable.

New Scotland Site - The data from this site has no major excursions. However, the high %D on continuing calibration runs for VOA's and BNA's should be addressed.

East Greenbush Site - One BNA sample required reextraction and was outside the holding time. There are several minor excursions, however, overall the data is useable.

H2M LABS, INC.
Environmental and Industrial Analytical Laboratory
575 Broad Hollow Road, Melville, NY 11747-5076

(516) 694-3040

December 12, 1988

Gibbs & Hill, Inc.
11 Penn Plaza
New York, NY 10001
Attn: Norman Hinsey

Dear Mr. Hinsey:

Please find enclosed copies of the lab data reports and case narratives for the samples submitted from the GAF Dump Site. The CLP data package has been forward to O'Brien & Gere and the NYSDEC for review.

Also enclosed are the invoices for both the GAF Dump Site and the RCA Rocky Point (Roux Associates).

If you have any questions regarding this material, please feel free to contact us.

Very truly yours,

H2M Labs, Inc.

Stanley Isaacson P.E.
Stanley Isaacson
Laboratory Manager

SI/peb
Enclosure

H2M GROUP
Melville, N.Y. • Riverhead, N.Y. • Fairfield, N.J.

Member ACIL

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

CASE NARRATIVE FOR PURGEABLE ORGANICS

All quality control criteria were met and no problems were encountered for this data package.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: 12/06/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

CASE NARRATIVE FOR BASE NEUTRALS/ACID EXTRACTABLES

All Quality Control requirements were met for this group of samples with the exception of the following: the surrogate standard tribromophenol was outside the allowable limits for all samples analyzed. After investigation into the reasons for this unusually high recovery, it appears to be due to a low daily Rf of the continuing calibration. Since the average Rf of the initial calibration was used to quantify the samples the recoveries are on the high side.

The matrix spike and matrix spike duplicate results for pentachlorophenol were both outside the allowable limits, the recoveries were 110% and 126% respectively. The upper allowable range was 103%. The %RPD was slightly outside the allowable for 1,2,4-trichlorobenzene and pyrene.

A dichlorocyclopentane isomer was found in all samples and the method blank. The method blank contained 18J ug/L. The source of this contamination is under investigation.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

CASE NARRATIVE FOR PESTICIDES/PCB'S

The bottles for Pesticide/PCB matrix spike and matrix spike duplicate arrived broken in the laboratory. Therefore, no matrix spike and matrix spike duplicate was performed for the Pesticide/PCB.

The DBC surrogate spike recoveries for sample #4 and the field blank were outside the advisory limits.

All other quality control checks were in compliance with the required limits in the protocol and no problems were encountered with the analyses.

A low level compound eluting at the aldrin retention time was detected on both the primary and confirmatory columns in the method blank (0.13 ug/l); field blank (0.05 ug/l); Sample #3 (0.11 ug/l); and Sample #4 (0.14 ug/l). The cause of this contamination is under investigation.

The data file for the converted data (from intergrator to computer file) for capillary run of Sample #1 (871771) could not be accessed. No computer printout for the chromatogram for this run is available. The original chromatogram from the integrator was submitted.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

Soils Received 10/31/88

CASE NARRATIVE FOR METALS

ICP analysis was performed on the ARL's 3410 ICP. Furnace analysis was performed on the Zeeman 5100 furnace. Mercury was analyzed using the manual cold vapor method.

Nickel and Cobalt were initially run on the ICP. The CCV's were out of control. These metals were reanalyzed on the Perkin Elmer 2380 Flame A.A.. Lead was initially run on the Zeeman 5100 furnace and had to be reanalyzed on the Perkin Elmer 2380 Flame A.A. due to high concentrations.

The matrix spike recovery for sample #2 is less than 75% for silver. All associated silver results reported flagged with an "N". Matrix spike recoveries for sample #2 are greater than 125% for antimony, barium, cadmium, and manganese. All associated results reported flagged with an "N".

Duplicate analysis of sample #2 is out of control for barium, copper, iron, manganese, and zinc. All associated results reported flagged with an "*".

ICP serial dilution results of vanadium and chromium for sample #8 are not within the contract limit of 10%. All associated results reported flagged with an "E".

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

Waters Received 11/2/88

CASE NARRATIVE FOR METALS

ICP analysis was performed on ARL's 3410 ICP. Furnace analysis was performed on Zeeman's 5100 furnace. Mercury was analyzed using the manual cold vapor method. Flame analysis was performed on the Perkin Elmer 2380 Flame A.A. .

Sample #4 (871780) was redigested with appropriate spiking levels for sodium, magnesium, calcium, and potassium. These analyses were performed on the flame.

Inadvertently, spiking levels from an earlier protocol were used for arsenic, manganese, antimony, zinc and nickel.

Silver was initially run on the ICP. The ICS-AB result was not within the control limit of +/- 20%. These samples were reanalyzed on the flame and were within the control limits.

The matrix spike recovery for sample #4 is less than 75% for selenium. The matrix spike recovery for sample #4 is greater than 125% for copper. All associated selenium and copper results reported flagged with an "N" as per protocol.

The absorbances for samples #1 (871777) and #3 (871779) for thallium were less than 50% of the spike absorbances. Since the spike recovery was not between 85-115%, the values associated are flagged with a "W". The absorbances for samples #2 (871778) and #4 (871780) for selenium were less than 50% of the spike absorbances. Since the spike recovery was not between 85-115%, the values associated are flagged with a "W".

The lead matrix spike for sample #4 was incalculable due to a required dilution.

ICP serial dilution results of antimony, cadmium, and iron for sample #3 are not within the contract limit of 10%. All associated results reported flagged with an "E".

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID. 871771
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Sample ID: SAMPLE #1
GAF DUMP SITE GROUNDWATER SAMPLES
Sample Vol: 5 ml Level: LOW Column: PACK
Lab File ID: PU9266 Dilution Factor: 1
Date Analyzed: 11/05/88

RESULTS FOR PRIORITY POLLUTANTS ANALYSIS - PURGEABLE ORGANICS

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J,B
67-64-1	Acetone	18	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	19	B
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
70-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	6	B
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	2	J
1330-20-7	Xylene (total)	5	U

Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID: 871771
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Point: SAMPLE #1
GAF DUMP SITE GROUNDWATER SAMPLES
Sample vol: 5 mL Level: LOW Column: PACK
Lab File ID: PU9266 Dilution Factor: 1
Date Analyzed: 11/05/88

Number TICs found: 4

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	109-87-5	Dimethoxymethane	04:06	38	J
2	--	Unknown Alkene	09:24	24	J,B
3	--	Unknown	09:57	27	J,B
4	--	Unknown Alkene	10:09	26	J,B
5					
6					
7					
8					
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Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID. 871772
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Sample ID: SAMPLE #2
GAF DUMP SITE GROUNDWATER SAMPLES
Sample Vol: 5 ml Level: LOW Column: PACK
Lab File ID: PU9267 Dilution Factor: 1
Date Analyzed: 11/05/88

RESULTS FOR PRIORITY POLLUTANTS ANALYSIS - PURGEABLE ORGANICS

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	150	
75-09-2	Methylene Chloride	95	B
67-64-1	Acetone	87	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	44	
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	10	U
108-05-4	Vinyl Acetate	2	J
75-27-4	Bromodichloromethane	5	U
70-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	3	J
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	11	
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	2	J,B
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID: 871772
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Point: SAMPLE #2
GAF DUMP SITE GROUNDWATER SAMPLES
Sample vol: 5 mL Level: LOW Column: PAC
Lab File ID: PU9267 Dilution Factor: 1
Date Analyzed: 11/05/88

Number TICs found: 4

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	629-14-1	1,2-Diethoxyethane	05:42	30	J
2	--	Unknown alkene	09:27	6	J,B
3	--	Unknown	10:00	10	J,B
4	--	Unknown alkene	10:12	7	J,B
5					
6					
7					
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Date Reported: 11/29/88

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John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID. 871773
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Sample ID: SAMPLE #3
GAF DUMP SITE GROUNDWATER SAMPLES
Sample Vol: 5 ml Level: LOW Column: PACK
Lab File ID: PU9268 Dilution Factor: 1
Date Analyzed: 11/05/88

RESULTS FOR PRIORITY POLLUTANTS ANALYSIS - PURGEABLE ORGANICS

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	B
67-64-1	Acetone	86	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	75	B
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
70-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	
127-18-4	Tetrachloroethene	1	J,B
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	3	J,B
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID: 871773
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Point: SAMPLE #3
GAF DUMP SITE GROUNDWATER SAMPLES
Sample vol: 5 mL Level: LOW Column: PACK
Lab File ID: PU9268 Dilution Factor: 1
Date Analyzed: 11/05/88

Number TICs found: 4

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	--	Unknown alkene	09:33	12	J,B
2	--	Unknown	10:09	9	J,B
3	--	Unknown alkene	10:21	8	J,B
4	623-42-7	Butanoic acid methylester	12:48	7	J
5					
6					
7					
8					
9					
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Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID. 871774
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Sample ID: SAMPLE #4
GAF DUMP SITE GROUNDWATER SAMPLES
Sample Vol: 5 ml Level: LOW Column: PACK
Lab File ID: PU9269 Dilution Factor: 1
Date Analyzed: 11/05/88

RESULTS FOR PRIORITY POLLUTANTS ANALYSIS - PURGEABLE ORGANICS

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	120	
75-09-2	Methylene Chloride	81	B
67-64-1	Acetone	68	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	38	
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
70-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	11	
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID: 871774
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Point: SAMPLE #4
GAF DUMP SITE GROUNDWATER SAMPLES
Sample vol: 5 mL Level: LOW Column: PACK
Lab File ID: PU9269 Dilution Factor: 1
Date Analyzed: 11/05/88

Number TICs found: 2

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	629-14-1	1,2-Diethoxyethane	05:45	30	J
2	--	Unknown alkene	07:51	17	J,B
3					
4					
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7					
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Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID. 871775
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Sample ID: FIELD BLANK
GAF DUMP SITE GROUNDWATER SAMPLES
Sample Vol: 5 ml Level: LOW Column: PACK
Lab File ID: PU9272 Dilution Factor: 1
Date Analyzed: 11/05/88

RESULTS FOR PRIORITY POLLUTANTS ANALYSIS - PURGEABLE ORGANICS

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	8	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
70-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 11/29/88

JMolloy

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID: 871775
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Point: FIELD BLANK
GAF DUMP SITE GROUNDWATER SAMPLES
Sample vol: 5 mL Level: LOW Column: PACK
Lab File ID: PU9272 Dilution Factor: 1
Date Analyzed: 11/05/88

Number TICs found: 2

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	--	Unknown	08:57	5	J,B
2	--	Unknown alkene	09:45	13	J,B
3					
4					
5					
6					
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Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID. 871776
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Sample ID: TRIP BLANK
GAF DUMP SITE GROUNDWATER SAMPLES
Sample Vol: 5 ml Level: LOW Column: PACK
Lab File ID: PU9273 Dilution Factor: 1
Date Analyzed: 11/05/88

RESULTS FOR PRIORITY POLLUTANTS ANALYSIS - PURGEABLE ORGANICS

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	12	
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	20	B
67-64-1	Acetone	8	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
70-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	4	J,B
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID: 871776
Date Collected: 11/01/88
Date Received: 11/02/88
Matrix: WATER
Point: TRIP BLANK
GAF DUMP SITE GROUNDWATER SAMPLES
Sample vol: 5 mL Level: LOW Column: PACK
Lab File ID: PU9273 Dilution Factor: 1
Date Analyzed: 11/05/88

CONCENTRATION UNITS: ug/L

Number TICs found: 2

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	--	Unknown alkene	09:33	7	J,B
2	--	Unknown	10:06	10	J,B
3	--	Unknown alkene	10:21	9	J,B
4					
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6					
7					
8					
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Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID. VBLK
Date Collected: --
Date Received: --
Matrix: WATER
Sample ID: INST. BLANK
GAF DUMP SITE GROUNDWATER SAMPLES
Sample Vol: 5 ml Level: LOW Column: PACK
Lab File ID: PU9265 Dilution Factor: 1
Date Analyzed: 11/05/88

RESULTS FOR PRIORITY POLLUTANTS ANALYSIS - PURGEABLE ORGANICS

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	
75-09-2	Methylene Chloride	8	
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	J
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
70-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	1	J
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 11/29/88

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John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

GIBBS & HILL, INC.
11 PENN PLAZA
NEW YORK, NY 10001-2059

Sample Lab ID: VBLK
Date Collected: --
Date Received: --
Matrix: WATER
Point: INST. BLANK
GAF DUMP SITE GROUNDWATER SAMPLES
Sample vol: 5 mL Level: LOW Column: PACK
Lab File ID: PU9265 Dilution Factor: 1
Date Analyzed: 11/05/88

Number TICs found: 3

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	--	Unknown alkene	09:15	5	J
2	--	Unknown	09:45	10	J
3	--	Unknown alkene	10:00	7	J
4					
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7					
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Date Reported: 11/29/88

John J. Molloy, P.E.
Laboratory Director

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMP #1

Lab Name: H2M LABS INC. Contract: -------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: SAMP #1

Matrix: (soil/water) WATER Lab Sample ID: 871771

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5131

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. 100 dec. ----- Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMP #1

Lab Name: H2M LABS INC.   Contract: -------

Lab Code: -------   Case No.: -------   SAS No.: -------   SDG No.: SAMP #1

Matrix: (soil/water) WATER   Lab Sample ID: 871771

Sample wt/vol: 1000 (g/mL) ML   Lab File ID: >P5131

Level: (low/med) LOW   Date Received: 11/02/88

% Moisture: not dec. 100   dec. -----   Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF   Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N   pH: 7.2   Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	15.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SAMP #1

Lab Name: H2M LABS INC.   Contract: -------

Lab Code: -------   Case No.: -------   SAS No.: -------   SDG No.: SAMP #1

Matrix: (soil/water) WATER   Lab Sample ID: 871771

Sample wt/vol: 1000 (g/mL) ML   Lab File ID: >P5131

Level: (low/med) LOW   Date Received: 11/02/88

% Moisture: not dec. 100   dec. -----   Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF   Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N   pH: 7.2   Dilution Factor: 1.00000

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Dichloro-cyclopentane isomer	9.63	20.	JB
3.				
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Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMP #2

Lab Name:H2M LABS INC.   Contract:-------

Lab Code: -------   Case No.: ------- SAS No.: -------   SDG No.: SAMP #1

Matrix: (soil/water) WATER   Lab Sample ID: 871772

Sample wt/vol: 1000   (g/mL) ML   Lab File ID: >P5132

Level: (low/med) LOW   Date Received: 11/02/88

% Moisture: not dec.100   dec. -----   Date Extracted:11/03/88

Extraction: (Sepf/Cont/Sonc)   SEPF   Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N   pH:7.2   Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMP #2

Lab Name:H2M LABS INC.
Contract:-------

Lab Code: -------
Case No.: -------
SAS No.: -------
SDG No.: SAMP #1

Matrix: (soil/water) WATER
Lab Sample ID: 871772

Sample wt/vol: 1000 (g/mL) ML
Lab File ID: >P5132

Level: (low/med) LOW
Date Received: 11/02/88

% Moisture: not dec.100 dec. -----
Date Extracted:11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF
Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH:7.2
Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	4.	JB
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SAMP #2

Lab Name: H2M LABS INC.   Contract: -------

Lab Code: -------   Case No.: -------   SAS No.: -------   SDG No.: SAMP #1

Matrix: (soil/water) WATER   Lab Sample ID: 871772

Sample wt/vol: 1000 (g/mL) ML   Lab File ID: >P5132

Level: (low/med) LOW   Date Received: 11/02/88

% Moisture: not dec. 100   dec. -----   Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF   Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N   pH: 7.2   Dilution Factor: 1.00000

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Dichloro-cyclopentane isomer	9.64	16.	JB
2. 21368683	Bicyclo[2.2.1]heptan-2-one,	15.12	10.	J
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Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMP #3

Lab Name:H2M LABS INC. Contract:-------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: SAMP #1

Matrix: (soil/water) WATER Lab Sample ID: 871773

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5133

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec.100 dec. ----- Date Extracted:11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH:7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMP #3

Lab Name: H2M LABS INC. Contract: -------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: SAMP #1

Matrix: (soil/water) WATER Lab Sample ID: 871773

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5133

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. 100 dec. ----- Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	7.	JB
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SAMP #3

Lab Name: H2M LABS INC.   Contract: -------

Lab Code: -------   Case No.: -------   SAS No.: -------   SDG No.: SAMP #1

Matrix: (soil/water) WATER   Lab Sample ID: 871773

Sample wt/vol: 1000 (g/mL) ML   Lab File ID: >P5133

Level: (low/med) LOW   Date Received: 11/02/88

% Moisture: not dec. 100   dec. -----   Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF   Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N   pH: 7.2   Dilution Factor: 1.00000

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number TICs found: 2

CAS NUMBER		COMPOUND NAME	RT	EST. CONC.	Q
1.	123911	1,4-Dioxane (9CI)	3.96	20.	J
2.		Dichloro-cyclopentane isomer	9.64	20.	JB
3.					
4.					
5.					
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Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

EPA SAMPLE NO.

SAMP #4

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M LABS INC. Contract: -------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: SAMP #1

Matrix: (soil/water) WATER Lab Sample ID: 871774

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5134

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec.100 dec. ----- Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	2.	J
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMP #4

Lab Name: H2M LABS INC.   Contract: -------

Lab Code: -------   Case No.: -------   SAS No.: -------   SDG No.: SAMP #1

Matrix: (soil/water) WATER   Lab Sample ID: 871774

Sample wt/vol: 1000 (g/mL) ML   Lab File ID: >P5134

Level: (low/med) LOW   Date Received: 11/02/88

% Moisture: not dec. 100   dec. -----   Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF   Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N   pH: 7.2   Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	2.	J
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	3.	J
129-00-0	Pyrene	2.	J
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	2.	J
218-01-9	Chrysene	2.	J
117-81-7	bis(2-Ethylhexyl)phthalate	9.	JB
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	2.	J
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	2.	J
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SAMP #4

Lab Name:H2M LABS INC. Contract:-------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: SAMP #1

Matrix: (soil/water) WATER Lab Sample ID: 871774

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5134

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec.100 dec. ----- Date Extracted:11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH:7.2 Dilution Factor: 1.00000

CONCENTRATION UNITS:
Number TICs found: 3 (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Dichloro-cyclopentane isomer	9.64	22.	JB
2. 21368683	Bicyclo[2.2.1]heptan-2-one,	15.14	14.	J
3. 118467	2-Naphthalenol, 8-amino- (9C	18.52	10.	J
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FORM I SV-TIC 1/87 Rev.

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD BLANK

Lab Name: H2M LABS INC. Contract: -------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: SAMP #1

Matrix: (soil/water) WATER Lab Sample ID: 871775

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5137

Level: (low/med) LOW Date Received: 11/02/88

% Moisture: not dec. 100 dec. ----- Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD BLANK

Lab Name: H2M LABS INC.
Contract: -------

Lab Code: -------
Case No.: -------
SAS No.: -------
SDG No.: SAMP #1

Matrix: (soil/water) WATER
Lab Sample ID: 871775

Sample wt/vol: 1000 (g/mL) ML
Lab File ID: >P5137

Level: (low/med) LOW
Date Received: 11/02/88

% Moisture: not dec. 100 dec. -----
Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF
Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N pH: 7.2
Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	110.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
FIELD BLANK

Lab Name: H2M LABS INC.   Contract: -------

Lab Code: -------   Case No.: -------   SAS No.: -------   SDG No.: SAMP #1

Matrix: (soil/water) WATER   Lab Sample ID: 871775

Sample wt/vol: 1000 (g/mL) ML   Lab File ID: >P5137

Level: (low/med) LOW   Date Received: 11/02/88

% Moisture: not dec. 100   dec. -----   Date Extracted: 11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF   Date Analyzed: 11/18/88

GPC Cleanup: (Y/N) N   pH: 7.2   Dilution Factor: 1.00000

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Dichloro-cyclopentane isomer	9.64	18.	JB
2.					
3.					
4.					
5.					
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Date Reported: 12/1/88

John J. Molloy, P.E.
Laboratory Director

PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE #1
GAF DUMP SITE
GROUNDWATER SAMPLES

Lab Name: H2M LABS, INC.
Contract: G & H
Matrix: WATER
Sample vol: 1000 mL
Level: LOW
% Moisture:not dec. X dec.
Extraction: SEPF
GPC Cleanup: NONE pH: 6
Lab Sample ID: 871771
Lab File ID: RUN #178P / RUN #653C
Date Received: 11/02/88
Date Extracted: 11/05/88
Date Analyzed: 12/02/88 P/ 11/21/88 C
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE #2
GAF DUMP SITE
GROUNDWATER SAMPLES

Lab Name: H2M LABS, INC.
Contract: G & H
Matrix: WATER
Lab Sample ID: 871772
Sample vol: 1000 mL
Lab File ID: RUN #179P / RUN #654C
Level: LOW
Date Received: 11/02/88
% Moisture:not dec. X dec. ____
Date Extracted: 11/05/88
Extraction: SEPF
Date Analyzed: 12/02/88 P/ 11/21/88 C
GPC Cleanup: NONE pH: ____
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE #3
GAF DUMP SITE
GROUNDWATER SAMPLES

Lab Name: H2M LABS, INC.
Contract: G & H
Matrix: WATER
Lab Sample ID: 871773
Sample vol: 1000 mL
Lab File ID: RUN #180P / RUN #655C
Level: LOW
Date Received: 11/02/88
% Moisture: not dec. X dec. ___
Date Extracted: 11/05/88
Extraction: SEPF
Date Analyzed: 12/02/88 P/ 11/21/88 C
GPC Cleanup: NONE pH: 6
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.11	B
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

C-55

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE #4
GAF DUMP SITE
GROUNDWATER SAMPLES

Lab Name: H2M LABS, INC.
Contract: G & H
Matrix: WATER
Lab Sample ID: 871773
Sample vol: 1000 mL
Lab File ID: RUN #182P / RUN #657C
Level: LOW
Date Received: 11/02/88
% Moisture: not dec. X dec.
Date Extracted: 11/05/88
Extraction: SEPF
Date Analyzed: 12/02/88 P/ 11/21/88 C
GPC Cleanup: NONE pH: 6
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.14	B
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

PESTICIDE ORGANICS ANALYSIS DATA SHEET

FIELD BLANK
GAF DUMP SITE
GROUNDWATER SAMPLES

Lab Name: H2M LABS, INC.
Contract: G & H

Matrix: WATER
Sample vol: 1000 mL
Level: LOW
% Moisture: not dec. X dec. ___
Extraction: SEPF
GPC Cleanup: NONE pH: 6

Lab Sample ID: 871775
Lab File ID: RUN #183P / RUN #658C
Date Received: 11/02/88
Date Extracted: 11/05/88
Date Analyzed: 12/02/88 P/ 11/21/88 C
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	B
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
Environmental and Industrial Analytical Laboratory
U.S. EPA - CLP
575 Broad Hollow Road, Melville, NY 11747-5076
(516) 694-3040

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL1

Contract: GIBBS&HILL

Lab Name: H2M LABS, INC.

