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Spills - SP
ERP - E
VCP - V
BCP - C

YP-3080 D3154

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

PHASE II INVESTIGATIONS

Dibacco Site No. 1, Old Creek Site
Site Number 932056A
Town of Niagara, Niagara County

February 1992

Prepared for:

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, Commissioner

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

Prepared by:

Ecology and Environment Engineering, P.C.

YP-3080 D3154

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Dibacco Site No. 1, Old Creek Site
Site Number 932056A
Town of Niagara, Niagara County

February 1992

STATE OF NEW YORK
GERALD A. STROBEL
LICENSE NO. 044479-1
PROFESSIONAL ENGINEER

Prepared for:

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, Commissioner

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

Prepared by:

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1. EXECUTIVE SUMMARY

1.1 SITE DESCRIPTION AND BACKGROUND

Dibacco Site No. 1, Old Creek Site (Site Number 932056A), is an approximately 0.5-acre parcel of land located south of Porter Road behind 9115 Porter Road in the Town of Niagara, Niagara County, New York (see Figures 1-1 and 1-2). The site is on a portion of property currently owned by Joseph C. Weber III of Weber Group, Inc., 9200 Niagara Falls Boulevard, Niagara Falls, New York. However, Michigan Mayne Realty owned the site prior to and during a period of on-site dumping. Though presently inactive, dumping occurred from 1977 to 1978 in the low area that is a former Cayuga Creek channel. The landfill area was formed when the "old" creek bed was displaced to the southeast during construction of the berm around 1969, as shown in Figure 1-2. This displacement led to the formation of a low wetland now known as the old creek bed. Site reconnaissance suggests that fugitive dumping and unauthorized recreational use presently continues.

To the east and southeast, this site is bordered by Cayuga Creek. A fence that surrounds the house and gas station at 9115 Porter Road borders the site to the north. The west and southwest is bounded by brush and trees located in the old creek bed. The main debris pile extends from the fence behind the house into the old creek bed to the south and to Cayuga Creek to the east. There is a 6- to 8-foot embankment between the debris pile (upper area) and the old creek bed (lower area). A low berm separates the old creek bed from Cayuga Creek. A separate pile of fly ash lies to the west of the main debris pile. Numerous small piles of debris including tires, wood, concrete, and empty decomposed drums were also observed along the grassy track from Disney Drive to the west.

The site was utilized by Apex Salvage Company of Niagara Falls from August 1977 to 1978 as a landfill site for approximately 3,300 cubic yards of mostly demolition material. During this period, Apex Salvage had a contract with Carborundum Company to haul debris from their warehouse on Lendell Road, Town of Wheatfield, which was destroyed by fire. The debris consisted of Carborundum products such as fiberfax insulation, grinding wheels, sandpaper, heating elements, abrasive grains and some Iconel metal (nickel and chromium alloy), and stainless-steel studs. During this period, Apex Salvage also hauled building debris from the International Paper Company, Kenmore, New York. In addition, Hooker Chemical indicated that fly ash and spent hexachlorocyclopentadiene (C-56) catalyst of unknown quantity was deposited at the site (New York State Department of Environmental Conservation [NYSDEC] 1985). Further dumping was prohibited by the City of Niagara Falls in 1978 but casual dumping presently continues.

Previous investigations include a 1982 surface water study by the United States Geological Survey (USGS) and the NYSDEC Phase I study by Engineering-Science in 1984. In the USGS study, surface water samples were collected along Cayuga Creek bordering Dibacco Site No. 1 to examine chemical migration to the Niagara River from hazardous waste disposal sites in Erie and Niagara counties (USGS 1982). Examination of the data from this study indicates that lead and copper concentrations were higher downstream than upstream from the site. However, the concentrations of these metals were below NYSDEC Class D surface water standards. Although polycyclic aromatic hydrocarbon (PAH) compounds were observed upstream of the site, no organic compounds were detected downstream of the site during this study. A Phase I report was prepared in 1984 by Engineering-Science in association with Dames & Moore that consisted of a site inspection and a file search. Using this information, preliminary Hazardous Ranking System (HRS) scores were calculated.

1.2 PHASE II INVESTIGATION

In order to determine if hazardous waste was disposed of at the site, determine the potential risk to human health and the environment, and accurately calculate a final HRS score, a number of investigative tasks were performed at Dibacco Site No. 1, Old Creek Site. The Phase II field investigation begun by Ecology and Environment Engineering, P.C. (E & E) in April 1990 included a site reconnaissance, a geophysical survey, the installation of three groundwater monitoring wells and one additional soil boring, and the collection and analysis of surface soil, subsurface soil, groundwater, and surface water sediment samples at selected locations.

Prior to the site inspection conducted as part of the site reconnaissance, a detailed record and file search was initiated to review existing data and identify data gaps. A limited air monitoring survey was conducted during the site reconnaissance using photoionization and flame ionization detectors. Two geophysical survey methods were used to optimize the selection of locations of the test borings and to reduce the risks associated with drilling into unknown terrain. The collection and analysis of soil, groundwater, surface water, and sediment samples was conducted to determine the presence of contaminants and assess their potential for migration.

1.3 SITE ASSESSMENT

Electromagnetic ground conductivity (EM-31) and total earth field magnetic (magnetometer) measurements both yielded anomalous measurements that were interpreted to represent shallow ferrous metal objects.

Subsurface soil borings from on-site drilling indicate that 0 to 4 feet of industrial fill is present at each of the four test boring locations. This fill consists of mixtures of clay and debris and/or fly ash. Natural soils observed during drilling consist of tight brown clays and silty clays with occasional sandy lenses. The subsurface boring logs indicate that the Lockport Dolomite is the bedrock beneath the site and occurs from 13 to 16 feet below the ground surface. These logs imply that the soils are a veneer of lacustrine sediments overlaying the Lockport Dolomite that was suggested by regional geology maps (USGS 1982).

The downslope surface water nearest to the site is Cayuga Creek, which borders the site to the east and southeast. This part of Cayuga Creek is listed as a NYSDEC Class D stream.

There are two freshwater wetlands located within 1 mile of the site. No domestic wells or water intakes exist within 3 miles of the site.

Target Compound List (TCL) organic and inorganic analyses were performed on five surface soil, one subsurface soil, three surface water, five sediment, and three groundwater samples. Analyses of surface and subsurface soil samples indicate that lead in one surface sample was the only inorganic compound detected above the common range found in Eastern United States soils (Shacklette and Boergen 1984). All soil samples exhibited PAH contamination. In addition, borehole BH-1 showed very low concentrations (<270 μg/kg total) of the volatile compounds toluene, ethylbenzene, and xylenes.

Analyses of surface water and sediment samples indicate that the only analyte detected in surface water above NYSDEC standards was iron in SW-5, the farthest downgradient sample. TCL organics (PAHs) were present in four of the five sediment samples. Only SED-5, the last downstream sample, exhibited no PAH contamination. Low concentrations of cyanide were present in one sediment sample.

Organic and inorganic analyses of three groundwater samples indicate the presence of several inorganic parameters including lead, chromium, iron, magnesium, sodium, manganese, and zinc above NYSDEC Class GA groundwater standards in one or more samples.

On-site air monitoring surveys during site reconnaissance and subsurface sampling using both an organic vapor analyzer (OVA) and a portable HNu photoionization detector were conducted. Organic vapors above background levels were not encountered except for two isolated incidents of less than 5 parts per million (ppm) above background.

Numerous small debris piles scattered across the site pose physical hazards. The eroded section of the main debris pile provides a mechanism for contamination migration into Cayuga Creek by several different pathways. The ditch cutting across the base of the pile in the lowland area provides a direct, but intermittent path for contamination into Cayuga Creek by eroding the base of the pile and the surrounding berm. Less direct paths are surface runoff from the east side of the pile directly into Cayuga Creek and migration in groundwater.

Hooker Chemical indicated in the Inactive Waste Disposal Report (NYSDEC 1985) that hexachlorocyclopentadiene (C-56) was deposited at the site. No additional documentation could be found.

1.4 HAZARD RANKING SYSTEM SCORE

The HRS score was computed to quantify the risks associated with Dibacco Site No. 1, Old Creek Site. The HRS is applied to inactive hazardous waste sites in New York State to prioritize those needing additional investigation and remediation. This system evaluates site characteristics, containment measures, waste types, and potential contaminant receptors.

Under the HRS, three numerical scores are computed to express the site's relative risk of damage to the population and the environment. The three scores are described below:

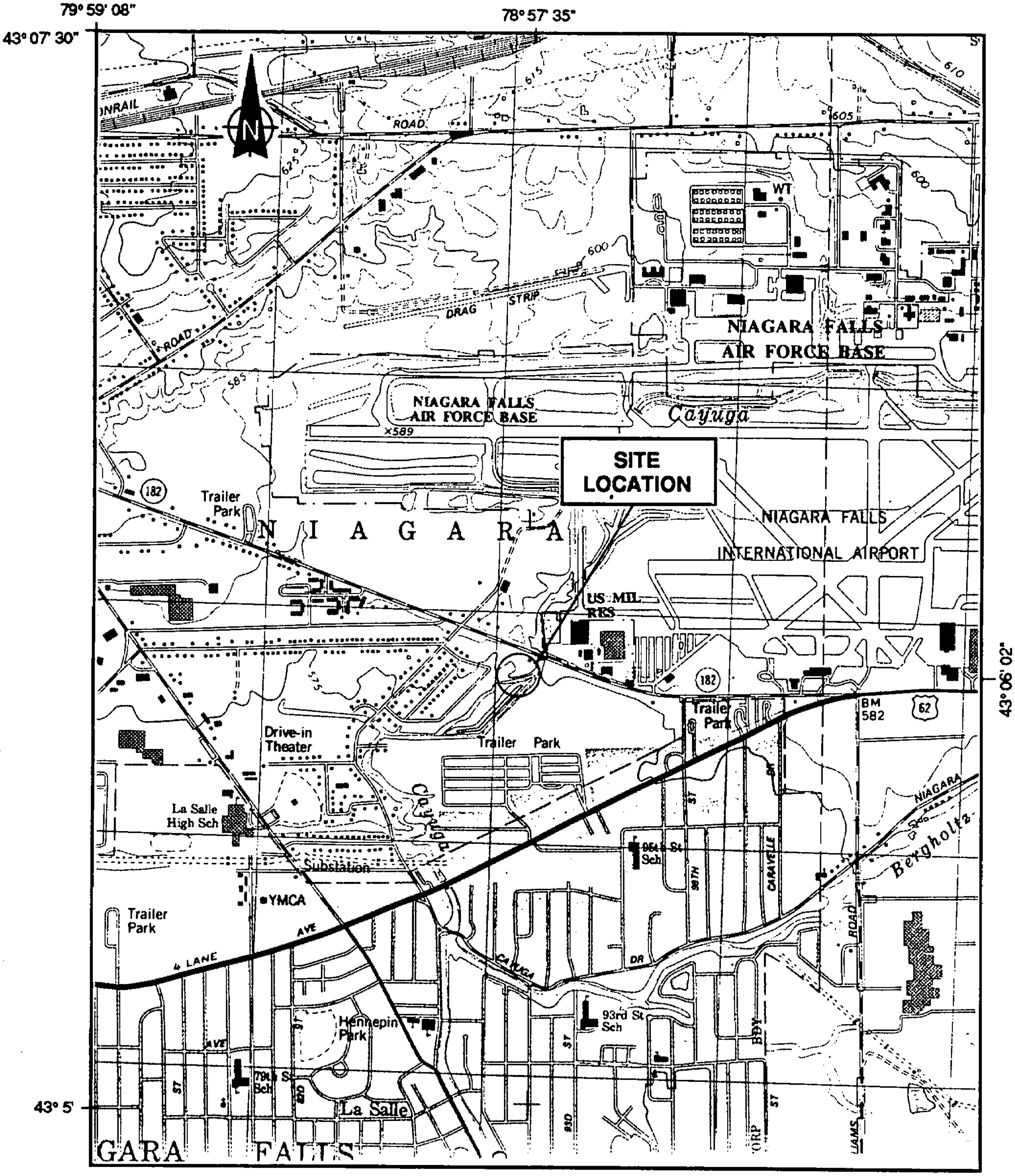
- S_M reflects the potential for harm to humans and/or the environment from migration of a hazardous substance away from the facility via groundwater, surface water, or air. It is a composite of the separate scores for each of the three routes (Sgw = groundwater route score, Ssw = surface water route score, and Sa = air route score);
- S_{FE} reflects the potential for harm from substances that can explode or cause fires; and
- S_{DC} reflects the potential for harm from direct contact with hazardous substances at the facility (i.e., no migration need be involved).

Based upon the results of the current Phase II study and previous studies, the HRS scores for Dibacco Site No. 1 are as follows:

$S_M = 5.92$ ($S_{gw} = 4.47$; $S_{sw} = 9.21$; $S_a = 0$)

$S_{FE} = 0$

$S_{DC} = 50$



SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle, Tonawanda West, N.Y. 1980.

SCALE

0 1000 2000 3000 4000 Feet

Figure 1-1
SITE LOCATION MAP DIBACCO SITE NO. 1, OLD CREEK SITE NUMBER 932056A

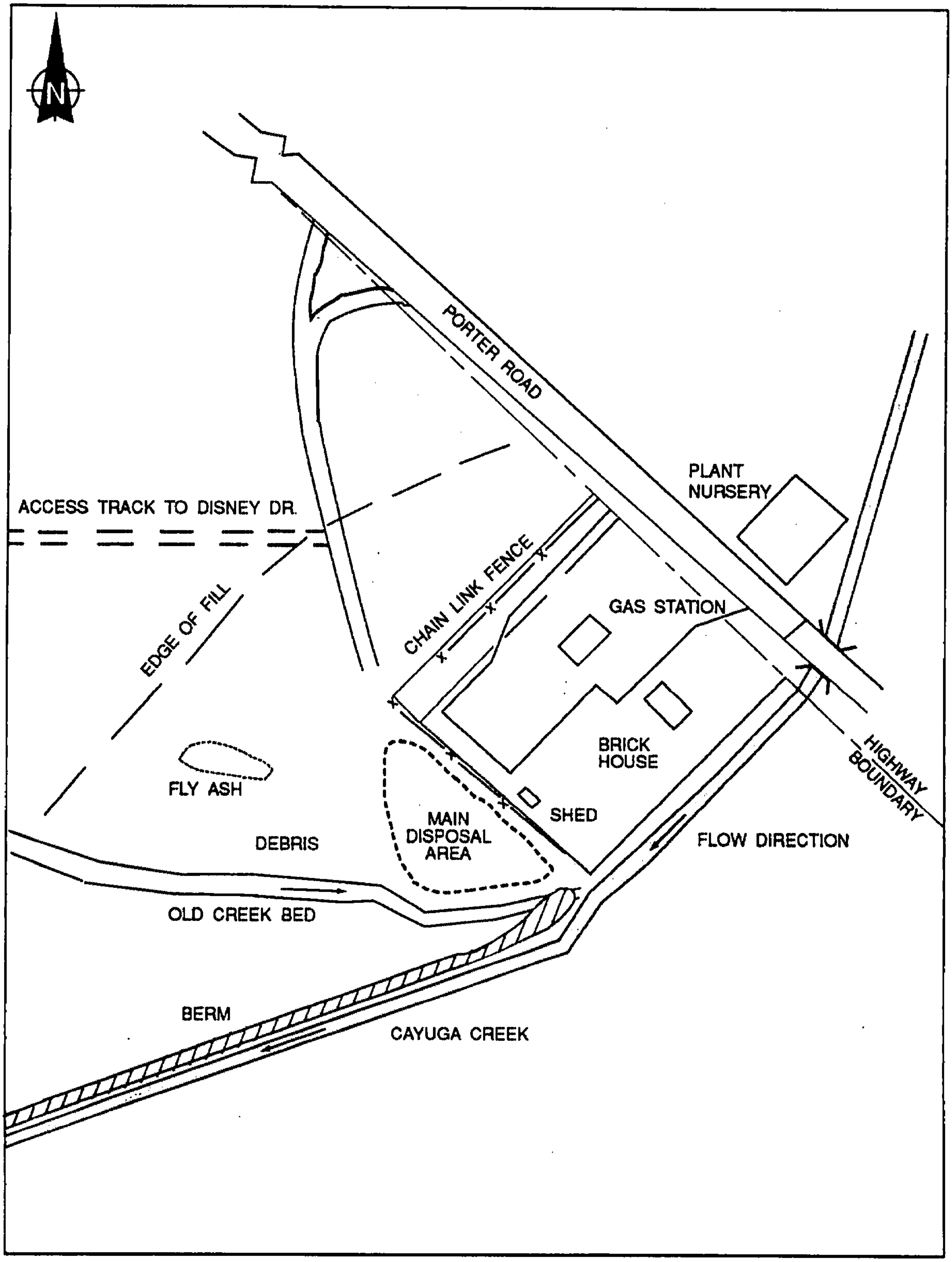


Figure 1-2
DIBACCO SITE NO. 1 SITE PLAN

47-15-25 (11/90)-9d

Original-BHSC
Copy-REGION
Copy-DEE
Copy-DOH
Copy-PREPARER

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

ADDITIONS/CHANGES TO REGISTRY OF INACTIVE HAZARDOUS WASTE DISPOSAL SITES

1. Site Name	2. Site Number	3. Town	4. County
Dibacco Site No. 1, Old Creek Site	932056A	Niagara	Niagara

5. Region	6. Classification	7. Activity
9	Current 2a /Proposed ____	[ ] Add [ ] Reclassify [ ] Delist [ ] Modify ____

8a. Describe location of site (attach USGS topographic map showing site location).
To reach the Dibacco Site No. 1, use Rt. 62 (Pine Avenue) off of I-190. Go right on Rt. 62, then left on Rt. 182 (Porter Road). The site is located behind 9115 Porter Road (to the south).

b. Quadrangle Tonawanda West c. Site latitude 43°06'02" Longitude 78'57'35" d. Tax Map Number L-2184,P-337 Parcel 1

9a. Briefly describe the site (attach site plan showing disposal/sampling locations)
Dumping occurred from 1977 to 1978 in the low area that was the former Cayuga Creek channel. The site was then owned by Michigan Mayne Realty. Wastes disposed of at the site consisted of demolition and industrial debris that was dumped in the wetland area created when the Creek flow was altered.

b. Area 0.5 acres c. EPA ID number NYD980508090 d. PA/SI [ ] Yes [ ] No

e. Completed: [X] Phase I [X] Phase II [ ] PSA [X] Sampling

10. Briefly list the type and quantity of the hazardous waste and the dates that it was disposed of at this site.
No hazardous waste is known to have been disposed of at the site. Demolition and industrial debris were dumped in a low area that was the channel of Cayuga Creek before the creek bed was altered by construction. Fugitive dumping of tires, cement, lumber, and metal persists at the site.

11a. Summarized sampling data attached

[ ] Air [X] Groundwater [X] Surface Water [X] Soil [ ] Waste [ ] EP Tox [ ] TCLP

b. List contravened parameters and values
Groundwater: Zinc (439 and 974 µg/L); Surface water: Iron (354 µg/L); Soil: Lead (370 µg/L).

12. Site impact data

a. Nearest surface water: Distance 0 ft. Direction S-SE Classification D

b. Nearest groundwater: Depth 3-16 ft. Flow direction S [ ] Sole source [ ] Primary [ ] Principal

c. Nearest water supply: Distance >16,000 ft. Direction SW Active [X] Yes [ ] No

d. Nearest building: Distance 500 ft. Direction NE Use Gas station

e. Crops/livestock on site? [ ] Yes [X] No

f. Exposed hazardous waste? [ ] Yes [X] No

g. Controlled site access? [ ] Yes [X] No

h. Documented fish or wildlife mortality? [ ] Yes [X] No

i. Impact on special status fish or wildlife resource? [ ] Yes [X] No

j. Within a State Economic Development Zone? [ ] Yes [X] No

k. For Class 2A: Code ____ Health model score ____

l. For Class 2: Priority category ____

m. HRS Score Sm = 5.92

n. Significant threat [ ] Yes ____ [X] No [ ] Unknown

13. Site owner's name	14. Address	15. Telephone Number
Joseph C. Weber, III	Weber Group, 9200 Niagara Falls Blvd.	(716) 297-4777

16. Preparer
Ralinda R. Leichner, Geologist, Ecology and Environment Engineering, P.C.
Name, title, and organization

2-24-92
Date

Ralinda Leichner
Signature

17. Approved

Name, title, and organization

Date

Signature

02[UZ]YP3080:D3153/6749

2

2. PURPOSE

This Phase II investigation was conducted under contract to the NYSDEC Division of Hazardous Waste Remediation, Bureau of Hazardous Site Control. The purpose of the investigation was to determine if hazardous wastes have been disposed of at the site; if contaminants exist in the various media; if contaminants are migrating from the Dibacco Site No. 1; and whether threats to human health and/or the environment exist.

The Phase II investigation was designed to supplement existing data for the site and update the HRS score. The Phase I study conducted by Engineering-Science in association with Dames & Moore in 1984 did not include any sampling or analysis. In 1982, a study conducted by the USGS included collection and analysis of only surface water samples from Cayuga Creek. As no other samples were collected, surface soil, subsurface soil, sediment, additional surface water, and groundwater samples were collected and analyzed as part of the Phase II investigation. In addition, a geophysical survey to ascertain the presence of buried waste and delineate its boundaries had not been conducted prior to the Phase II study.

3

3. SCOPE OF WORK

3.1 INTRODUCTION

Field work for the Phase II investigation at Dibacco Site No. 1, Town of Niagara, began in April 1990 and was completed in September 1990. The scope of work for the Phase II field investigation at the Dibacco site was prepared by NYSDEC. A Quality Assurance Project Plan (QAPP) was submitted to NYSDEC for approval prior to the start of field work. With minor exceptions, all field activities were performed in accordance with this scope of work. Variations from the plan occurred as a result of judgments made in the field with the concurrence of NYSDEC representatives. A site-specific health and safety plan (HSP) was also prepared prior to the commencement of any field activities.

3.2 PHASE II SITE INVESTIGATION

3.2.1 Records Search/Data Compilation

Available information from state, county, and municipal files was collected and reviewed prior to the initiation of the field work. Records from local and state agency files were reviewed to supplement the Phase I report prepared by Engineering-Science in September 1984 and an analytical report by USGS in 1982. The data review allows for the proper completion of the field investigation, site assessment, and calculation of the final HRS score. Specific contacts are listed in Table 3-1.

3.2.2 Site Reconnaissance and Site Safety

On April 30, 1990, E & E personnel conducted a site reconnaissance. The purpose of the site visit was:

- To identify access problems;

- To identify locations for the test borings, surface soil samples, and surface water samples;

- To conduct a limited air-monitoring study using an OVA and HNu photoionization detector;

- To visually inspect well locations and contact utility companies to determine whether underground utilities may impact the drilling program; and

- To identify and approve for use a suitable drilling water supply.

While conducting the site reconnaissance tasks, several logistical items were identified as critical for conducting the Phase II investigation. These included:

- Difficult access for the drilling equipment necessitating a bulldozer and an ATV rig;

- An abundance of surface litter such as refrigerators and other metal debris that would interfere with surface geophysical methods; and

- No air monitoring responses above background levels were observed during the site reconnaissance except a 4 ppm reading within one breached empty drum.

A site safety plan that included pertinent emergency phone numbers, a map showing the route to the nearest hospital, and a list of dangers to human health potentially posed by contaminants suspected to be at the site was developed. Prior to the beginning of any on-site activities, a site safety meeting was conducted by the site safety officer with all on-site personnel to discuss planned activities, potential routes of exposure, and appropriate emergency actions. A site safety plan was available to all personnel on site at all times (see Appendix A).