Lab Code: H2MLAB Case No.: SAS No.: SDG No.: GIB007

Matrix (soil/water): SOIL

Lab Sample ID: 871659

Level (low/med): LOW

Date Received: 10/31/88

% Solids: 34.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9530			P
7440-36-0	Antimony	17.1	B	N	P
7440-38-2	Arsenic				
7440-39-3	Barium	177		N*	P
7440-41-7	Beryllium	1.2	B		P
7440-43-9	Cadmium	3.2	B	N E	P
7440-70-2	Calcium	31700			P
7440-47-3	Chromium	12.4			P
7440-48-4	Cobalt				
7440-50-8	Copper	30.6		*	P
7439-89-6	Iron	18200		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	6050			P
7439-96-5	Manganese	912		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	7.6		N	P
7440-23-5	Sodium	6320			P
7440-28-0	Thallium				
7440-62-2	Vanadium	14.7	B	E	P
7440-66-6	Zinc	166		*	P
	Cyanide				

Color Before: BROWN

Clarity Before: CLOUDY

Texture: MEDIUM

Color After: YELLOW

Clarity After: CLOUDY

Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #1

GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): SOIL

Lab Sample ID: 871659

Level (low/med): LOW

Date Received: 10/31/88

% Solids : 34

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	9.4		*N	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt	5.9	U		A
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	41.2			F
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.4			CV
7440-02-0	Nickel	17.6		*N	A
7440-09-7	Potassium	1180			A
7782-49-2	Selenium	8.8			F
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium	2.9	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	2.9	U		C

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

Environmental and Industrial Analytical Laboratory
575 Broad Hollow Road, Melville, NY 11747-5076
(516) 694-3040

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL2

Lab Name: H2M LABS, INC. Contract: GIBBS&HILL

Lab Code: H2MLAB Case No.: SAS No.: SDG No.: GIB007

Matrix (soil/water): SOIL Lab Sample ID: 871660

Level (low/med): LOW Date Received: 10/31/88

% Solids: 79.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4860			P
7440-36-0	Antimony	12.9	B	N	P
7440-38-2	Arsenic				
7440-39-3	Barium	181		N*	P
7440-41-7	Beryllium	1.0	B		P
7440-43-9	Cadmium	1.4	B	N E	P
7440-70-2	Calcium	4040			P
7440-47-3	Chromium	26.3			P
7440-48-4	Cobalt				
7440-50-8	Copper	3510		*	P
7439-89-6	Iron	28400		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	859	B		P
7439-96-5	Manganese	318		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	2.3	B	N	P
7440-23-5	Sodium	4480			P
7440-28-0	Thallium				
7440-62-2	Vanadium	17.7		E	P
7440-66-6	Zinc	797		*	P
	Cyanide				

Color Before: BROWN Clarity Before: CLOUDY Texture: MEDIUM

Color After: GREY Clarity After: CLOUDY Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

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Rev. IFB Amendment One

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #2

GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Lab Sample ID: 871660

Matrix (soil/water): SOIL

Date Received: 10/31/88

Level (low/med): LOW

% Solids : 79

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony			*N	F
7440-38-2	Arsenic	5.6			
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				A
7440-48-4	Cobalt	4.1	U		
7440-50-8	Copper				
7439-89-6	Iron				A
7439-92-1	Lead	334			
7439-95-4	Magnesium				
7439-96-5	Manganese				CV
7439-97-6	Mercury	0.08		*N	A
7440-02-0	Nickel	55.9			A
7440-09-7	Potassium	455			F
7782-49-2	Selenium	1.3	U		
7440-22-4	Silver				
7440-23-5	Sodium				F
7440-28-0	Thallium	1.3	U		
7440-62-2	Vanadium				
7440-66-6	Zinc				C
	Cyanide	1.3	U		

COMMENTS: ____________________

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.

Environmental and Industrial Analytical Laboratory
575 Broad Hollow Road, Melville, NY 11747-5076
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL3

Lab Name: H2M LABS, INC.

Contract: GIBBS&HILL

Lab Code: H2MLAB

Case No.:

SAS No.:

SDG No.: GIB007

Matrix (soil/water): SOIL

Lab Sample ID: 871661

Level (low/med): LOW

Date Received: 10/31/88

% Solids: 90.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8160			P
7440-36-0	Antimony	14.0		N	P
7440-38-2	Arsenic				
7440-39-3	Barium	135		N*	P
7440-41-7	Beryllium	0.89	B		P
7440-43-9	Cadmium	1.2	B	N E	P
7440-70-2	Calcium	57800			P
7440-47-3	Chromium	15.3			P
7440-48-4	Cobalt				
7440-50-8	Copper	40.2		*	P
7439-89-6	Iron	15800		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	8450			P
7439-96-5	Manganese	416		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	1.1	B	N	P
7440-23-5	Sodium	2190			P
7440-28-0	Thallium				
7440-62-2	Vanadium	18.7		E	P
7440-66-6	Zinc	118		*	P
	Cyanide				

Color Before: BROWN

Clarity Before: CLOUDY

Texture: MEDIUM

Color After: BEIGE

Clarity After: CLOUDY

Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #3
GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): SOIL Lab Sample ID: 871661

Level (low/med): LOW Date Received: 10/31/88

% Solids : 90

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	5.3		*N	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt	7.8			A
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	144			A
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.1	U		CV
7440-02-0	Nickel	16.7		*N	A
7440-09-7	Potassium	1130			A
7782-49-2	Selenium	1.1	U		F
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	1.1	U		C

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL4

Lab Name: H2M LABS, INC.

Contract: GIBBS&HILL

Lab Code: H2MLAB

Case No.:

SAS No.:

SDG No.: GIB007

Matrix (soil/water): SOIL

Lab Sample ID: 871662

Level (low/med): LOW

Date Received: 10/31/88

% Solids: 93.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8330			P
7440-36-0	Antimony	13.8		N	P
7440-38-2	Arsenic				
7440-39-3	Barium	58.5		N*	P
7440-41-7	Beryllium	0.86	B		P
7440-43-9	Cadmium	1.2	B	N E	P
7440-70-2	Calcium	68300			P
7440-47-3	Chromium	18.1			P
7440-48-4	Cobalt				
7440-50-8	Copper	23.2		*	P
7439-89-6	Iron	14800		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	5580			P
7439-96-5	Manganese	379		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	0.58	U	N	P
7440-23-5	Sodium	2210			P
7440-28-0	Thallium				
7440-62-2	Vanadium	14.8		E	P
7440-66-6	Zinc	135		*	P
	Cyanide				

Color Before: BROWN

Clarity Before: CLOUDY

Texture: MEDIUM

Color After: GREY

Clarity After: CLOUDY

Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #4
GAF DUMP SITE

Lab Name: H2M LABS, INC.   Contract: GIBBS & HILL

Matrix (soil/water): SOIL   Lab Sample ID: 871662

Level (low/med): LOW   Date Received: 10/31/88

% Solids : 93

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	3.4		*N	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt	6.9			A
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	60			A
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	18.7		*N	A
7440-09-7	Potassium	1030			A
7782-49-2	Selenium	1.1	U		F
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	1.1	U		C

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL5

Lab Name: H2M LABS, INC. Contract: GIBBS&HILL

Lab Code: H2MLAB Case No.: SAS No.: SDG No.: GIB007

Matrix (soil/water): SOIL Lab Sample ID: 871663

Level (low/med): LOW Date Received: 10/31/88

% Solids: 89.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7770			P
7440-36-0	Antimony	11.9	B	N	P
7440-38-2	Arsenic				
7440-39-3	Barium	176		N*	P
7440-41-7	Beryllium	0.90	B		P
7440-43-9	Cadmium	1.2	B	N E	P
7440-70-2	Calcium	39500			P
7440-47-3	Chromium	21.3			P
7440-48-4	Cobalt				
7440-50-8	Copper	153		*	P
7439-89-6	Iron	19200		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	7340			P
7439-96-5	Manganese	368		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	2.0	B	N	P
7440-23-5	Sodium	2200			P
7440-28-0	Thallium				
7440-62-2	Vanadium	16.9		E	P
7440-66-6	Zinc	291		*	P
	Cyanide				

Color Before: BROWN Clarity Before: CLOUDY Texture: MEDIUM

Color After: YELLOW Clarity After: CLOUDY Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

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INORGANIC ANALYSIS DATA SHEET

SAMPLE #5
GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): SOIL Lab Sample ID: 871663

Level (low/med): LOW Date Received: 10/31/88

% Solids : 89

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	6.8		*N	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt	5.2			A
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	502			A
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.4			CV
7440-02-0	Nickel	24.8		*N	A
7440-09-7	Potassium	990			A
7782-49-2	Selenium	1.1	U		F
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	1.1	U		C

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL6

Lab Name: H2M LABS, INC.
Contract: GIBBS&HILL

Lab Code: H2MLAB
Case No.:
SAS No.:
SDG No.: GIB007

Matrix (soil/water): SOIL
Lab Sample ID: 871664

Level (low/med): LOW
Date Received: 10/31/88

% Solids: 96.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10100			P
7440-36-0	Antimony	12.5		N	P
7440-38-2	Arsenic				
7440-39-3	Barium	166		N*	P
7440-41-7	Beryllium	1.0			P
7440-43-9	Cadmium	1.1	B	N E	P
7440-70-2	Calcium	25700			P
7440-47-3	Chromium	21.7			P
7440-48-4	Cobalt				
7440-50-8	Copper	136		*	P
7439-89-6	Iron	21500		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	10000			P
7439-96-5	Manganese	492		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	1.9	B	N	P
7440-23-5	Sodium	2190			P
7440-28-0	Thallium				
7440-62-2	Vanadium	18.1		E	P
7440-66-6	Zinc	182		*	P
	Cyanide				

Color Before: BROWN
Clarity Before: CLOUDY
Texture: MEDIUM

Color After: BROWN
Clarity After: CLOUDY
Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #6

GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): SOIL Lab Sample ID: 871664

Level (low/med): LOW Date Received: 10/31/88

% Solids : 96

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	6.2		*N	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt	8.1			A
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	164			A
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.2			CV
7440-02-0	Nickel	22.0		*N	A
7440-09-7	Potassium	1160			A
7782-49-2	Selenium	1.0			F
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	1.1	U		C

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

Environmental and Industrial Analytical Laboratory
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL7

Lab Name: H2M LABS, INC.

Contract: GIBBS&HILL

Lab Code: H2MLAB

Case No.:

SAS No.:

SDG No.: GIB007

Matrix (soil/water): SOIL

Lab Sample ID: 871665

Level (low/med): LOW

Date Received: 10/31/88

% Solids: 93.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7510			P
7440-36-0	Antimony	8.4	B	N	P
7440-38-2	Arsenic				
7440-39-3	Barium	130		N*	P
7440-41-7	Beryllium	1.1			P
7440-43-9	Cadmium	1.2	B	N E	P
7440-70-2	Calcium	37400			P
7440-47-3	Chromium	16.3			P
7440-48-4	Cobalt				
7440-50-8	Copper	57.0		*	P
7439-89-6	Iron	16700		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	6530			P
7439-96-5	Manganese	486		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	0.65	B	N	P
7440-23-5	Sodium	2120			P
7440-28-0	Thallium				
7440-62-2	Vanadium	17.4		E	P
7440-66-6	Zinc	106		*	P
	Cyanide				

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: BROWN

Clarity After: CLOUDY

Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #7

GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): SOIL

Lab Sample ID: 871665

Level (low/med): LOW

Date Received: 10/31/88

% Solids : 93

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	9.5		*N	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt	3.2	U		A
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	142			A
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.2			CV
7440-02-0	Nickel	16.8		*N	A
7440-09-7	Potassium	989			A
7782-49-2	Selenium	1.1	U		F
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	1.1	U		C

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

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INORGANIC ANALYSIS DATA SHEET

EFA SAMPLE NO.

SAMPL8

Lab Name: H2M LABS, INC.

Contract: GIBBS&HILL

Lab Code: H2MLAB

Case No.:

SAS No.:

SDG No.: GIB007

Matrix (soil/water): SOIL

Lab Sample ID: 871666

Level (low/med): LOW

Date Received: 10/31/88

% Solids: 94.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9060			P
7440-36-0	Antimony	10.4	B	N	P
7440-38-2	Arsenic				
7440-39-3	Barium	98.9		N*	P
7440-41-7	Beryllium	0.85	B		P
7440-43-9	Cadmium	1.2	B	N E	P
7440-70-2	Calcium	35000			P
7440-47-3	Chromium	18.5			P
7440-48-4	Cobalt				
7440-50-8	Copper	38.3		*	P
7439-89-6	Iron	16200		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	5300			P
7439-96-5	Manganese	390		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	0.57	U	N	P
7440-23-5	Sodium	2120			P
7440-28-0	Thallium				
7440-62-2	Vanadium	21.9		E	P
7440-66-6	Zinc	117		*	P
	Cyanide				

Color Before: BROWN

Clarity Before: CLOUDY

Texture: MEDIUM

Color After: BROWN

Clarity After: CLOUDY

Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #8
GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): SOIL Lab Sample ID: 871666

Level (low/med): LOW Date Received: 10/31/88

% Solids : 94

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	5.5		*N	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt	5.3			A
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	130			A
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.1			CV
7440-02-0	Nickel	17.5		*N	A
7440-09-7	Potassium	1170			A
7782-49-2	Selenium	1.1	U		F
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	1.1	U		C

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL9

Lab Name: H2M LABS, INC.

Contract: GIBBS&HILL

Lab Code: H2MLAB Case No.: SAS No.: SDG No.: GIB007

Matrix (soil/water): SOIL

Lab Sample ID: 871667

Level (low/med): LOW

Date Received: 10/31/88

% Solids: 92.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12500			P
7440-36-0	Antimony	13.3		N	P
7440-38-2	Arsenic				
7440-39-3	Barium	46.7		N*	P
7440-41-7	Beryllium	1.1			P
7440-43-9	Cadmium	1.2	B	N E	P
7440-70-2	Calcium	522	B		P
7440-47-3	Chromium	18.3			P
7440-48-4	Cobalt				
7440-50-8	Copper	20.7		*	P
7439-89-6	Iron	21700		*	P
7439-92-1	Lead				
7439-95-4	Magnesium	3650			P
7439-96-5	Manganese	452		N*	P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	0.59	U	N	P
7440-23-5	Sodium	2060			P
7440-28-0	Thallium				
7440-62-2	Vanadium	19.1		E	P
7440-66-6	Zinc	56.3		*	P
	Cyanide				

Color Before: BROWN Clarity Before: CLOUDY Texture: MEDIUM

Color After: BEIGE Clarity After: CLOUDY Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE.

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #9

GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): SOIL Lab Sample ID: 871667

Level (low/med): LOW Date Received: 10/31/88

% Solids : 92

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	7.6		*N	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt	8.7			A
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	15.5			A
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.1			CV
7440-02-0	Nickel	21.6		*N	A
7440-09-7	Potassium	1370			A
7782-49-2	Selenium	1.1	U		F
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	1.1	U		C

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

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Environmental and Industrial Analytical Laboratory
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(516) 694-3040

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL1

Lab Name: H2M LABS, INC.

Contract: GIBBS&HILL

Lab Code: H2MLAB

Case No.:

SAS No.:

SDG No.: GIB008

Matrix (soil/water): WATER

Lab Sample ID: 871777

Level (low/med): LOW

Date Received: 11/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	252000			P
7440-36-0	Antimony	367		E	P
7440-38-2	Arsenic				
7440-39-3	Barium	2200			P
7440-41-7	Beryllium	29.0			P
7440-43-9	Cadmium	196		E	P
7440-70-2	Calcium				
7440-47-3	Chromium	815			P
7440-48-4	Cobalt	329			P
7440-50-8	Copper	690		N	P
7439-89-6	Iron	690		E	P
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese	14000			P
7439-97-6	Mercury				
7440-02-0	Nickel	684			P
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium	395			P
7440-66-6	Zinc	1460			P
	Cyanide				

Color Before: TAN

Clarity Before: CLOUDY

Texture:

Color After: YELLOW

Clarity After: CLEAR

Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 OF 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE RESULTS.

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #1

GAF DUMP SITE

Lab Name: H2M LABS, INC.   Contract: GIBBS & HILL

Matrix (soil/water): WATER   Lab Sample ID: 871777

Level (low/med): LOW   Date Received: 11/02/88

% Solids : --

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	54.6			F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	109600			A
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	640000			A
7439-92-1	Lead	320			F
7439-95-4	Magnesium	110800			A
7439-96-5	Manganese				
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel				
7440-09-7	Potassium	21400			A
7782-49-2	Selenium	5	U	N	F
7440-22-4	Silver	10			A
7440-23-5	Sodium	27600			A
7440-28-0	Thallium	5	U	W	F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	10	U		C

Color Before: TAN   Clarity Before: CLOUDY   Texture: --
Color After: YELLOW   Clarity After: CLEAR   Artifacts: NO

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL2

Contract: GIBBS&HILL

Lab Name: H2M LABS, INC.

Lab Code: H2MLAB Case No.: SAS No.: SDG No.: GIB008

Matrix (soil/water): WATER

Lab Sample ID: 871778

Level (low/med): LOW

Date Received: 11/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	22100			P
7440-36-0	Antimony	29.0	B	E	P
7440-38-2	Arsenic				
7440-39-3	Barium	1600			P
7440-41-7	Beryllium	2.0	B		P
7440-43-9	Cadmium	8.0		E	P
7440-70-2	Calcium				
7440-47-3	Chromium	50.0			P
7440-48-4	Cobalt	10.0	B		P
7440-50-8	Copper	744		N	P
7439-89-6	Iron	47300		E	P
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese	769			P
7439-97-6	Mercury				
7440-02-0	Nickel	61.0			P
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium	46.0	B		P
7440-66-6	Zinc	2250			P
	Cyanide				

Color Before: BROWN Clarity Before: CLOUDY Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

John J. Molloy, P.E.
Laboratory Director

Comments:
PAGE 1 OF 2
SEE PAGE 2 OF 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE RESULTS.

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INORGANIC ANALYSIS DATA SHEET

SAMPLE #2
GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): WATER Lab Sample ID: 871778

Level (low/med): LOW Date Received: 11/02/88

% Solids : --

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	17.6			F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	56800			A
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				A
7439-92-1	Lead	770			F
7439-95-4	Magnesium	14900			A
7439-96-5	Manganese				
7439-97-6	Mercury	0.8			CV
7440-02-0	Nickel				
7440-09-7	Potassium	12900			A
7782-49-2	Selenium	5	U	N	F
7440-22-4	Silver	320			A
7440-23-5	Sodium	162500			A
7440-28-0	Thallium	5	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	10	U		C

Color Before: BROWN Clarity Before: CLOUDY Texture: --
Color After: YELLOW Clarity After: CLEAR Artifacts: NO

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SAMPL3

Lab Name: H2M LABS, INC.

Contract: GIBBS&HILL

Lab Code: H2MLAB

Case No.:

SAS No.:

SDG No.: GIB008

Matrix (soil/water): WATER

Lab Sample ID: 871779

Level (low/med): LOW

Date Received: 11/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	236000			P
7440-36-0	Antimony	358		E	P
7440-38-2	Arsenic				
7440-39-3	Barium	1000			P
7440-41-7	Beryllium	26.0			P
7440-43-9	Cadmium	160		E	P
7440-70-2	Calcium				
7440-47-3	Chromium	387			P
7440-48-4	Cobalt	291			P
7440-50-8	Copper	542		N	P
7439-89-6	Iron	542		E	P
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese	9470			P
7439-97-6	Mercury				
7440-02-0	Nickel	612			P
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium	395			P
7440-66-6	Zinc	1760			P
	Cyanide				

Color Before: BROWN

Clarity Before: CLOUDY

Texture:

Color After: ORANGE

Clarity After: CLEAR

Artifacts:

John J. Molloy, P.E.
Laboratory Director

Comments:
PAGE 1 OF 2
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #3

GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): WATER Lab Sample ID: 871779

Level (low/med): LOW Date Received: 11/02/88

% Solids : --

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	60.5			F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	373000		N	A
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	495000			A
7439-92-1	Lead	260			F
7439-95-4	Magnesium	234000			A
7439-96-5	Manganese				
7439-97-6	Mercury	0.5			CV
7440-02-0	Nickel				
7440-09-7	Potassium	19700			A
7782-49-2	Selenium	5	U	N	F
7440-22-4	Silver	88		N	A
7440-23-5	Sodium	192800			A
7440-28-0	Thallium	5	U	W	F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	10	U		C

Color Before: BROWN Clarity Before: CLOUDY Texture: --

Color After: ORANGE Clarity After: CLEAR Artifacts: NO

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

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EPA SAMPLE NO.

SAMPL4

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INORGANIC ANALYSIS DATA SHEET

Lab Name: H2M LABS, INC.

Contract: GIBBS&HILL

Lab Code: H2MLAB   Case No.:   SAS No.:   SDG No.: GIB008

Matrix (soil/water): WATER

Lab Sample ID: 871780

Level (low/med): LOW

Date Received: 11/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18700			P
7440-36-0	Antimony	22.0	B	E	P
7440-38-2	Arsenic				
7440-39-3	Barium	1420			P
7440-41-7	Beryllium	2.0	B		P
7440-43-9	Cadmium	5.5		E	P
7440-70-2	Calcium				
7440-47-3	Chromium	44.0			P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	619		N	P
7439-89-6	Iron	41800		E	P
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese	740			P
7439-97-6	Mercury				
7440-02-0	Nickel	56.0			P
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium	41.0	B		P
7440-66-6	Zinc	1980			P
	Cyanide				

Color Before: BROWN   Clarity Before: CLOUDY   Texture:

Color After: YELLOW   Clarity After: CLEAR   Artifacts:

John J. Molloy, P.E.
Laboratory Director

Comments:
PAGE 1 OF 2
SEE PAGE 2 OF 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE RESULTS.

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

SAMPLE #4

GAF DUMP SITE

Lab Name: H2M LABS, INC.

Contract: GIBBS & HILL

Matrix (soil/water): WATER

Lab Sample ID: 871780

Level (low/med): LOW

Date Received: 11/02/88

% Solids : --

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	16.2			F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	56200			A
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	630			F
7439-95-4	Magnesium	14100			A
7439-96-5	Manganese				
7439-97-6	Mercury	0.6			CV
7440-02-0	Nickel				
7440-09-7	Potassium	12600			A
7782-49-2	Selenium	5	U	NW	F
7440-22-4	Silver	250			A
7440-23-5	Sodium	173800			A
7440-28-0	Thallium	5	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	10	U		C

Color Before: BROWN

Color After: YELLOW

Clarity Before: CLOUDY

Clarity After: CLEAR

Texture: --

Artifacts: NO

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
Environmental and Industrial Analytical Laboratory
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
FLDBLK

Lab Name: H2M LABS, INC.
Contract: GIBBS&HILL
Lab Code: H2MLAB
Case No.:
SAS No.:
SDG No.: GIB008
Matrix (soil/water): WATER
Lab Sample ID: 871781
Level (low/med): LOW
Date Received: 11/02/88
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	129	B		P
7440-36-0	Antimony	15.0	U	E	P
7440-38-2	Arsenic				
7440-39-3	Barium	1.0	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	5.5	U	E	P
7440-70-2	Calcium				
7440-47-3	Chromium	2.9	U		P
7440-48-4	Cobalt	1.6	U		P
7440-50-8	Copper	1.4	U	N	P
7439-89-6	Iron	46.0	B	E	P
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese	0.30	U		P
7439-97-6	Mercury				
7440-02-0	Nickel	3.4	U		P
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium	1.9	U		P
7440-66-6	Zinc	2.0	B		P
	Cyanide				

Color Before: COLORLESS
Clarity Before: CLEAR
Texture:
Color After: COLORLESS
Clarity After: CLEAR
Artifacts:

Comments:
PAGE 1 OF 2
SEE PAGE 2 OF 2 FOR FURNACE, FLAME, MERCURY, AND CYANIDE RESULTS.

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

FIELD BLANK
GAF DUMP SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix (soil/water): WATER Lab Sample ID: 871781

Level (low/med): LOW Date Received: 11/02/88

% Solids : --

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	5	U		F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1000	B		A
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	5	U		F
7439-95-4	Magnesium	300	B		A
7439-96-5	Manganese				
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel				
7440-09-7	Potassium	200	U		A
7782-49-2	Selenium	5	U	N	F
7440-22-4	Silver	3	U		A
7440-23-5	Sodium	300	B		A
7440-28-0	Thallium	5	U		F
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide	10	U		C

Color Before: COLORLESS Clarity Before: CLEAR Texture: --
Color After: COLORLESS Clarity After: CLEAR Artifacts: NO

COMMENTS:

Date Reported: 12/02/88

John J. Molloy, P.E.
Laboratory Director

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK 406

ab Name:H2M LABS INC. Contract:-------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: SAMP #1

atrix: (soil/water) WATER Lab Sample ID: SBLK 406

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5130

evel: (low/med) LOW Date Received: --------

% Moisture: not dec.100 dec. ----- Date Extracted:11/03/88

xtraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 11/18/88

PC Cleanup: (Y/N) N pH:7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK 406

ab Name:H2M LABS INC. Contract:-------

ab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: SAMP #1

atrix: (soil/water) WATER

Lab Sample ID: SBLK 406

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: >P5130

evel: (low/med) LOW

Date Received: --------

Moisture: not dec.100 dec. -----

Date Extracted:11/03/88

Extraction: (Sepf/Cont/Sonc) SEPF

Date Analyzed: 11/18/88

PC Cleanup: (Y/N) N pH:7.2

Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	22.	
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

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H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

PESTICIDE ORGANICS ANALYSIS DATA SHEET

PBLK B-11/05/88

Lab Name: H2M LABS, INC.
Contract: G & H
Matrix: WATER
Lab Sample ID: B-11/05/88
Sample vol: 1000 mL
Lab File ID: RUN #184P / RUN #659C
Level: LOW
Date Received: 11/02/88
% Moisture: not dec. X dec. ___
Date Extracted: 11/05/88
Extraction: SEPF
Date Analyzed: 12/02/88 P/ 11/22/88 C
GPC Cleanup: NONE pH: 6
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.13	
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxyohlor	0.5	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

Date Reported: 12/08/88

John J. Molloy, P.E.
Laboratory Director

D. HISTORIC LITERATURE

CONTENTS

D.1

PRELIMINARY

Register of Hazardous Waste Dump Sites, Broome County, New York 1981

By

Principle Author
Kenneth Goldstein

Contributing Authors
Karen Berk
Elizabeth Hagg

State University of New York, Binghamton
Department of Geography
Internship Program
for the
Broome County Environmental Management Council

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[illegible]

Introduction

In 1979, Broome County's Environmental Management Council published the Broome County Toxic Waste Inventory, its first effort to identify hazardous waste dump sites in the County. This report, representing the Council's second effort, goes beyond the 1979 report by including environmental variables related to the dump sites' potential effect on human health. These variables include soil types at the site, a measure of permeability of those soils, average population density in adjacent areas, and land use. The Register also contains data (where available) on the location of wells and test borings drilled near the dump sites.

Each entry lists information sources used to identify the sites, their users, and materials dumped there. These include published sources and/or information provided by local citizens as a result of an information-gathering campaign initiated by the Council. Other sources include the Soil Survey, Broome County, New York (U.S. Dept. of Agriculture, March 1971) for soil data, and the Broome County Land Use Plan (Broome County Planning Department, June 1977) for population and land use data. Wells and test borings information was obtained from Records of Wells and Test Borings in the Susquehanna River Basin, New York (N.Y.S. Dept. of Environmental Conservation, Bulletin 69, 1972).

Maps showing dump sites, wells, and test borings locations appear to the left of each entry in the Register. Base maps are portions of the Council's Natural Resource Inventory map series.

This effort is not considered a definitive register of all hazardous waste dump sites in Broome County. The Council will update the Register whenever information on any site (whether active or closed) becomes available. Local citizens and government officials are encouraged to call the Environmental Management Council at 772-2116 if they have any further information on hazardous waste dump sites documented in this report or information on suspected sites not included here.

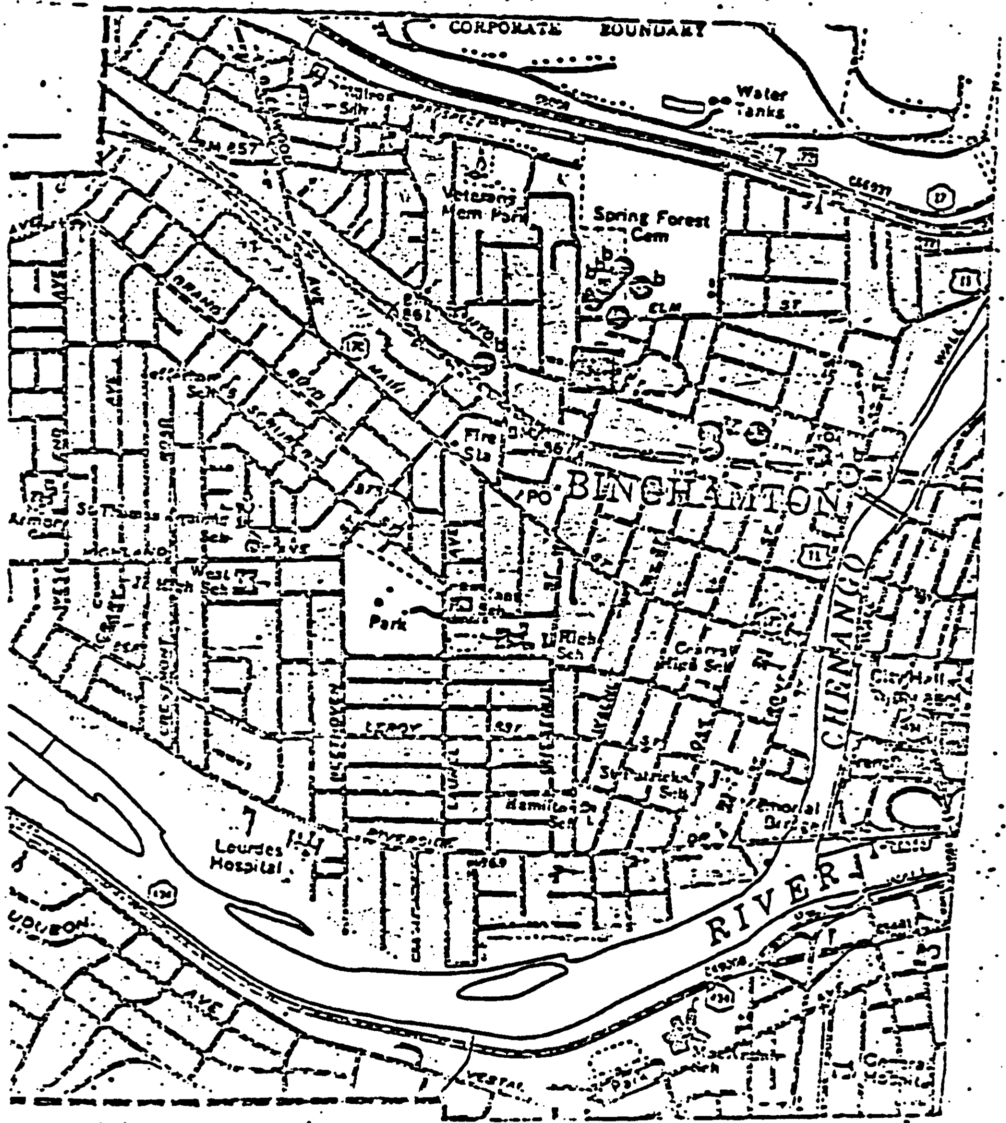
LEGEND

▨ DUMP SITES

⊖ SUPPLY WELLS

⊖^{b} WELL BORINGS

D.1


CORPORATE BOUNDARY
Water Tanks
Veterans Mem Park
Spring Forest Cem
ELM
Fire Sta
PO
BINGHAMTON
Armory
St Thomas Aquinas Sch
West Sch
Park
Lt Rich Sch
St Patricks Sch
Hamilton Sch
Memorial Bridge
CHENANGO
City Hall
Lourdes Hospital
RIVER
AUDUBON
AVE
VESTAL

D-6

D.1

SITE LOCATION:

GAF dump, Charles Street and Grace Street, Binghamton, New York.

STATUS:

Closed

WASTE MATERIAL:

Industrial, photo chemical by-products.

SOIL SERIES:

Cut and fill lands, used to be marshland.

POPULATION DENSITY AND LAND USE:

34-54 people/acre, Residential/Commercial

PRIORITY:

4 (moderately high)

COMMENTS:

INFORMATION SOURCES:

USERS:

GAF

WELLS AND TEST BORINGS:

24-52b, 17-20, 16-19, 18-13, 15-03b, 14-00b, 31-32b, 28-34, 29-36, 32-35b, 31-35b, 30-36b.

SURFACE WATER:

GROUND WATER:

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COLESVILLE LANDFILL (con't.)

INDUSTRIAL WASTE: Users:

→ GAF - at least 800, 55 gallon drums

For information only - not GAF Dump site

1. 5 Drums/month Solid Waste - dye saturated filter media, dye scrappings, possible traces of mercury or cyanide. Fe, Zn, Al, Sn traces.
2. 10 drums/month Aqueous colored dye wastes.
3. 10 drums/month organic solvent mixtures - includes benzene, cyclohexane, acetone, IPA, methanol, ethanol, n-hexane, toluene, xylene, methyl cellosolve, chlorinated solvents, and diethyl ether.
4. 10 drums/month mixed chemical solvents - includes IPA, methanol, methslene chloride, acetone, and other hydrocarbons and oxygenated solvents.
5. 1 drum/month Lead Iodide Solid
6. 1 drum/month Lead Bromide Solid
7. 5 drums/month - 1. Cadmium, 2. Ammonium salts, 3. Silver, 4. Iron, 5. Zink, 6. Calcium, 7. Magnesium, 8. Copper, 9. Nickel, 10. Sodium, 11. Potassium, 12. Nitrate, 13. Chloride, 14. Sulfate.

WATER SAMPLE ANALYSIS: 2/4/75

Element	Embankment West Side of Landfill	Downstream from Landfill
Iron	17.0 Mg/L	.33 Mg/L
Arsenic	.01 Mg/L	.01 Mg/L
Cadmium	.02 Mg/L	.02 Mg/L
Chromium	.1 Mg/L	.1 Mg/L
Lead	ND Mg/L	.1 Mg/L

Compounds found in near by private wells:
Methylene chloride, toluene, 1,1,1 trichloroethane, trichloroethene, T-1,2 dichloroethene, Chloroform, carbon tetrachloride, 1,1,2 trichloroethane

Extensive sampling has been done in 1983 by Melonie Sviatyla and Broome County Health Department.

LEACHATE HISTORY: 4/70 - 5/73 Leachate observed flowing into a small pond on adjacent property. This pond is the headwaters of a small brook flowing into the Susquehanna Rv.

5/73 Dam and Diversion channel constructed and leachate was landlocked on site.

12/73 Leachate flow into pond resumed.

ROBINTECH INC.

LOCATION: 3421 Old Vestal Rd., Vestal
USGS COORDINATES: 42°6'15" 75°59'45"
NUMBER ON MAP: 31
WASTE MATERIAL: Cutting oils, PVC fillings, chromium and sludge.

MONARCH CHEMICALS

LOCATION: 511 Prentice Rd., Vestal
USGS COORDINATES: 42°6'27" 75°59'58"
NUMBER ON MAP: 32
WASTE MATERIAL: Acids, solvents, electro-plating, materials & other various industrial waste. Trichloroethylene & Tetrachloroethylene

GAF DUMP

LOCATION: Charles & Grace Streets, Binghamton
USGS COORDINATES: 42°6'43" 75°55'42"
NUMBER ON MAP: 33
WASTE MATERIAL: Industrial, photo chemical by-products (silver, cadmium, organics - t-1,2 dichloroethylene, trichloroethylene, phenols, intermediate dyestuffs).

SERVICE MERCHANDISE

LOCATION: 220 Reynolds Rd., N. of Harry L. Drive, Johnson City
USGS Coordinates: 42°7'36" 75°58'14"
STATUS: Closed, developed
NUMBER ON MAP: 34
WASTE MATERIAL: Commercial, J.C. municipal, E.J. industrials, Wilson Hospital Wastes

JENNIE F. SNAPP MIDDLE SCHOOL

LOCATION: Loder Ave. (between North St. & Main St.), Endicott
USGS COORDINATES: 42°5'50" 76°3'39"
NUMBER ON MAP: 35
STATUS: Closed, developed
WASTE MATERIALS: Tanning acids (E.J.), animal hides, municipal wastes, and sludge.

D.2

TELEPHONE CONVERSATION MEMORANDUM

CLIENT NYSDEC Phase I Round 3

PROJ. No. 04339 EX

PROJECT GAF Dump

DATE May 20, 1985

TIME 11:50 a.m.

CALL TO/FROM Melanie Sviatyla

REPRESENTING Engineer, Broome Co. Health Department

PHONE No. 607-772-2887

SUMMARY OF CONVERSATION:

Previous employee of GAF. Reported that 55 gallon drums of waste materials were just dumped out on the site.

GAF probably stopped using site 10 years ago.

Site currently fenced and some areas are tarred over and are now used as a parking lot.

Trout Brook was sampled in 1971; will send final report on results.

COPIES TO:

BY:

Fran Geissler

WEHRAN ENGINEERING
CONSULTING ENGINEERS

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[illegible] · F. Geissler Scientist
K. Melloy Scientist
T. Heeler Geologist

D.3

Sept. 24, 1985

SITE INSPECTION FORM

Site # 704011

SITE NAME: GAF Dump

[illegible] #

LOCATION: Prospect St. Binghamton, Broome Co.

OWNER/REPRESENTATIVE: Mr. C.F. Bien, GAF Corp Wayne NJ

Plant produced photo film now owned by Anitec Corp.

DISPOSAL METHODS: ☐ OPEN DUMP ☐ PIT/LAGOON ☐ LANDFILL ☒ OTHER

Plant used since WWII

DESCRIBE: Waste liquids spilled out of drums onto ground surface

ENVIRONMENTAL CONTROLS: NONE

LINER

COVER

LEACHATE COLLECTION

FENCING yes but no secure

CUT-OFF WALL

OTHER

WASTE TYPES: ☐ SOLID ☒ LIQUID ☐ SLUDGES ☐ INDUSTRIAL ☐ MUNICIPAL

DESCRIBE:

DESCRIPTION OF SITE VICINITY: mixed residential + commercial, see topo map

SOIL TYPE: fill: demo debris SITE SLOPE: 4% FLORA STRESS: none

FAUNA STRESS: none

intervening slope ≤ 2% to Trout B

NEAREST WELL: ☒ INDUSTRIAL ☐ MUNICIPAL ☐ PRIVATE ☐ OTHER

DESCRIBE: w/i 500'

NEAREST SURFACE WATER:

☐ LAKE ☒ ONSITE ☒ STREAM

DESCRIBE: Trout Brook 66" storm sewer discharges to Chenango R.

OTHER INFORMATION: 2/3 site abandoned asphalt parking lot
1/3 filled w/ demo debris, ungraded + weed covered
fenced but not secure, dirt bikers etc use site
fill ≈ 10' deep deposited ≈ 8-12 yrs ago

" ~~[illegible]~~ dump was used informally, like a backyard... things were thrown over the fence..." C.F. Bien

D.4

GAF CORPORATION
1361 Alps Road
Wayne NJ 07470
201 628 3000

Mr. Manden Chen
Bureau of Hazardous Site Control
Division of Solid and Hazardous Waste
N.Y. Department of Environmental Conservation
Albany, N.Y. 12233-0001

November 27, 1984

RECEIVED
DEC 0[illegible] 1984
BUREAU OF HAZARDOUS SITE CONTROL
DIVISION OF SOLID &
HAZARDOUS WASTE

Re: GAF-Dump ID# 704011
Binghamton/Broome County

Dear Sirs:

GAF has searched its records in response to DEC's September 28 request for information concerning the Binghamton site. GAF has attempted to compile all currently available information consistent with the Environmental Conservation Law (ECL), Section 27-1307.

As provided by Section 27-1307(2), GAF cannot fully comply with DEC's request for information because no records remain. GAF has no knowledge of records or of anyone who can provide information concerning the types or quantities of wastes deposited at Binghamton.

Consequently, GAF is also without information about the period of operation, description of practices, including testing, monitor or remedial action. There has not been, to GAF's knowledge, any health or environmental problem resulting from disposal of waste at this site.

This response follows a significant effort to locate records which may have provided additional information. Please contact me at (201) 628-4021 if you have any additional questions concerning this matter.

Sincerely yours,

Jeffrey H. Teitel

Jeffrey H. Teitel
Associate Counsel

JHT:er

cc: C.F. Bien

Leonard Pascolli
201-628

D-12

Telephone Conversation Record

Date: 6/12/89

Time: 10:12 AM

Call by: Aminullah Kazemi of Gibbs & Hill, Inc.
(Name) (Company)

Answer by: Ben Conetta of EPA Region II (212) 264-6696
(Name) (Company)

Contract No: 5583-001

Subject discussed: EPA identification numbers for the following fourteen sites

---

SUMMARY OF DISCUSSION, DECISIONS AND COMMITMENTS.

Mr. Conetta responded as follows:

Site Name	Town/County	EPA I.D.
1. LAFKO PROPERTY	Pleasant Valley/Dutchess	Not Available
2. WHITE HOUSE CROSSING	North East/Dutchess	NYD-982181083
3. C&D BATTERIES	Deerpark/Orange	NYD-064337298
4. CORNWALL LANDFILL	Cornwall/Orange	NYD-4570024451
5. RAMAPO PIECE & DYE WORKS	Sloatsburg/Rockland	NYD-982181133
6. HERCULES, INC.	Port Ewen/Ulster	NYD-002005809
7. SAUGERTIES LANDFILL	Saugerties/Ulster	NYD-980507636
8. COSTANTINO LANDFILL	Lloyd/Ulster	NYD-981186901
9. NEW SCOTLAND AVENUE	Albany/Albany	NYD- Not Available
10. HOOSICK FALLS LANDFILL	Hoosick/Rensselaer	NYD-980506828
11. EAST GREENBUSH LANDFILL	East Greenbush/Rensselaer	NYD-982269938
12. GAF DUMP	Binghamton/Broome	NYD-002239465
13. CARDWELL CONDENSER	Lindenhurst/Suffolk	NYD-002049690
14. HOMER VILLAGE DUMP	Homer/Courtland	NYD-980506802

F-424, 10-68

cc: AK, AL, NH, Roux

D.6

TELEPHONE CONVERSATION RECORD

Date: 10/3/88

Time: 9:30 AM

Call By: A. Longoria (Name) of Gibbs & Hill, Inc. (Company)

Answer By: Peter Breen (Name) of Roux Associates (Company)

Contract No.: GAF #704011

Subject Discussed: Clarification and adjustments to geophysical report

Summary of Discussion, Decisions and Commitments

Resistivity: Regarding the discussion on page 5, paragraph 3, of the geophysical report, the absence of large changes in resistivity at the 30 to 40 feet interval implies that a conductant leachate plume has not been detected at this depth.

Summary of Findings: Peter Breen will elaborate on the geophysical complexities and provide us with a more detailed interpretation of the data. However, according to Peter Breen, the geophysical study needs to key in on monitoring well information in order to provide a more complete conclusion.

D.7

Dept of [illegible]

Broome County
Memorandum

To: Ron Tramontano, NYSHD
From: Melonie M. Sviatyla, Robert W. Denz, BCHD
Date: December 15, 1983
Subject: Comments on the "Assessment of Health Problems" for the State Superfund List

The following are comments from the Broome County Health Department (BCHD), regarding local landfill sites selected for the State Superfund listing:

(1) Robintech Inc.:

The BCHD has been involved with the installation of a backflow preventor on the water service to the plant. National Pipe (present owners) have drilled four (4) wells on site for cooling water production. These wells may offer a sampling point to check the groundwater quality.

The BCHD has the following concerns:

1) Proximity of the site to the Town of Vestal Well #4-2. This well has already been contaminated with volatile organics.

2) There are a number of private residences nearby who have not connected to municipal water, which have their own wells.

(2) Colesville Landfill:

The BCHD has been involved with the sampling of private resident wells in the vicinity of the landfill. Of the twenty (20) water sources sampled, four (4) have contained levels of volatile organics which exceed New York State Health Department (NYSHD) guidelines. Those organics found in the resident water supplies were also present in the leachate from the landfill. At the present time, these residences are receiving bottled water for drinking and cooking, supplied by the Broome County Dept of Public Works (BCDPW). Bottled water is also being supplied to those residences who may be located in the "contaminated groundwater plume" as presented in a report prepared by the County Engineering consultants. Additional monitoring of residences will commence in January 1984. At that time, the County consultants Phase II report will be presented.

The BCHD has the following concerns:

1) Long term effects of contamination on other wells not presently contaminated (i.e., down-gradient, bedrock).

(3) BEC Trucking:

The BCHD has been involved with the initial inspection of the area used for dumping. Files indicate that a number of 55-gallon drums containing Methanol and Dizco reducer were leaking and saturating the surrounding soil.

The BCHD has the following concerns:

1) Possible groundwater contamination of Vestal wells in Water District #4 and private wells in the area not connected to Municipal water.

(4) Village of Endicott Well (Ranney Well):

The BCHD was involved initially with the New York State Department of Environmental Conservation (NYSDEC) in collecting monitoring samples from the well. This well contains elevated levels of vinyl chloride, a known human carcinogen. Guidelines set by the NYSHD for vinyl chloride is 5 ug/l (ppb) in drinking water. Other volatile organics have also been found in the well.

The BCHD has the following concerns:

1) The long term trends in concentrations, as alternate sources of water will be difficult to develop.

(5) Tri-Cities Barrel Company:

The BCHD has been involved in the SPDES review only under SEQR.

The BCHD has the following concerns:

1) Possible groundwater contamination of private wells in the area as there is no public water.

2) Surface water contamination of Osborne Creek which flows into the Chenango River.

(6) Keytronics:

The BCHD has been involved with sampling at the South Street Well field down-gradient from site. Samples showed that methylene chloride was not present from past dumping practices at this site.

The BCHD has the following concerns:

1) Possible contamination of groundwater in the vicinity of the dumpsite.

(7) GAF Dump:

The BCHD has been involved in the sampling of two (2) wells on Anitec property down-gradient. Both wells sampled showed trace levels of volatile organics.

The BCHD has the following concerns:

1) Possibility of groundwater and surface water contamination.

2) Proximity of the dump to the Veteran's Memorial Park (across the street from the dump site).