3.2.3 Geophysical Survey

A geophysical survey was conducted at Dibacco Site No. 1 on April 30, 1990. The geophysical investigation included an EM-31 survey (to measure electromagnetic terrain conductivity) and a portable proton magnetometer survey (to measure total earth field magnetic). The objectives of the geophysical methods used were:

- o Reduce the risks associated with drilling into unknown terrain and wastes;
- o Determine vertical and horizontal anomalies that might represent buried waste boundaries or underground utilities; and
- o Optimize the locations of the subsurface borings.

Detailed methods and results are presented in the geophysical survey report included in Appendix B.

3.2.4 Surface Soil Sampling and Analysis

Five surface soil samples were collected at the site on July 18, 1990 (see Figure 3-1). The surface soil sample sites were located to give a general assessment of contaminant distribution across the site. S-1 was located on the southwest corner of the fence behind the gas station. S-2 was located near the fence by the shed behind the gas station. S-3 was located in the cleared area between the fence and the target debris piles. S-4 and S-5 were located at the west and east ends of the debris pile, respectively. Each surface soil sample location was marked by a pin flag to provide identification during subsequent site surveying. All surface soil samples were collected from 0 to 12 inches below the ground surface using disposable stainless steel sampling equipment. Prior to use, the new dedicated sampling equipment was decontaminated using the following procedure:

- o Washed with a detergent and water mixture;
- o Rinsed with potable water;
- o Rinsed with pesticide-grade methanol;
- o Rinsed with deionized water; and
- o Allowed to air dry.

The initial phase of soil sampling involved on-site screening for volatile organics using an HNu photoionization detector. No response above background levels was detected. Immediately following volatile organic screening, each sample was placed in a labeled container and preserved by cooling with ice to 4°C. The samples were transported under proper chain-of-custody to E & E's Analytical Services Center (ASC). The analyses for each sample consisted of TCL metals, cyanide, and organic compounds, including volatile organics (VOA), semivolatiles (BNA), and pesticides/polychlorinated biphenyls (PCBs). These results are discussed in more detail in Section 4.5 and the data are included in Appendix D.

3.2.5 Subsurface Boring/Monitoring Well Installation

Three groundwater monitoring wells were installed on and in the vicinity of the site between July 2 and 3, 1990 by American Auger and Ditching Co., Inc., a subcontractor to E & E. The groundwater monitoring wells were installed to determine the presence and migration potential of possible contaminants. Because the presumed groundwater gradient was south toward Cayuga Creek, GW-1 was placed at the northwest corner of the site to act as an upgradient well. GW-2 was placed north of the fly ash pile to delineate contaminants flowing south across the site, and GW-3 was placed south of the main debris pile to delineate contaminants moving southeast across the site. The location of these wells were chosen to provide:

- The direction of groundwater flow across the site;
- The types of contamination present in the groundwater; and
- The migration potential of these contaminants.

The borings were drilled until the top of bedrock was encountered. The bottom of each screen was placed at the bedrock/overburden interface in each boring. Monitoring wells were installed using PVC risers, a 0.010-foot machine-slotted screen, a silica sand pack, and a 2-foot bentonite seal and grouted to the surface. Screen lengths varied from 7 to 10 feet. The wells were secured with a protective steel casing and lock. Monitoring well construction details are presented in Table 4-1. Boring logs are presented in Appendix C.

No subsurface soil samples were collected from any of the monitoring well locations for chemical analysis. The initial phase of sample collection involved on-site screening for volatile organics using an HNu and an OVA. During this phase, no visual contamination was observed and no samples produced an instrumental response >5ppm. Only one sample from each of GW-1 and GW-3 were above background levels. Samples for physical analysis were taken from each well location. One sample for grain size analysis (GW-1: 0 to 2 feet) and one sample from the screened interval in each well was taken for Atterburg Limits testing (GW-1: 14 to 16 feet; GW-2: 10 to 12 feet; GW-2: 13 to 15 feet and GW-3: 10 to 12 feet). Geotechnical testing results are presented in Appendix F.

Each well was developed by hand using a precleaned PVC bailer until the temperature, pH, turbidity, and conductivity stabilized or until the well was bailed dry.

A fourth boring, BH-1, was drilled in the area behind the gas station to provide subsurface information at this location and to determine whether hexachlorocyclopentadiene (C-56) was present in this area. This area is more accessible than other areas of the site and therefore may have served as a dumping location. Fly ash and staining were visible in this borehole to the groundwater table encountered at 4 feet. A composite sample was collected from BH-1 (0 to 4 feet) for full TCL analysis. Immediately following volatile organic screening, the sample was placed in precleaned and prelabled sample bottles and preserved by cooling with ice to 4°C. The sample was transported under proper chain-of-custody to E & E's ASC. The analyses for the sample consisted of TCL metals, cyanide, and organic compounds, including VOA, BNA, and pesticides/PCBs. These results are discussed in more detail in Section 4.5 and the data are included in Appendix D.

The soil samples collected during the drilling of the subsurface borings were obtained by continuous split-spoon sampling in accordance with standard penetration testing as outlined in American Society for Testing and Materials (ASTM) D1586-84. A 2.5-foot by 2-inch outer diameter (OD) hardened steel sample barrel and shoe was driven in 2-foot intervals by a 140-pound hammer falling 30 inches. A plastic retainer was used in the end of the split spoon to promote satisfactory sample recoveries. The split-spoon samples were logged in the field by an on-site geologist. The subsurface boring logs are presented in Appendix C. The NYSDEC-approved decontamination procedure consisted of steam cleaning each split-spoon sampler after each use.

3.2.6 Surface Water and Sediment Sampling and Analysis

Three surface water and five sediment samples were collected from the old creek bed and Cayuga Creek, which form the eastern and southern boundaries of the site. In order to determine background values for this stream, the first sample, SW-1/SED-1, was collected upstream from the site where the stream crosses Porter Avenue. Thereafter, sampling progressed in a regular manner beginning from the northeast edge of the site with SW-4/SED-4 to several hundred yards beyond the site with SW-5/SED-5. At locations SED-2 and SED-3 along the old creek bed, only sediment samples were collected due to a lack of water. Sample SED-2 is considered upgradient of the site.

Each sediment sample was collected using a stainless steel spoon that was decontaminated according to the procedure outlined in Section 3.2.4. Each sample container was labeled and preserved by cooling with ice to 4°C. In addition, the metals and cyanide samples were preserved with nitric acid and sodium hydroxide, respectively. The samples were transported under proper chain-of-custody to E & E's ASC. The analyses for each sample consisted of TCL metals, cyanide and organic compounds, including VOA, BNA, and pesticides/PCB. These results are discussed in more detail in Section 4.5 and the data are included in Appendix D.

3.2.7 Groundwater Sampling and Analysis

Prior to sampling, the monitoring wells were purged until at least three well volumes of water was removed. Each well was sampled using a dedicated PVC bailer. Field measurements for turbidity, specific conductivity, temperature, and pH were taken during purging activities (see Appendix H).

During sampling, water was transferred carefully from the bailer to the sample bottles to avoid sample agitation and subsequent loss of volatile constituents. The sample containers for volatile organic analysis were filled first. All sample containers were labeled and preserved by cooling with ice to 4°C. In addition, the metals and cyanide samples were preserved with nitric acid and sodium hydroxide, respectively. Samples were transported under proper chain-of-custody to E & E's ASC. The analyses for each sample consisted of TCL metals, cyanide, and organic compounds, including VOA, BNA, and PCBs/pesticides. These results are discussed in more detail in Section 4.5 and the data are included in Appendix D.

Table 3-1

SOURCES CONTACTED FOR THE NYSDEC PHASE II INVESTIGATION AT DIBACCO SITE NO. 1, OLD CREEK SITE, TOWN OF NIAGARA, NEW YORK

New York State Department of Environmental Conservation
Division of Regulatory Affairs
600 Delaware Avenue
Buffalo, New York 14202
Contact: Martin L. Doster
Telephone Number: 716/847-4585
Date: April 3, 1990
Information Gathered: File search.

New York State Department of Environmental Conservation
Bureau of Hazardous Site Control
50 Wolf Road
Albany, New York 12233
Contact: Mike Ryan and Jane Thapa
Telephone Number: 518/457-9538
Date: April 3-4, 1989
Information Gathered: File search for additional data and NYSDEC Phase I reports.

New York State Department of Environmental Conservation
Information Services/Significant Habitat Unit
Wildlife Resources Center
Delmar, New York 12054-9767
Contact: John Ozard
Telephone Number: 518/439-8391
Date: May 2, 1989
Information Gathered: Information on designated critical habitats with respect to NYSDEC Phase II sites.

New York State Department of Environmental Conservation
584 Delaware Avenue
Buffalo, New York 14202
Contact: Jaspal Singh Walia
Telephone Number: 716/847-4585
Date: April 3, 1990
Information Gathered: File search for NYSDEC Phase II report preparation.

New York State Department of Health
Regional Toxic Program Office
584 Delaware Avenue
Buffalo, New York 14202
Contact: Cameron O'Conner
Telephone Number: 716/847-4365
Date: March 24, 1989
Information Gathered: File search for NYSDEC Phase II report preparation.

New York State Department of Health
Bureau of Environmental Exposure
2 University Place
Room 205
Albany, New York 12203
Contact: Lani D. Rafferty
Telephone Number: 518/458-6306
Date: April 3-4, 1989
Information Gathered: Viewed site inspection reports for NYSDEC Phase II sites.

02[UZ]YP3080:D3154/6005/21

Table 3-1 (Cont.)

New York State Natural Heritage Program
700 Troy-Schenectady Road
Albany, New York 12110
Contact: Burrell Buffington
Telephone Number: 518/783-3932
Date: April 10, 1990
Information Gathered: Significant endangered habitats in areas adjacent to NYSDEC Phase II sites.

Niagara County Department of Health
10th and Falls Streets
Niagara Falls, New York
Contact: Paul Dicky
Telephone Number: 716/284-3128
Date: April 2, 1990
Information Gathered: Information about files pertaining to NYSDEC sites.

Niagara County Highway Department
225 South Niagara Street
Lockport, New York 14094
Contact: Carl Allen
Telephone Number: 716/439-6066
Date: April 3, 1990
Information Gathered: Aerial photographs of NYSDEC Phase II sites.

Town of Niagara Water Department
7105 Lockport Road
Niagara Falls, New York 14305
Contact: Don Woodcock
Telephone Number: 716/297-2150
Date: May 14, 1990
Information Gathered: Information concerning water usage in areas surrounding Niagara County NYSDEC Phase II sites.

USDA Soil Conservation Service
Cornell Cooperative Extension
4487 Lake Avenue
Lockport, New York 14094
Contact: Ed Oliver
Telephone Number: 716/434-4949
Date: April 3, 1990
Information Gathered: Soil survey, agriculture districts and prime farmland, aerial photos for Phase II sites.

02[UZ]YP3080:D3154/6005/21

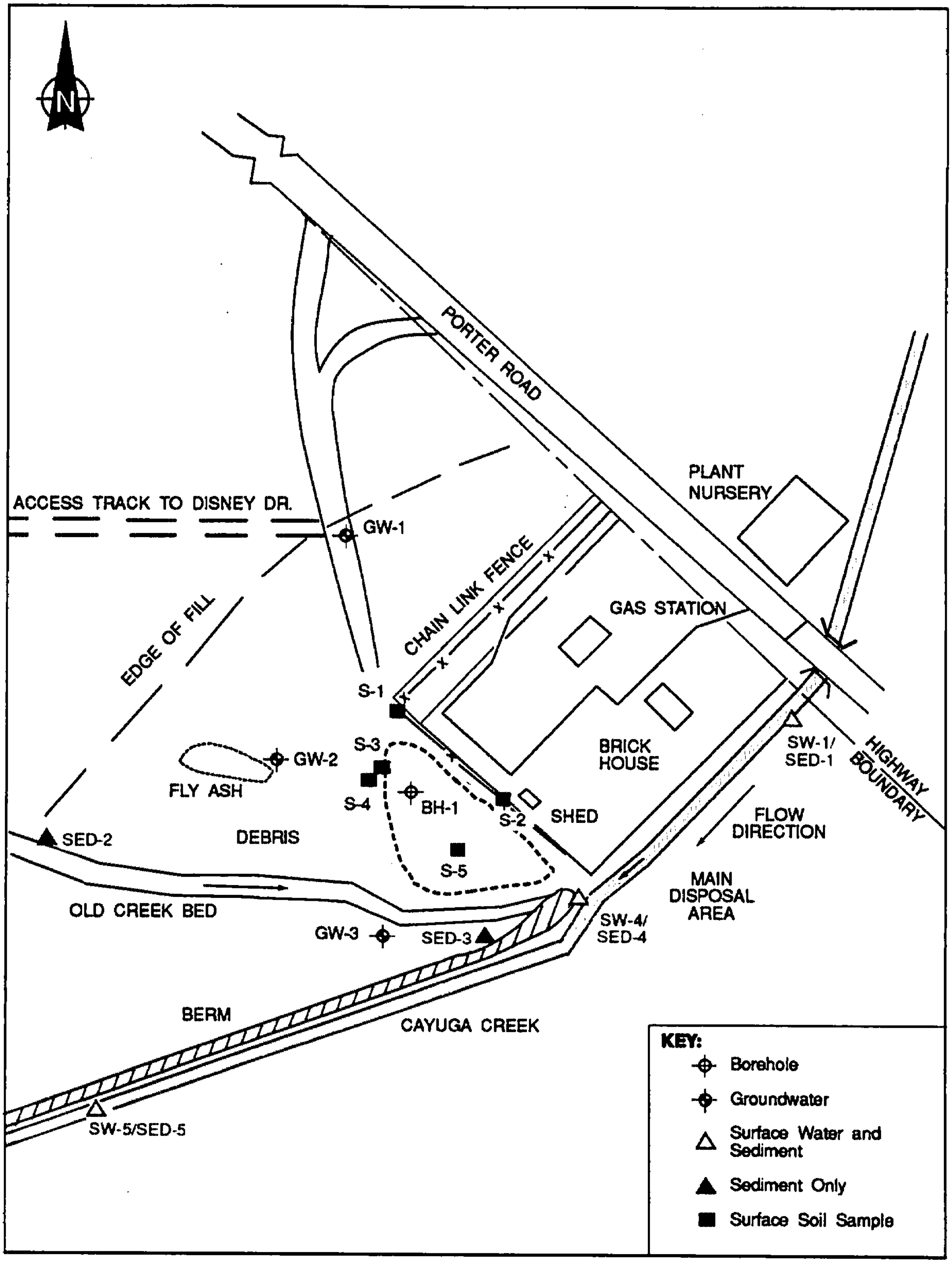


Figure 3-1
DIBACCO SITE NO. 1 SAMPLE LOCATIONS

4

4. SITE ASSESSMENT

4.1 SITE HISTORY

The Dibacco Site No. 1, Old Creek Site, is an approximately 0.5-acre parcel of land located south of Porter Road behind 9115 Porter Road in the Town of Niagara, Niagara County, New York. The site is on a portion of property currently owned by Joseph C. Weber III of Weber Group Inc. 9200 Niagara Falls Boulevard, Niagara Falls, New York. However, Michigan Mayne Realty owned the property prior to and during a period of on-site dumping. Though presently inactive, dumping occurred from 1977 to 1978 in the low area that was a Cayuga Creek channel before the creek bed was altered by construction. Site reconnaissance suggests that fugitive dumping and unauthorized recreational use has continued to the present.

The site was utilized by Apex Salvage Company of Niagara Falls in August 1977 as a landfill site for approximately 3,300 cubic yards of mostly demolition material. During this period, Apex Salvage had a contract with Carborundum Company to haul the debris from their warehouse on Lendell Road, Town of Wheatfield, which was destroyed by fire. The debris consisted of Carborundum products such as fiberfax insulation, grinding wheels, sandpaper, heating elements, abrasive grains, some Iconel metal (a nickel-base alloy), and stainless steel studs. The fiberfax insulation, grinding wheels, sandpaper, heating elements, and abrasives are composed of combinations of silica, alumina, and silicon carbide. During this period, Apex Salvage also hauled building debris from the International Paper Company, Kenmore, New York. In addition, Hooker Chemical indicated in the New York State Registry that fly ash and spent hexachlorocyclopentadiene (C-56) catalyst of unknown quantity may have been deposited at the site (NYSDEC 1985). Although further dumping was prohibited by the Town of Niagara in 1978, fugitive dumping presently continues, as evidenced by numerous small piles of debris such as tires, cement, lumber, and metal. The presence of campfire remains, bottles, and other trash indicates that the site continues to be used for unauthorized recreational purposes.

The main dump was apparently located on the edge of the upper area. There is a 6- to 8-foot embankment between the debris pile (upper area) and the old creek bed (lower area). The waste material was pushed over the embankment into the lower wetland areas. When the landfill closed, the upper area was graded and clay from a road excavation was placed over the landfill material. Currently, the debris pile has been breached on the east side bordering Cayuga Creek. There was no visual evidence of leachate during site reconnaissance, but leachate may enter the creek through surface runoff and during high seasonal water tables. In addition, a ditch cutting across the lowland area at the base of the debris pile shows visible evidence of runoff into the creek. This is apparent in the erosion observed in the berm surrounding the lowland and in the presence of flood drift in the lowland. From these observations, it is apparent that intermittent seasonal erosion of the main waste pile is occurring, providing a mechanism for contaminants to enter the creek.

Previous investigations include a 1982 surface water study by USGS and the Phase I study by Engineering-Science in 1984. In the USGS study, surface water samples were taken along Cayuga Creek bordering Dibacco Site No. 1 to examine chemical migration to the Niagara River from hazardous waste disposal sites in Erie and Niagara counties (USGS 1982). This study indicated that lead and copper concentrations were two to three times higher downstream of the site, ranging from 16 to 18 µg/L, but still below NYSDEC Class D surface water standards. Although PAHs were observed upstream of the site (<94 µg/L), no organic compounds were detected downstream of the site during this study. In 1984, a Phase I report was prepared by Engineering-Science in association with Dames & Moore which included a site inspection and a file search. Preliminary HRS scores were calculated using this information.

Hooker chemical indicated in the inactive Waste Disposal Report (NYSDEC 1985) that C-56, (a listed hazardous waste, U130, also found in 40 CFR 261 Appendix VIII) was deposited at the site. There is no further documentation, and during the Phase II investigation, no evidence of C-56 was found.

4.2 REGIONAL GEOLOGY AND HYDROGEOLOGY

Niagara County lies within the Central Lowland physiographic province. Specifically, it lies in the Eastern Lake section and occupies part of the Huron and Ontario Plains (USDA 1972).

This area, known as the Niagara Frontier, is relatively flat and broken by two east-west trending escarpments: the Niagara Escarpment and the Onondaga Escarpment. The site lies on the flat area between these escarpments called the Tonawanda Plain. This was the site of the postglacial Lake Tonawanda (Tesmer 1981).

Sediments in this area consist mainly of lacustrine deposits and glacial tills. The lacustrine deposits (i.e., silts and clays that settled to the bottom of the postglacial lake) are generally olive and brownish sediments overlying a red clay. The olive and brownish lacustrine sediments were deposited in glacial Lake Tonawanda following the Wisconsin Ice Age. These sediments blanket a red clay that was deposited following an earlier ice age in glacial Lake Lundy which at one time covered the entire county.

Glacial till also occupies a large part of the surface area in the county and underlies most areas of lake sediments. The glacial till deposits consist of ground moraines, drumlins, eskers, and terminal moraines. Ground moraines occupy the low undulating till plain and are approximately 10 to 15 feet thick. Drumlins are rounded hills of bedrock or till that were molded beneath the ice and are elongated in the direction of ice flow. Drumlins in Niagara County are very subdued due to modification by the glacial lakes. Eskers are thin elongated ridges of pebbly drift trending northeast-southwest. These ridges may be related to giant flutings (furrows or grooves cut by glaciers) in the underlying Queenston shale. The terminal moraines have a general east-west trend and were formed when the ice stagnated for a long period of time. Other deposits, consisting of glacial outwash and beach deposits, exist in large belts (up to 8 miles in length) and are generally 1 to 10 feet thick (Higgins *et al*. 1972).

Surface drainage of the Ontario Plain is northward into Lake Ontario and soil drainage is relatively poor. Surface drainage of the Huron Plain is southward into Tonawanda Creek and is also not well developed (USDA 1972).

The lacustrine sediments and glacial till of the Niagara Frontier are underlain by sedimentary rocks varying in thickness between 1,980 to 4,200 feet (see Figure 4-1) and are Ordovician, Silurian, and Devonian in age. The lower part of the Ordovician System is composed primarily of limestones and dolostones. The upper part is composed of massive shales, interbedded with thin sandstone layers. These are in turn overlain by the red shales of the Queenston Formations.

The Silurian system is composed of the Medina, Clinton, Lockport, and Salina Groups. The Medina Group consists of sandstones, shales, and siltstones. These are overlain by the limestones, shales, and dolostones of the Clinton, which in turn are overlain by the dolostones of the Lockport Group. Above the Lockport are shales, siltstones, and dolostones, and gypsum, anhydrite, and salt beds of the Salina Group. The poorly drained Tonawanda Plain is formed on the weathered surface of the Lockport and Salina Groups.

The Devonian system overlies Silurian rocks to the south of Niagara County. The formation at the Devonian-Silurian contact is the Onondaga limestone which is a massive cherty limestone that outcrops across most of northern Erie County (Tesmer 1981).

Niagara County has abundant surface waters bordering it: Tonawanda Creek to the south, the Niagara River to the west, and Lake Ontario to the north. The county's municipal water district draws most of its water from the Niagara River. However, rural residents depend on both bedrock and overburden wells. The bedrock wells north of the Niagara Escarpment are dug or drilled into the Queenston shale. The yields of water are often inadequate during extended dry periods and may contain high levels of salt or sulfate. Bedrock wells to the south of the escarpment are drilled into the Lockport dolomite. Yields are generally higher, but the water is hard from high calcium and other base concentrations. Shallow dug wells and springs are commonly in the three most permeable of the 11 soil associations in Niagara County: the Otisville-Altmar-Fredon-Stafford association, the Howard-Arkport-Phelps association, and the Hilton-Ovid-Ontario association. The shallow wells are less desirable than bedrock wells due to increasing pollution of shallow groundwater, primarily by seepage (USDA 1972).

4.3 SITE GEOGRAPHY

4.3.1 Topography

Dibacco Site No. 1, located in the Town of Niagara, Niagara County, New York, lies on the Lake Tonawanda plain within the Erie-Ontario lowland topographic province formed during the last Pleistocene glacial stage. These lowlands are characterized by a flat-lying topography resulting from pre-glacial erosion of the bedrock and subsequent modification by glaciation. In the Lake Tonawanda plain, this is marked by generally flat terrain within the lake basin with beach ridges and moraines forming areas of low relief (Beuhler and Tesmer 1963, Johnston 1964).

The ground surface at Dibacco Site No. 1 reflects this general trend. The site is generally flat, showing no appreciable relief with a consistent elevation of approximately 573 feet above mean sea level. The surface of the area exhibits small irregularities due to debris piles associated with dumping activities. The main dump was apparently located on the edge of the upper area. There is a 6- to 8-foot embankment caused by debris between the debris pile (upper area) and the Old Creek Bed (lower area). Waste material was pushed over the embankment into the lower wetland areas. In this area, the site slopes toward the Old Creek Bed. When the landfill closed, the upper area was graded and clay from a road excavation was placed over the landfill material. A ditch cutting across the lowland area at the base of the debris pile shows visible evidence of runoff into the creek. This is apparent in the erosion observed in the berm surrounding the lowland and in the presence of flood drift in the lowland. From these observations, it is apparent that intermittent seasonal erosion of the main waste pile is occurring, providing a mechanism for contaminants to enter the creek. In addition, there is a low berm between the former creek bed and Cayuga Creek. The area surrounding the site consists of both heavily populated subdivisions and rural farmland. The site itself has areas of low scrub and brush as well as wooded areas.