(8) Conklin dumps:

One private well directly east of the landfill was sampled on 3/30/83 for the priority pollutants by the BCHD (and Water Resources Commission). Results found trace levels of trichlocoethylene (TCE) and some metals. Leachate wells on site indicate trace TCE contamination and elevated manganese levels in lower dump. The BCHD and Broome County Industrial Development Agency (BCIDA) sampled additional residents in the vicinity on 11/15/83. Results are pending.

The BCHD has the following concerns:

1) Possible groundwater contamination of private wells in the area.

2) Possibility of connecting local residents to the Town of Conklin public water supply, if a problem develops.

(9) Endicott Village Landfill:

The BCHD has been involved in the past site inspections of the landfill. Complete reports are on file in the Environmental Health Division of the BCHD.

The BCHD has the following concerns:

1) Possible contamination of ground and surface waters.

2) BCHD files confirms the dumping of industrial sludge containing various metals on site.

3) Dumping was done on the banks of the Susquehanna River, resulting most likely in the runoff of landfill leachate into the river.

4) Possible impacts on Village of Endicott Ranney Well.

MMS:et

Enclosure
cc: Dr. Kathleen A. Gaffney
Roland M. Austin
Ron Heerkens
Larry Lepak
John Kowalchyk
David Machlica
Robert Denz

BROOME COUNTY HEALTH DEPARTMENT

TO: Mrs. F. Geissler, Wehran

FROM: Melonie M. Sviatyla, BCHD

DATE: 5/20/85 if not local. Activity out of NYC

RE: GAF dumpsite 774 (607)

Eng Aastech ~~John~~ Jim Wright 3322

.....here is the final copy of the report on Trout Brook. If you have any additional questions please feel free to call me @ (607) 772-2887

Do not know methods used in data analyses.
Some analyses done @ State Lab in Albany

☐ FOR YOUR INFORMATION
☐ FOR YOUR COMMENTS
☑ INFORMATION AS REQUESTED

MAY 23 1985

:mbf
6/81

This sampling survey is of questionable
value since dump site is immediately
adjacent to industrial discharge pt.
@ time of survey, (GAF)
had primitive treatment facilities ∴
cannot assign contaminants to dump
site - metals may well have been from process.

File
D 8
CAF

REPORT ON TROUT BROOK SAMPLING SURVEY

Tributary SR - 44

October 18 - 22 1971

Broome County Health Department - Division of Environmental Health Services

An intensive sampling survey was carried out by personnel of the Division of Environmental Health Services, beginning at 9:00 AM October 18, and extending through 5:00 PM October 22. Hourly samples were taken and visual observations and physical measurements and chemical analyses performed on most samples collected. A total of 104 samples were collected from the 66 " storm sewer line known as Trout Brook. At least five determinations were made for every sample collected. These being color, odor, temperature and PH, while three other determinations, namely DO, COD, and conductivity were run for approximately 60 samples. Finally, MBAS determinations and metals were measured on about 30 samples. Therefore a total of 760 determinations were made.

The permanent sampling station was established in the back of a van truck owned by the Department for storage of equipment, chemicals, glassware, and providing space necessary for running the dissolved oxygen determinations in the field. The location was at manhole #2 (see accompanying map) in Spring Forest Cemetery, near the corner of Elm and Mygatt Streets. This manhole is about 600 feet downstream from the GAF Sampling manhole, and the sampling was therefore essentially the total storm water discharge of GAF. Observations were made throughout the period of the flow of manhole #1, located just upstream from the GAF Plant, and also at the manhole located at Colfax Avenue. The observations showed that no storm water flow was found at these points, and therefore the total flow at manhole #2 was due to a combination of industrial wastes, cooling water wastes, and any storm water waste coming from GAF property, plus whatever storm water may have been coming from the 18 inch line which drains a portion of Prospect Street. However, since there was no measurable flow at the Colfax Avenue point which drains a much larger area, there is good reason to assume there was little or no flow coming from the Prospect Street line. It should also be mentioned that the sampling program was preceded by a long stretch of rather dry weather.

Flows

Estimates of flow were made at manhole #2 by measuring the conduit at a cross -section of the stream within the manhole structure, and taking measurements of the flow velocity. Estimates of flow based on hourly measurements ranged from 3.5 to 5.1 MGD. This corresponds to flow rates of 2,000 gallons per minute to 3,500 gallons per minute.

Violations of Water Pollution Laws

Violations were found of Parts 701.3 of Chapter 10, Title 6 - Official Rules, and Regulations. According to these standards, and reports on the Susquehanna River drainage basin which was assigned the standard of D to Trout Brook (see page 38, Table 1) violations exist in the following respects:

Colored Wastes

The standards require "none alone or in a combination with other substances .... in sufficient amounts .... to impair the waters for any class." Since the waters of Trout Brook discharge as a tributary into the Chenango River, and since the Chenango River is classified B from its mouth to tributary 61, colored wastes make the waters unsuitable for fishing, boating or any other recreational use.

Highly colored wastes were observed in nineteen samples. These colors ranged from milky white to blues, pinks, yellow and brown. By color is meant apparent color which includes not only the color due to substances in solution, but also that due to suspended matter, and was determined on the original sample without filtration or centrifugation. The following color scale was used:

0 - none
1 - trace
2 - faint
3 - pronounced
4 - intense

PH

Values for class B water range from 6.5 and 8.5 and for class D waters, from 6.0 and 9.5 Samples exceeded PH range both on low part and high part of the scale on a number of cases.

Settleable Solids

Under the requirements of Part 701.4, Title 6, Chapter 10 of the Official Rules, and Regulations, no settleable solids are allowed. Considerable settleable matter was measured in at least three samples during the sampling period.

Suspended Solids

There is no mention of suspended solids in the Quality Standards for Class D waters, however, we regard the presence of suspended solids in amounts greater than 25 PPM as having a deleterious effect upon the waters of the Chenango River into which Trout Brook discharges downstream. Irrespective of any possible toxic effects contained in these solids due to substances leached out by water, suspended solids are considered injurious to fish by causing abrasive injuries, clogging gills and respiratory passages of fish and other aquatic organisms. Such solids also have been observed blanketing the stream bottom. This is destructive to food organisms as well as the eggs and young, and destroys spawning beds. Suspended solids in these amounts also screen out light, (a condition known as turbidity) and therefore create conditions inimical to aquatic life and thus reducing the quality of water.

Dissolved Oxygen

D.O.'s of less than 3.0 PPM (for Class D waters) were measured in 63 cases. Every 24 hour period showed numerous violations of the dissolved oxygen standard. It must be remembered that these DO levels were measured in great volumes, since up to 5 MGD of wastes are discharged daily from the GAF plant. These low DO's in the volumes found impose a serious deleterious impact upon the receiving stream.

Toxic Wastes

The principle toxic waste found during the sampling period was silver. Ten samples taken during the test period showed values of greater than 1.0 PPM. We are not fully acquainted with the toxic effect of silver in this amount, but note that the toxic threshold for silver nitrate for stickleback fish is as low as 0.0048 PPM. Since the plant above our sampling point is engaged in the production and processing of photographic film, it is believed that the silver detected is the result of amounts of silver nitrate being discharged from the plant. If necessary, supplementary data can be obtained, more precisely defining this substance.

Zinc was also found, and since concentrations of 0.1 to 1.0 PPM have been reported to be lethal to fish, we feel that the amount of zinc pollution is unacceptable. Thirteen samples were found to contain zinc in excess of 0.1 PPM. One sample was as high as 1.66 PPM.

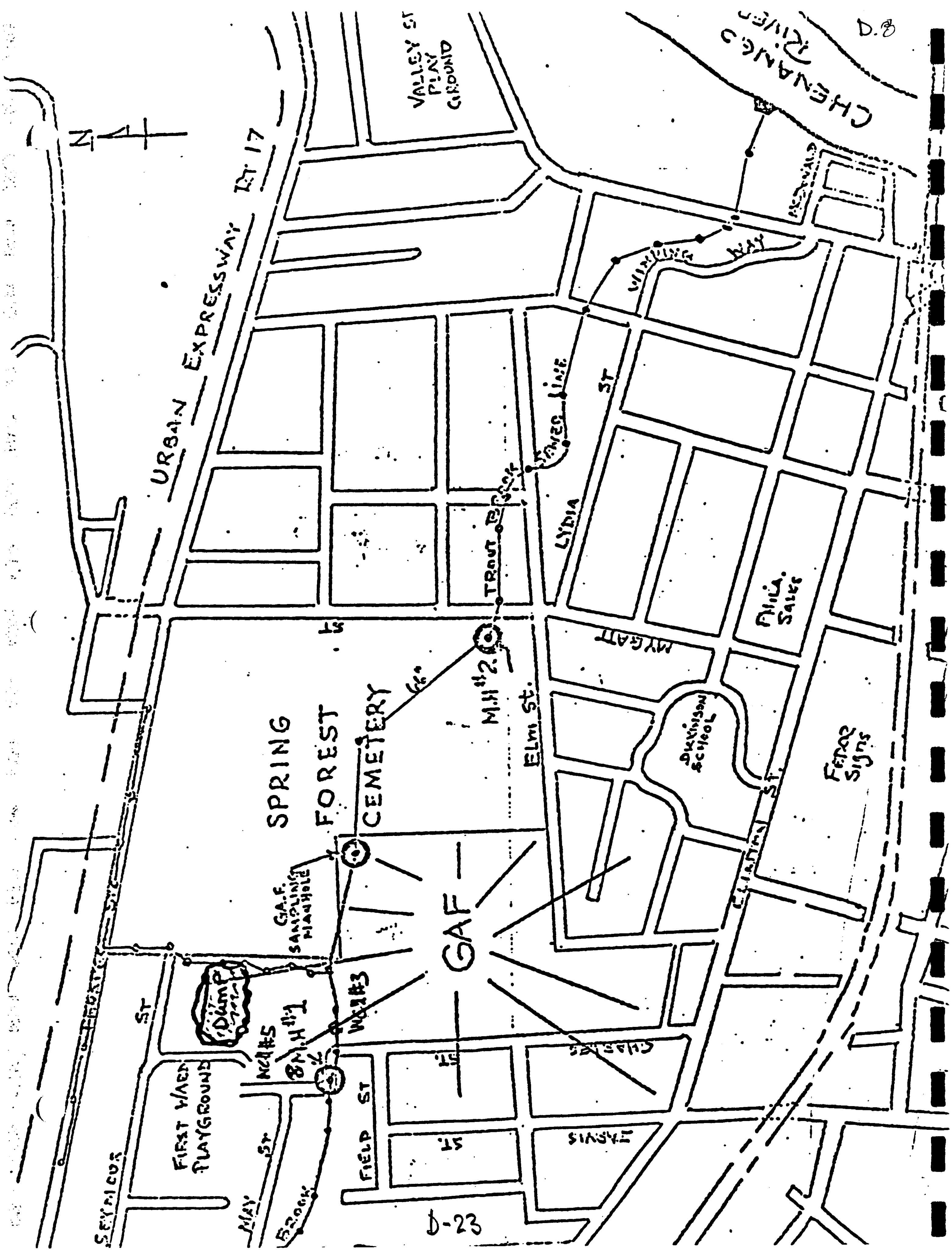
Conclusion

The data collected during the sampling period of October 18 through October 22 demonstrates without question that despite efforts made by GAF to control waste water discharges, serious violations of State pollution control laws occur on a daily basis.

It is recommended that consultation be arranged with officials of GAF and that initial remedial steps be taken immediately by the company to provide necessary industrial waste water treatment required to bring these discharges into compliance with State and County laws.

R. M. Austin
December 17, 1971

D.8


CHENANGO RIVER
VALLEY ST PLAY GROUND
URBAN EXPRESSWAY RT 17
N
WINDING WAY
SEWER LINE
TROUT BROOK
LYDIA ST
MYGATT ST
PHILA. SALES
DICKINSON SCHOOL
FEDAR SIGNS
CLINTON ST
ELM ST.
M.H.#2
66'
SPRING FOREST CEMETERY
GAF
G.A.F. SAMPLING MANHOLE
DUMP
M.H.#1
WELL#3
WELL#5
B.M.H.#2
ST
FIRST WARD PLAYGROUND
SEYMOUR ST
MAY ST
FIELD ST
BROOK
CHARLES

D-23

D.9

TELEPHONE CONVERSATION MEMORANDUM

CLIENT NYSDEC Phase I Round 3

PROJ. No. 04339 EX

PROJECT GAF Dump

DATE June 6, 1985

TIME 1:30 p.m.

CALL TO/FROM Melanie Sviatyla

REPRESENTING Broome County
Health Department

PHONE No. 607-772-2887

SUMMARY OF CONVERSATION:

1971 Trout Brook sampling survey is of questionable value in terms of assessing toxicity of leachate. The alleged dump site is immediately adjacent to the industrial discharge point. At time of survey, Anatech (now GAF) had primative treatment facilities. Therefore, cannot assign contaminants to dump site - metals may well have been from process wastes.

COPIES TO:

BY: Fran Geissler (fm)

Fran Geissler

WEHRAN ENGINEERING
CONSULTING ENGINEERS

3/31/83 D.10 Well #5

SAMPLE IDENTIFICATION NO R17C0-174

Lab No. 82-64452(

VOLATILE COMPOUNDS

Parameter	Method No.	CAS No.	Method Detection Limit* (ppb)	Found (ppb)
Acrolein	603, 624	107-02-8	100	ND
Acrylonitrile	603, 624	107-13-1	100	ND
Benzene	624	71-43-2	10	ND
Bromodichloromethane	624	75-27-4	10	ND
Bromoform	624	75-25-2	10	ND
Bromomethane	624	74-83-9	10	ND
Carbon Tetrachloride	624	56-23-5	10	2
Chlorobenzene	624	108-90-7	10	ND
Chlorodibromomethane	624	124-48-1	10	ND
Chloroethane	624	75-00-3	10	ND
2-Chloroethyl vinyl ether	624	110-75-8	10	ND
Chloroform	624	67-66-3	10	3
Chloromethane	624	74-87-3	10	ND
Dichlorodifluoromethane	624	75-71-8	10	ND
1,1-Dichloroethane	624	75-34-3	10	ND
1,2-Dichloroethane	624	107-06-2	10	ND
1,1-Dichloroethylene	624	75-35-4	10	ND
Trans - 1,2-Dichloroethylene	624	156-60-5	10	ND
1,2-Dichloropropane	624	78-87-5	10	ND
1,3-Dichloropropene	624	10061-02-6	10	ND
Ethylbenzene	624	100-41-4	10	ND
Methylene Chloride	624	75-09-2	10	47
1,1,2,2-Tetrachloroethane	624	79-34-5	10	ND
Tetrachloroethylene	624	127-18-4	10	< 1.0
Toluene	624	108-88-3	10	2
1,1,1-Trichloroethane	624	71-55-6	10	< 1.0
1,1,2-Trichloroethane	624	79-00-5	10	1.0
Trichloroethylene	624	79-01-6	10	< 2
Trichlorofluoromethane	624	75-69-4	10	ND
Vinyl chloride	624	75-01-4	10	ND

ND = None Detected
< = Less than

*EPA published method detection limit

D-25

SAMPLE IDENTIFICATION NO.R1700-174 Lab No. 82-64452(D-3)

BASE/NEUTRAL COMPOUNDS

Parameter	Method No.	CAS #	Method Detection Limit * (ppb)	Found (ppb)
Acenaphthene	625	83-32-9	10	ND
Acenaphthylene	625	208-96-8	10	ND
Anthracene	625	120-12-7	10	ND
Benzo (a) anthracene	625	56-55-3	10	ND
Benzo (b) fluoroanthene	625	205-99-2	10	ND
Benzo (k) fluoroanthene	625	207-08-9	10	ND
Benzo (a) pyrene	625	50-32-8	10	ND
Benzo (g,h,i) perylene	625	191-24-2	25	ND
Benzidine	625	92-87-5	10	ND
Bis (2-chloroethyl) ether	625	111-44-4	25	ND
Bis (2-chloroethoxy) methane	625	111-91-1	10	ND
Bis (2-ethylhexyl) phthalate	625	117-81-7	10	< 10 ←
Bis (2-chloroisopropyl) ether	625	39638-32-9	10	ND
4-Bromophenyl phenyl ether	625	101-55-3	10	ND
Butylbenzylphthalate	625	85-68-7	10	ND
2-Chloronaphthalene	625	91-58-7	10	ND
4-Chlorophenylphenylether	625	7005-72-3	10	ND
Chrysene	625	218-01-9	10	ND
Dibenzo (a,h) anthracene	625	53-70-3	25	ND
Di-N-Butylphthalate	625	84-74-2	10	< 10 ←
1,2-Dichlorobenzene	625	95-50-1	10	ND
1,3-Dichlorobenzene	625	541-73-1	10	ND
1,4-Dichlorobenzene	625	106-46-7	10	ND
3,3'-Dichlorobenzidine	625	91-94-1	10	ND
Diethylphthalate	625	84-66-2	10	ND
Dimethylphthalate	625	131-11-3	10	ND

ND = None Detected
< = Less than
*EPA published method detection limit

BASE/NEUTRAL COMPOUNDS - continued

Parameter	Method No.	CAS #	Method Detection Limit* (ppb)	Found (ppb)
2,4-Dinitrotoluene	625	121-14-2	10	ND
2,6-Dinitrotoluene	625	606-20-2	10	ND
Di-octyl-phthalate	625	117-84-0	10	ND
1,2-Diphenylhydrazine	625	112-66-7	10	ND
Fluoroanthene	625	206-44-0	10	ND
Fluorene	625	86-73-7	10	ND
Hexachlorobenzene	625	118-74-1	10	ND
Hexachlorobutadiene	625	87-68-3	10	ND
Hexachloroethane	625	67-72-1	10	ND
Hexachlorocyclopentadiene	625	77-47-4	10	ND
Indeno (1,2,3-cd) pyrene	625	193-39-5	25	ND
Isophorone	625	78-59-1	10	ND
Naphthalene	625	91-20-3	10	ND
Nitrobenzene	625	98-95-3	10	ND
N-Nitrosodimethylamine	625	62-75-9	25	ND
N-Nitrosodi-N-propylamine	625	621-64-7	10	ND
N-Nitrosodiphenylamine	625	86-30-6	10	ND
Phenanthrene	625	85-01-8	10	ND
Pyrene	625	129-00-0	10	ND
1,2,4-Trichlorobenzene	625	120-82-1	10	ND
2,3,7,8-Tetrachlorodibenzo-p-dioxin	625	1746-01-6	-	-

ND = None Detected
< = Less than
*EPA published method detection limit

SAMPLE IDENTIFICATION NO. R1700-174

Lab No. 82-64452(D-3)

ACID COMPOUNDS

Parameter	Method No.	CAS #	Method Detection Limit * (ppb)	Found (ppb)
4-Chloro-3-methylphenol	625	59-50-7	25	ND
2-Chlorophenol	625	95-57-8	25	ND
2,4-Dichlorophenol	625	120-83-2	25	ND
2,4-Dimethylphenol	625	105-67-9	25	ND
2,4-Dinitrophenol	625	51-28-5	250	ND
2-Methyl-4,6-dinitrophenol	625	534-52-1	250	ND
2-Nitrophenol	625	88-75-5	25	ND
4-Nitrophenol	625	100-02-7	25	ND
Pentachlorophenol	625	87-86-5	25	ND
Phenol	625	108-95-2	25	ND
2,4,6-Trichlorophenol	625	88-06-02	25	ND

ND = None Detected

< = Less than

*EPA published method detection limit

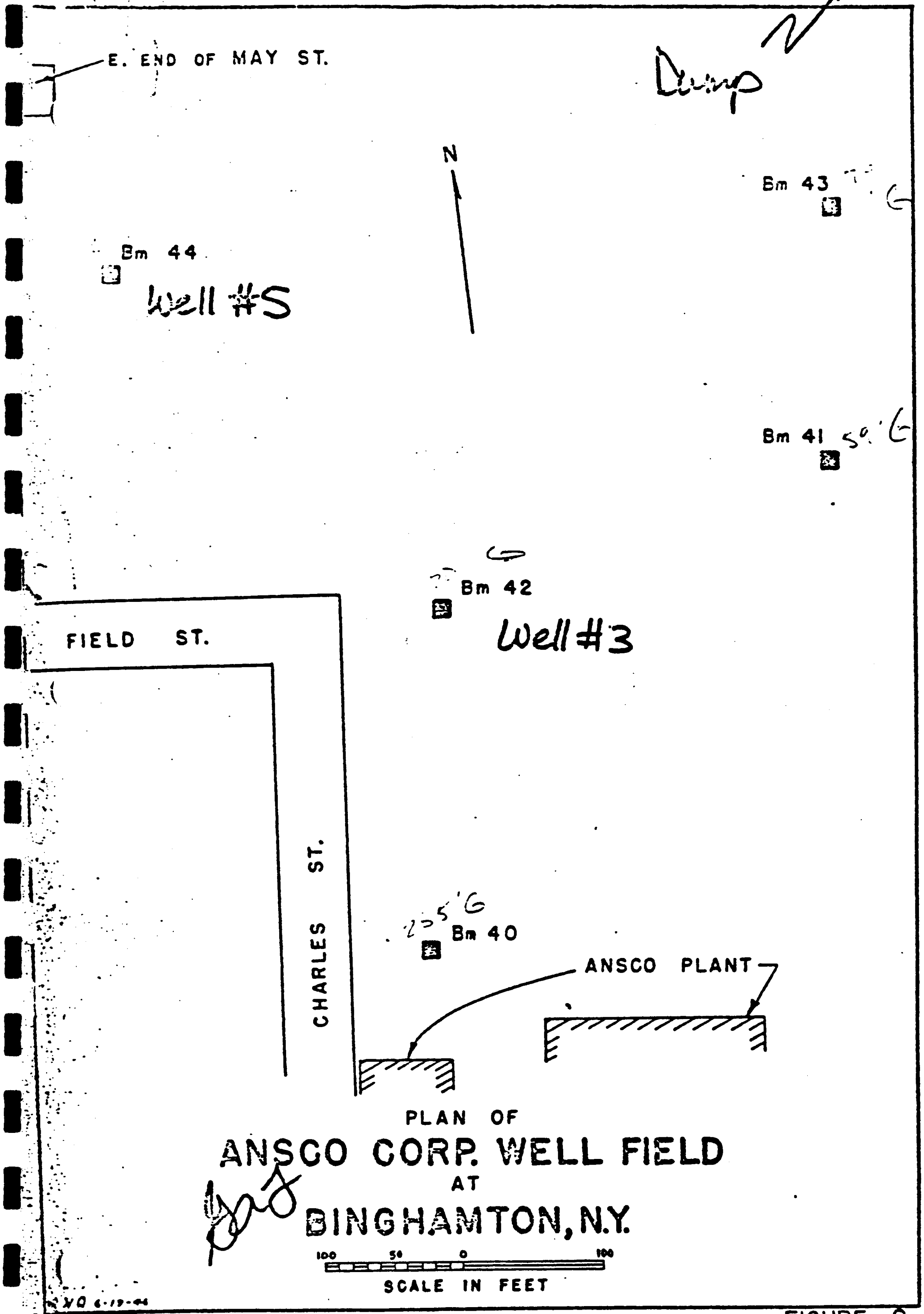
Page 11 SAMPLE IDENTIFICATION R 1-700-174 **Lab No.** 82-64452 (D-3)

METALS AND PHYSICAL CHEMISTRY

Parameters (µg/l)	Method No.	CAS #	Method Detection Limit*	Found
Cyanide, Total	335.2	57-12-5	20	ND
Phenols, Total	420.1	--	5	ND
Antimony	204.1	7440-36-0	200	ND
Arsenic	206.2	7440-38-2	1	9
Beryllium	210.1	7440-41-7	5	ND
Cadmium	213.1	7440-43-9	5	ND
Chromium	218.1	7440-47-3	50	ND
Copper	220.1	7550-50-8	20	28
Lead	239.1	7439-92-1	100	ND
Mercury	245.1	7439-97-6	0.2	0.6
Nickel	249.1	7440-02-0	40	ND
Selenium	270.2	7782-49-2	2	< 2
Silver	272.1	7440-22-4	10	ND
Thallium	279.1	7440-28-0	100	ND
Zinc	289.1	7440-66-6	5	23

ND = None Detected
< = Less than

* EPA published method detection limit



PLAN OF
ANSCO CORP. WELL FIELD
AT
BINGHAMTON, N.Y.

FIGURE 9

D.11

O'BRIEN & GERE

Purgeable Priority Pollutants

Client BROOME COUNTY		Job Number 2622.001.517	
Sample Number 17294	Description Anitec Well 3, 12-20	Date Analyzed 12-28-82	Analyst TAA

	µg/l		µg/l
1) Chloromethane	<1.	16) 1,2-dichloropropane	<1.
2) Vinyl chloride	↓	17) Chlorobenzene	↓
3) Chloroethane	↓	18) Chloroform	↓
4) Benzene	↓	19) 1,4-dichlorobutane	SS
5) Methylene chloride	↓	20) Bromochloromethane	SS
6) Toluene	↓	21) Trichloroethylene	1.
7) Bromomethane	↓	22) 1,1,1-trichloroethane	<1.
8) 1,1-dichloroethylene	↓	23) 1,1,2-trichloroethane	<1.
9) t-1,2-dichloroethylene	1.	24) Trichlorofluoromethane	IS
10) 1,1-dichloroethane	<1.	25) Carbon tetrachloride	<1.
11) 1,2-dichloroethane	↓	26) 2-bromo-1-chloropropane	SS
12) Ethylbenzene	↓	27) Bromodichloromethane	<1.
13) 2-chloroethylvinyl ether	<10.	28) Tetrachloroethylene	↓
14) t-1,3-dichloropropene	<1.	29) 1,1,2,2-tetrachloroethane	↓
15) c-1,3-dichloropropene	<1.	30) Chlorodibromomethane	↓
		31) Bromoform	<10.
		32) Dichlorodifluoromethane	SS

Comments

IS = Internal Standard used for quantitation
SS = Surrogate Standard used for quality control

Authorized: D.R. Hill DRH D-31 Date 1-10-83

D.12

TELEPHONE CONVERSATION MEMORANDUM

CLIENT NYSDEC

PROJECT GAF Dump

PROJ. No. (04339) 06281 H#

DATE 10/30/86

TIME 9:50 Am

[✓ CALL TO]/FROM Mr. Griffin, Mgr. Utilities

REPRESENTING Anitec.

PHONE No. (607) 774-3333

SUMMARY OF CONVERSATION:

Mr. Griffin stated that 3 wells are located at the plant, these wells obtain water which is used for cooling purpose only, Domestic water comes from municipal system.

COPIES TO:

BY: DGT

WEHRAN ENGINEERING
CONSULTING ENGINEERS

D-32

47-15-11(2/80)

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

D.13

Code: 2A

Site Code: 704011

Name of Site: GAF Dump **Region:** 7

County: Broome XXXn/**City** Binghamton

Street Address Seymour Street

Status of Site Narrative:

Inactive facility, allegedly used as disposal area for industrial photochemical wastes. Fifty-five gallon drums of waste liquids were spilled out on the ground surface. No containment practices are in evidence and site is fenced, partially paved and currently not in use.

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

Estimated Size 2 **Acres**

Hazardous Wastes Disposed? Confirmed ☐ Suspected ☒

***Type and Quantity of Hazardous Wastes:**

TYPE	QUANTITY (Pounds, drums, tons, gallons)
Heavy metals: silver and cadium	Unknown
organics and trichloroethylene	Unknown
t-1,2 dichoroethylene	Unknown
phenols	Unknown
intermediate dyestaffs	Unknown

* Use additional sheets if more space is needed.

47-15-11(2/80)

Name of Current Owner of Site: GAF Corporation

Address of Current Owner of Site: C/O General Counsel, GAF Corp. Building #10
1361 Alps Road, Wayne, NJ 07470

Time Period Site Was Used for Hazardous Waste Disposal:

Approx. WWII , 19 To mid-1970's , 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: None

Status of Legal Action: None **State** ☐ **Federal** ☐

Permits Issued: **Federal** ☐ **Local Government** ☐ **SPDES** ☐
Solid Waste ☐ **Mined Land** ☐ **Wetlands** ☐ **Other** ☐

Assessment of Environmental Problems:

Elevated levels of heavy metals and volatile organics have been detected in past sampling efforts. No background date is available. Site is adjacent to numerous industrial wells and the Trout Brook storm sewer. Approximately 1.5 miles to the west is Johnson City municipal well field.

Assessment of Health Problems:

Unknown

Persons Completing this Form:

Frances C. Geissler

New York State Department of Environmental Conservation

Date October 16, 1985

New York State Department of Health

D-34

D.14

THE CLINTON STREET-BALLPARK AQUIFER IN BINGHAMTON AND JOHNSON CITY, NEW YORK

By

Allan D. Randall

U.S. Geological Survey

Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

in cooperation with

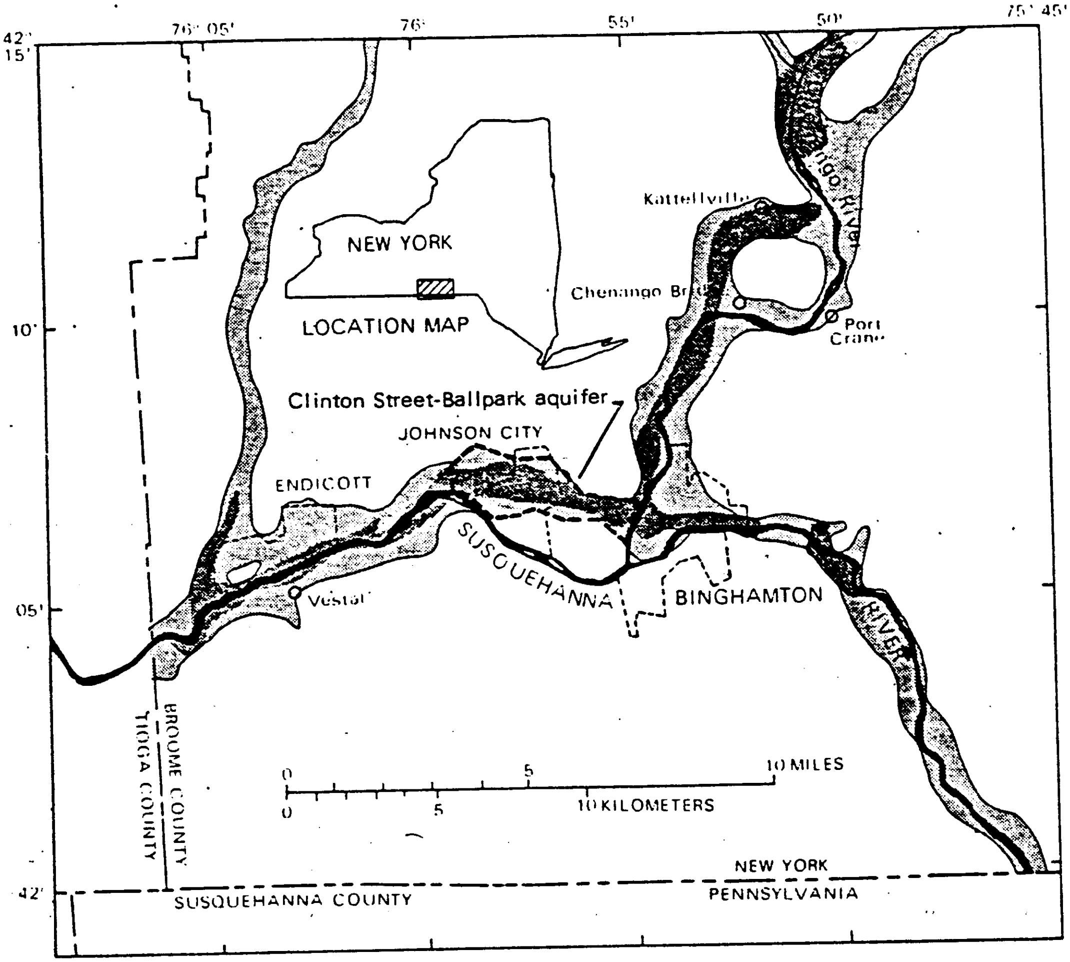
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Bulletin 73

1977

D-35



Base from U.S. Geological Survey
Binghamton, and Elmira, 1:250,000, quadrangles

EXPLANATION

▨

Aquifers composed of sand and gravel. Darker tone, more than 40 feet of saturated sand and gravel, locally overlapped by silt and clay. Lighter tone, generally less than 40 feet of saturated sand and gravel, overlying a thick section of silt and clay or overlying bedrock; thin sand and gravel aquifers locally beneath the silt and clay

Figure 1.--Location and geohydrologic setting of Clinton Street-Ballpark aquifer.

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GEOLOGIC FRAMEWORK

The Clinton Street-Ballpark aquifer was formed about 17,000 years ago (Cadwell, 1973) as the last glacier retreated from south-central New York. Deep valleys, originally carved by streams, had been widened and deepened by tongues of ice (Coates, 1966). While the glacier was melting, lakes continually formed between the remaining ice and older sediment downvalley. Turbulent rivers of meltwater built deltas of sand and gravel where they entered these lakes, and the silt, clay, and very fine sand they carried in suspension settled to the lake bottoms. Much of the sediment that was deposited west of the Chenango River in Binghamton and in Johnson City is permeable sand and gravel that today forms the Clinton Street-Ballpark aquifer.

The successive geologic units that compose and border the aquifer are described in table 1; the diagram in figure 2 illustrates the arrangement of these units.

Glacial deposits in the Susquehanna River basin range from "bright" to "drab" (Denny and Lyford, 1963; Moss and Ritter, 1962). The bright deposits contain fragments of many different rock types from remote locations and thus have a colorful appearance; the drab deposits are derived almost entirely from local shale bedrock. Near Binghamton, the drab glacial sand or gravel deposits are slightly older than the bright ones; that is, the bright overlies the drab wherever both types are present (Randall, in press). The change is commonly gradational over many feet if no fine-grained beds intervene. Because small tributary streams continued to bring drab gravel into the major valleys after the retreat of the ice, thin postglacial drab gravel may overlie bright glacial gravel near such streams. Geologists may find these relationships useful in tracing units from one borehole to another.

Distribution of the various geologic units at land surface is shown in a surficial geologic map (plate 6). Their structure and position below land surface are illustrated in figure 3.

ABILITY OF THE AQUIFER TO TRANSMIT WATER TO WELLS

The concept of transmissivity is used by hydrologists to express in quantitative terms the ability of aquifers to transmit water. Transmissivity is a measure of the rate at which water would flow through a vertical strip of specified width extending from the top to the bottom of the aquifer, assuming a 1/1 hydraulic gradient. A 1/1 gradient, which means a 1-foot decline in water level for each foot of water movement, is steeper than gradients usually observed in aquifers but serves as a standard for comparison. However, even though transmissivity is defined exactly and expressed numerically, it is difficult to measure precisely in most glacial aquifers because it varies widely from place to place.

The Clinton Street-Ballpark aquifer is composed mostly of permeable materials. Transmissivity in the central part of the aquifer generally exceeds 10,000 feet squared per day and locally may reach 100,000 feet squared per day (900 to 9,000 meters squared per day).

Table 1.--Geologic units in and near the Clinton Street-Ballpark aquifer

Geologic unit (youngest to oldest)	Number in figures 2 and 3	Lithology (materials composing unit)	Distribution, thickness, and position	Hydrologic significance
Fill	8	Chiefly trash and ashes; some sand, gravel, and other materials	Most natural depressions in Binghamton and Johnson City have been raised 5 to 20 feet by fill; some are now unrecognizable.	Not tapped by wells. Increases dissolved-solids concentration and acidity of infiltrating water, but effect decreases as age of fill increases.
Flood-plain silt	7	Brown silt and very fine sand with roots and a little fine organic matter.	Mantles lowlands inundated during major floods; typically 5 to 15 feet thick. May rest on all older units (1-5).	Not tapped by wells. Poorly permeable; limits recharge of underlying aquifers from floodwater and possibly from heavy rainfall.
Alluvial fan deposits	6	Gravel, moderately sandy and in general moderately silty. Most stones are flat pieces of local shale or siltstone.	Deposited by small streams where they enter the Susquehanna valley. May rest on all older units (1-5).	Permeable, but too thin to supply large-capacity wells. Water from small streams infiltrates through alluvial fan deposits to stratified glacial deposits.
Older river alluvium	5	Sand and gravel, bright but leached partially to completely free of limestone.	Interfingers with and overlies late-glacial lakebeds near Chenango River; as much as 35 feet thick. Relation to other units uncertain. May cap stratified glacial deposits beneath flood-plain silt elsewhere, but is not recognized or mapped.	Highly permeable and in good hydraulic contact with Chenango River. Could be tapped by large-capacity wells.
Late-glacial lakebeds	4	Silt and very fine sand with some clay and scattered tiny plant fragments; commonly grades into peat or highly organic silt at top.	Fills irregular depressions left when ice blocks melted, chiefly in a narrow east-west zone near deepest part of bedrock valley; as much as 80 feet thick. Generally overlies bright gravel.	A significant barrier to infiltration and ground-water flow in many places.
Stratified glacial deposits	3			
Bright gravel	3c	Sandy gravel and pebbly sand containing variable amounts of silt; highly calcareous. Upper part very bright (35 to 75 percent of the pebbles are limestone and other rock types not derived from local bedrock). Lower part moderately bright (15 to 30 percent exotic pebbles).	Present over much of the valley as broad terraces or underlying younger units; thickness varies widely, locally exceeds 100 feet.	Highly permeable, tapped by several large-capacity wells, but locally above water table. The abundant limestone in this unit causes water that migrates through it to have high hardness (250-400 milligrams per liter).
Lake beds	3b	Silt to fine sand, some clay, no plant fragments.	Lenses may occur anywhere within unit 3, but seem to be most common between the bright and drab gravels.	A significant barrier to infiltration and ground-water flow in places.
Drab gravel	3a	Sandy gravel and pebbly sand with variable amounts of silt; weakly calcareous. Pebbles are almost entirely local	Present at land surface along north and south sides of valley; commonly underlies bright gravel (directly or	Highly permeable; tapped by several large-capacity wells.

		ately bright (15 to 30 per-cent exotic pebbles).		
Lake beds	3b	Silt to fine sand, some clay, no plant fragments.	Lenses may occur anywhere within unit 3, but seem to be most common between the bright and drab gravels.	A significant barrier to infiltration and ground-water flow in places.
Drab gravel	3a	Sandy gravel and pebbly sand with variable amounts of silt; weakly calcareous. Pebbles are almost entirely local shale and siltstone, with 10 percent or less exotic rock types.	Present at land surface along north and south sides of valley; commonly underlies bright gravel (directly or with intervening lake beds) in central part of valley; varies widely in thickness.	Highly permeable; tapped by several large-capacity wells.
Glacial till	2	Mixture of silt, clay, gravel, and sand, tough and compact; commonly called hardpan. May contain minor sand and gravel lenses.	Immediately overlies bedrock. Only about 1 foot thick in places, but forms low hills in southern part of Susquehanna valley.	Very poorly permeable. Low hills of till prevent movement of water between aquifer and Susquehanna River for 3 miles west from Chenango River
Bedrock	1	Interbedded shale and siltstone.	Present everywhere beneath other units.	Poorly permeable; serves as north, and part of south, aquifer boundary, but yields 100 to 300 gallons per minute of salty water to wells several hundred feet deep.

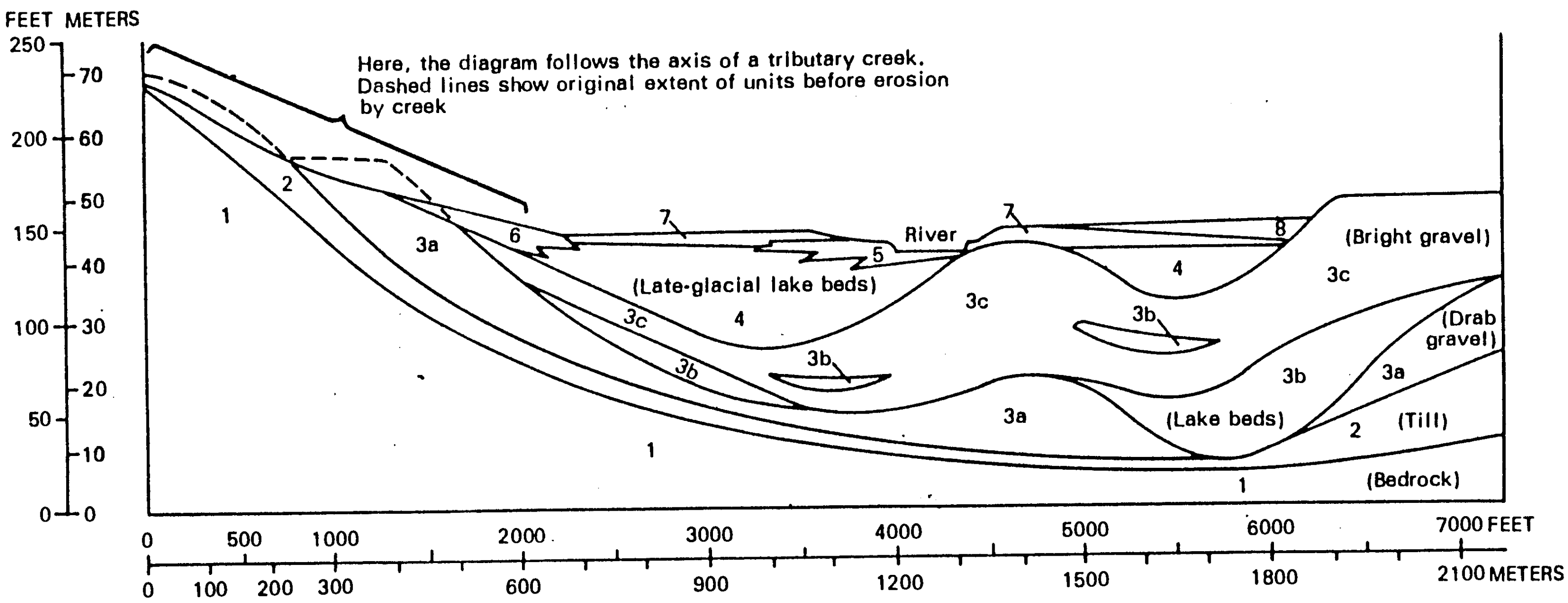

Figure 2.--Idealized diagram illustrating arrangement of geologic units numbered and described in table 1. Note that diagram would appear much flatter if drawn to same scale vertically and horizontally.

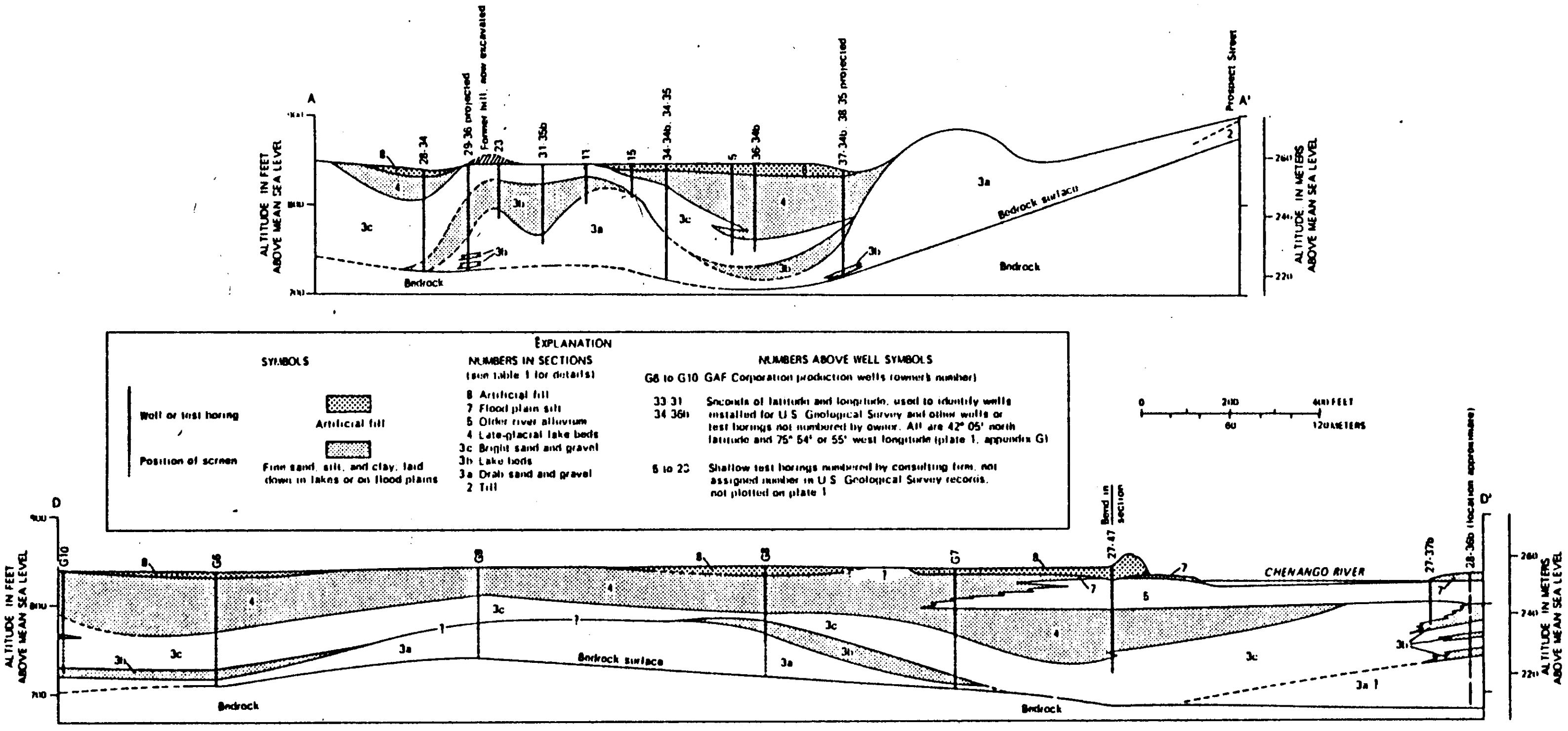

Figure 3 (continued).--Geologic sections within the Clinton Street-Ballpark aquifer.