4.3.2 Soils

The soils in the vicinity of Dibacco Site No. 1 are lacustrine clays and silts of the Odessa-Lakemont-Ovid association. This association consists of level or nearly level soils on the Lake Tonawanda plain south of the Niagara escarpment. All of these soils are deep, somewhat poorly drained to very poorly drained, having a fine-textured or moderately fine-textured subsoil that is dominantly reddish in color. Soil types around Dibacco Site No. 1 are principally of the Lakemont Series with minor amounts of soils from the Odessa Series occurring on the high area to the west (USDA 1972).

The Lakemont soils occur in level to slightly depressional topography and share the general characteristics of lacustrine-deposited clays. They are silty clays having a silty clay topsoil (ML/CL) and subsoil (CL), and underlying clay to varied clay and silt (CL). Their fine to very fine grain size causes very poor drainage characteristics, especially in the subsoils. This is because of their low permeabilities, which are generally less than 1.14×10^{-4} cm/sec. Consequently, seasonal water tables are high during wet periods ranging from 0 to 6 inches below the surface and ponding is common. Due to the presence of carbonate bedrock, the pHs are high, ranging from 6.1 to greater than 7.6 increasing with depth (USDA 1972).

The Odessa soils are similar to the Lakemont series; however, they occur in the broad areas between poorly drained depressional areas and the slightly elevated till areas. They are marked by slightly higher permeabilities and ponding is less common. Their water tables are still seasonally high ranging from 0 to 6 inches below the surface. Their close proximity to carbonate bedrocks also cause high pHs, ranging from 6.1 to greater than 7.6 (USDA 1972).

Examination of the subsurface soil boring logs (see Appendix C) indicates that the geology of Dibacco Site No. 1 consists of 13 to 16 feet of unconsolidated sediments underlain by the Lockport Dolomite. The stratigraphy consists of approximately 0 to 4 feet of fill, followed by 9 to 14 feet of lacustrine silty clays, and 2 to 6 feet of glacial till. The presence of ponding, gray-lined fractures, and calcium carbonate precipitates indicate slow percolation of groundwater outward from the fractures (Johnston 1964, USDA 1972). These features suggest a low permeability that would be consistent with the Lakemont and Odessa soils (USDA 1972). The presence of calcium carbonate precipitates also suggests a high soil pH (> 6.1) (USDA 1972) as would be expected in a carbonate terrain (USDA 1972). Geotechnical testing results are presented in Appendix F.

4.4 SITE HYDROGEOLOGY

Groundwater monitoring wells, USGS topographic maps, geological survey maps, and regional groundwater reports were used to develop this discussion. The soil boring logs are included in Appendix C.

4.4.1 Geology

The Dibacco site is underlain by Lockport Dolomite which is an early Silurian dolostone approximately 150 feet thick. According to Johnston (1964), the Lockport is a dark gray to brown, massive to thin-bedded dolostone, locally containing algal reef and gypsum nodules. At the base are light-gray limestone (Gasport Limestone Member) and gray shaley dolostone (DeCew Limestone Member). Beneath this is 60 feet of the Rochester Shale; a dark-gray, calcareous shale that is part of the Clinton Group.

4.4.2 Hydrology

The groundwater system beneath Dibacco Site No. 1 consists of several aquifers; however, only the upper two are of primary concern. The upper aquifer occurs at the interface between the unconsolidated sediments and the bedrock. The second aquifer of concern is the upper water-bearing units of the Lockport Dolomite, which is the bedrock beneath the site.

As Johnston (1964) suggests, the upper clays and silts are dry and relatively impermeable. No water was found until the bedrock was encountered. This suggests that the aquifer in this area is in the "washed zone" above the bedrock. If this is the case, then the fractures common in the upper portion of the Lockport will cause the overburden aquifer and the upper portion of the Lockport to act as one hydraulic unit (Johnston 1964). The direction of groundwater flow in this upper aquifer is affected by the dip of the bedrock surface and the distance and depth to the local discharge point. Examination of the bedrock elevation data (see Table 4-2) indicates that the bedrock surface of the Lockport Dolomite dips southward from GW-1 to GW-3 toward Cayuga Creek. The groundwater elevations in the wells and in Cayuga Creek are approximately 562 feet above mean sea level. The water levels in the wells, however, are influenced by artesian conditions. Although the overburden was initially dry during drilling, groundwater rose rapidly in the monitoring wells after the "washed zone" was encountered. The dry nature of the overburden soils and the artesian conditions suggest that the sediments act as a confining layer and that once this pressure was released, the groundwater rose to its potential hydraulic head. The similarity between the water elevations in the wells and in Cayuga Creek, and the southward dip of the bedrock surface suggest that Cayuga Creek is the local discharge point for this aquifer. From these data it appears that the general direction of groundwater flow is south along the dip of the bedrock toward Cayuga Creek (see Figure 4-2).

The presence of vertical fractures suggest that there may be connections between different sets of bedding plane aquifers as well (Johnston 1964). The degree of this connection will determine the extent to which downward migration of groundwater and hence contaminants, if any, will be found. Vertical movement is considerably faster than percolation rates would predict for non-fractured limestone (10^{-6} cm/sec) (Freeze and Cherry 1979) since the fractures act as conduits. Hence, any groundwater from the upper washed zone could travel rapidly into the lower aquifers. Regional potentiometric data (Johnston 1964) and groundwater data from Dibacco Site No. 1 (see Figure 4-2) suggest that the direction of groundwater flow beneath the site is southward toward the Niagara River. Thus, interaction between the groundwater from this area and the Niagara River could occur.

Surface Water

Cayuga Creek forms the east and southeast borders of the site. In this area, Cayuga Creek is classified as a Class D stream. Like most of the area streams, it has a small drainage area and thus low flow rates during prolonged periods with little or no precipitation (Johnston 1964). This results from the relatively impermeable sediments that discharge insufficient groundwater to maintain the stream during dry periods (Johnston 1964). The impermeable nature of the soils also causes high groundwater tables during periods of high precipitation (USDA 1972). The presence of drift on the eastern side of the lowland, abundant ponding, and erosion of the berm between the lowland and Cayuga Creek are evidence that the lowland in the southern section of the site is flooded during periods of high precipitation and that runoff flows in the old creek bed across the base of the debris and directly into Cayuga Creek. From Cayuga Creek, the water flows south joining with Burgholtz Creek and eventually flows into the Niagara River approximately 2.3 stream miles south of the site.

The surface-water system from Cayuga Creek to the Niagara River has multiple uses. Niagara River is utilized as the municipal water source for the City of Niagara Falls, the City of Lockport, and Niagara County (Johnston 1964). Cayuga Creek and the Niagara River are utilized for recreational purposes. At the confluence of the Niagara River and Cayuga Creek is Cayuga Island, which holds Jayne Park. This public park is used for recreation and is also the habitat of the sky blue aster, (Aster odentangensis), which is classified as S1 U, a rare species of concern. Its habitat extends approximately 1.5 miles north of the park (about 1.2 miles south of the site [Buffington 1990]). In addition, there are two freshwater wetlands located within 1 mile of the site.

4.5 SITE CONTAMINATION ASSESSMENT

Analytical data for the contamination assessment are presented in Appendix D in the form of EPA Contract Laboratory Program (CLP) data summary forms for TCL organics and inorganics. All CLP data packages were reviewed to determine whether the data were acceptable for the intended use. In general, common laboratory contamination, including methylene chloride, acetone, and phthalate compounds are considered background contamination and not evaluated if the values in the field samples are qualified with a "B" and concentrations are less than 10 times the concentration detected in the method blank. The quality assurance/quality control (QA/QC) assessment of the chemical data and procedures indicates the data quality was sufficient to allow an accurate assessment of the chemical hazards associated with Dibacco Site No. 1.

4.5.1 Surface Soil

Five surface soil samples (S-1 through S-5) were collected for TCL organic and inorganic analyses as part of the Phase II study. Organic compounds detected in the soil samples are presented in Table 4-3 and inorganic analytes detected in the soil samples are presented in Table 4-4.

TCL organic analyses indicate that surface soils at the site have been contaminated with numerous semivolatile PAHs in concentrations ranging from 620 µg/kg to 21,000 µg/kg. These concentrations, typical of industrialized areas where concentrations of PAHs may be as great as 650,000 µg/kg (Edwards 1983), are ubiquitous at the site but the concentration distribution is random. Sample S-2 exhibits the lowest average concentration of PAHs with an estimated total of 3,800 µg/kg including PAHs detected below quantitation limits. Those detected below quantitation limits have been included in this discussion since numerous PAHs were detected in all the soil samples. S-1, S-4, and S-5 show moderate values with totals of approximately 7,200 µg/kg in S-5; 11,000 µg/kg in S-1; and 27,000 µg/kg in S-4. The location of greatest concern is S-3 where the estimated total is 97,000 µg/kg. Additionally, 1,2-dichlorobenzene was detected below quantitation limits in S-1 and dibenzofuran, commonly associated with PAHs, was detected below the quantitation limit in S-1, S-3, S-4 and S-5. The only volatile compounds detected in the surface soil samples that is not attributable to laboratory contamination was trichloroethene, which was detected below the quantitation limit in only S-1.

Inorganic analyses indicated that all analytes detected fell within the common range for Eastern United States soils except for lead in S-2 (Shacklette and Boergen 1984). Lead was detected at concentrations ranging from 20.7 to 370 mg/kg and exceeded the common range only in S-2 at 370 mg/kg.

4.5.2 Subsurface Soil

Due to the concern about the possible disposal of C-56 within the landfill one composite subsurface soil sample, BH-1, was collected for TCL organic and inorganic analysis as part of the Phase II study of

Dibacco Site No. 1. The TCL organics compounds detected above quantitation limits are presented with the surface soil results in Table 4-3. The inorganic analytes detected in sample BH-1 are presented in Table 4-5.

TCL organic analyses of the subsurface soils from BH-1 indicate the presence of numerous semivolatile PAHs and volatile aromatic compounds in concentrations ranging from 15 µg/kg to 2,000 µg/kg. These concentrations are typical of industrialized areas where concentrations of PAHs may be as great as 650,000 µg/kg (Edwards 1983). PAH concentrations observed in BH-1 fall within the range detected in the surface soil samples. Concentrations of individual PAHs range up to 2,000 µg/kg with a total PAH concentration of approximately 10,000 µg/kg including compounds detected below the quantitation limit. In addition, dibenzofuran, commonly associated with PAHs, was detected below the quantitation limit in BH-1. Three aromatic hydrocarbons were detected above quantitation limits in BH-1, including toluene at 15 µg/kg, ethylbenzene at 39 µg/kg, and total xylenes at 210 µg/kg. Additionally, trichloroethene was detected below the quantitation limit. No other organic compounds other than common laboratory contaminants were detected in BH-1.

TCL inorganic analyses indicated that 19 of the 24 analytes tested for were present in sample BH-1. Of these, none exceeded the common range found in Eastern United States soils (Shacklette and Boergen 1984).

4.5.3 Surface Water and Sediment Samples

Three surface water samples (SW-1, SW-4, and SW-5) and five sediment samples (SED-1 through SED-5) were collected for TCL organic and inorganic analyses as part of the Phase II study for Dibacco Site No. 1. Organic and inorganic contaminants were detected at concentrations of concern in several samples. Table 4-6 presents the inorganic analytes detected in the surface water samples. Organic compounds detected in the sediment samples are presented in Table 4-7 while inorganic analytes detected in the sediment are presented in Table 4-8.

TCL organic analyses of the three surface water samples indicated no apparent contamination. The only organic compounds detected were attributable to laboratory contamination.

Of the 24 inorganic analytes tested for, 11 were detected in the three surface water samples. Of these, only iron in SW-5 downgradient of the site, exceeded the NYSDEC Class D surface water standard. Iron was detected downstream of the site in SW-5 at 354 µg/L. However, since the level of iron downstream does not exceed the level of iron in the upstream sample (SW-1 at 219 µg/L) by three or more times, it does not constitute an observed release from the site (USEPA 1984).

TCL organic analyses of sediment samples from Cayuga Creek indicate the presence of numerous semivolatile PAHs in concentrations ranging from 450 µg/kg to 5,600 µg/kg. However, these concentrations are typical of industrialized areas where concentrations of PAHs may be as great as 650,000 µg/kg (Edwards 1983). Sample SED-5 exhibits no evidence of volatile or semivolatile contamination. SED-3 and SED-4 exhibit the lowest average concentration of PAHs with total estimated concentrations of 1,400 µg/kg and 3,300 ug/kg, respectively. SED-1 and SED-2, both upgradient samples, exhibit moderate values with individual concentrations between 1,000 to 5,600 µg/kg and totals of approximately 32,000 µg/kg in SED-1 and 17,000 µg/kg in SED-2. These contamination ranges fall within the low to moderate range observed in the surface soil and subsurface soil samples (Edwards 1983). Additionally, SED-2 contained the pesticide endosulfan sulfate at 78 µg/kg. Several organic compounds were detected below the quantitation limits in the sediment samples including dibenzofuran in SED-1 and SED-2, total xylenes in SED-5, and alpha- and gamma-chlordane in SED-2. Several tentatively identified compounds (TICs) were also detected below quantitation limits including dibenzothiophene and benzo(h)quinoline in SED-1; 4-H-cyclopenta(d,e,f)-phenanthrene in SED-2; and 9H-Carbozole in SED-1 and SED-2.

Examination of TCL inorganic analyses for sediment samples indicated that 21 of the 24 analytes tested for were present but that no metals exceeded the common range found in Eastern United States soil (Shacklette and Boerngen 1984). Cyanide was present in one sample, SED-2, at 2.7 mg/kg.

4.5.4 Groundwater Samples

One groundwater sample was collected from each of three monitoring wells (GW-1 through GW-3) for TCL organic and inorganic analyses as part of the Phase II study for Dibacco Site No. 1. The inorganic analytes detected in the ground water samples are presented in Table 4-9.

TCL organic analyses of the groundwater samples indicated that no organic compounds were detected in the samples with the exception of common laboratory contaminants. However, GW-1, upgradient of the site, contained unusually high concentrations of methylene chloride and acetone. While these compounds were detected in the method blank, they were detected in GW-1 at greater than 10 times the concentrations in the method blank. The presence of these compounds may be attributable to field or laboratory contamination.

On July 19, 1991, NYSDEC collected a second round of groundwater samples for VOC analysis for the purpose of confirming previous results. No methylene chloride or acetone was detected in GW-1.

Of the 24 inorganic analytes tested for, 18 were detected in the three groundwater samples. Of these, seven analytes were found to exceed NYSDEC Class GA Standards and guidance values in one or more samples. Chromium exceeded the Class GA Standard in GW-1 and GW-2 at 66.0 and 52.4 µg/L, respectively. However, the highest concentration of chromium was detected in upgradient well GW-1. Additionally, lead exceeded the Class GA standard in GW-1 and GW-2 at 158 and 110 µg/L, but again, the highest concentration was detected in upgradient sample GW-1. Iron was found to exceed the standard in all three samples ranging from 2,180 to 76,800 µg/L, with the highest concentration detected in upgradient sample GW-1, Magnesium exceeded the guidance value in all three samples ranging from 52,200 to 485,000 µg/L with the highest concentration in sample GW-2. However, due to similar concentrations in GW-1, magnesium does not constitute an observed release.

Manganese exceeded the standard in all three samples ranging from 446 to 2,510 µg/L with the highest concentration in upgradient well GW-1. Sodium also exceeded the standard in all three wells ranging from 61,800 to 137,000 µg/L, with the highest concentration in GW-2. However, due to a similar concentration upgradient, sodium does not constitute an observed release. Zinc exceeded the standard in GW-2 and GW-3 at 439 and 874 µg/L, respectively. Based on the relatively low concentration detected upgradient, zinc constitutes an observed release.

Additional groundwater samples were collected by NYSDEC on July 19, 1991, and submitted to Recra Environmental, Inc. for volatile organic analysis. The samples from GW-1, GW-2, GW-2 duplicate, and GW-3 contained no volatile organic compounds above instrument detection limits. Concentrations of methylene chloride, 1,2-dichloropropane, and toluene in the field blank and methylene chloride in the trip blank were detected below contract detection limits but above instrument detection limits.

4.5.5 Water Source

A water sample, DW-01, was obtained from the tank on the drill rig to test the drilling water and decontamination operations on site. The source of the water was the Erie County Water Authority. The results of a full TCL analysis indicated no atypical concentrations of inorganic or organic constituents were present in the water supply. The presence of chloroform, bromodichloromethane and dibromochloromethane is attributed to standard chlorination procedures performed to render the municipal water supply potable. These compounds were present below the New York State Department of Health (NYSDOH) maximum contaminant level of 100 μg/L for total trihalomethanes.

4.5.6 Contamination Assessment Summary

The principal immediate threat to human health and/or the environment posed by Dibacco Site No. 1 is potential direct contact with or indirect ingestion of surface soil contaminated with PAHs. A lesser hazard is the potential for groundwater contamination.

Concentrations of inorganic analytes in the surface and subsurface soil samples were compared to the common ranges in Eastern United States soils in order to assess the threat posed by direct contact. Lead was the only inorganic analyte to exceed the common range and only in one sample.

All soil samples exhibited PAH contamination in concentrations between 6,000 and 97,000 μg/kg. Surficial soil sample S-3 is of the greatest concern because individual PAH concentrations reach 21,000 μg/kg and the total PAH concentration is approximately 97,000 μg/kg. However, PAHs are common in industrialized areas where concentrations may be as high as 650,000 μg/kg (Edwards 1983).

PAHs were present in four of the five sediment samples. Only SED-5, the last downstream sample, exhibited no PAH contamination.

PAH compounds are variable combinations of fused benzene rings in linear, cluster, or angular arrays. They may be formed by natural processes such as microbial synthesis, forest fires, and volcanic activity. Anthropogenic sources of PAHs include the iron and steel industry, the petroleum industry, coal tar pitch, asphalt, heating and power generation, refuse incineration, open burning, and emissions from combustion engines. Typical concentrations range from 0.4 µg/kg in remote protected areas to 650,000 µg/kg in industrial areas (Edwards 1983). The concentrations at Dibacco Site No. 1 are typical of industrial sites.

Cyanide was present in SED-2, upgradient of the site, at 2.7 mg/kg. Cyanide and cyanide compounds are almost universally present wherever life and industry are found. These compounds are important in a wide variety of manufacturing processes and are found in many plants and animals as metabolic intermediates.

Organic and inorganic analyses of surface water indicate that the only parameter detected above NYSDEC standards in the surface water samples was iron in SW-5.

Although there is no apparent risk of contamination by surface water, migration of contaminated sediment during flood stages poses a slight risk to areas downstream including the Niagara River, 2.3 miles downstream from the site. These contaminants should have no effect on the habitat of the sky blue aster, an S1-U rare species of concern, on Jayne Park in the Niagara River at the mouth of Cayuga Creek, which extends to approximately 1.2 miles south of the site.

Organic and inorganic analyses of the groundwater samples indicate the presence of several inorganic parameters above NYSDEC Class GA groundwater standards including lead, chromium, iron, manganese, magnesium, sodium, and zinc in one or more samples. High sample turbidity may account for the presence of these elements. In addition, all of these parameters except zinc were detected in similar or higher concentrations in GW-1, the upgradient well. The potential risk of groundwater exposure is even further reduced since no domestic wells or municipal water intakes occur within 3 miles of the site.

There is an indication from Hooker Chemical in the New York State Registry that C-56 may have been deposited on site but no further documentation exists. In addition, no evidence of C-56 was found during the Phase II investigation. C-56 is a catalyst used in the production of resins, dyes, pesticides, fungicides, and pharmaceuticals. Normally a yellow to amber colored liquid with a purgent odor, this product is a deadly poison by inhalation or ingestion and moderately toxic through direct contact.

The nature and extent of inorganic and organic contamination is consistent with reports that the area was utilized as a disposal site for demolition debris and industrial wastes. Geophysical surveys indicate the presence of several anomalies that suggest ferromagnetic materials that are associated with the dumping.

Numerous small debris piles scattered across the site pose physical hazards. The eroded section of the main debris pile provides a mechanism for contamination migration into Cayuga Creek by several different pathways. The ditch cutting across the base of the pile in the lowland area provides a direct, but intermittent path for contamination into Cayuga Creek by eroding the base of the pile and the surrounding berm. Less direct paths are surface runoff from the east side of the pile directly into Cayuga Creek and migration in groundwater.

The summation of these data suggests that although several compounds exceeded recommended values or site background values, the concentrations remained low for all inorganic compounds. Only the PAHs were present in any significant levels and they are ubiquitous in industrialized sites. Therefore, the potential risks associated with these contaminants appear to be low. The potential threat to potable drinking sources posed by contamination of groundwater resources is not significant because no domestic wells nor municipal water intakes are in use within 3 miles of Dibacco Site No. 1.

4.6 RECOMMENDATIONS

Limited threats to human health and the environment posed by Dibacco Site No. 1 include direct dermal contact and ingestion of contaminated shallow soils (0 to 2 feet) at the site by direct or indirect routes. In addition, contamination of local groundwater and

surface water is of concern because Cayuga Creek flows directly into the Niagara River which is a source of municipal drinking water.
Considering the generally low contaminant concentrations, the absence of documented hazardous waste disposal at this site, and the lack of analytical evidence to indicate its presence, E & E recommends that this site be referred to the NYSDEC's Division of Solid Waste for appropriate action. Various actions that could be taken to reduce the potential for any exposure include:

- Removing or covering fugitive dumping debris and the mound of fly ash. Although BH-1 showed low concentrations of contaminants, the fly ash is uncovered and thus it is subject to erosion and poses a threat of direct contact. The entire site should be covered with a low permeability clay cap to prohibit surface water intrusion. The hillsides should be regraded to stabilize the soil and revegetated to reduce the potential for erosion, thus preventing further off-site dispersion of fill material.

- Restricting access to the site. Persons have been observed crossing the area and using it as an unauthorized gathering spot. In addition, visual inspection of the site suggests that fugitive dumping presently continues. Fencing the area is recommended to restrict unauthorized use and lower the incidence of fugitive dumping.

The extremely poisonous nature of C-56 is such that the suspicion of disposal within the landfill justifiably causes concern. It is therefore recommended that NYSDEC consider additional subsurface soil sampling to verify its existence or absence.

Table 4-1

MONITORING WELL CONSTRUCTION

Well Number	Ground Elevation	PVC Riser Elevation	Top of Casing Elevation	Borehole Depth/Elevation	Top of Screen Depth/Elevation	Bottom of Screen Depth/Elevation
GW-1	572.2	573.99	574.01	16.50/556.31	6.5/556.31	16.50/556.31
GW-2	569.1	570.96	571.00	15.50/553.91	7.5/541.91	15.50/533.91
GW-3	564.9	567.10	567.16	13.00/552.81	6.0/559.81	13.00/552.81

02[UZ]YP3080:D3154/5808/25

Note: Elevations are relative site elevations. Depth is in feet below ground surface (BGS).

Table 4-2

BEDROCK AND WATER LEVEL ELEVATION* DATA

Well Number	Ground Elevation	Borehole Depth/Elevation	Bedrock Depth/Elevation	Water Level Elevation 7/18/90	Water Level Elevation 7/19/90
GW-1	572.2	16.50/556.31	16.50/556.31	562.13	562.11
GW-2	569.1	15.50/553.91	15.50/553.91	562.20	562.10
GW-3	564.9	13.00/552.81	13.00/552.81	562.26	562.17

02[UZ]YP3080:D3154/5807/26

*Elevations are relative site elevations. Depth is in feet below ground surface (BGS).