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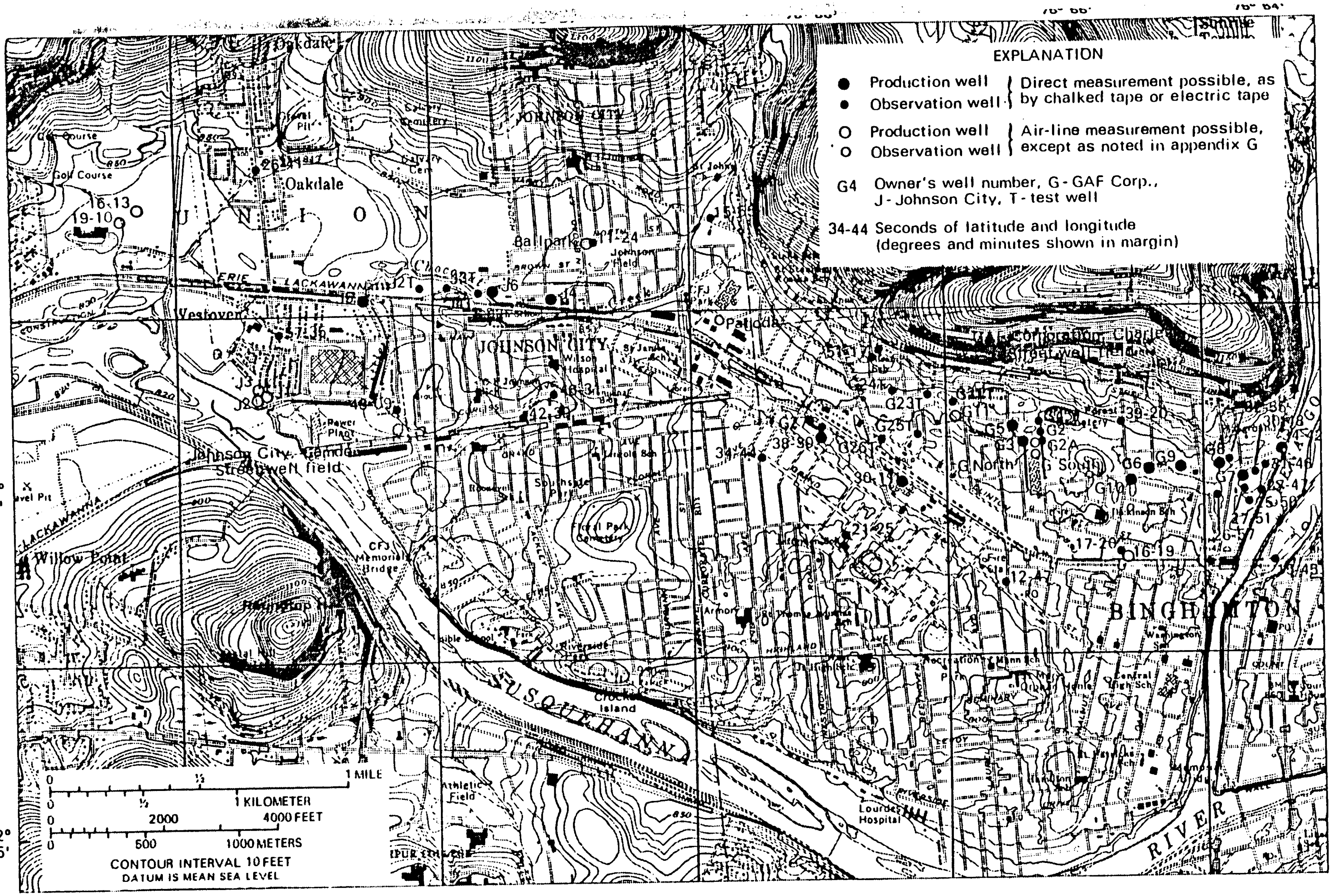
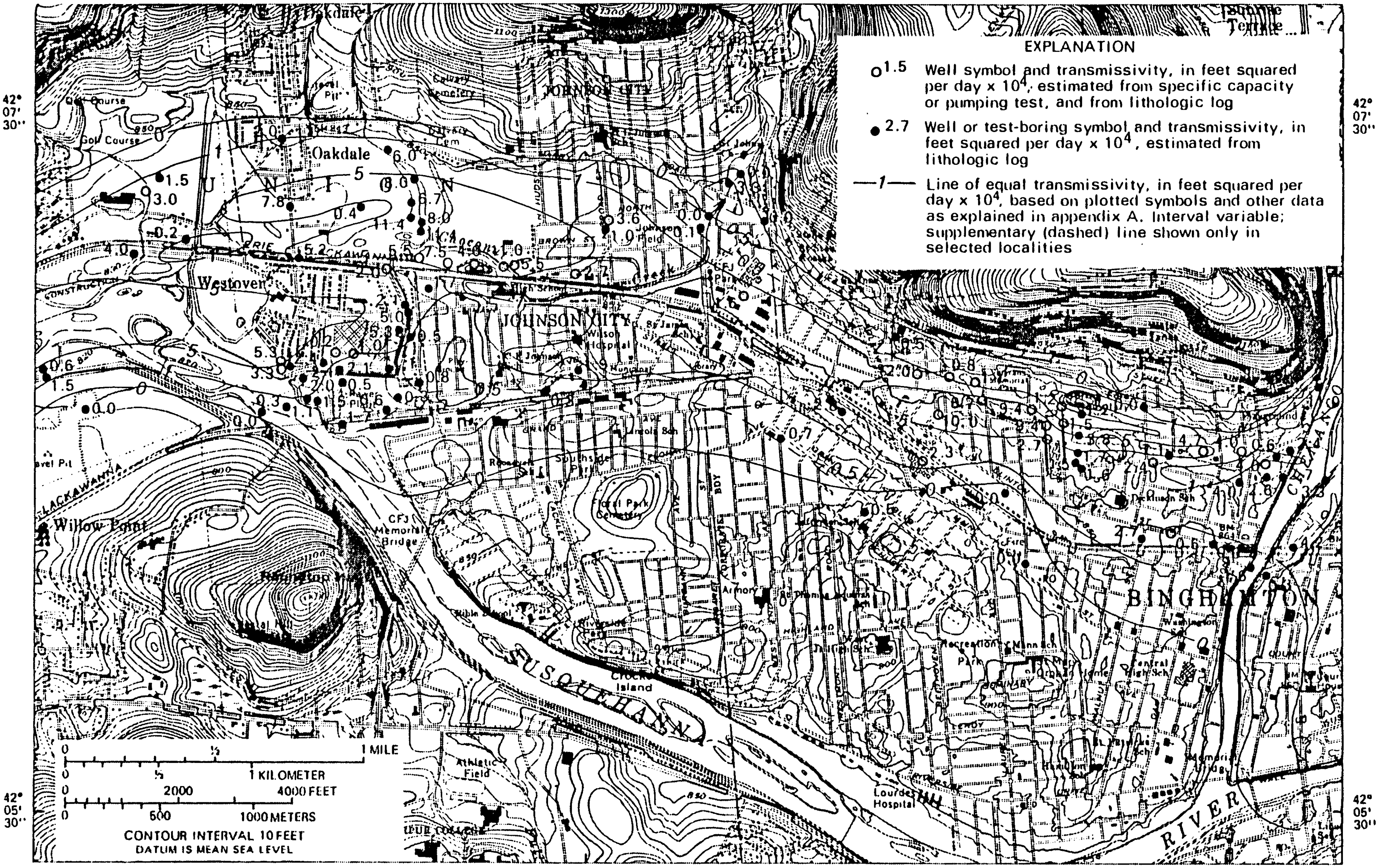


Base from U.S. Geological Survey
Binghamton West, and Castle Creek, N.Y., 1:24,000, 1968

PLATE 1.--LOCATION OF OBSERVATION WELLS, 1971, CLINTON STREET-BALLPARK AQUIFER

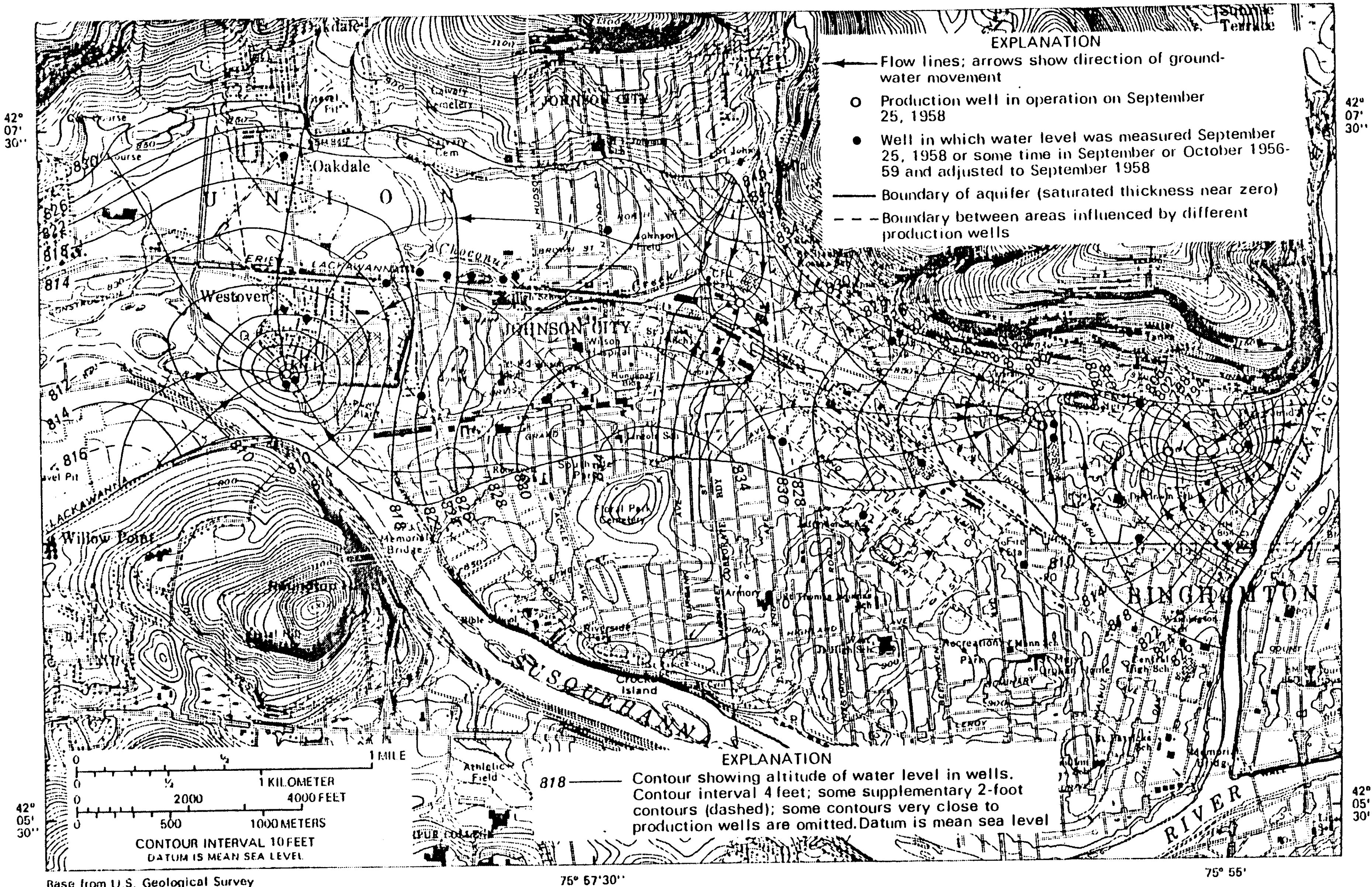


Base from U.S. Geological Survey
Binghamton West, and Castle Creek, N.Y., 1:24,000, 1968

75° 57'30"

75° 55'

PLATE 3.--TRANSMISSIVITY OF CLINTON STREET-BALLPARK AQUIFER



Base from U.S. Geological Survey
Binghamton West, and Castle Creek, N.Y., 1:24,000, 1968

PLATE 7.--FLOW NET FOR SEPTEMBER 25, 1958, CLINTON STREET-BALLPARK AQUIFER

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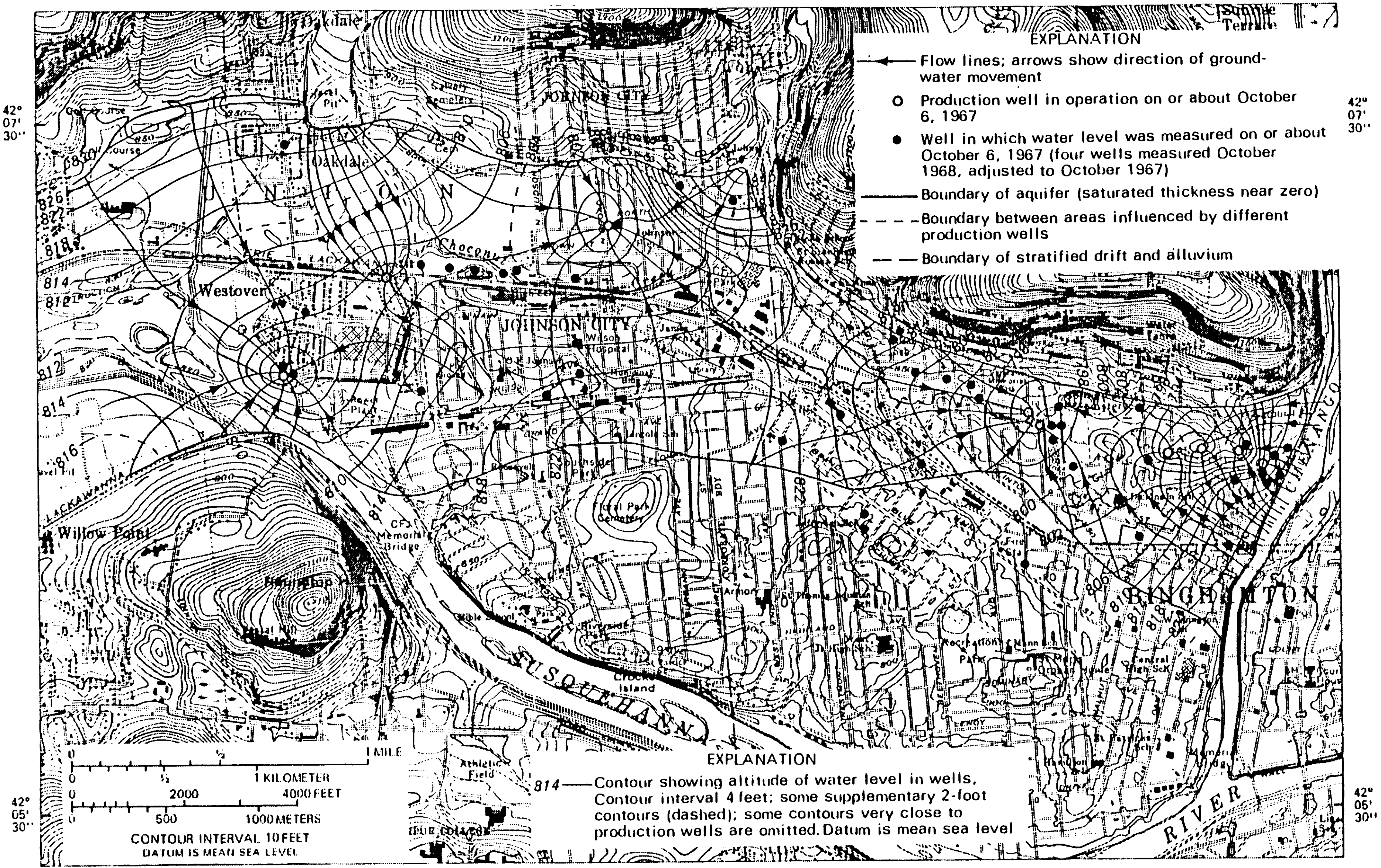

Base from U.S. Geological Survey
Binghamton West, and Castle Creek, N.Y., 1:24,000, 1968

PLATE 8.--GROUND-WATER FLOW NET FOR OCTOBER 6, 1967, CLINTON STREET-BALLPARK AQUIFER

D.15

Telephone Conversation Record

Date: 5/3/89

Time: 1:30 PM

Call by: Albert Longoria of G&H
(Name) (Company)

Answer by: Allan Randall of USGS
(Name) (Company)

Contract No: 5583-157

Subject discussed: Groundwater Geologic Units and Groundwater Flow Direction In and Near the GAF Site

---

SUMMARY OF DISCUSSION, DECISIONS AND COMMITMENTS

The discussion was about the disparity between the groundwater flow direction observed by the data attained from the recently completed monitoring wells and that which has been published by the USGS. Mr. Randall explained that the Anitec Corporation's production wells are influencing the entire vicinity's groundwater flow. It has been documented by the USGS that Anitec's core of influence will direct groundwater flow, at or near the GAF site, in a south by southwest course. A. Longoria discussed the possibility of GAF's GW-1 easterly flow pattern. Mr. Randall stated that this is highly plausible because a silty clay layer exists in the GAF site vicinity. This silty clay layer separates the water bearing zones from each other, subsequently establishing a perched water bearing layer throughout the vicinity. The silty clay layer is discontinuous, allowing for the water bearing layers to be hydraulically connected.

D.16

The Condensed Chemical Dictionary

TENTH EDITION

Revised by

GESSNER G. HAWLEY

VNR VAN NOSTRAND REINHOLD COMPANY
NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

D-45

Grades: Technical; 99.9%.
Containers: Carboys; cylinders; tank cars.
Hazard: Highly toxic; corrosive to skin and tissue. Reacts with water to form HCl. Tolerance, 0.5 ppm in air. Store in tightly closed containers.
Uses: Making phosphorus oxychloride; intermediate for organophosphorus pesticides, surfactants, phosphites (reaction with alcohols and phenols), gasoline additives, plasticizers, dyestuffs; chlorinating agent; catalyst; preparing rubber surfaces for electrodeposition of metal; ingredient of textile finishing agents.
Shipping regulations: (Rail, Air) Corrosive label. Not accepted passenger.

phosphorus triiodide PI_3.
Properties: Red crystals; hygroscopic. Soluble in alcohol, carbon disulfide, water (dec). M.p. 61°C (dec); sp. gr. 4.18.
Grades: Technical; reagent.
Hazard: Toxic and flammable; reacts with water. Irritant to skin and eyes.
Use: Organic synthesis.

phosphorus trisulfide (phosphorus sulfide; tetraphosphorus hexasulfide; thiophosphorous anhydride) P_2S_3, or P_4S_6.
Properties: Grayish-yellow mass; tasteless; odorless. Keep well stoppered! Decomposes in moist air. Soluble in alcohol, carbon disulfide, ether. B.p. 490°C; m.p. 290°C.
Hazard: Highly toxic; flammable, dangerous fire risk; reacts with water.
Use: Organic chemistry (reagent).
Shipping regulations: (Rail, Air) Flammable Solid label. Not acceptable passenger.

phosphorylase. An enzyme occurring in muscle and liver which catalyzes the conversion of glycogen into glucose-1-phosphate.

phosphorylation. A reaction in which phosphorus combines with an organic compound, usually in the form of the trivalent phosphoryl group$=P=O$. It occurs naturally in cellular metabolism and is of particular importance in vitamin activity and enzyme formation. It is also used to produce a modified cellulose (P-cellulose) for cation exchange in chromatographic separations.

phosphoryl chloride. See phosphorus oxychloride.

phosphotungstic acid (phospho-12-tungstic acid; phosphowolframic acid; 12-tungstophosphoric acid) $H_3PW_{12}O_{40}\cdot xH_2O$.
Properties: Yellowish-white solid; m.p. (for $24H_2O$ hydrate) 89°C. Soluble in water, acetone, and diethyl ether. Relatively insoluble in nonpolar organic solvents. Strong oxidizing agent in aqueous solution; strong acid in the free acid form.
Derivation: Addition of phosphates to sodium tungstate in the presence of hydrochloric acid.
Grades: Reagent; technical.
Hazard: Strong irritant to skin and eyes.
Uses: Reagent in analytical chemistry and biology; manufacture of organic pigments; additive in plating industry; imparts water resistance to plastics, adhesives and cement; catalyst for organic reactions; photographic fixing agent; textile antistatic agent.

phosphotungstic acid, sodium salt. See sodium 12-tungstophosphate.

phosphotungstic pigment (tungsten lake). A green or blue pigment manufactured by precipitating basic dyestuffs such as malachite green or Victoria blue with solutions of phosphotungstic acid, or phosphomolybdic acid, or mixtures of both. See also phosphomolybdic pigment.
Uses: Printing inks; paper; paints and enamels.

photochemistry. The branch of chemistry concerned with the effect of absorption of radiant energy (light) in inducing or modifying chemical changes. Photosynthesis is the most important example of a photochemical reaction; others are the photosensitization of solids, applied in photography, photocells, photovoltaic cells, and the formation of visual pigments; photochemical decomposition (photolysis); photo-induced polymerization, oxidation, and ionization; fluorescence and phosphorescence; and the reaction of chlorine with organic compounds. Free-radical chain mechanisms are usually involved. See also free radical.

photochromism. The ability of a transparent material to darken reversibly when exposed to light. See also glass, photochromic.

Plastics can be made light-sensitive by certain aromatic organic nitro compounds such as 2-(2,4-dinitrobenzyl)pyridine. Such chemicals are compatible with most transparent plastics and are either blended with the base resin or applied as coatings.

photo-glycin. See para-hydroxyphenylglycine.

photographic chemistry. In photographic films and papers the sensitive surface consists of microscopic grains of a silver halide, suspended in gelatin. Exposure to light renders the halide particles susceptible to reduction to metallic silver by developing agents (q.v.) containing a reducing agent, as well as an accelerator, preservative, and restrainer. The accelerator increases the activity of the reducing agent (due principally to ionization of the phenolic agents to their active form) and is usually an alkaline compound. The preservative, usually sodium sulfite, minimizes air oxidation. The restrainer helps to prevent "fog" (reduction of silver halide grains which have not been exposed to light) and is almost always potassium bromide.

Color sensitizers are dyes added to silver halide emulsions to broaden their response to various wavelengths. Unsensitized emulsions are most responsive in the blue region of the spectrum and thus do not correctly represent the light spectrum striking them. Widely used sensitizers include the cyanine dyes (q.v.), the merocyanines, the benzooxazoles, and the benzothiazoles. Cryptocyanine sensitizes the extreme red and infrared.

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In color photography diethyl-para-phenylenediamine is an important developer, since its oxidation product readily couples with a large number of phenol and reactive methylene compounds to form indophenol and indoaniline dyes, which are the basis of most of the current color processes.

photolysis. Decomposition of a compound into simpler units as a result of absorbing one or more quanta of radiation; examples are splitting of hydrogen iodide by the reaction $2HI + h\nu \longrightarrow H_2 + I_2$, and of ketene ($H_2C{=}CO$) into carbon monoxide and carbene (methylene) ($:CH_2$). Photodecomposition may also occur with aldehydes, ketones, azo compounds, and organometallic compounds. Continuous generation of hydrogen by photolysis of water has been achieved experimentally, using platinum catalyst in conjunction with ruthenium and rhodium. See also flash photolysis; photochemistry.

photometric analysis. Chemical analysis by means of absorption or emission of radiation, primarily in the near ultraviolet, visible, and infrared portions of the electromagnetic spectrum. It includes such techniques as spectrophotometry, spectrochemical analysis, Raman spectroscopy, colorimetry and fluorescence measurements. See also spectroscopy.

photon. The unit (quantum) of electromagnetic radiation. Light waves, gamma rays, x-rays, etc., consist of photons. Photons are discrete concentrations of energy that have no rest mass and move at the speed of light. Their nature can be described only in mathematical terms. Photons are emitted when electrons move from one energy state to another, as in an excited atom. See also radiation.

photophor. See calcium phosphide.

photopolymer. A polymer or plastic so made that it undergoes a change on exposure to light. Such materials can be used for printing and lithography plates, for photographic prints and microfilm copying. The effect of the light may be to cause further polymerization or crosslinking, or may cause degradation. One application involves the use of esters of polyvinyl alcohol which crosslink and so become insoluble, whereas unexposed portions of the material remain soluble.

photosynthesis. The utilization of sunlight by plants as well as by bacteria to convert two inorganic substances (carbon dioxide and water) into carbohydrates. Chlorophyll (q.v.) acts as the energy-converter in this reaction, which is perhaps the most important on earth. The generalized reaction is: $6CO_2 + 6H_2O + 672\ \text{kcal} \longrightarrow C_6H_{12}O_6 + 6O_2$. This significance of this process lies in the conversion of energy from radiant to chemical form. The chemical energy a green plant stores by photosynthesis provides the total energy requirement of the plant. Directly or indirectly plants supply the primary organic nutrient for most other living organisms. Most fossil fuels are storehouses of the radiant energy transformed by photosynthesis in earlier geologic eras.

Photosynthesis is the principal source of atmospheric oxygen. At least two-thirds of the total photosynthetic activity of the earth takes place in the oceans (see algae). Its exact chemical mechanism is extremely complex. Essential features are the reduction of carbon dioxide and utilization of the hydrogen of water to form carbohydrates, the oxygen being liberated; the nucleotides nicotinamide and adenosine triphosphate are involved in this conversion. Sugar (sucrose) is formed in the cytoplasm surrounding the chloroplasts.

Photosynthesis has been suggested as a possible source of fuels by the development of "energy plantations" (intensive growth of crops) and conversion of a small fraction of the solar energy to generation of electric power. See also biomass.

photovoltaic cell. See solar cell.

"Photox."[266] Trademark for photoconductive lead-free zinc oxides manufactured by the French process produced from zinc metal. Used in electrophotography.

"PH 990 Resin."[469] Trademark for a phosphonitrilic-modified phenolic resin. Stable, off-white, free-flowing powder. Soluble in most organic solvents. Flame retardant and retains electrical and structural properties up to 260–426° C.

"Phthalamaquin."[342] Trademark for an aureoquin preparation, described as 4-(2-dimethylaminoethylamino)-6-methoxyquinoline diethylaminotetrahydrophthalate. Used in medicine.

phthalamide $C_6H_4(CONH_2)_2$. The double acid amide of phthalic acid.

Properties: Colorless crystals; m.p. 220° C (decomposes into phthalimide and ammonia). Very slightly soluble in water and alcohol; insoluble in ether.

Derivation: By stirring phthalimide with cold concentrated ammonia solution; by the reaction of phthalyl chloride and ammonia; or from the addition of ammonia to phthalic anhydride under pressure.

Use: Intermediate in organic synthesis; laboratory reagent.

phthalic acid (ortho-phthalic acid; ortho-benzene dicarboxylic acid) $C_6H_4(COOH)_2$.

Properties: Colorless crystals; soluble in alcohol; sparingly soluble in water and ether. Sp. gr. 1.585; m.p., decomposes at 191° C.

Derivation: Catalytic oxidation of o-toluic acid and oxidation of xylene.

Grades: Technical; reagent.

Uses: Dyes; phenolphthalein; phthalimide; anthranilic acid; synthetic perfumes; laboratory reagent.

para-phthalic acid. See terephthalic acid.

phthalic anhydride $C_6H_4(CO)_2O$.

Properties: White, crystalline needles; sublimes below b.p.; mild odor. Sp. gr. 1.527 (4° C); m.p. 131.16° C;

D.17

Telephone Conversation Record

Date: 5/3/89

Time: 3:30 PM

Call by: Albert Longoria (Name) of Gibbs & Hill, Inc. (Company)

Answer by: Sam Iwobi (Name) of Anitec Corporation (Company)

Contract No: 5583-157

Subject discussed: Water Elevation Measurements and Location of Anitec Wells in the GAF Site Vicinity

---

SUMMARY OF DISCUSSION, DECISIONS AND COMMITMENTS

Sam Iwobi provided Gibbs & Hill with water elevation measurements (shown below) and well location (Figure ____) in the GAF site vicinity. Mr. Iwobi indicated that local groundwater flow was highly influenced by the pumping of the wells in question. The following is a breakdown of the information provided by Mr. Iwobi:

Well No.	Depth to Water	Reference Point	Water Elevation
3	32'8"	837.0	804.3
5	35'3"	840.0	804.8
11	32'0"	835.0	803.0
N-Test	39'0"	848.0	809.0
S-Test	44.33'	851.0	807.0

D. 18

LABORATORY DATA VALIDATION
FUNCTIONAL GUIDELINES FOR EVALUATING ORGANICS ANALYSES

Prepared for the

HAZARDOUS SITE EVALUATION DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

Compiled by

Ruth Bleyler
Sample Management Office

Prepared by

The USEPA Data Review Work Group
Scott Siders - EPA HQ - Co-Chairperson
Jeanne Hankins - EPA Region III - Co-Chairperson
Deborah Szaro - EPA Region I
Leon Lazarus - EPA Region II
Charles Sands - EPA Region III
Charles Hooper - EPA Region IV
Patrick Churilla - EPA Region V
Debra Morey - EPA Region VII
Raleigh Farlow - EPA Region X

February 1, 1988

1) Flag positive results for that compound as estimated (J).

2) Flag non-detects for that compound as unusable (R).

b. If any volatile or semivolatile TCL compound has a % Difference between Initial and Continuing Calibration of greater than 25%:

1) Flag all positive results for that compound as estimated (J).

2) Non-detects may be qualified using professional judgment.

IV. BLANKS

A. Objective

The assessment of blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply to any blank associated with the samples. If problems with <u>any</u> blank exist, all data associated with the Case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the Case, or if the problem is an isolated occurrence not affecting other data.

B. Criteria

No contaminants should be present in the blank(s).

C. Evaluation Procedure

1. Review the results of all associated blank(s), Form I(s) and raw data (chromatograms, reconstructed ion chromatograms, quantitation reports or data system printouts).

2. Verify that Method Blank analysis has been reported per matrix, per concentration level, for each GC/MS system used to analyze VOA samples, and for each extraction batch for semivolatiles. The reviewer can use the Method Blank Summary (Form IV) to assist in identifying samples associated with each Method Blank.

D. Action

Action in the case of unsuitable blank results depends on the circumstances and origin of the blank. No positive sample results should be reported unless the concentration of the compound in the sample exceeds 10 times the amount in any blank for the common contaminants listed below, or 5 times the amount for other compounds. In instances where more than one blank is associated with a given sample, qualification should be based upon a comparison with the associated blank having the highest concentration of a contaminant. The results must <u>not</u> be corrected by subtracting any blank value. Specific actions are as follows:

1. If a compound is found in a blank but not found in the sample, no action is taken.

2. Any compound (other than the five listed below) detected in the sample, which was also detected in any associated blank, must be qualified when the sample concentration is less than five times the blank concentration. For the following five compounds, the results are qualified by elevating the limit of detection when the sample concentration is less than 10 times the blank concentration.

   Common lab contaminants:

   a. Methylene chloride
   b. Acetone
   c. Toluene
   d. 2-butanone
   e. Common phthalate esters

   The reviewer should note that the blank analyses may not involve the same weights, volumes, or dilution factors as the associated samples. These factors must be taken into consideration when applying the 5x and 10x criteria, such that a comparison of the total amount of contamination is actually made.

   Additionally, there may be instances where little or no contamination was present in the associated blanks, but qualification of the sample was deemed necessary. Contamination introduced through dilution water is one example. Although it is not always possible to determine, instances of this occurring can be detected when contaminants are found in the diluted sample result, but are absent in the undiluted sample result. Since both results are not routinely reported, it may be impossible to verify this source of contamination. However, if the reviewer determines that the contamination is from a source other than the sample, he/she should qualify the data. In this case, the 5x or 10x rule does not apply; the sample value should be reported as a non-detect.

3. The following are examples of applying the blank qualification guidelines. Certain circumstances may warrant deviations from these guidelines.

   Case 1: Sample result is greater than the Contract Required Quantitation Limit (CRQL), but is less than the required amount (5x or 10x) from the blank result.

	Rule	
	10x	5x
Blank Result	7	7
CRQL	5	5
Sample Result	60	30
Qualified Sample Result	60U	30U

   In the example for the 10x rule, sample results less than 70 (or 10 x 7) would be qualified as non-detects. In the case of the 5x rule, sample results less than 35 (or 5 x 7) would be qualified as non-detects.

Case 2: Sample result is less than CRQL, and is also less than the required amount (5x or 10x) from the blank result.

	Rule	
	10x	5x
Blank Result	6	6
CRQL	5	5
Sample Result	4J	4J
Qualified Sample Result	5U	5U

Note that data are not reported as 4U, as this would be reported as a detection limit below the CRQL.

Case 3: Sample result is greater than the required amount (5x or 10x) from the blank result.

	Rule	
	10x	5x
Blank Result	10	10
CRQL	5	5
Sample Result	120	60
Qualified Sample Result	120	60 ←

For both the 10x and 5x rules, sample results exceeded the adjusted blank results of 100 (or 10x10) and 50 (or 5x10), respectively.

4. If gross contamination exists (i.e., saturated peaks by GC/MS), all compounds affected should be flagged as unusable (R), due to interference, in all samples affected.

5. If inordinate amounts of other TCL compounds are found at low levels in the blank(s), it may be indicative of a problem at the laboratory and should be noted in the data review comments which are forwarded to the DPO.

6. Similar consideration should be given to TIC compounds which are found in both the sample and associated blank(s). (See Section XI for TIC guidance.)

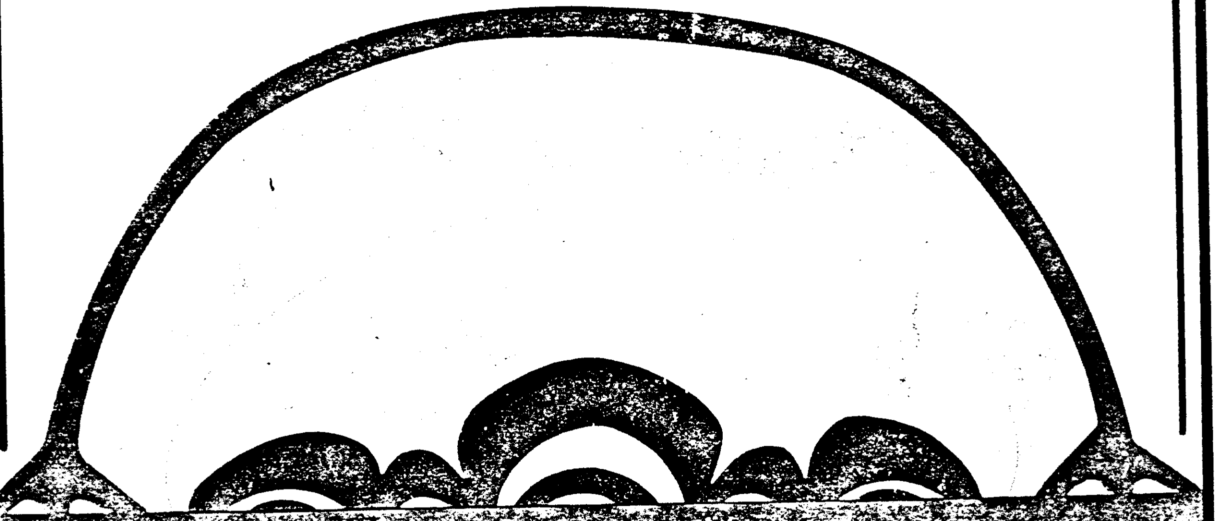
V. SURROGATE RECOVERY

A. Objective

Laboratory performance on individual samples is established by means of spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The evaluation of the results of these surrogate spikes is not necessarily straightforward. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the review and validation of data based on specific sample results is

D.20

GROUNDWATER



R. Allan Freeze/John A. Cherry

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the use of the pumping-test approach is usually inappropriate. It is our opinion that the method is widely overused. Piezometer tests are simpler and cheaper, and they can provide adequate data in many cases where pumping tests are not justified.

8.7 Estimation of Saturated Hydraulic Conductivity

It has long been recognized that hydraulic conductivity is related to the grain-size distribution of granular porous media. In the early stages of aquifer exploration or in regional studies where direct permeability data are sparse, this interrelationship can prove useful for the estimation of conductivity values. In this section, we will examine estimation techniques based on grain-size analyses and porosity determinations. These types of data are often widely available in geological reports, agricultural soil surveys, or reports of soil mechanics testing at engineering sites.

The determination of a relation between conductivity and soil texture requires the choice of a representative grain-size diameter. A simple and apparently durable empirical relation, due to Hazen in the latter part of the last century, relies on the effective grain size, d_{10}, and predicts a power-law relation with K:

$$K = Ad_{10}^2 \tag{8.47}$$

The d_{10} value can be taken directly from a grain-size gradation curve as determined by sieve analysis. It is the grain-size diameter at which 10% by weight of the soil particles are finer and 90% are coarser. For K in cm/s and d_{10} in mm, the coefficient A in Eq. (8.47) is equal to 1.0. Hazen's approximation was originally determined for uniformly graded sands, but it can provide rough but useful estimates for most soils in the fine sand to gravel range.

Textural determination of hydraulic conductivity becomes more powerful when some measure of the spread of the gradation curve is taken into account. When this is done, the *median grain size*, d_{50}, is usually taken as the representative diameter. Masch and Denny (1966) recommend plotting the gradation curve [Figure 8.25(a)] using Krumbein's ϕ units, where $\phi = -\log_2 d$, d being the grain-size diameter (in mm). As a measure of spread, they use the *inclusive standard deviation*, σ_I, where

$$\sigma_I = \frac{d_{16} - d_{84}}{4} + \frac{d_5 - d_{95}}{6.6} \tag{8.48}$$

For the example shown in Figure 8.25(a), $d_{50} = 2.0$ and $\sigma_I = 0.8$. The curves shown in Figure 8.25(b) were developed experimentally in the laboratory on prepared samples of unconsolidated sand. From them, one can determine K, knowing d_{50} and σ_I.

For a fluid of density, ρ, and viscosity, μ, we have seen in Section 2.3 [Eq. (2.26)] that the hydraulic conductivity of a porous medium consisting of uniform

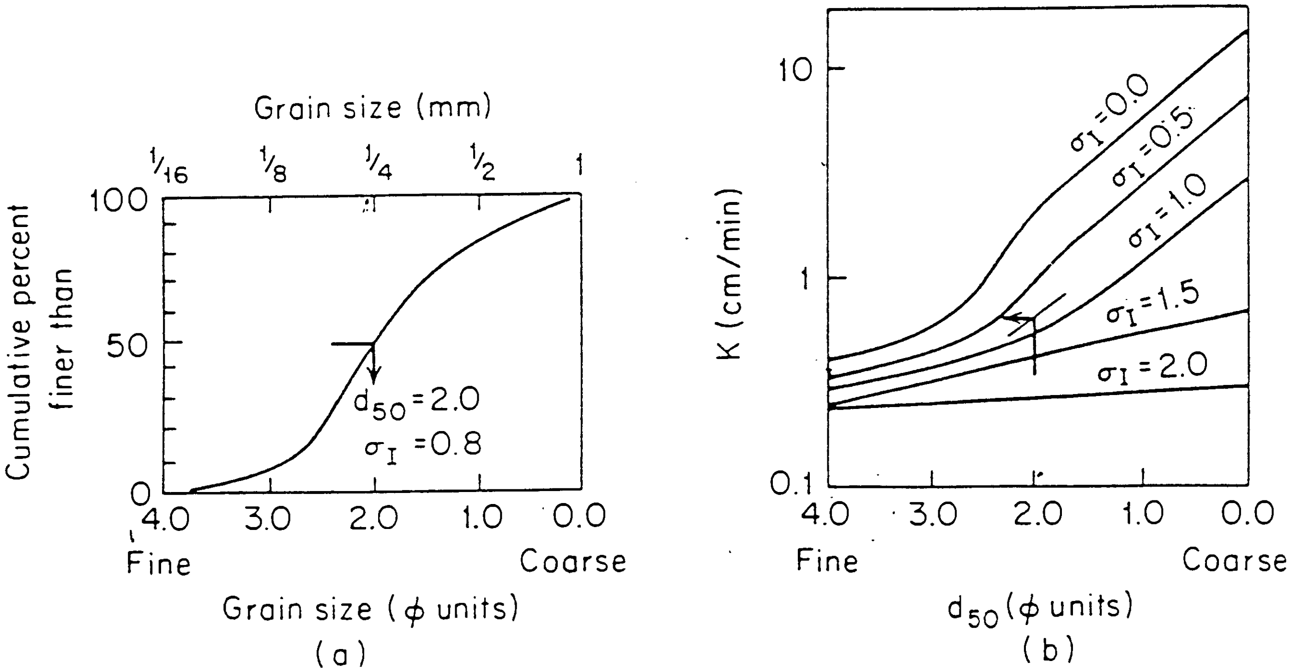

Figure 8.25 Determination of saturated hydraulic conductivity from grain-size gradation curves for unconsolidated sands (after Masch and Denny, 1966).

spherical grains of diameter, *d*, is given by

$$K = \left(\frac{\rho g}{\mu}\right) C d^2 \tag{8.49}$$

For a nonuniform soil, we might expect the *d* in Eq. (8.49) to become d_m, where d_m is some representative grain size, and we would expect the coefficient *C* to be dependent on the shape and packing of the soil grains. The fact that the porosity, *n*, represents an integrated measure of the packing arrangement has led many investigators to carry out experimental studies of the relationship between *C* and *n*. The best known of the resulting predictive equations for hydraulic conductivity is the *Kozeny-Carmen equation* (Bear, 1972), which takes the form

$$K = \left(\frac{\rho g}{\mu}\right)\left[\frac{n^3}{(1-n)^2}\right]\left(\frac{d_m^2}{180}\right) \tag{8.50}$$

In most formulas of this type, the porosity term is identical to the central element of Eq. (8.50), but the grain-size term can take many forms. For example, the *Fair-Hatch equation*, as reported by Todd (1959), take the form

$$K = \left(\frac{\rho g}{\mu}\right)\left[\frac{n^3}{(1-n)^2}\right]\left[\frac{1}{m\left(\frac{\theta}{100}\sum\frac{P}{d_m}\right)^2}\right] \tag{8.51}$$

where *m* is a packing factor, found experimentally to be about 5; θ is a sand shape factor, varying from 6.0 for spherical grains to 7.7 for angular grains; *P* is the percentage of sand held between adjacent sieves; and d_m is the geometric mean of the rated sizes of adjacent sieves.

Both Eqs. (8.50) and (8.51) are dimensionally correct. They are suitable for application with any consistent set of units.

8.8 Prediction of Aquifer Yield by Numerical Simulation

The analytical methods that were presented in Section 8.3 for the prediction of drawdown in multiple-well systems are not sophisticated enough to handle the heterogeneous aquifers of irregular shape that are often encountered in the field. The analysis and prediction of aquifer performance in such situations is normally carried out by numerical simulation on a digital computer.

There are two basic approaches: those that involve a *finite-difference* formulation, and those that involve a *finite-element* formulation. We will look at finite-difference methods in moderate detail, but our treatment of finite-element methods will be very brief.

Finite-Difference Methods

As with the steady-state finite-difference methods that were described in Section 5.3, transient simulation requires a discretization of the continuum that makes up the region of flow. Consider a two-dimensional, horizontal, confined aquifer of constant thickness, b; and let it be discretized into a finite number of blocks, each with its own hydrogeologic properties, and each having a node at the center at which the hydraulic head is defined for the entire block. As shown in Figure 8.26(a), some of these blocks may be the site of pumping wells that are removing water from the aquifer.

Let us now examine the flow regime in one of the interior nodal blocks and its four surrounding neighbors. The equation of continuity for transient, saturated flow states that the net rate of flow into any nodal block must be equal to the time rate of change of storage within the nodal block. With reference to Figure 8.26(b), and following the developments of Section 2.11, we have

$$Q_{15} + Q_{25} + Q_{35} + Q_{45} = S_{s_5}\,\Delta x\,\Delta y\,b\,\frac{\partial h_5}{\partial t} \qquad (8.52)$$

where S_{s_5} is the specific storage of nodal block 5. From Darcy's law,

$$Q_{15} = K_{15}\frac{h_1 - h_5}{\Delta y}\,\Delta x\,b \qquad (8.53)$$

where K_{15} is a representative hydraulic conductivity between nodes 1 and 5. Similar expressions can be written for Q_{25}, Q_{35}, and Q_{45}.

b-56

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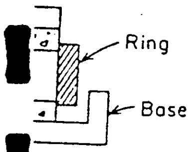

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consolidation, c_v, which is defined as

$$c_v = \frac{K}{\rho g \alpha} \tag{8.30}$$

At each loading level in a consolidation test, the sample undergoes a transient drainage process (fast for sands, slow for clays) that controls the rate of consolidation of the sample. If the rate of decline in sample thickness is recorded for each loading increment, such measurements can be used in the manner described by Lambe (1951) to determine the coefficient of consolidation, c_v, and the hydraulic conductivity, K, of the soil.

In Section 8.12, we will further examine the mechanism of one-dimensional consolidation in connection with the analysis of land subsidence.

Unsaturated Characteristic Curves

The characteristic curves, $K(\psi)$ and $\theta(\psi)$, that relate the moisture content, θ, and the hydraulic conductivity, K, to the pressure head, ψ, in unsaturated soils were described in Section 2.6. Figure 2.13 provided a visual example of the hysteretic relationships that are commonly observed. The methods used for the laboratory determination of these curves have been developed exclusively by soil scientists. It is not within the scope of this text to outline the wide variety of sophisticated laboratory instrumentation that is available. Rather, the reader is directed to the soil science literature, in particular to the review articles by L. A. Richards (1965), Klute (1965b), Klute (1965c), and Bouwer and Jackson (1974).

8.5 Measurement of Parameters: Piezometer Tests

It is possible to determine *in situ* hydraulic conductivity values by means of tests carried out in a single piezometer. We will look at two such tests, one suitable for point piezometers that are open only over a short interval at their base, and one suitable for screened or slotted piezometers that are open over the entire thickness of a confined aquifer. Both tests are initiated by causing an instantaneous change in the water level in a piezometer through a sudden introduction or removal of a known volume of water. The recovery of the water level with time is then observed. When water is removed, the tests are often called *bail tests*; when it is added, they are known as *slug tests*. It is also possible to create the same effect by suddenly introducing or removing a solid cylinder of known volume.

The method of interpreting the water level versus time data that arise from bail tests or slug tests depends on which of the two test configurations is felt to be most representative. The method of Hvorslev (1951) is for a point piezometer, while that of Cooper et al. (1967) is for a confined aquifer. We will now describe each in turn.