An electronic water level indicator capable of obtaining depth to water measurements to 0.01 of an inch was used on site.

Table 4-3

ORGANIC COMPOUNDS DETECTED IN SURFACE AND SUBSURFACE SOIL SAMPLES*

	Concentration in Affected Samples (μg/kg)					
Compound	BH-1	S-1	S-2	S-3	S-4	S-5
PAHs	10,000	11,000	3,800	95,000	27,000	7,200
Toluene	15	--	--	--	--	--
Ethylbenzene	39	--	--	--	--	--
Total Xylenes	210	--	--	--	--	--

02[UZ]YP3080:D3154/5809/25

*Includes only compounds detected above quantitation limits except for PAHs. Since numerous PAHs were detected across the site at concentrations above and below quantitation limits, all PAHs are included in estimated totals.

Key:

PAHs = Polynuclear Aromatic Hydrocarbons.

Table 4-4

INORGANIC ANALYTES DETECTED IN SURFACE SOIL SAMPLES

Analyte	Range Detected in Samples (mg/kg)	Common Range Found in Eastern U.S. Soils* (mg/kg)	Samples Exceeding Common Range	
			Sample	Concentration (mg/kg)
Aluminum	5,850 - 12,400	7,000 - 100,000	--	--
Arsenic	3.5 - 7.1	<0.1 - 73	--	--
Barium	87.7 - 123	10 - 1,500	--	--
Cadmium	2.9 - 3.5	--	--	--
Calcium	11,800 - 65,800	100 - 280,000	--	--
Chromium	23.8 - 56.5	1 - 1,000	--	--
Cobalt	[4.0] - [8.7]	<0.3 - 70	--	--
Copper	23.4 - 28.8	<1 - 700	--	--
Iron	11,900 - 21,900	100 - >100,000	--	--
Lead	20.7 - 370	<10 - 300	S-2	370
Magnesium	6,940 - 29,900	50 - 50,000	--	--
Manganese	480 - 640	<2 - 7,000	--	--
Mercury	0.14 - 0.45	0.01 - 3.4	--	--
Nickel	14.1 - 21.8	<5 - 700	--	--
Potassium	[974] - 1,780	50 - 37,000	--	--
Selenium	ND - [0.92]L	<0.1 - 3.9	--	--
Sodium	ND - [156]	<500 - 50,000	--	--
Vanadium	15.7 - 28.2	<7 - 300	--	--
Zinc	154 - 529	<5 - 2,900	--	--

02[UZ]YP3080:D3154/5810/19

*After Shacklette and Boerngen 1984.

Key:

[] = Analyte present. As values approach the IDL, the quantitation may not be accurate.
L = Analyte present. Reported value may be biased low. Actual value expected to be higher.
ND = Not detected.

Table 4-5

INORGANIC ANALYTES DETECTED IN SUBSURFACE BORING SAMPLE, BH-1

	Concentration Detected in BH-1 (mg/kg)	Common Range Found in Eastern U.S. Soils* (mg/kg)	Samples Exceeding Common Range
Aluminum	12,700	7,000 - 100,000	--
Arsenic	20.0L	<0.1 - 73	--
Barium	162	10 - 1,500	--
Beryllium	[0.36]	<1 - 7	--
Cadmium	2.1	--	--
Calcium	26,500	100 - 280,000	--
Chromium	21.5	1 - 1,000	--
Cobalt	[13.5]	<0.3 - 70	--
Copper	23.9	<1 - 700	--
Iron	24,200	100 - >100,000	--
Lead	63.0	<10 - 300	--
Magnesium	10,100	50 - 50,000	--
Manganese	749	<2 - 7,000	--
Nickel	19.6	<5 - 700	--
Potassium	[1,410]	50 - 37,000	--
Selenium	[0.50]L	<0.1 - 3.9	--
Sodium	[389]	<500 - 50,000	--
Vanadium	32.7	<7 - 300	--
Zinc	122	<5 - 2,900	--

02[UZ]YP3080:D3154/5811/24

*After Shacklette and Boerngen 1984.

Key:

L = Analyte present. Reported value may be biased low. Actual value expected to be higher.
[] = Analyte present. As values approach the IDL, the quantitation may not be accurate.

Table 4-6

INORGANIC ANALYTES DETECTED IN SURFACE WATER SAMPLES

Analyte	Range Detected in Samples (µg/L)	NYSDEC Class D Standard (µg/L)	Samples Exceeding Standard	
			Sample	Concentration (µg/L)
Aluminum	[173] - 289	100	SW-1 SW-4 SW-5	[193] [173] 289
Barium	[48.2] - [58.5]	NA	--	--
Calcium	180,000 - 228,000	NA	--	--
Iron	219 - 354	300	SW-5	354
Lead	[2.6] - 3.4	847 - 1,110*	--	--
Magnesium	43,600 - 51,500	NA	--	--
Manganese	61.8 - 69.5	NA	--	--
Nickel	ND - [12.4]	8,800*	--	--
Potassium	6,540 - 8,580	NA	--	--
Sodium	68,700 - 92,900	NA	--	--
Zinc	[18.5] - 25.2	1,480 - 1,770*	--	--

02[UZ]YP3080:D3154/5812/21

*Standard based on hardness of individual samples.

Key:

[ ] = Analyte present. As values approach the IDL, the quantitation may not be accurate.
NA = No applicable standard or guidance value.

Table 4-7

ORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES*

	Concentration in Affected Samples (μg/kg)				
Compound	SED-1	SED-2	SED-3	SED-4	SED-5
PAHs	32,000	17,000	1,400	3,300	--
4,4'-DDD	--	78	--	--	--

02[UZ]YP3080:D3154/5813/30

*Includes only compounds detected above quantitation limits except for PAHs. Since numerous PAHs were detected across the site, all PAHs are included in estimated totals.

Key:

PAHs = Polynuclear Aromatic Hydrocarbons.

Table 4-8

INORGANIC ANALYTES DETECTED IN SEDIMENT SAMPLES

Analyte	Range Detected in Samples (mg/kg)	Common Range Found in Eastern U.S. Soils* (mg/kg)	Samples Exceeding Common Range	
			Sample	Concentration (mg/kg)
Aluminum	10,500 - 21,500	7,000 - 100,000	--	--
Arsenic	[1.8] - 6.8	<0.1 - 73	--	--
Barium	91.8 - 161	10 - 1,500	--	--
Beryllium	ND - [0.53]	<1 - 7	--	--
Cadmium	2.0 - 4.0	0.01 - 7.0**	--	--
Calcium	7,430 - 66,200	100 - 280,000	--	--
Chromium	17.2 - 35.0	1 - 1,000	--	--
Cobalt	[9.3] - 17.5	<0.3 - 70	--	--
Copper	14.0 - 34.9	<1 - 700	--	--
Cyanide	ND - 2.7	--	--	--
Iron	19,100 - 32,500	100 - <100,000	--	--
Lead	20.4 - 53.8	<10 - 300	--	--
Magnesium	7,630 - 25,400	50 - 50,000	--	--
Manganese	290 - 675	<2 - 7,000	--	--
Mercury	ND - 0.25	0.01 - 3.4	--	--
Nickel	22.0 - 30.6	<5 - 700	--	--
Potassium	[1,270] - [2,090]	50 - 37,000	--	--
Selenium	ND - [0.82]L	<0.1 - 3.9	--	--
Sodium	ND - [320]	<500 - 50,000	--	--
Vanadium	22.4 - 39.9	<7 - 300	--	--
Zinc	468 - 1,342	<5 - 2,900	--	--

02[UZ]YP3080:D3154/5814/18

*After Shacklette and Boerngen 1984.
**After Dragun 1988.

Key:

[ ] = Analyte present. As values approach the IDL, the quantitation may not be accurate.
L = Analyte present. Reported value may be biased low. Actual value expected to be higher.
ND = Not detected.

Table 4-9

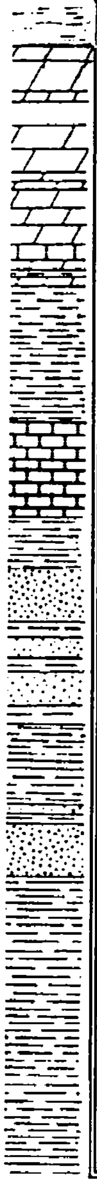
INORGANIC ANALYTES DETECTED IN GROUNDWATER SAMPLES

Analyte	Range Detected in Samples (µg/L)	NYSDEC Class GA Standard (µg/L)	Samples Exceeding Common Range	
			Sample	Concentration (µg/L)
Aluminum	1,540 - 45,400	NA	--	--
Arsenic	[1.2] - 10.8	25	--	--
Barium	[37.8] - 380	1,000	--	--
Cadmium	ND - 6.0	10	--	--
Calcium	152,000 - 731,000	NA	--	--
Chromium	ND - 66.0	50	GW-1 GW-2	66.0 52.4
Cobalt	ND - [38.0]	NA	--	--
Copper	ND - 89.9	200	--	--
Iron	2,180 - 76,800	300	GW-1 GW-2 GW-3	76,800 55,100 2,180
Lead	5.6 - 158	25	GW-1 GW-2	158 110
Magnesium	52,200 - 485,000	35,000G	GW-1 GW-2 GW-3	343,000 485,000 52,200
Manganese	446 - 2,510	300	GW-1 GW-2 GW-3	2,510 2,200 446
Mercury	ND - 0.22	2	--	--
Nickel	ND - 84.4	NA	--	--
Potassium	[3,540] - 13,800	NA	--	--
Sodium	61,800 - 137,000	20,000	GW-1 GW-2 GW-3	73,500 137,000 61,800
Vanadium	ND - 89.2	NA	--	--
Zinc	25.2 - 874	300	GW-2 GW-3	439 874

02[UZ]YP3080:D3154/5815/20

Key:

[ ] = Analyte present. As values approach the IDL, the quantitation may not be accurate.
ND = Not detected.
NA = No applicable standard a guidance value.
G = Guidance value.



System		Group	Formation	Thickness 1/ (feet)	Description
Silurian	Middle		Lockport Dolomite	150	Dark-gray to brown, massive to thin-bedded dolomite, locally containing algal reefs and small, irregularly shaped masses of gypsum. At the base is light-gray, coarse-grained limestone (Gasport Limestone Member) and gray shaley dolomite (DeCew Limestone Member of Williams, 1919).
		Clinton	Rochester Shale	60	Dark-gray calcareous shale weathering light-gray to olive.
			Irondequoit Limestone	12	Light-gray to pinkish-white coarse-grained limestone.
			Reynales Limestone	10	White to yellowish-gray shaley limestone and dolomite.
			Neahga Shale of Sanford (1933)	5	Greenish-gray soft fissile shale.
	Lower	Albion	Thorold Sandstone	8	Greenish-gray shaley sandstone.
			Grimsby Sandstone of Williams (1914)	45	Reddish-brown to greenish-gray cross-bedded sandstone interbedded with red to greenish-gray shale.
			Unnamed unit	40	Gray to greenish-gray shale interbedded with light-gray sandstone.
			Whirlpool Sandstone	20	White, quartzitic sandstone.
Ordovician	Upper		Queenston Shale	1,200	Brick-red sandy to argillaceous shale.

1/ Average figure for area. Thickness at falls is not necessarily the same.

Figure 4-1
BEDROCK UNITS OF NIAGARA COUNTY AFTER JOHNSTON 1964

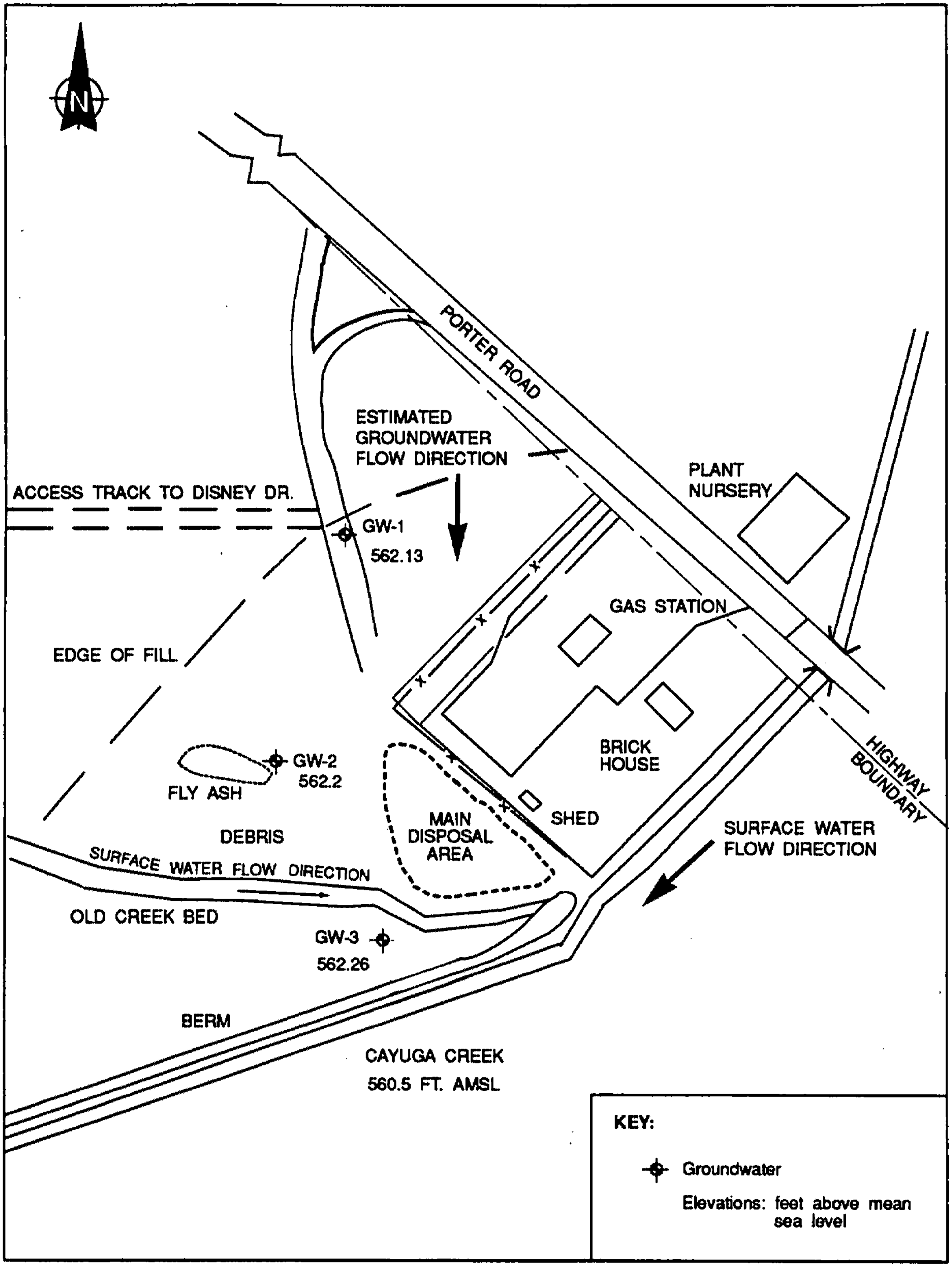


Figure 4-2
DIBACCO SITE NO. 1 - GROUNDWATER MAP

5

5. FINAL APPLICATION OF THE HAZARDOUS RANKING SYSTEM

5.1 NARRATIVE SUMMARY

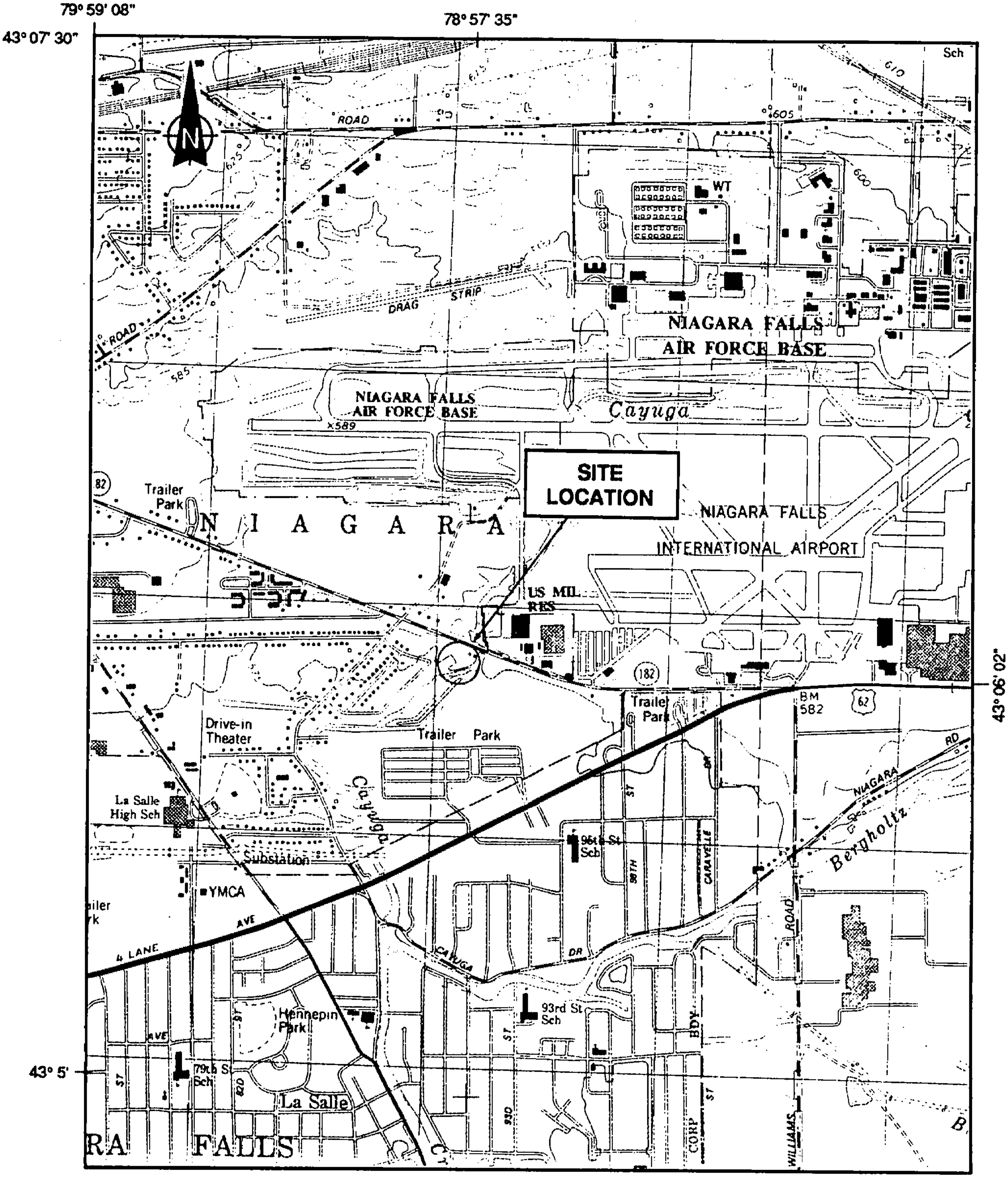
Dibacco Site No. 1, Old Creek Site, occupies approximately 0.5 acre adjacent to Cayuga Creek behind 9115 Porter Road, Town of Niagara, Niagara County, New York (see Figure 5-1). The site has had numerous owners and is currently owned by Joseph C. Weber III. During 1977 to 1978 the site was used by Apex Salvage Company as a landfill. Apex hauled Carborundum Company warehouse fire debris consisting of fiberfax insulation, grinding wheels, sand paper, heating elements, abrasive grains, and Iconel metal. In addition, they hauled debris from the International Paper Company in Kenmore, New York. Also, during this period, Hooker Chemical is believed to have dumped fly ash and possibly hexachlorocyclopentadiene (C-56) catalyst.

The total volume of wastes present at the site is approximately 3,300 cubic yards. The landfill was closed to further dumping in 1978 by the Town of Niagara and the site was graded and covered with clay. Soil and water sampling was conducted by E & E in 1990 under contract to NYSDEC.

Analysis of surface, subsurface, and sediment samples indicated the presence of numerous PAHs. Additionally, one soil sample had low concentrations of cyanide and one had low concentrations of toluene, ethylbenzene, and xylene. One sediment sample contained lead and another contained a pesticide.

Surface water samples contained excess iron in one sample. One or more groundwater samples contained several metals above groundwater standards. However, the groundwater samples were turbid, which could account for the presence of metals.

The landfill is bordered by both densely populated residential subdivisions and rural farmland. Cayuga Creek borders the site and flows south directly into the Niagara River approximately 2.3 miles south of the site. Approximately 50,000 people reside within a 2-mile radius of the site. There are no domestic wells or municipal intakes within 3 miles of the site.



SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle, Tonawanda West, N.Y. 1980.

SCALE

0 1000 2000 3000 4000 Feet

Figure 5-1
SITE LOCATION MAP DIBACCO SITE NO. 1, OLD CREEK SITE NUMBER 932056A

FIGURE 1

HRS COVER SHEET

Facility Name: Dibacco Site 1, Old Creek Site

Location: Southside of Porter Road in the Town of Niagara, New York

EPA Region: Region II

Person(s) in Charge of Facility: Joseph C. Weber III

The Weber Group

9200 Niagara Falls Boulevard

P.O. Box 392 LaSalle Station

Niagara Falls, New York 14304-0312

Name of Reviewer: ____________ Date: 10/11/90

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.)

Dibacco Site 1, Old Creek Site, located at the above address, is approximately 0.5 acre of fallow land. It is surrounded by both densely populated subdivisions and by rural farmlands. Though currently owned by Joseph C. Webber III, the site was utilized by Apex Salvage Company as a landfill during 1977-1978. During this period, under contract with Carborundum of Niagara Falls, Apex hauled debris from a warehouse fire consisting of fiberfax insulation, grinding wheels, sand paper, heating elements, abrasive grains, and Iconel metal. In addition, they hauled debris from the International Paper Company in Kenmore, New York. Also during this period, Hooker Chemical is believed to have dumped fly ash and possibly hexachlorocyclopentadiene (C-56) catalyst. The landfill was closed to further dumping in 1978 by the Town of Niagara and the site was graded and covered with clay. Chemical analyses of soil, sediment surface water, and groundwater suggest that the site is primarily contaminated with polycyclic aromatic hydrocarbons (PAHs).

Scores: S_M = 5.92 (S_{gw} = 4.47 S_{sw} = 9.21 S_a = 0)

S_{FE} = 0

S_{DC} = 50

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	2	3	
	Total Route Characteristics Score		12	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	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	8	
	Total Waste Characteristics Score		19	26	
5 Targets					3.5
Ground Water Use	0 1 2 3	3	3	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	Total Targets Score		3	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			2,565	57,330	
7 Divide line 6 by 57,330 and multiply by 100		S_{gw} =	4.47		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	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	3	3	
1-yr. 24-hr. Rainfall	0 1 2 3	1	2	3	
Distance to Nearest Surface Water	0 1 2 3	2	6	6	
Physical State	0 1 2 3	1	2	3	
	Total Route Characteristics Score		13	15	
3 Containment	0 1 2 3	1	3	3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 18	1	18	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	2	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		8	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			5,928	64,350	
7 Divide line 6 by 64,350 and multiply by 100		S_{sw} = 9.21			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet					
Rating Factor	**Assigned Value (Circle One)**	**Multi-plier**	**Score**	**Max. Score**	**Ref. (Section)**
1 Observed Release	0 45	1	0	45	5.1
Date and Location: 4/30/90, 7/2 - 7/3/90, 7/18 - 7/19/90					
Sampling Protocol: OVA Hnu					
If line 1 is 0, the S_a = 0. Enter on line 5. If line 1 is 45, then proceed to line 2.					
2 Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1	0	3	
Toxicity	0 1 2 3	3	9	9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	8	
	Total Waste Characteristics Score		10	20	
3 Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1	21	30	
Distance to Sensitive Environment	0 1 2 3	2	1	6	
Land Use	0 1 2 3	1	3	3	
	Total Targets Score		25	39	
4 Multiply 1 x 2 x 3			0	35,100	
5 Divide line 4 by 35,100 and multiply by 100	S_a =		0		

FIGURE 9
AIR ROUTE WORK SHEET

	S	S^2
Groundwater Route Score (S_{gw})	4.47	19.98
Surface Water Route Score (S_{sw})	9.21	84.82
Air Route Score (S_a)	0	0
$S^2_{gw} + S^2_{sw} + S^2_a$		104.8
$\sqrt{S^2_{gw} + S^2_{sw} + S^2_a}$		10.24
$\sqrt{S^2_{gw} + S^2_{sw} + S^2_a} / 1.73 = S_M =$		5.92

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	1	3	7.1
[2] Waste Characteristics					7.2
Direct Evidence	0 3	1	0	3	
Ignitability	0 1 2 3	1	0	3	
Reactivity	0 1 2 3	1	0	3	
Incompatibility	0 1 2 3	1	0	3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	0	8	
	Total Waste Characteristics Score		0	20	
[3] Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1	5	5	
Distance to Nearest Building	0 1 2 3	1	3	3	
Distance to Sensitive Environment	0 1 2 3	1	0	3	
Land Use	0 1 2 3	1	3	3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1	5	5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1	5	5	
	Total Targets Score		21	24	
[4] Multiply [1] x [2] x [3]			0	1,440	
[5] Divide line [4] by 1,440 and multiply by 100		S_{FE} =	0		

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

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	15	15	8.3
4 Waste Characteristics Toxicity	0 1 2 3	5	15	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			10,800	21,600	
7 Divide line 6 by 21,600 and multiply by 100		S_{DC} =	50.00		

FIGURE 12
DIRECT CONTACT WORK SHEET

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 = 4,320 drums plus 80 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: Dibacco Site No. 1, Old Creek Site

Location: South of Porter Road behind 9115 Porter Road, Town of Niagara, New York

Date Scored: October 11, 1990

Person Scoring: Carol Waddell-Sheets

Primary Source(s) of Information (e.g., EPA region, state, FIT, etc.):

Ref. 1, 2, 6, 10, 17, 20, 22

Factors Not Scored Due to Insufficient Information:

None

Comments or Qualifications:

None

G R O U N D W A T E R   R O U T E

1. OBSERVED RELEASE

Contaminants detected (3 maximum):

Zinc

Rationale for attributing the contaminants to the facility:

Several metals were found in groundwater samples collected from the site.
Ref. 15

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

The aquifer located in the "wash zone" at the contact between the glacial till and the Lockport dolomite. Vertical fractures in the Lockport may allow interaction between this aquifer and lower Lockport aquifer units. The second aquifer system is the six bedding plane units formed by dissolution along bedding plane joints. These are the major aquifer units in the area.
Ref. 12

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

The overburden aquifer may be 0-12 inches due to low soil permeability. This aquifer is in contact with the lower upper fractured aquifer, zone in the Lockport, 3-16 feet below the surface.
Ref. 4, 11

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

Four feet but less than 16 feet. The soil boring BH-1 had fly ash to 4 feet but because the soil was saturated no additional footage was done. Sixteen feet is the maximum depth to bedrock in this area so it could extend no farther. It probably does not extend much beyond 4 feet since the fill in the rest of the area is 4 feet or less.
Ref. 22

Net Precipitation

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

32 inches
Ref. 10

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

24 inches
Ref. 10

Net precipitation (subtract the above figures):

8 inches

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Silty clays (CL) of glacial lacustrine deposits.
Ref. 4

Permeability associated with soil type:

1. $10^{-4} < x < 10^{-6}$ cm/sec
Ref. 4

Physical State

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

Solids and catalyst
Ref. 14, 24

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

No containment structures in place. Waste is either exposed or covered by a layer of fill, unlined landfill
Ref. 14

Method with highest score:

Score = 3
No containment structures, unlined landfill

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated: Lead, manganese, chromium

All above acceptable levels in samples GW-1 and GW-2

Ref. 15

Compound with highest score:

Lead
Score = 18
Ref. 2

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.):

No statistically accurate way to estimate quantity. Hazardous substances found in samples but nature and quantity unknown.

Basis of estimating and/or computing waste quantity:

Factor scored greater than zero due to presence of hazardous substances in samples.
Score = 1
Ref. 15

* * *

5. TARGETS

Groundwater Use

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

No commercial or domestic use of either aquifer within a 3-mile radius. Municipal water supplies only.
Ref. 14, 17, 19

Distance to Nearest Well

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

More than 3 miles, Town of Royalton
Ref. 11, 17

Distance to above well or building:

More than 3 miles
Ref. 6, 11

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:

Not applicable. No water supply wells drawing from aquifers of concern within a 3-mile radius.
Ref. 14, 17, 19

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):

Not applicable. No water supply wells are used for irrigation within a 3-mile radius.
Ref. 14, 17

Total population served by groundwater within a 3-mile radius:

None
Ref. 14, 17, 19

1. OBSERVED RELEASE

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

None detected in surface water itself during this study. However, one sediment sample had low concentration of cyanide and four sediment samples had concentrations of polycyclic aromatic hydrocarbons (PAHs), however, these concentrations were below NYSDEC standards for Class D surface water. Previous study by USGS in 1982 showed higher lead and copper downstream from the site.
Ref. 15, 10
Score = 0

Rationale for attributing the contaminants to the facility:

* * *

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0-2%
Generally flat with one 6-8 foot embankment
Ref. 8, 9

Name/description of nearest downslope surface water:

Cayuga Creek
Ref. 6

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

<2% 6-8 foot embankment between the major disposal area and Cayuga Creek
Ref. 6, 8, 9

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

Only at periods of high precipitation, when ditch at base is flowing
Ref. 8, 9

Is the facility completely surrounded by areas of higher elevation?

No, flat to north and west and creekbed to east and south
Ref. 8, 9

1-Year 24-Hour Rainfall in Inches

2.1 inches
Ref. 10

Distance to Nearest Downslope Surface Water

Adjacent to the site
Ref. 8, 9

Physical State of Waste

Mixture of solids and catalyst
Ref. 10, 14, 24

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

None, facility is an unlined landfill
Ref. 8, 9, 10

Method with highest score:

Unlined landfill
Score = 3

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Lead, cyanide, polycyclic aromatic hydrocarbons (benzo-a-pyrene)
Ref. 10, 15

Compound with highest score:

Lead 18 and benzopyrene 18
Ref. 2

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.):

No statistically accurate way to estimate quantity. Hazardous substances found in samples but nature and quantity unknown.
Ref. 15

Basis of estimating and/or computing waste quantity:

Factor scored greater than 0 due to presence of hazardous substances samples.
Score = 1
Ref. 15

* * *

5. TARGETS

Surface Water Use

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

Recreation
Commercial
Industrial
Ref. 16, 20

Is there tidal influence?

No, Lake Erie and the Niagara River are of too limited extent to have significant tidal effects.

Distance to a Sensitive Environment

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

Not applicable. None within 2 miles
Ref. 16, 20

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

0.7 miles
Ref. 16, 20

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

No significant habitat within 1 mile. Closest habitat is 1.2 miles, for a rare species of concern, a blue aster (Aster odentangensis) with a classification of S1 U. The habitat continues south to Jayne Park on Cayuga Island.
Ref. 18

Population Served by Surface Water

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

Not applicable. Water intakes are located more than 4 miles both downstream and upstream from Cayuga Creek mouth.
Ref. 6, 17

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

Not applicable. No intakes within the specified distances
Ref. 6

Total population served:

Not applicable. No intakes within the specified distances
Ref. 6

Name/description of nearest of above water bodies:

Niagara River 2.3 stream miles south of the site.
Ref. 6

Distance to above-cited intakes, measured in stream miles:

>4 miles upstream
>4 miles downstream
Ref. 6

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

None on record; none observed >5 ppm
Ref. 8, 9

Date and location of detection of contaminants:

Not applicable. Not observed

Methods used to detect the contaminants:

An Hnu and OVA were used during drilling fieldwork by E & E July 1990 and an OVA was utilized by E & E field reconnaissance 30 April 1990. No ambient air contamination was revealed in breathing zones in either case. Slightly elevated levels were detected in two soil samples during drilling (<4 ppm)

Rationale for attributing the contaminants to the site:

Not applicable. No observed departure from background levels on either Hnu or OVA

* * *

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Not applicable. No air contamination observed; no air samples taken

Most incompatible pair of compounds:

Not applicable. No air contamination observed, no air samples taken

Toxicity

Most toxic compound:

Not applicable. No air contamination observed; no air samples taken

Hazardous Waste Quantity

Total quantity of hazardous waste:

No statistically accurate way to estimate quantity. Hazardous substances found in samples but nature and quantity unknown.
Ref. 15

Basis of estimating and/or computing waste quantity:

Factor scored greater than 0 due to presence of hazardous substances in samples.
Score = 1
Ref. 15

* * *

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 to 1/2 mi   0 to 1/4 mi

<10,000
Ref. 6

Distance to a Sensitive Environment

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

Not applicable. None within specified distance

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

0.7 miles
Ref. 16, 20

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

No significant habitats within 1 mile. The habitat of the blue aster (Aster odentangensis) begins 1.2 miles south of the site and extends to Jayne Park on Cayuga Island. This species is classified as S1-U, a rare species of concern.
Ref. 18

Land Use

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

<0.1 mile gas station adjacent to site
Ref. 8, 9

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

Not applicable. None within 2 miles of Niagara County Land Use Inventory
Ref. 16, 20

Distance to residential area, if 2 miles or less:

<0.1 mile house is adjacent to site
Ref. 8. 9

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

0.3 mile
Ref. 16, 20

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

0.75 mile
Ref. 16, 20

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

No. The nearest is 0.25 mile away
Ref. 16, 20

F I R E   A N D   E X P L O S I O N

1. CONTAINMENT

Hazardous substances present:

PAHs - (polycyclic aromatic hydrocarbons)
Ref. 10, 15

Type of containment, if applicable:

No containment structures in place. Waste exposed or covered by a layer of fill in an unlined landfill.
Ref. 8, 9, 10

* * *

2. WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

Not applicable. No observed fire hazard
Ref. 23

Ignitability

Compound used:

Not applicable. No observed fire hazard
Ref. 23

Reactivity

Most reactive compound:

Not applicable. No observed fire hazard
Ref. 23

Incompatibility

Most incompatible pair of compounds:

Not applicable. No observed fire hazard
Ref. 23

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

No statistically accurate way to estimate quantity. Hazardous substances found in samples but nature and quantity unknown.
Ref. 15

Basis of estimating and/or computing waste quantity:

Factor scored greater than 0 due to presence of hazardous substances in samples.
Score = 1
Ref. 15

* * *

3. TARGETS

Distance to Nearest Population

Residential structure adjacent to the site <0.1 mile
Ref. 8, 9

Distance to Nearest Building

Industrial building adjacent to the site <0.1 mile
Ref. 8, 9

Distance to a Sensitive Environment

Distance to wetlands:

0.7 mile
Ref. 16, 20

Distance to critical habitat:

There are no critical habitats within 1 mile of the site. The habitats of the blue aster (Aster odentangensis) with a classification of S1-U, a rare species of concern, begins 1.2 miles south of the site and continues south to Jayne Park on Cayuga Island.
Ref. 18

Land Use

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

<0.1 mile adjacent to site is a gas station
Ref. 8, 9

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

Not applicable. None within 2 miles

Distance to residential area, if 2 miles or less:

<0.1 mile house adjacent to site
Ref. 8, 9

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

1/3 mile
Ref. 16, 20

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

0.75 mile
Ref. 16, 20

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

No, the nearest location is approximately 1/4 mile away
Ref. 16, 20

Population Within 2-Mile Radius

>50,000
Ref. 11

Buildings Within 2-Mile Radius

Approximately 15,000 based upon 3.8 people per house

DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

Not applicable. No known incident

* * *

2. ACCESSIBILITY

Describe type of barrier(s):

Access to site is unrestricted on west, east, and south. Chain-link fence occurs at northern end
Ref. 8, 9

* * *

3. CONTAINMENT

Type of containment, if applicable:

No containment structures in place. Waste is exposed or covered by a layer of fill. This is an unlined landfill.
Ref. 8, 9

* * *

4. WASTE CHARACTERISTICS

<u>Toxicity</u>

Compounds evaluated:

Lead, mercury, polycyclic aromatic hydrocarbons, benzo-a-pyrene
Ref. 15

Compound with highest score:

Lead = 18
Ref. 2

* * *

5. TARGETS

<u>Population Within One-Mile Radius</u>

<10,000
Ref. 6

<u>Distance to Critical Habitat (of endangered species)</u>

1.2 miles to northern-most range of the blue aster. Aster odentangensis, a rare species of concern, classified as S1-U whose range extends to Jayne Park on Cayuga Island.
Ref. 18

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.

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2	Sax, N.I., Sixth Edition, Dangerous Properties of Industrial Materials. Document Location: Ecology and Environment, Inc., Buffalo, New York.
3	LaSala, A.M., 1968, Groundwater Resources of the Erie-Niagara Basin, New York, State of New York Conservation Department Water Resources Commission, Basin Planning Report ENB-3, 114 pp. Document Location: Ecology and Environment, Inc., Buffalo, New York.
4	USDA Soil Conservation Service, 1972, Soil Survey of Niagara County. Document Location: Ecology and Environment, Inc., Buffalo, New York.
5	Buehler, E.J. and T.H. Tesmer, 1963, Geology of Erie County. Buffalo Society of Natural Sciences Bulletin, Vol. 21, No. 3, 118 pp. Document Location: Ecology and Environment, Inc., Buffalo, New York.
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11	Johnston, R.H., 1964, Groundwater in the Niagara Falls Area, New York, with Emphasis on the Water-bearing Characteristics of the Bedrock. State of New York Conservation Department Water Resources Commission Bulletin GW-53, 93 pp. Document Location: Ecology and Environment, Inc., Buffalo, New York.
12	New York State Department of Environmental Conservation, September 25, 1990, Water Quality Standards and Guidance Values, Albany, New York, 63 pp.

02[UZ]YP3080:D3154/5818/4

Reference Number	Description of the Reference
13	Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 604 pp. Document Location: Ecology and Environment, Inc., Buffalo, New York.
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18	Buffington, B., New York Natural Heritage Program, April 10, 1990, Interview Acknowledgment Form. Document Location: Ecology and Environment, Inc., Buffalo, New York.
19	Woodcock, D., Town of Niagara Water Superintendent, May 14, 1990, Interview Acknowledgment Form. Document Location: Ecology and Environment, Inc., Buffalo, New York.
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02[UZ]YP3080:D3154/5818/4

REFERENCE 1

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

Encl K 7

REFERENCE 2

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VNR VAN NOSTRAND REINHOLD COMPANY
New York

REFERENCE 3

GROUND-WATER RESOURCES OF THE ERIE-NIAGARA BASIN, NEW YORK

Prepared for the
Erie-Niagara Basin Regional Water Resources
Planning Board

by

A. M. La Sala, Jr.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
in cooperation with
THE NEW YORK STATE CONSERVATION DEPARTMENT
DIVISION OF WATER RESOURCES

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER RESOURCES COMMISSION

5-30
Basin Planning Report ENB-3
1968

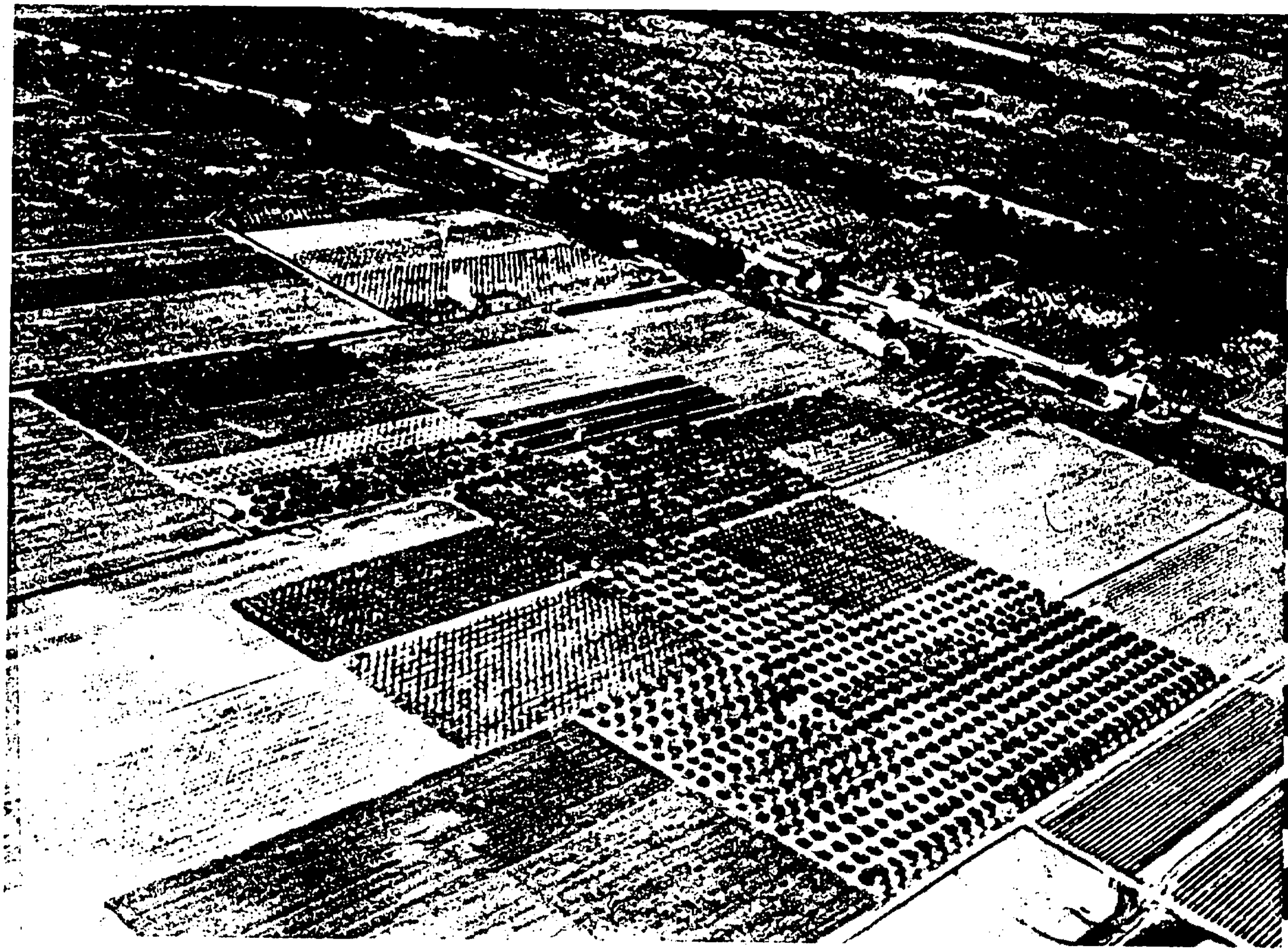
recycled paper

ecology and environment

REFERENCE 4

SOIL SURVEY OF

Niagara County, New York



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P.O. Box D 5-32
Buffalo, N.Y. 14225

Rosslyn Center
1700 N. Moore
Arlington, Va 22209

REFERENCE 5

GEOLOGY

OF

ERIE COUNTY

New York

By

Edward J. Buehler
Professor of Geology
State University of New York at Buffalo

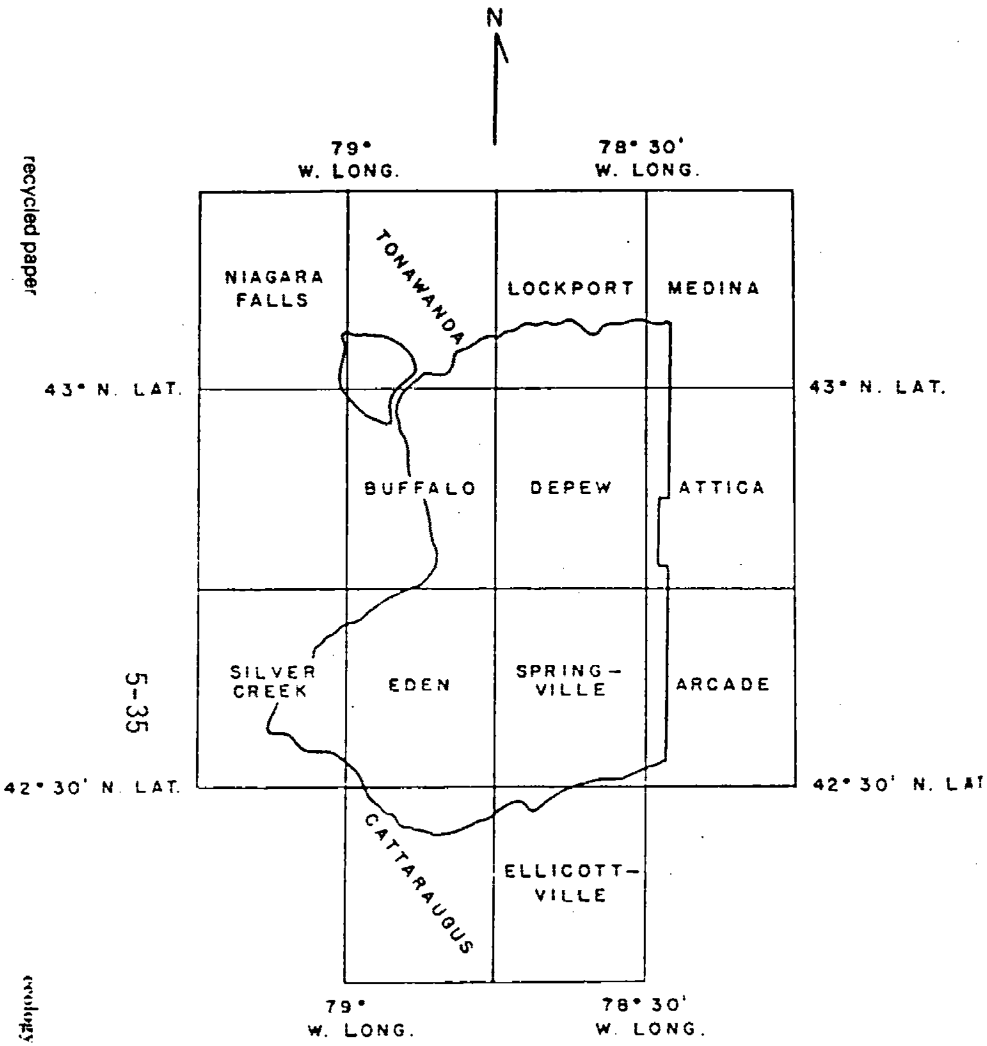
and

Irving H. Tesmer
Professor of Geology
State University College at Buffalo

BUFFALO SOCIETY OF NATURAL SCIENCES
BULLETIN

Vol. 21. No. 3 Buffalo, 1963

p 118



SKETCH MAP OF ERIE COUNTY, NEW YORK
SHOWING 15' QUADRANGLES

Fig. 1

5-35

Historical Geology

The exposed bedrock of western New York records events chiefly of the Silurian and Devonian Periods. The last deposit of the Ordovician Period is the red Queenston Shale which outcrops in the lower Niagara Gorge and along the south shore of Lake Ontario. Still older rocks are present (see section on SUBSURFACE GEOLOGY) but deeply buried and too imperfectly known to permit much interpretation.

The start of the Silurian Period provides a convenient place to begin our account of the geologic history of Erie County. The Early Silurian (440 million years ago) was a time of extensive sand accumulation in eastern North America. The so-called Medina sand, famous for its natural gas reserves, was transported here by streams flowing from highlands to the east.

The Middle Silurian was a time of extensive flooding of the continent by shallow seas in which marine invertebrates flourished. The limestone and shale beds deposited at this time are well exposed in the Niagara Gorge and along the Niagara escarpment. They extend into Erie County but are covered by younger formations.

During Late Silurian time these seas became greatly restricted in area, and in northeastern North America were confined to an area which somewhat coincides with the present location of the Great Lakes. The marine water frequently was completely landlocked and evaporation under desert-like conditions caused precipitation of salt, gypsum and anhydrite. Western New York, at that time, was submerged beneath a body of water that must have resembled the Dead Sea. The next event, but still within the Silurian Period, was the freshening of the hypersaline water and deposition of the Bertie and Akron Formations, which are principally dolostone. However, this water apparently did not attain normal salinity for the typical coral-brachiopod-bryozoan fauna of the Silurian seas is absent, and instead one finds a rather unusual fauna in which eurypterids predominate.

At the close of the Silurian Period sea water withdrew from western New York but persisted in the eastern part of the state. The limestones deposited in eastern New York in the Late Silurian are very similar to the limestones of Early Devonian age in that region, so that the boundary between the Silurian and Devonian Systems in eastern New York must be drawn on the basis of fossils.

There is no appreciable amount of Lower Devonian rock in western New

York unless one so regards the Onondaga Limestone. The Early Devonian sea was narrowly restricted to the Appalachian trough and did not extend into the western part of the state, which at that time was undergoing erosion. Thus, an unconformity (disconformity) represents the Early Devonian and part of the Late Silurian in Erie County.

The Onondaga Limestone begins the Devonian record in western New York. The sea returned and the environment was one of warm, clear salt water teeming with animal life; coral reefs flourished. An exceptionally fine reef was displayed in a former quarry at Main Street and Kensington Avenue in Williamsville, prior to expressway construction.

Eventually the clear water of the Onondaga sea was replaced by muddy water giving rise to the shales of the Middle Devonian Hamilton Group. This mud was carried from highlands to the east which were uplifted during the period of mountain building known as the Acadian orogeny. They constitute part of the Catskill delta which is described on page 19.

The Hamilton deposits began with black shales of the Marcellus Formation which accumulated in a stagnant water environment. This was followed by thick deposits of gray shale. Some of these gray shale beds are quite barren of fossils, whereas others, especially the more calcareous ones, record a sea bottom teeming with corals, brachiopods, bryozoans, and other Paleozoic marine
5-36 animals. Several thin but persistent limestone beds represent brief clearing of the water. At these times the crinoids or sea lilies must have formed immense undersea communities, for their dissociated stem segments are an important component of the limestone. The uppermost Hamilton shale is succeeded by a very thin and discontinuous bed of iron sulphide. The remarkable dwarfed animals which are preserved are attributed to a stagnant water environment that was unfavorable for normal growth.

Late Devonian time marked a return to black shale deposition in western New York. Deposits of black and gray shale alternate through a thickness of several hundred feet. The organic-rich black mud environment to the west and the gray mud environment to the east oscillated back and forth with time, causing an intertonguing of these two facies. Fossils are relatively scarce in these Upper Devonian shale beds. The area was largely inhabited by certain brachiopods and mollusks, and by an occasional armored fish. The uppermost Devonian in Erie County consists of beds of shale and siltstone. This coarsening of sediment from mud to silt marks the westward migration of the Devonian shoreline.

The remainder of the Paleozoic Era, as well as all of the Mesozoic and most of the Cenozoic Eras, have left no record in western New York. This area was probably above sea level during most or all of that time, and subject to erosion. The record resumes in the latter part of the Pleistocene Epoch. These glacial deposits and their related history are described in the following section on SURFICIAL GEOLOGY.

Surficial Geology

PHYSIOGRAPHY

Both the altitude and relief of the land surface tend to increase from north to south. The lowest elevation is 565 feet above sea level at the northern tip of Grand Island and the highest, 1,945 feet above sea level, is in Sardinia township, southeastern Erie County. On the basis of physiography the county may be divided into three parts: the flat Lake Tonawanda plain in the north, followed by the Lake Erie plain, and the Allegheny plateau in the south.

The Onondaga escarpment is a conspicuous topographic feature. This north-facing cliff, formed by the outcropping northern edge of the resistant Onondaga Limestone and Upper Silurian dolostone, can be traced from Buffalo eastward through Akron. In Erie County it seldom exceeds 40 feet in height. Some of the streams which cross the escarpment form waterfalls, but many of the smaller streams disappear in fissures and caves and reappear on the plain to the north.

Between the Onondaga escarpment and the parallel Niagara escarpment to the north is the Lake Tonawanda plain, so named because in late Pleistocene time it was occupied by now extinct Lake Tonawanda. This plain actually is a shallow east-west trending trough, 10 to 15 miles in width, which is drained along its axis by Tonawanda Creek.

The Lake Erie plain, so called because it was covered by glacial lakes ancestral to the present Lake Erie, is an area 6 to 12 miles in width between the Onondaga escarpment and the hilly region to the south. This plain is smooth or gently rolling and rises in elevation toward its southern border where much of it is 900 to 1,000 feet above sea level.

The southern third of the county lies within the maturely dissected Allegheny plateau, the northern border of which is sometimes referred to as the Lake Erie or Portage escarpment. The hilly topography of this region appears to be largely the result of stream erosion for there are no appreciable folds or faults. Glacial erosion has modified the shape of some of the larger valleys and has produced a general rounding of the topography. The amount of glacial drift is commonly so great as to obscure the topography of the underlying bedrock.

Erie County has no large lakes other than bordering Lake Erie. The major streams, all of which flow west or northwest into Lake Erie, are Tonawanda, Ellicott, Cayuga, Buffalo, Cazenovia, Eighteenmile, and Cattaraugus Creeks. Tonawanda Creek, part of which coincides with the Erie Barge Canal, flows over the flat bottom of extinct Lake Tonawanda. Ellicott Creek crosses the Onondaga escarpment at Williamsville where it forms a waterfall, as does Murder Creek at Akron. Cayuga, Buffalo, Cazenovia, and Eighteenmile Creeks flow northwest from the hills of the Allegheny plateau to the Lake Erie plain and cut post-glacial gorges which expose thick sections of Middle and Upper Devonian rock. Cattaraugus Creek flows essentially westward, part of it through the picturesque gorge known locally as Zoar Valley.

PLEISTOCENE GEOLOGY

Introduction

The surficial geology of Erie County consists largely of the effects of the Pleistocene glaciation (Fig. 2). The Pleistocene geology of western New York provides a fertile field for research, not only from the scientific viewpoint of understanding more of this last phase of geologic history, but also from the practical aspect of engineering geology and sand and gravel resources.

Following is a list of the glacial and interglacial stages of the Pleistocene Epoch. Although erosion by earlier glacial stages undoubtedly played a role in shaping the topography of Erie County, all the identified features date from the Wisconsin Stage, and a more detailed breakdown of that stage is provided. The most conspicuous of these features are the moraines deposited by the retreating ice sheet and the strand lines of the late Wisconsin lakes. Hough (1958, pp. 90 - 109) describes the subdivisions given below:

Wisconsin Glacial Stage
- Valders Substage
- Two Creeks Interval
- Mankato (Port Huron) Substage
- Cary Substage
- Tazewell Substage
- Iowan Substage
- Farmdale Substage

Sangamon Interglacial Stage

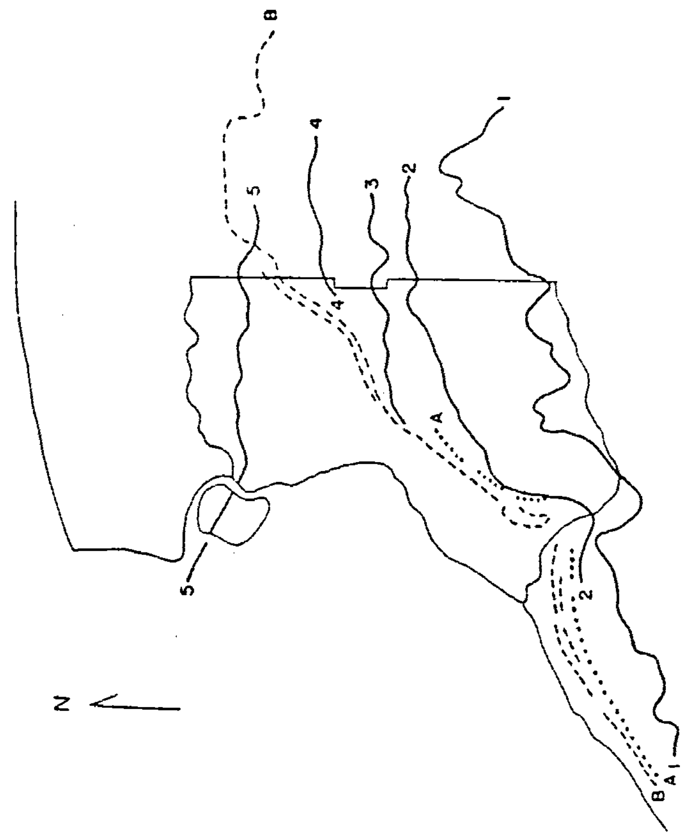
Illinoian Glacial Stage

Yarmouth Interglacial Stage

Kansan Glacial Stage

Aftonian Interglacial Stage

Nebraskan Glacial Stage



KEY

1. LAKE ESCARPMENT MORAINE
2. GOWANDA MORAINE
3. HAMBURG MORAINE
4. MARILLA MORAINE
5. NIAGARA FALLS MORAINE

A. ······· LAKE WHITTLESEY STRAND

B. – – – – LAKE WARREN STRAND

SKETCH MAP OF ERIE COUNTY, NEW YORK SHOWING GLACIAL MORAINES AND STRAND LINES. (AFTER MULLER, 1960)

Fig. 2

Glacial Moraines and Till Sheets

Muller (1960, p. 22) assigns the moraines and till sheets of Erie County to the Port Huron (late Wisconsin) Substage and indicates that these deposits formed during the last 12,000 years.

Lake Escarpment Moraine System

The oldest moraine system covers part of the brow and much of the face of the Lake Erie escarpment which separates the hills of the dissected Allegheny plateau from the plains which lie to the north. The system consists of a complex of overlapping moraines which are hard to differentiate or trace for any distance.

A moraine assigned to the Lake Escarpment Moraine System occurs on the north side of Cattaraugus Creek between the creek and Collins Center. The ridges and knolls are 20 to 30 feet high and among them are saucer-like depressions. This moraine system can be followed northeastward to Woodward Hollow, and then eastward to East Concord where it locally grades into a gravel outwash plain. From East Concord the system continues northeastward through Protection into Wyoming County.

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Fairchild (1932, p. 637) and Muller (1960, p. 29) correlate the Lake Escapment Moraines with the Valley Heads Moraine of central New York. Wood found in the outwash plain near Chaffee on the Arcade quadrangle has been dated as approximately 12,000 years old.

Muller (1960, p. 34) indicates the position of the Lake Escarpment and other moraines of Erie County (fig. 2).

Gowanda Moraine

The Gowanda Moraine has been traced from Sheridan in Chautauqua County eastward into Erie County. Near Gowanda the moraine turns northeastward and follows the base of an escarpment past Lawtons. It can then be followed northeastward to Clarksburg and Boston Center, and thence to West Falls. Here the moraine turns eastward toward South Wales and extends into Wyoming County.

The Gowanda Moraine is characterized by small swells generally 10 to 15 feet, but occasionally 40 feet in height. One mile west of Gowanda, till is exposed in a bank of Cattaraugus Creek. This till consists of about 100 feet of blue clay with many pebbles, largely of local rock. This moraine also exhibits a large number of surface boulders, many of which are granite.

Hamburg Moraine

The Hamburg Moraine (also called Hamburg-Marilla Moraine) has been traced from the village of Hamburg eastward through Erie County. It passes

Kame in Hamburg-Marilla Moraine near Four Rod Road
1.5 miles southeast of Marilla

from Hamburg through the village of Orchard Park, past East Aurora, across Buffalo Creek between East Elma and Porterville, and thence to Williston. This moraine generally consists of sharp knolls enclosing distinct basins (Pl. 1). The knolls are from 20 to 50 feet in height and are at 900 to 1100 feet elevation.

The Gowanda and Hamburg Moraines are correlated with the Whittlesey Stage of Great Lakes development.

Niagara Falls Moraine

Kindle and Taylor (1913, p. 10) describe a moraine which trends east-west across northern Erie County, from Grand Island through the towns of Tonawanda, Amherst, Clarence, and Newstead. The topographic expression is slight.

Glacial Lakes and Beaches

Lake Erie Basin

Early stages in the history of the Lake Erie basin are recorded by sandy beach ridges and bottom deposits. The latter are commonly of red clay. Varved clay deposits occur in the vicinity of Cheektowaga. The beaches are no longer horizontal but show the effects of post-glacial upwarp. Hough (1958) gives the most recent general history of the Great Lakes.

Although glacial Lake Maumee occupied part of the Lake Erie basin it was largely confined to the western half at an elevation of 760 to 800 feet above sea level. No evidence of Maumee beaches has been found east of Erie, Pennsylvania. Lake Arkona extended into western New York, but Arkona beaches have not been positively identified in Erie County. The highest beaches in Erie County are those of Lake Whittlesey which stood at 740 feet above sea level. Post-glacial uplift causes the Whittlesey (Belmore) beach to now range in elevation from 850 feet near North Collins to approximately 900 feet near Marilla. The beach can be observed immediately east of North Collins and traced northward to a point east of Eden Center. It can then be traced northeastward through Orchard Park to Marilla where it appears to terminate. According to radiocarbon dating Lake Whittlesey existed about 13,000 years ago.

Lake Warren, which existed approximately 11,000 to 12,000 years ago, is divided into High Lake Warren (elevation 690 feet) and Low Lake Warren (elevation 675 feet) which were separated in time by the Two Creeks interval. Low Lake Warren left prominent beaches in Erie County. At present the beach varies in elevation from 760 feet in southern Erie County to about 850 feet at Alden. A beach may be traced from Brant Center past Pontiac and Eden to Hamburg. It continues northeastward through Orchard Park, Springbrook, and Elma to Alden at which point it divides into two distinct beaches

which continue eastward. Prominent Warren beaches are displayed at Buffalo Creek near Bullis Road. Blackmon (1956) provides an excellent account of strand lines on the East Aurora quadrangle.

Lake Grassmere which stood at an elevation of 640 feet and Lake Lundy which stood at 620 feet extended into Erie County. The beaches of these lakes, however, are scattered and difficult to correlate. Lake Lundy existed approximately 10,000 years ago.

Lake Tonawanda

As glacial ice retreats it inevitably leaves a train of small lakes. These become extinct as their outlets cut low enough to drain them. One of the largest of these in western New York was Lake Tonawanda, described by Kindle and Taylor (1913, p. 19). This lake occupied much of the area in Niagara and Erie counties which lies between the Niagara and Onondaga escarpments. It was formed as the level of Lake Lundy dropped and it drained northward over the Niagara escarpment at Lewiston, Lockport, Gasport, Medina, and Holley. The lake extended eastward from the Niagara River for a distance of about 50 miles to Holley. It was about 8 miles wide in a north-south direction and the maximum depth is estimated as approximately 35 feet. The present Oak Orchard Swamp is regarded as a remnant.

The shore line of Lake Tonawanda was traced by D'Agostino (1958). In Erie County the southern shore extended from Tonawanda through Brighton Village to Ellicott Creek just north of the junction of Forest Road and Millersport Highway. It continued eastward 1 mile north of Clarence Center and approximately 2.5 miles north of Akron.

In southern Erie County, Cuthbert (1937) by studies of topography and sedimentation outlined Lake Zoar which occupied part of the valley of Cattaraugus Creek.

Glacial Pavement and Striae

Glacial pavement and glacial striations are preserved on several outcrops of the Onondaga Limestone. The best displays are in the Federal Crushed Stone Company quarry, Cheektowaga. No systematic study of the orientation of striae has been made in this area.

General Stratigraphy

GEOLOGIC TIME SCALE

Those periods marked with an asterisk are the only portions of the time scale represented in outcrop in Erie County.

Cenozoic Era	* Quaternary Period
	Tertiary Period
Mesozoic Era	Cretaceous Period
	Jurassic Period
	Triassic Period
Paleozoic Era	Permian Period
	Pennsylvanian Period
	Mississippian Period
	* Devonian Period
	* Silurian Period
	Ordovician Period
	Cambrian Period
Precambrian	

The section on DETAILED STRATIGRAPHY AND PALEONTOLOGY deals only with Silurian and Devonian bedrock. The unconsolidated Quaternary deposits are described in the section on SURFICIAL GEOLOGY.

The following Silurian and Devonian subdivisions are exposed in Erie County (Fig. 3):

- Devonian System
  - Upper Devonian (Chautauquan) Series
    - Arkwright Group
    - Seneca Group
  - Middle Devonian (Erian) Series
    - Hamilton Group
    - Onondaga Limestone (assigned to the Lower Devonian by some stratigraphers)
- Silurian System
  - Upper Silurian (Cayugan) Series
    - Akron Dolostone
    - Bertie Formation
    - Salina Group
  - No older rocks exposed

The development of stratigraphic nomenclature is shown in Fig. 4.

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STRATIGRAPHIC COLUMN OF ERIE COUNTY, NEW YORK

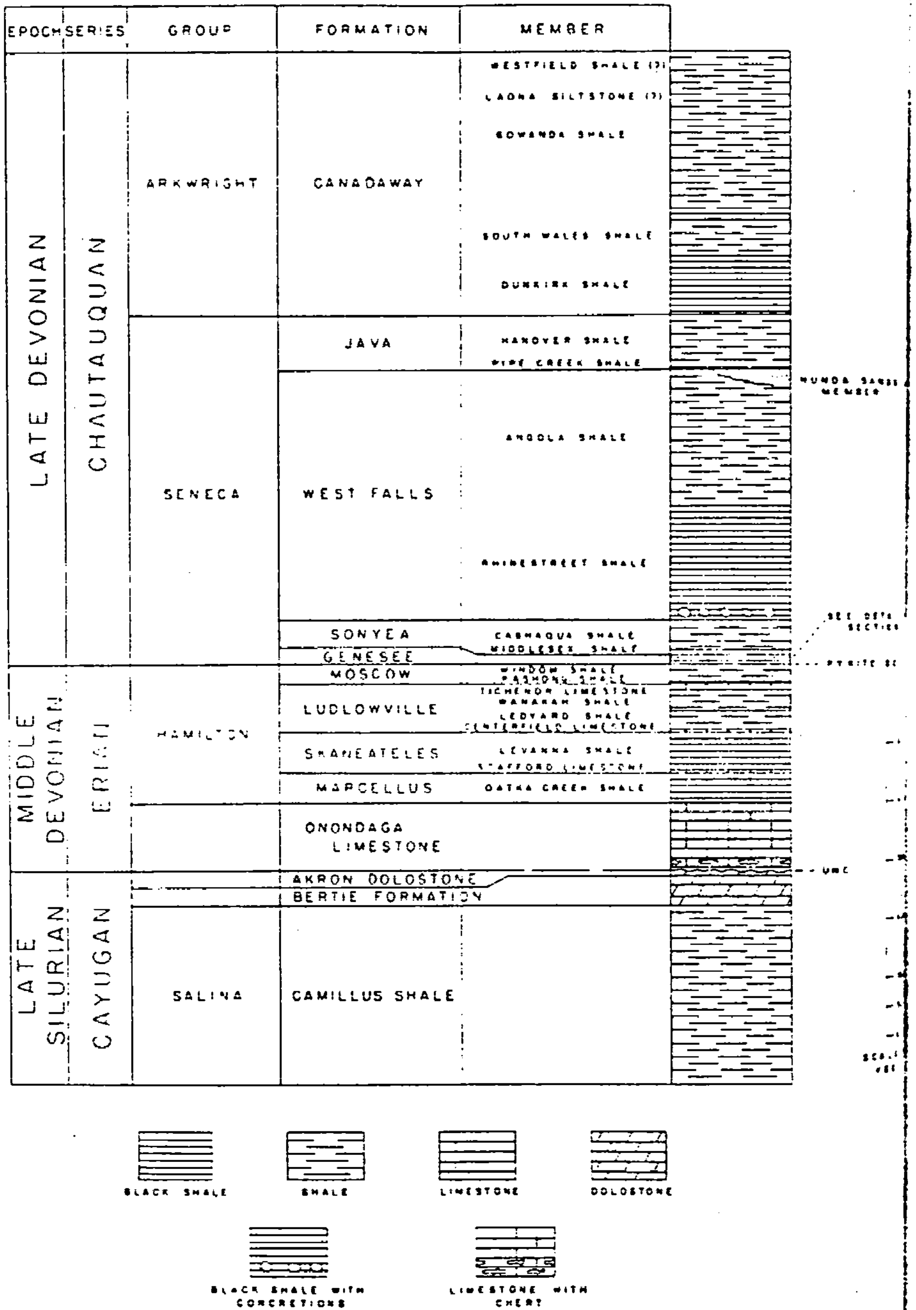


Fig. 3

ROCK-STRATIGRAPHIC AND TIME-STRATIGRAPHIC UNITS

The fundamental time-stratigraphic unit is the *system*, those rocks formed during a geologic period. Thus, parts of the Silurian and Devonian Systems may be observed in Erie County. Systems may be subdivided into *series*, which are also time-stratigraphic units representing rocks formed during a geologic epoch.

The *formation* is the fundamental rock-stratigraphic unit. It consists of a succession of strata useful for mapping or description. The age of a formation may vary from place to place. Formations may be combined in *groups* or be subdivided into *members*.

OUTCROP PATTERN

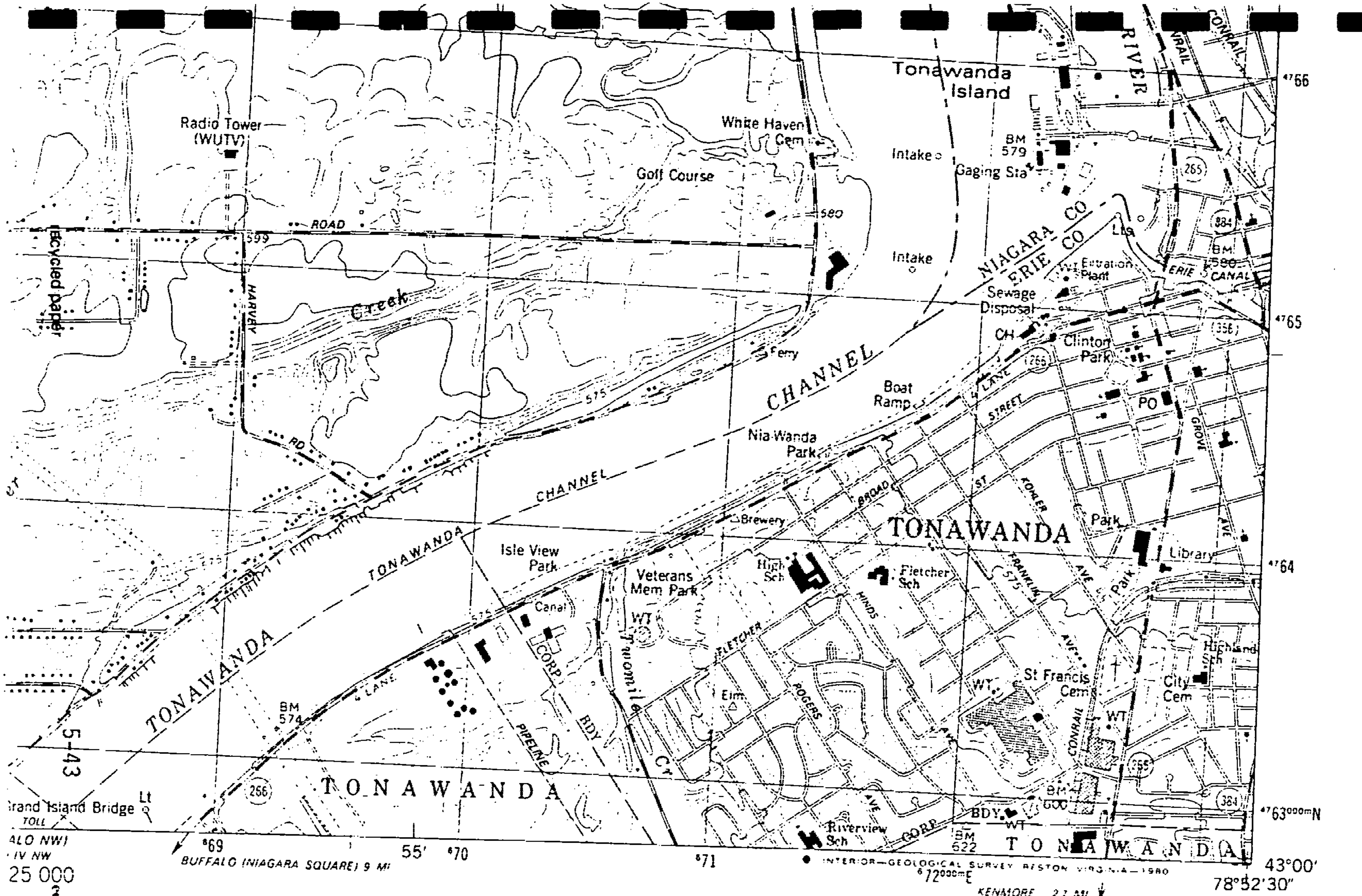
All the the strata dip quite uniformly to the south and strike approximately east-west. The action of erosion on this structure results in an outcrop pattern of approximately east-west trending bands, the oldest to the north and the youngest to the south. The Onondaga Limestone and Upper Silurian dolestones frequently outcrop along the Onondaga escarpment. Otherwise, the best outcrops occur along the shore of Lake Erie and in stream valleys.

CATSKILL DELTA

The post-Onondaga rocks of Erie County were deposited on the seaward side of the Catskill delta. The landward part of the delta was in the vicinity of the Catskill Mountains where the deposits are thickest and are coarse-textured, with fossils of plants and fresh-water animals. The deposits thin westward away from the Devonian shoreline toward the open sea of the Appalachian geosyncline, and become finer in texture and more calcareous. Formations the same age as those of the Catskill region contain abundant fossils of marine invertebrates. In Erie County the Middle Devonian formations consist largely of calcareous shale and limestone with an abundant coral-bryozoan-brachiopod fauna. As the Devonian Period progressed the shore line tended to shift westward. The Late Devonian formations contain few limestone beds. The shales contain more silt and less fossils, chiefly mollusks and brachiopods. There is some difference of opinion among geologists as to the depth of the water.

Black shales of both Middle and Late Devonian age occur in western New York. They may contain pyrite and some beds, such as the Rhinestreet Shale Member of the West Falls Formation emit a petroliferous odor upon fracture. The black color is attributed to disseminated organic matter. These shale beds probably represent an environment of poorly oxygenated, stagnant water. Except for pieces of wood, fossils are generally scarce. Certain beds, particularly in the Marcellus Formation, may yield a fauna rich in numbers but poor in variety. Thin shelled brachiopods (*Leiorhynchus*) are especially common.

REFERENCE 6



ALO NW)
IV NW

25 000

1 MILE

1000 5000 6000 7000 FEET

1 KILOMETER

RVAL 5 FEET
ICAL DATUM OF 1929

ET–DATUM IS LOW WATER 568.6 FEET

AL MAP ACCURACY STANDARDS
RVEY, RESTON, VIRGINIA 22092
ND SYMBOLS IS AVAILABLE ON REQUEST

NEW YORK

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Primary highway, hard surface

Light-duty road, hard or improved surface

Secondary highway, hard surface

Unimproved road

Interstate Route
U. S. Route
State Route

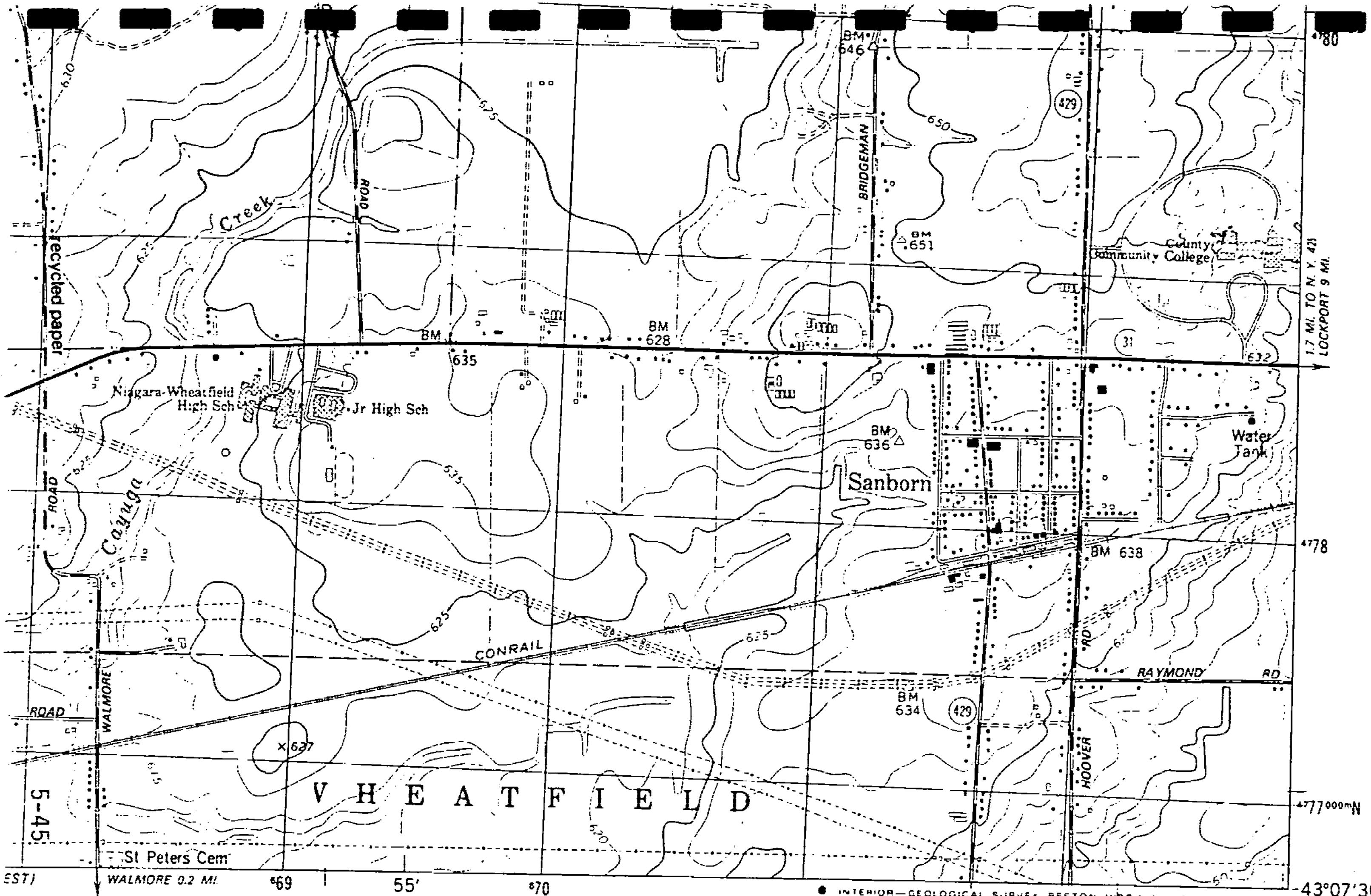
TONAWANDA WEST, N. Y.

SW/4 TONAWANDA 15' QUADRANGLE
N4300—W7852.5/7.5

1980

DMA 5270 III SW–SERIES V821

REFERENCE 7



(TONAWANDA EAST)
5270 III SE

000

1 MILE

4000 5000 6000 7000 FEET

1 KILOMETER

L 5 FEET
L DATUM OF 1929

MAP ACCURACY STANDARDS
EY, RESTON, VIRGINIA 22092
SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface

Secondary highway, hard surface — Unimproved road

Interstate Route — U. S. Route — State Route

NEW YORK

QUADRANGLE LOCATION

RANSOMVILLE, N. Y.

NW/4 TONAWANDA 15′ QUADRANGLE
N4307.5–W7852.5/7.5

1980

DMA 5270 III NW–SERIES V821

REFERENCE 8

GEOPHYSICAL SURVEY

APPENDIX B OF THIS REPORT

REFERENCE 9

APPENDIX H OF THIS REPORT

REFERENCE 10

932056

PHASE I REPORT
ENGINEERING INVESTIGATIONS AND EVALUATIONS AT INACTIVE HAZARDOUS WASTE DISPOSAL SITES

Dibacco Site #1
Niagara County, NY

DEPARTMENT OF ENVIRONMENTAL CONSERVATION · NEW YORK STATE ·

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

ENGINEERING-SCIENCE
in association with
DAMES & MOORE

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SEPTEMBER 1984

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TABLE OF CONTENTS

ASSESSMENT

Insufficient data was available to complete a final HRS scoring. The preliminary HRS scoring was:

$S_M = 3.84$	$S_A = 0.00$
$S_{GW} = 3.67$	$S_{FE} = 0.00$
$S_{SW} = 5.54$	$S_{DC} = 50.00$

The final site score will most likely increase since insufficient information was available to complete the groundwater route and hazardous waste quantity factor. However, the increase in the site score would be low due to the low target factors for this site.

RECOMMENDATIONS

The following recommendations are made for the completion of Phase II:

- groundwater monitoring system consisting of one up-gradient and two down-gradient wells
- sample analyses should include a GC/MS scan and heavy metals

The estimated manhour requirements for Phase II are 295, while the estimated cost is $19,264.

SECTION II
SITE DESCRIPTION
Dibacco Site #1

Dibacco Site #1 is located on the south side of Porter Road in the town of Niagara Falls, Niagara County, New York. The site is approximately one acre. It is bounded on the north northwest side by a lowland that was once the creek bed for Cayuga Creek before the creek route was altered to the east. The site has been used as a landfill since 1977. Materials deposited at the site include construction rubble, silica and alumina debris, and a suspect deposit of an organic catalyst from Hooker Chemical Co.

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HRS COVER SHEET

Facility name: Dibacco Site #1

Location: Niagara Falls, NY

EPA Region: II

Person(s) in charge of the facility: McClendon Blacktop Co., Inc.

Niagara Falls, NY

Name of Reviewer: John Kubarewicz/Eileen Gilligan Date: August 26, 1983

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.)

Rural area where low areas were filled with concrete and inert wastes from Carborundum. Hooker chemical also indicated that some organic catalyst may have been disposed here. To date there is no known health or environmental hazard.

Scores: S_M = 3.84 (S_{gw} = 3.67 S_{sw} = 3.54 S_a = 0.00)

S_{FE} = 0.00

S_{DC} = 50.00

Ground 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	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. ✓

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
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	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	0	8	
	Total Waste Characteristics Score		18	26	
5 Targets					3.5
Ground Water Use	0 1 2 3	3	3	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	Total Targets Score		3	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			2106	57,330	
7 Divide line 6 by 57,330 and multiply by 100			S_{gw} = 3.67		

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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	
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					
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			11	15	
3 Containment	0 1 2 3	1	3	3	
4 Waste Characteristics					
Toxicity/Persistence	0 3 6 9 12 15 18	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	0	8	
Total Waste Characteristics Score			18	26	
5 Targets					
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			3564	64,350	
7 Divide line 6 by 64,350 and multiply by 100			S_{sw} = 5.54		

Air Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1	O	45	5.1

Date and Location:

Sampling Protocol:

If line 1 is 0, the S_a = 0. Enter on line 5 ✓
If line 1 is 45, then proceed to line 2.

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
2 Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
3 Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score			39	
4 Multiply 1 x 2 x 3				35,100	
5 Divide line 4 by 35,100 and multiply by 100		S_a = O			

Direct Contact Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	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	15	15	8.3
4 Waste Characteristics Toxicity	0 1 2 3	5	15	15	8.4
5 Targets					8.
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			10,800	21,500	
7 Divide line 6 by 21,500 and multiply by 100			S_{DC} = 50.00		

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Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Sectio
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} =		

WORKSHEET FOR COMPUTING S_M

	S	S^2
Groundwater Route Score (S_{gw})	3.67	13.47
Surface Water Route Score (S_{sw})	5.54	30.69
Air Route Score (S_a)	0.00	0.00
$S_{gw}^2 + S_{sw}^2 + S_a^2$		44.16
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		6.65
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		3.84

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. 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 that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: Dibacco Site #1

LOCATION: City of Niagara Falls

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

Not applicable.
No groundwater samples collected for chemical analysis.

Rationale for attributing the contaminants to the facility:

Not applicable.

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifers(s) of concern:

Shallow aquifer.
(Basic geological knowledge)

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

0 ft.
(ES/D&M site visit)

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

Unknown.

Net Precipitation

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

32 inches
(USDOC Climate Atlas of the US, 1979)

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

24 inches
(USDOC Climate Atlas of the US, 1979)

Net precipitation (subtract the above figures):

8 inches

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Silt.
(ES/D&M site visit)

Permeability associated with soil type:

10^{-4} cm/sec.

(Lambe & Whitman, 1969, John Wiley & Sons, pub.)

Physical State

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

Mixture of solids and catalyst (sludge or powder) - 3
(NCDOH, 1981)

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

None, unlined landfill.

Method with highest score:

Unlined landfill - 3

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Lead
(USGS, 1982 - compound found in surface water samples taken both upgradient and downgradient of the site)

Compound with highest score:

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):

Unknown - 0

Basis of estimating and/or computing waste quantity:

Not applicable.

* * *

5 TARGETS

Ground Water Use

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

Commercial water supply.
(ES/D&M site visit)

Distance to Nearest Well

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

More than 4 miles.
(ES/D&M site visit)

Distance to above well or building:

More than 4 miles.
(ES/D&M site visit)

Population Served by Ground Water 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:

Not applicable. No water-supply wells drawing from aquifer of concern within 3 mile radius.
(USGS Topographic Map: Tonawanda West, NY Quadrangle)

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):

Not applicable. No land area irrigated by supply wells drawing from aquifer of concern within 3-mile radius.

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

0.

1 OBSERVED RELEASE

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

None.
(USGS, 1982)

(Contaminants were detected both upstream and downstream of site; therefore, these contaminants cannot be attributed to this site.)

Rationale for attributing the contaminants to the facility:

Not applicable.

* * *

2 ROUTE CHARACTERISTICS (USGS Topographic Map: Tonawanda West, NY Quadrangle)

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0%

Name/description of nearest downslope surface water:

Cayuga Creek adjacent to landfill.

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

2%

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

No.
(ES/D&M site visit)

Is the facility completely surrounded by areas of higher elevation?

No.
(USGS Topographic Map: Tonawanda West, NY Quadrangle)

1-Year 24-Hour Rainfall in Inches

2.1 inches
(USDOC Tech. Paper No. 40)

Distance to Nearest Downslope Surface Water

0.1
(ES/D&M site visit)

Physical State of Waste

Mixed solids and liquids
(NCDOH, 1981)

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Unlined landfill.

Method with highest score:

Unlined landfill.

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

Lead

(USGS, 1982)

Compound with highest score:

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):

Unknown - 0

Basis of estimating and/or computing waste quantity:

Not applicable.

* * *

5 TARGETS

Surface Water Use

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

Recreation
Commercial Supply (5 miles)
(ES/D&M site visit)

Is there tidal influence?

No.
(USGS Topographic Map: Tonawanda West, NY Quadrangle)

Distance to a Sensitive Environment

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

Not applicable. None within 2 miles.
(USGS Topographic Map: Tonawanda West, NY Quadrangle)

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

More than 3 miles.
(ES/D&M site visit)

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

More than 3 miles.
(ES/D&M site visit)

Population Served by Surface Water

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

Not applicable. No water-supply intakes within specified distances.
(ES/D&M site visit)

Toxicity

Most toxic compound:

Hazardous Waste Quantity

Total quantity of hazardous waste:

Basis of estimating and/or computing waste quantity:

* * *

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 to 1/2 mi   0 to 1/4 mi

3500 people.
(USGS Topographic Map: Tonawanda West, NY Quadrangle)

Distance to a Sensitive Environment

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

Not applicable. None within 2 miles.
(USGS Topographic Map: Tonawanda West, NY Quadrangle)

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

More than 2 miles.
(ES/D&M site visit)

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

Not applicable. None within 1 mile.
(NYSDEC Region 9, Dept. of Fish & Wildlife Files)

Land Use

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

0.1 mi.
(ES/D&M site visit)

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

Not applicable. None within 2 miles.
(ES/D&M site visit)

Distance to residential area, if 2 miles or less:

0.1 mi.
(ES/D&M site visit)

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

5 miles
(ES/D&M site visit)

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

Not applicable. None within 2 miles.
(ES/D&M site visit)

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

No.
(ES/D&M site visit)

SECTION IV

SITE HISTORY

Dibacco Site #1

The first record of deposit of materials at this site was in 1977 when Apex Salvage Company of Niagara Falls hauled demolition debris to the site. This material consisted of silica and alumina products manufactured by Caborundum Company and damaged in a warehouse fire. Apex Salvage Company also hauled waste from International Paper Company and Hooker Chemical Company to this site. Dumping at the Dibacco site was prohibited by the Town of Niagara in 1978. The area was then graded and covered with clay. The site was investigated by the Monroe County Department of Health in 1981. At that time, and at the present time, piles of tires, concrete and other rubbish was observed at the site. Surface water samples were taken in 1982 by the USGS as part of their Niagara River Study.

SECTION V

SUMMARY OF AVAILABLE DATA

Dibacco Site #1

REGIONAL GEOLOGY AND HYDROLOGY

The site is located in the Erie-Ontario lowlands physiographic province. The bedrock of this region is predominantly limestone, dolostone, and shale. Most of the rocks are deep aquifers with regional flow to the south.

In the recent past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The activity of the glacier widened pre-existing valleys, and deposited widespread accumulations of till. The melting of ice, ending approximately 12,000 years ago, produced large volumes of meltwater; this water subsequently shaped channels and deposited thick accumulations of stratified, granular sediments.

As glacial ice retreated from the region, meltwater formed lakes in front of the ice margin. This region is covered by lake sediments, the most recent being from Lake Iroquois (a larger predecessor to Lake Ontario) and from Lake Tonawanda (an elongate lake which occupied an east-west valley and drained north into Lake Iroquois). The sediments consist of blanket sands and beach ridges which are occasionally underlain by lacustrine silts and clays (indicating quiet or deeper water deposition).

Granular deposits in this region frequently act as shallow aquifers, whereas lacustrine clays, as well as tills, often inhibit groundwater movement. However, fine-grained, water-lain sediments, such as silts and clays, frequently contain horizontal laminations and sand seams. These internal features facilitate lateral groundwater movement through otherwise low permeability materials.

SITE GEOLOGY

No subsuface investigations have been performed on this site. The following geological summary is based on the USGS topograhic map, NYS Museum and Science Service Quaternary Geology map.

Bedrock at the site consists of Lockport Dolomite, which may occur at depths below approximately 15 feet. Bedrock may be overlaid by a thin layer of silty till, which is then overlain by lacustrine clay and silt (deposited by former Lake Tonawanda). Most recent soil deposited on the site is aluvial sands from Cayuga Creek (site occupies a former creek bed). Above this soil is waste material.

SITE HYDROLOGY

No groundwater investigations have been performed on this site. However, the following summary of site hydrology can be made based on our estimate of site geology.

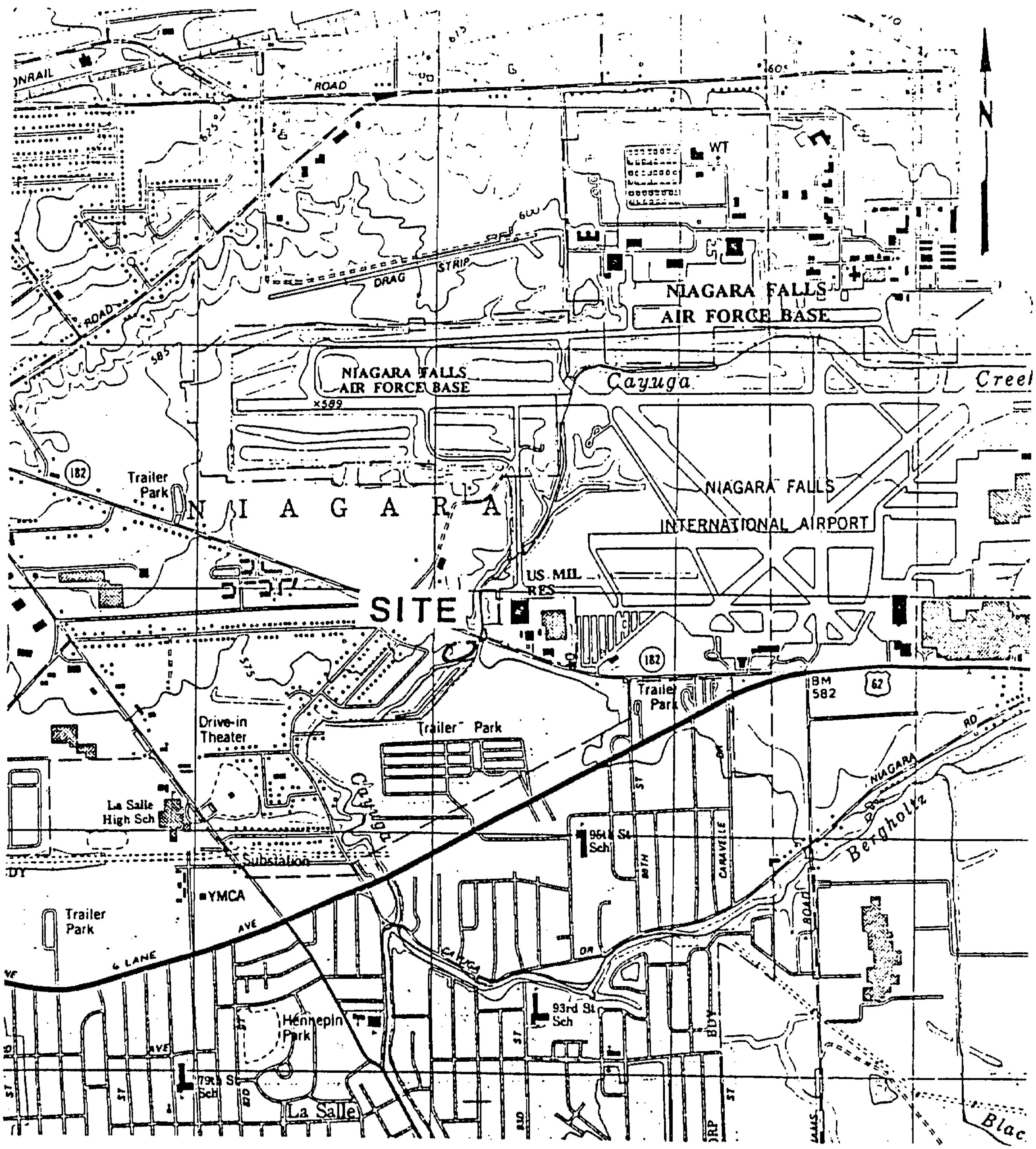
A shallow groundwater aquifer may exist within the site soils. Flow rates may be slow, due to the low permeability of the soils; flow direction may parallel topography and therefore flow to the south. A deep aquifer probably exists within the dolomite bedrock. Flow direction is unknown.

SAMPLING AND ANALYSIS

Surface water samples at the Dibacco site were taken and analyzed by the USGS (USGS, 1982). Figure V-1 shows sample locations. The results of the analysis are summarized below:

Parameter (ppb)	Sample Number 1	2	3	4
Copper	9		8	18
Lead	2		3	16
Mercury	0.2	<0.1	<0.1	<0.1
Heptanal		8.8		
2,3-Dichloro-2-methyl-butane		7.5		
1,3-Dimethylbenzene		20		
Bis (2-ethylhexyl) phthalate		94		

As shown on Figure V-I, organics were detected upstream of the old disposal area, but were not found in the sample collected downstream of the site. Slightly higher concentrations of copper and lead were detected in samples taken downstream of the site.



SCALE

0 1000 2000 3000 4000 FEET

5-76

SITE LOCATION MAP
DIBACCO SITE

REFERENCE: BASE TAKEN FROM U.S.G.S. 7.5 MIN. TOPOGRAPHIC MAP, TONAWANDA WEST, NY (1980) QUADRANGLE

APPENDIX A

Bibliography

Dibacco Site #1

Beuchi, Peter (1982) Associate Sanitary Engineer. Letter to Mr. William McClendon. June 23, 1982.

EPA (1981). Potential Hazardous Waste Site Identification and Preliminary Assessment. November 17, 1981.

EPA (1981A) Potential Hazardous Waste Site, Tenative Disposition. November 18, 1981.

EPA (1981B) Potential Hazardous Waste Site, Final Strategy Determination. November 18, 1981.

New York State Museum and Science Service (1977). Wuaternary Geology of New York, Niagara Sheet by E.H. Muller, Map and Chart Series No. 28.

Niagara County Dept. of Health (1981). Preliminary Report an Investigation of Selected Inactive Toxic Landfills in Conjunction with the Niagara River Study.

United States Geological Survey, Topographic Maps. 7.5 Minute Series.

USGS (1982). Draft Report of Preliminary Evaluation of Chemical Migration to Niagara River from Hazardous Waste Disposal Sites in Erie and Niagara County.

NAME OF LANDFILL

DIBACCO SITE (DEC #932056-A)

LOCATION OF SITE

On the southside of Porter Road behind 9115 Porter Road, Town of Niagara, the area where the dumping took place is referred to as the "Old Creek Bed". This is a low area at which one time was the flow route for Cayuga Creek before the route was altered to the east.

OWNER

The owner at the time of landfilling to present:

Michigan Wayne Realty
1305 Delaware Avenue
Buffalo, NY

HISTORY

The site was utilized by Apex Salvage Company of Niagara Falls in August, 1977 as a landfill site for demolition material. Apex Salvage had a contract with Carborundum Company during this period to haul the debris from the Carborundum Warehouse on Lendell Road, Town of Wheatfield, which had resulted from a fire.

The debris consisted of Carborundum products such as fiberfax insulation, grinding wheels, sandpaper, heating elements, abrasive grains and some inconel metal and stainless steel studs. The fiberfax insulation, grinding wheels, sandpaper heating elements and abrasive grains are composed of either/or a combination of silica, alumina and silicon carbide.

Apex Salvage Company also hauled building debris from International Paper Company, Kenmore, NY to this site. Hooker Chemical was believed to have dumped some hexachlorocyclopentadiene (C-56) catalyst at this site also, but the quantity is unknown. Information extracted from Hazardous Waste Disposal Sites, 1980.

INVESTIGATION

A site investigation of the landfill site known as DiBacco - "Old Creek Bed" was conducted on June 24, 1981.

The ground area of the site is on a consistent grade with the surrounding area. The slope of the land is towards the southeast and southwest. The approximate slope grade in the southeast area is 1:1 and 1:2. This area leads to Cayuga Creek and the "Old Creek Bed". The southwest slope is gradual and a dirt path in this area leads to Disney Drive. There are also numerous piles of wood, stones, broken pavement and tires that have been randomly dumped.

INVESTIGATION (continued)

The area of the landfill is landlocked and the owners do not have a right of way to gain access to the property. The landfill is bordered by Cayuga Creek to the east, trees and undergrowth in the "Old Creek Bed" to the south, a treeline which is to the southwest and a wire fence, which encloses the gas station and residential home known as 9115 Porter Road to the north.

An interview was conducted with Walter Fellon, the owner of 9115 Porter Road. This gentleman has been located at this address for nineteen years.

Approximately twelve years ago, work was being done on Cayuga Creek and the flow was inadvertently altered to a more direct southern route. This created a low wetland area known now as the "Old Creek Bed".

In August of 1977, Carborundum Company contracted with Apex Salvage Company to haul material from their Lendell Road, Town of Wheatfield warehouse, which had resulted from a fire; Mr. Walter Fellon also stated that Hooker Chemical dumped what he thought was fly ash in this same general time span.

The major dumping area was probably done on the elevated area above the "Old Creek Bed" and then pushed into the lower areas. The Town of Niagara in 1978 prohibited any further dumping to take place in this area. The area was then graded and clay from a road excavation project was placed over the landfilled material.

The area behind the residential house is bordering the current creek bank and in one area a portion of the landfill is the creek bank. Visible signs of leachate were not seen at this time, but it is possible that it could be entering the creek by way of surface runoff and high seasonal water tables.

The random piles of rubbish currently visible is the result of fugitive dumping that has occurred in the last three to four years. The dumpers use the dirt roadway that leads from Disney Drive to gain access to the property.

SOIL

The area of the "Old Creek Bed" consists of Lakemont silty clay loam and the elevated brodering area consists of Odessa silty clay loam.

The Lakemont Series has a seasonal high water table at or just under the surface early in the Spring and in other excessively wet periods. Lakemont soils, which are not artifically drained are usually ponded during wet periods because of their position in the landscape and their slowly permeable subsoil.

SOIL (continued)

The Odessa silty clay loam also has a high water table 6 - 12 inches below the surface early in the Spring and in excessively wet periods. The water table usually is perched above the slowly permeable subsoil and substratum.

GROUNDWATER - GEOLOGICAL

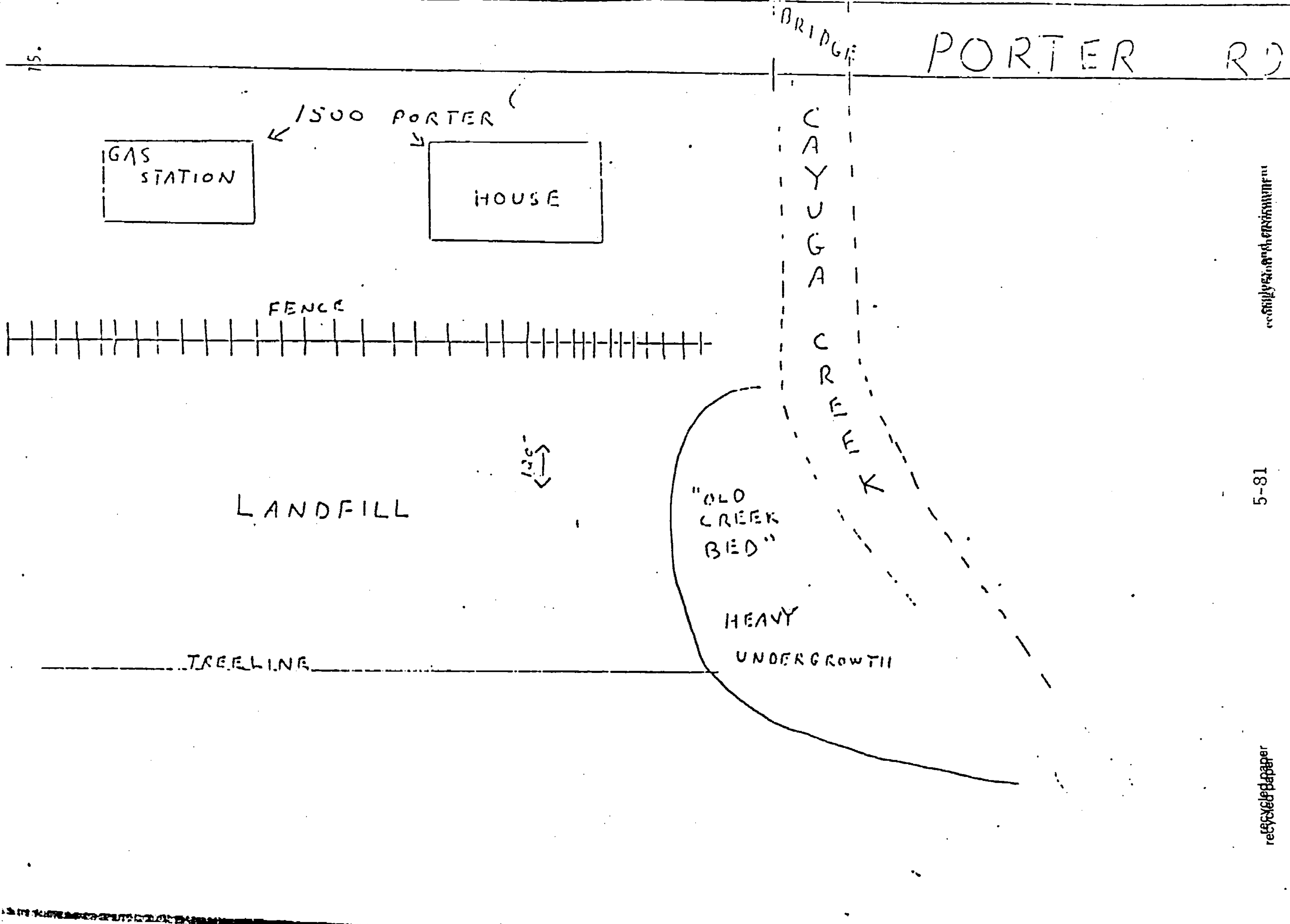
The bedrock is composed of Lockport Dolomite with about a depth of 140 feet. The characteristics of Lockport Dolomite suggests that there are several water-bearing depths. Specifics concerning this data is not readily available.

CONCLUSION

The potential for migration of toxins to Cayuga Creek and therefore the Niagara River is present. Sampling attempts were unsuccessful, as the nature of the fill did not permit hand augering of holes.

RECOMMENDATIONS

Sampling wells should be placed between Cayuga Creek and the site to facilitate future sampling. Periodic inspection is recommended.



5-81

recycled paper

REFERENCE 11

GROUND WATER IN THE NIAGARA FALLS AREA, NEW YORK

With Emphasis on the Water-Bearing Characteristics of the Bedrock

BY

RICHARD H. JOHNSTON

GEOLOGIST

U.S. GEOLOGICAL SURVEY

STATE OF NEW YORK

CONSERVATION DEPARTMENT

WATER RESOURCES COMMISSION

BULLETIN GW-53

1964

5-83

93 pp

REFERENCE 12

WATER QUALITY STANDARDS AND GUIDANCE VALUES

New York State
Department of Environmental Conservation
Division of Water
Albany, New York

September 25, 1990

REFERENCE 13

R. Allan Freeze

Department of Geological Sciences
University of British Columbia
Vancouver, British Columbia

John A. Cherry

Department of Earth Sciences
University of Waterloo
Waterloo, Ontario

GROUNDWATER

Prentice-Hall, Inc.
Englewood Cliffs, New Jersey 07632

1979

604 pp

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

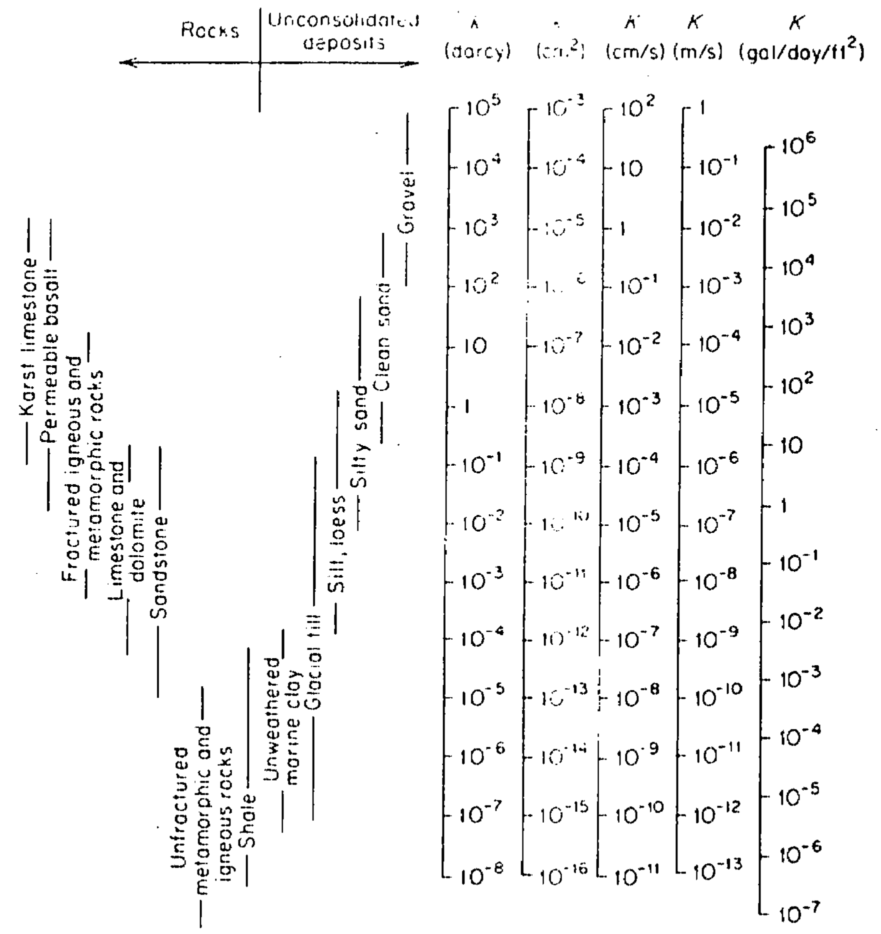


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm²	ft²	darcy	m/s	ft/s	U.S. gal/day/ft²
cm²	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft²	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	6.46×10^{5}
U.S. gal/day/ft²	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.55×10^{-6}	1

*To obtain k in ft², multiply k in cm² by 1.08×10^{-3}.

Constituent	Recommended concentration limit* (mg/ℓ)
Inorganic	
Total dissolved solids	500
Chloride (Cl)	250
Sulfate (SO_4^{2-})	250
Nitrate (NO_3)	45†
Iron (Fe)	0.3
Manganese (Mn)	0.05
Copper (Cu)	1.0
Zinc (Zn)	5.0
Boron (B)	1.0
Hydrogen sulfide (H_2S)	0.05
	Maximum permissible concentration‡
Arsenic (As)	0.05
Barium (Ba)	1.0
Cadmium (Cd)	0.01
Chromium (Cr^{VI})	0.05
Selenium	0.01
Antimony (Sb)	0.01
Lead (Pb)	0.05
Mercury (Hg)	0.002
Silver (Ag)	0.05
Fluoride (F)	1.4–2.4§
Organic	
Cyanide	0.05
Endrine	0.0002
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.005
2,4-D	0.1
2,4,5-TP silvex	0.01
Phenols	0.001
Carbon chloroform extract	0.2
Synthetic detergents	0.5
Radionuclides and radioactivity	Maximum permissible activity (pCi/ℓ)
Radium 226	5
Strontium 90	10
Plutonium	50,000
Gross beta activity	30
Gross alpha activity	3
Bacteriological	
Total coliform bacteria	1 per 100 mℓ

SOURCES: U.S. Environmental Protection Agency, 1975 and World Health Organization, European Standards, 1970.

*Recommended concentration limits for these constituents are mainly to provide acceptable esthetic and taste characteristics.

†Limit for NO_3^- expressed as N is 10 mg/ℓ according to U.S. and Canadian standards; according to WHO European standards, it is 11.3 mg/ℓ as N and 50 mg/ℓ as NO_3^-.

REFERENCE 14

INTERVIEW ACKNOWLEDGMENT FORM

SITE NAME:	Dibacco #1 (Old Creek)	I.D. NUMBER:	932056A
PERSON CONTACTED:	Mr. Paul Dickey	DATE:	4/2/90
AFFILIATION:	Niagara County Department of Health	PHONE NUMBER:	284-[illegible] 3128
ADDRESS:	10th and Falls St. Niagara Falls	CONTACT PERSON(S):	J. Vangalio R. Leichner

TYPE OF CONTACT: personal interview and file search

INTERVIEW SUMMARY

Mr. Dickey stated that, as far as he knew, residences within a 3-mile radius are on municipal water, but a well survey was done in the general area in conjunction with the Bell Aerospace site by Golder.

The file for this site contained a Department of Health memo stated 11/8/82 that stated that a conductivity survey was performed at the site by the U.S.G.S. Also in the file was another Department of Health memo, dated 4-26-82, stating that a gray ashlike material, probably from Hooker, was dumped in the area to fill in low areas along Cayuga Creek off the end of Disney Drive. The area across Porter Road near the Gun Club was also reported to be filled with this material. The reported hauler was Carl Wagner of 2216 Tuscarora Road, who also hauled wastes from Hooker to Love Canal and the Hyde Park Landfill.

Fill material in the area reportedly consists of rock, broken concrete, and some inert wastes from Carborundum including "Fiber flax" insulation, silica grinding wheels, alumina silicon carbide, and "inconel metal." Also, Hooker indicated that some hexachloracyclopentadine (C-56) catalyst may have been disposed of on the site.

Mr. Dickey recommended subsurface waste samples from the fill area be taken to further characterize the waste on site. Also, the Department of Health requested that they be called prior to any fieldwork at the site.

(HAZARDOUS WASTES HAVE NOT YET BEEN DOCUMENTED AT THIS SITE)

ACKNOWLEDGMENT

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

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

Signature: [signature] Date: 4-23-90

REFERENCE 15

APPENDIX D THIS REPORT

REFERENCE 16

INTERVIEW ACKNOWLEDGMENT FORM

SITE NAME: Dibacco #1

PERSON CONTACTED: Sue Casey

AFFILIATION: Niagara County Environmental Mgmt. Council

ADDRESS: County Courthouse
Lockport, NY

I.D. NUMBER: 932056A

DATE: 3/30/90

PHONE NUMBER: 716-439-6170

CONTACT PERSON(S): Judy Vangalio
Kirsten Neumaier
Ralinda Leichner

TYPE OF CONTACT: personal interview and file search

INTERVIEW SUMMARY

We were informed that the Highway Department, located at 225 S. Niagara Street, Lockport, NY had aerial photos of the county over several years. We were also told that the Health Department at 5467 Upper Mountain Road, Lockport, NY might have water information and that we could pickup a directory of county phone numbers in the legislative offices at the Courthouse.

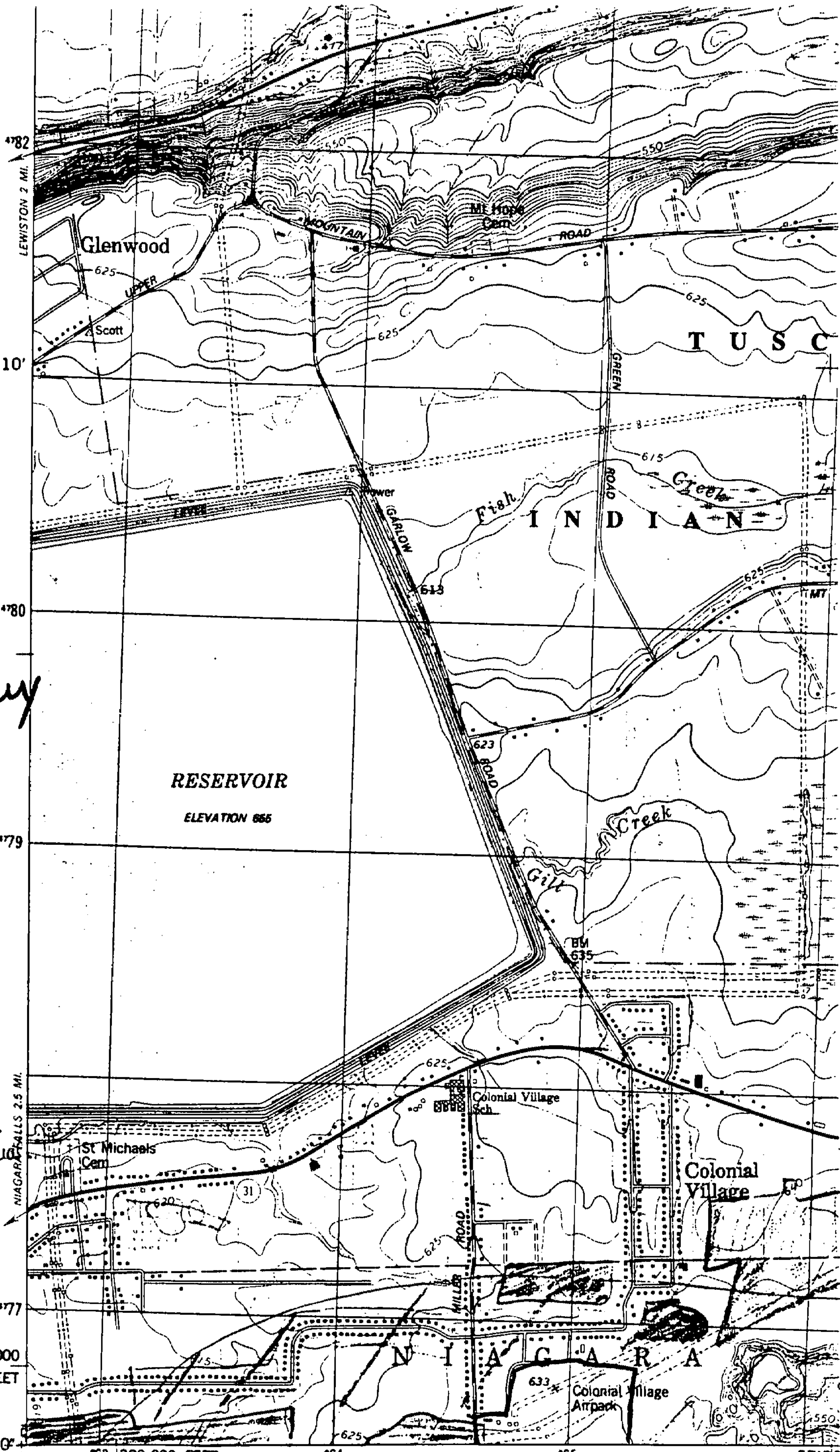
We gathered land use information from maps at this office on 3/30, 4/3 and 4/4/90.

ACKNOWLEDGMENT

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

<u>Revisions (please write in any corrections needed to above transcript)</u>

Signature: [signature] Date: 4/24/90



Ag District boundary

zoned industrial

zoned res

active res

active Ag

active commercial

outdoor rec

Mapped, edited, and published by the Geological Survey

Control by USGS, NOS/NOAA, and USCE