The simplest interpretation of piezometer-recovery data is that of Hvorslev (1951). His initial analysis assumed a homogeneous, isotropic, infinite medium in which both soil and water are incompressible. With reference to the bail test of Figure 8.20(a), Hvorslev reasoned that the rate of inflow, q, at the piezometer tip at any time t is proportional to the hydraulic conductivity, K, of the soil and to the unrecovered head difference, $H - h$, so that

$$q(t) = \pi r^2 \frac{dh}{dt} = FK(H - h) \tag{8.31}$$

where F is a factor that depends on the shape and dimensions of the piezometer intake. If $q = q_0$ at $t = 0$, it is clear that $q(t)$ will decrease asymptotically toward zero as time goes on.

Hvorslev	Fr / Cherry
z, H_o	$H - H_o$
Y	$h - H_o$
dY	dh
H	$H - h$

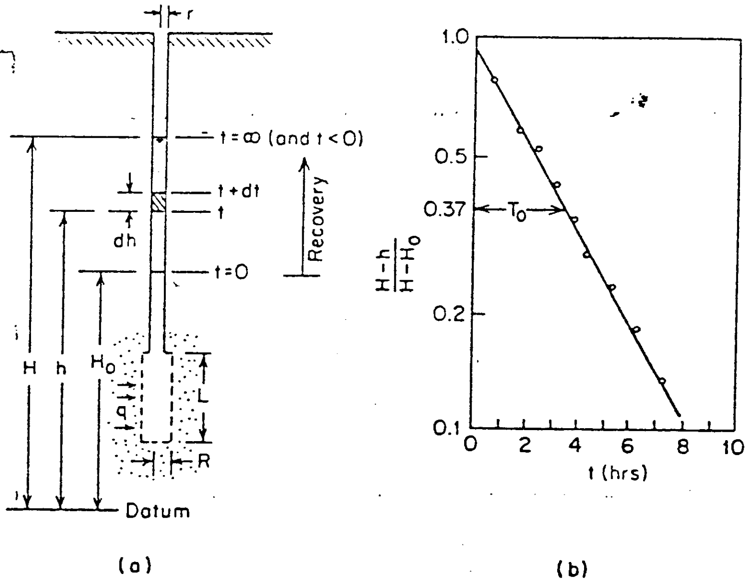

Figure 8.20 Hvorslev piezometer test. (a) Geometry; (b) method of analysis.

Hvorslev defined the *basic time lag*, T_0, as

$$T_0 = \frac{\pi r^2}{FK} \tag{8.32}$$

When this parameter is substituted in Eq. (8.31), the solution to the resulting ordinary differential equation, with the initial condition, $h = H_0$ at $t = 0$, is

$$\frac{H - h}{H - H_0} = e^{-t/T_0} \tag{8.33}$$

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A plot of field recovery data, $H - h$ versus t, should therefore show an exponential decline in recovery rate with time. If, as shown on Figure 8.20(b), the recovery is normalized to $H - H_0$ and plotted on a logarithmic scale, a straight-line plot results. Note that for $H - h/H - H_0 = 0.37$, $\ln (H - h/H - H_0) = -1$, and from Eq. (8.33), $T_0 = t$. The basic time lag, T_0, can be defined by this relation; or if a more physical definition is desired, it can be seen, by multiplying both top and bottom of Eq. (8.32) by $H - H_0$, that T_0 is the time that would be required for the complete equalization of the head difference if the original rate of inflow were maintained. That is, $T_0 = V/q_0$, where V is the volume of water removed or added.

To interpret a set of field recovery data, the data are plotted in the form of Figure 8.20(b). The value of T_0 is measured graphically, and K is determined from Eq. (8.32). For a piezometer intake of length L and radius R [Figure 8.20(a)], with $L/R > 8$, Hvorslev (1951) has evaluated the shape factor, F. The resulting expression for K is

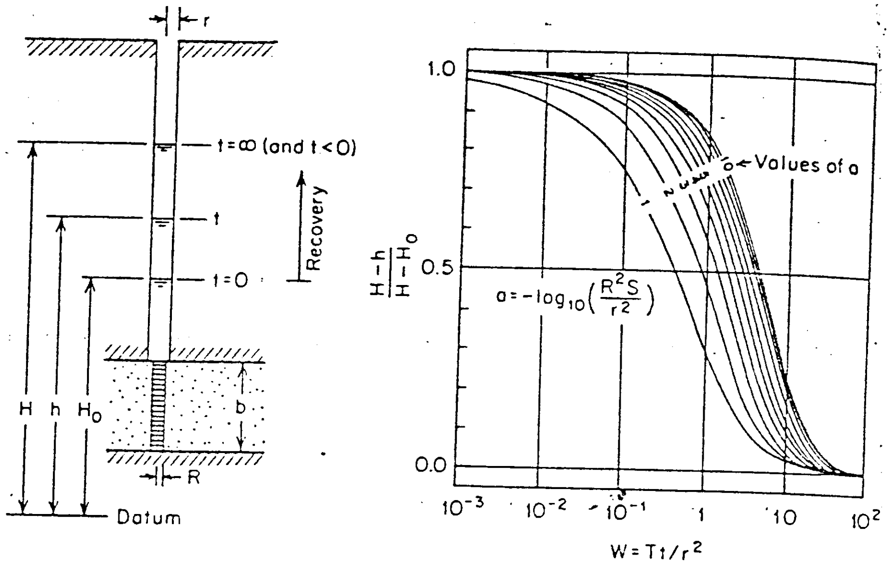
$$K = \frac{r^2 \ln (L/R)}{2LT_0} \tag{8.34}$$

Hvorslev also presents formulas for anisotropic conditions and for a wide variety of shape factors that treat such cases as a piezometer open only at its basal cross section and a piezometer that just encounters a permeable formation underlying an impermeable one. Cedergren (1967) also lists these formulas.

In the field of agricultural hydrology, several *in situ* techniques, similar in principle to the Hvorslev method but differing in detail, have been developed for the measurement of saturated hydraulic conductivity. Boersma (1965) and Bouwer and Jackson (1974) review those methods that involve auger holes and piezometers.

For bail tests of slug tests run in piezometers that are open over the entire thickness of a confined aquifer, Cooper et al. (1967) and Papadopoulos et al. (1973) have evolved a test-interpretation procedure. Their analysis is subject to the same assumptions as the Theis solution for pumpage from a confined aquifer. Contrary to the Hvorslev method of analysis, it includes consideration of both formation and water compressibilities. It utilizes a curve-matching procedure to determine the aquifer coefficients T and S. The hydraulic conductivity K can then be determined on the basis of the relation, $K = T/b$. Like the Theis solution, the method is based on the solution to a boundary-value problem that involves the transient equation of groundwater flow, Eq. (2.77). The mathematics will not be described here.

For the bail-test geometry shown in Figure 8.21(a), the method involves the preparation of a plot of recovery data in the form $H - h/H - H_0$ versus t. The plot is prepared on semilogarithmic paper with the reverse format to that of the Hvorslev test; the $H - h/H - H_0$ scale is linear, while the t scale is logarithmic. The field curve is then superimposed on the type curves shown in Figure 8.21(b). With the axes coincident, the data plot is translated horizontally into a position where the data best fit one of the type curves. A matchpoint is chosen (or rather, a vertical axis is matched) and values of t and W are read off the horizontal scales



(a) (b)

Figure 8.21 Piezometer test in a confined aquifer. (a) Geometry; (b) type curves (after Papadopoulos et al., 1973).

at the matched axis of the field plot and the type plot, respectively. For ease of calculation it is common to choose a matched axis at $W = 1.0$. The transmissivity T is then given by

$$T = \frac{Wr^2}{t} \tag{8.35}$$

where the parameters are expressed in any consistent set of units.

In principle, the storativity, S, can be determined from the a value of the matched curve and the expression shown on Figure 8.21(b). In practice, since the slopes of the various a lines are very similar, the determination of S by this method is unreliable.

The main limitation on slug tests and bail tests is that they are heavily dependent on a high-quality piezometer intake. If the wellpoint or screen is corroded or clogged, measured values may be highly inaccurate. On the other hand, if a piezometer is developed by surging or backwashing prior to testing, the measured values may reflect the increased conductivities in the artificially induced gravel pack around the intake.

It is also possible to determine hydraulic conductivity in a piezometer or single well by the introduction of a tracer into the well bore. The tracer concentration decreases with time under the influence of the natural hydraulic gradient that exists in the vicinity of the well. This approach is known as the *borehole dilution method,* and it is described more fully in Section 9.4.

SUMMARY OF WELLS USED FOR DETERMINATION OF REGIONAL GROUNDWATER FLOWS

Location	Owner	Aquifer	Altitude	Water Level(ft.)	Date
4206-21-7556-25	USGS	Unconsolidated gravel	869	25	10-66
4206-45-7556-13	Anitec	Unconsolidated gravel	840	33	10-68
4206-36-7555-42[1]	Anitec	Unconsolidated gravel	848	—	—
4206-12-7555-47	USGS	Bedrock, late devonian	867	17	10-66
4206-38-7555-46[2]	Anitec	Unconsolidated gravel	845	50	10-66
4206-41-7555-57	R. Kocik	None given	840	32	4-66
4206-17-7555-20	USGS	Unconsolidated gravel	856	56	10-66
4206-39-7555-20	USGS	Unconsolidated gravel	852	48	10-66
4206-32-7554-55	USGS	Unconsolidated gravel	840	31	4-66
4206-36-7555-38	Anitec	Unconsolidated gravel	845	49	10-66
4206-34-7556-44	USGS	Unconsolidated gravel	876	53	10-66
4206-38-7556-30	Anitec	Unconsolidated gravel	859	45	4-66

[1] Monitoring Well #3

[2] Monitoring Well #2

Source: A.D. Randall, USGS, Records of Wells and Test Borings in the Susquehanna River Basin, New York, NYSDEC Bulletin 69, 1972

D.20

CITY OF BINGHAMTON

WATER SUPPLY WELLS

Location	Aquifer	Depth	Yield
4206-58-7554-16	QG	51	708
4206-12-7553-41	QG	23	1,400

JOHNSON CITY

WATER SUPPLY WELLS

4206-46-7558-40	QG	100	2,100
4206-46-7558-42	QG	101	2,180
4206-46-7558-42	QG	89	2,200
4207-11-7557-24	QG	80	2,400
4207-2-7557-32	QG	98	900
4207-3-7557-46	QG	117	1,900
4207-3-7558-17	QG	109	840

QG: Unconsolidated deposits (sand and gravel) Pleistocene Age.

Source: A.D. Randall, USGS, Records of Wells and Test Borings in the Susquehanna River Basin, New York, NYSDEC Bulletin 69, 1972

4206 18 7555 13

D-21

11259

(Bm. 37. Ritz Theatre, Binghamton. North side of Clinton St. near est of) Murray St. Drilled by H. H. Cranston and Son in June 1938. ltitude 850 feet above mean sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Gravel, coarse, & sand, some clay, yellow..........	7	7
Sand, gravel & clay, yellow........................	35	42
Sand, coarse with some gravel (small vol. of water)	5	47
Sand & gravel, some clay, thin layer of gravel with water..............................	13	60
Sand, gravel & clay, some cobbles, thin layers of gravel with water............................	20	80
Sand, very fine, dirty.............................	2	82
Sand, fine, some gravel............................	5	87
Sand, hard packed, some gravel.....................	6	93
Gravel & fine sand, some water.....................	4	97
Sand, fine...	3	100
Sand & gravel......................................	2	102
Sand & gravel, some clay...........................	3	105
Sand & gravel, fine................................	3.5	108.5
Clay, light bluish gray, blue pebbles..............	2.5	111
Re[illegible]ual shale gravel..........................	2	113
Shale..	97	210

Casing: 8-inch.
Depth: 135 feet.
Screen: 10 feet by 5-inch Johnson No. 80 slot set at 105.8 feet.
Static water level: 24.5 feet.
Drawdown: 15.5 feet.
Yield: 50 gallons a minute.
Installed pump capacity: 50 gallons a minute.
Aquifer: Sand and gravel from 96 to 106 feet.

Bm. 38.* Ansco Corp., Binghamton. Northwest corner of Spruce and Streets. Drilled in 1942. Altitude 838 feet above mean sea level. iller's log.

4206 31 7555 13

(Continued on next page)

D-63

38.* (Cont'd.)

	Thickness (feet)	Depth (feet)
Ashes and clay	9	9
No record	3	12
Silt, sand very fine with clay	53	65
No record	5	70
Gravel, coarse and medium, large stones	40	110
Sand, fine	5	115
Silt and sand, fine	5	120
Sand, coarse, and gravel, fine	5	125
No record	3	128
Rock, blue shale	7	135

Casing: 24-inch.
Depth: 100 feet.
Screen: 35 feet by 24 inch.
Static water level: 30 feet.
Yield: 1,100 gallons a minute.
Installed pump capacity: 1,200 gallons a minute.

(Note: For additional data see table 1.)

Bm. 39. Ansco Corp., Binghamton. About 180 feet north of Elm St. and about 160 feet east of West St. extended. Drilled in 1941. Altitude 843.9 feet above mean sea level. Driller's log.

4206 29 7555 36

	Thickness (feet)	Depth (feet)
Sand, fine, gravel, medium, and some clay	116	116
Rock at		116

Quicksand layers at 40, 50, 75 and 80 feet.
Medium gravel layers at 90, 95, 105 and 114 feet.
Clay layers at 100 and 110 feet.

Casing: 6-inch.
Depth; 116 feet.
Static water level: 43 feet.

Well is not in use and is available for observation purposes.

4205 34 7555 42 11259

Bm. 40. Ansco Corp., Binghamton. East side of Charles St. about 360 et north of Grace St. Drilled in 1935. Altitude 848.5 feet above mean a level. Driller's log.

	Thickness (feet)	Depth (feet)
No record	25.5	25.5
Gravel, medium	15	40.5
Gravel, medium and sand, fine	40	80.5
Gravel, medium and hardpan	5	85.5
Gravel, coarse	15	100.5
Gravel, medium and sand	12	112.5
Rock at		112.5

Casing: 12-inch.
Depth: 100 feet.
Screen: Cook, 15 feet by 12-inch by 3/32-inch slots from 63.5 to 78.5 feet.
Drawdown: 10 feet.
Yield: 250 gallons a minute.
nstalled pump capacity: 800 gallons a minute.
Aquifer: Medium gravel and fine sand.

(Note: For additional data see table 1.)

Bm. 41. Ansco Corp., Binghamton. About 380 feet east of Charles St. nd about 120 feet north of Field St. extended. Drilled in 1935. Altide 848.5 feet above mean sea level. Driller's log.

UNKNOWN

	Thickness (feet)	Depth (feet)
No record	34	34
Sand, fine	25	59
Sand and silt	5	64
Gravel, medium and sand	5	69
Gravel, coarse	5	74
Gravel, medium	5	79
Gravel, coarse	5.5	84.5
Sand and clay, at		84.5

(Continued on next page)

11259

41. (Cont'd.)

Casing: 12-inch.
Depth: 100 feet.
Screen: Cook, 10 feet by 12-inch by 3/32-inch slots from 74.5 to 84.5 feet.
Drawdown: 15 feet.
Yield: 200 gallons a minute.
Installed pump capacity: 500 gallons a minute.
Aquifer: Gravel, coarse and medium.

(Note: For additional data see table 1.)

Bm. 42.* Ansco Corp., Binghamton. East side of Charles St. at Field

Drilled in 1935. Altitude 848.5 feet above mean sea level. Driller's

Well #3

4206 36 7555 4/2

	Thickness (feet)	Depth (feet)
No record	20.5	20.5
avel, medium, and sand	15	35.5
Gravel, medium, and stones	15	50.5
Gravel, medium	10	60.5
Gravel, coarse	15	75.5
Gravel, medium and fine	15	90.5
Gravel, fine	5	95.5
Gravel, medium, and clay	10	105.5
Gravel, fine, and clay	5	110.5
Sand and clay	10	120.5
Gravel, fine, and sand	5	125.5
Gravel, fine, and clay	7	132.5

Casing: 16-inch.
Depth: 100 feet.
Screen: Cook, 28 feet by 16-inch by 3/32-inch slots from 64.5 to 92.5 feet.
Drawdown: 4 feet.
Yield: 1,200 gallons a minute.
Installed pump capacity: 2,000 gallons a minute.
Aquifer: Gravel, coarse, medium, and fine.

(Note: For additional data see table 1.)

Unknown

Bm. 43. Ansco Corp., Binghamton. About 185 feet north of well m. 41. Drilled in 1935. Altitude 848.5 feet above mean sea level. riller's log.

	Thickness (feet)	Depth (feet)
No record	79	79
Gravel, coarse	15	94
Gravel, medium, and clay	5	99

Casing: 12-inch.
Depth: 100 feet.
Screen: Cook, 10 feet by 12-inch by 3/32-inch slots from 79.5 to 89.5 feet.
Drawdown: 12 feet.
Yield: 150 gallons a minute.
Installed pump capacity: 300 gallons a minute.
Aquifer: Gravel, coarse.

(Note: For additional data see table 1.)

Bm. 44. Ansco Corp., Binghamton. About 260 feet north of Field St. d about 140 feet west of Charles St. extended. Drilled in 1937. Altide 848.5 feet above mean sea level. Driller's log. Well #5

4206 38 7555 46

	Thickness (feet)	Depth (feet)
No record	18.5	18.5
Gravel, medium	10	28.5
Gravel, medium, and sand	5	33.5
Gravel, medium	5	38.5
Gravel, coarse	9	47.5
Stones, coarse	3	50.5
Sand, fine	25	75.5
Gravel, medium, and sand	5	80.5
Gravel, medium, and rock	5	85.5
Sand, fine	5	90.5
Gravel, coarse, and sand	5	95.5
Gravel, medium, and sand	9	104.5
Gravel, fine, and sand	17	121.5
Rock at		121.5

(Continued on next page)

3 44. (Cont'd.)

Casing: 18-inch.
Depth: 100 feet.
Screen: Cook, 25 feet by 18-inch by 3/32-inch slots from 92.6 to 117.6 feet.
Drawdown: 7 feet.
Yield: 1,800 gallons a minute.
Installed pump capacity: 2,000 gallons a minute.
Aquifer: Gravel, coarse, medium and fine, and sand.

(Note: For additional data see table 1.)

Bm. 45. Ansco Corp., Binghamton. Western side of Colfax Ave. at May St. Drilled in 1941. Altitude 840 feet above mean sea level. Driller's log. UNKNOWN

	Thickness (feet)	Depth (feet)
Clay, gravel, medium and coarse, and sand.......	65	65
No record..................................	5	70
Sand, very fine, and clay..................	18	88
No record..................................	2	90
Rock, blue shale, at.......................		90

Casing: 8-inch.
Depth: 90 feet.

Well is not in use and is available for observation purposes.

Bm. 46. Ansco Corp., Binghamton. Southeast corner of intersection of Emma St. and DL & W R. R. Drilled in 1941. Altitude 856.2 feet above mean sea level. Driller's log.

4206 38 7556 30

	Thickness (feet)	Depth (feet)
Sand, fine, and gravel, medium..............	45	45
Sand, fine, gravel, and some clay...........	15	60
No record..................................	5	65
Gravel, coarse (½-inch), and sand, fine.........	10	75
No record..................................	5	80
Clay and sand, fine.........................	10	90
No record..................................	2	92
Rock, blue shale, at.......................		92

(Continued on next page)

m. 46. (Cont'd.)

Casing: 6-inch.
Depth: 92 feet.
Static water level: 40 feet.

Well is not in use and is available for observation purposes.

Bm. 47. Water Dep't., Village of Johnson City. Near southwest corner of pool in C. F. Johnson Park. Drilled by Kelly Well Drilling Co. n 1923. Altitude 850 feet above mean sea level. Driller's log.

4206 58 7556 53

	Thickness (feet)	Depth (feet)
Clay and stones	12	12
Clay and sand	8	20
Clay and sandy	8	28
Sand and clay	7	35
Sand, hard, and gravel	10	45
Sand, fine.	13	58
Clay	2.7	60.7
Boulders at		60.7

Casing: 25-inch.
Depth: 61 feet.
Screen: 26 feet set from 35 to 61 feet.
Static water level: 18 feet.
Drawdown: 4 feet.
Yield: 500 gallons a minute.
Installed pump capacity: 1,000 gallons a minute.

Well is for emergency and pool filling use only.

Bm. 48. Water Dep't., Village of Johnson City. Northwest corner of Ball Park at North and North Broad Sts. Drilled by Kelly Well Drilling o. in 1923. Altitude 840 feet above mean sea level. Driller's log.

(Continued on next page)

D-65

E. UPDATED REGISTRY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 2a REGION: 3 SITE CODE: 704011
EPA ID: NYD002239465

NAME OF SITE: GAF Dump
STREET ADDRESS: Charles & Grace Street
TOWN/CITY: Binghamton COUNTY: Broome ZIP: 13905

SITE TYPE: Open Dump X Structure ___ Lagoon ___
Landfill ___ Treatment Pond ___

ESTIMATED SIZE: 1 acre

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME: GAF Corporation
CURRENT OWNER ADDRESS: 1362 Alps Road, Wayne, New Jersey
OWNER(S) DURING USE: GAF Corp.
OPERATOR DURING USE: GAF Corporation
OPERATOR ADDRESS:
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From to

SITE DESCRIPTION:

The GAF dump site is a 2-acre inactive disposal area, adjacent to an Anitec Co. facility, which was formerly a GAF manufacturing plant. An abandoned paved parking lot makes up the eastern half of the site, while the remaining western portion of the site is ungraded and covered with weeds. Liquids from production of photographic material were allegedly dumped (from 1945-1975) directly onto the ground. The dump area was presumably filled with rubble and covered with soil. The site is fenced in, but accessible along the south side.

RECOMMEND:
HAZARDOUS WASTE DISPOSED: Confirmed ___ Suspected X

TYPE	QUANTITY (units)
Unknown	

ANALYTICAL DATA AVAILABLE:

Air ___ Surface Water ___ Groundwater _X_ Sediment ___

Soil _X_ Leachate ___ None ___

CONTRAVENTION OF STANDARDS:

Groundwater ___ Drinking Water _X_ Surface Water ___ Air ___

LEGAL ACTION:

TYPE: State ___ Federal ___
STATUS: Progress ___ Order Signed ___

REMEDIAL ACTION:

Proposed ___ Under Design ___ In Progress Completed ___

NATURE OF ACTION:

GEOTECHNICAL INFORMATION:
SOIL TYPE: Fine sand and silt
GROUNDWATER DEPTH: 8 feet

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

A Phase II investigation report was completed in November 1989. The groundwater analyses detected three organics released from the site into the groundwater. The principal TCL metal found in the groundwater is silver. Lead was found in soil samples in a slightly high elevation.

ASSESSMENT OF HEALTH PROBLEMS:

Medium	Contaminants Available	Migration Potential	Potentially Exposed Population	Need for Investigatio
Air	Unknown	Likely	Yes	High
Surface Soil	Unknown	Likely	Yes	High
Groundwater	Unknown	Unlikely	No	Low
Surface Water	Unknown	Unlikely	Yes	Medium

HEALTH DEPARTMENT SITE INSPECTION DATE: 12/84

MUNICIPAL WASTE ID: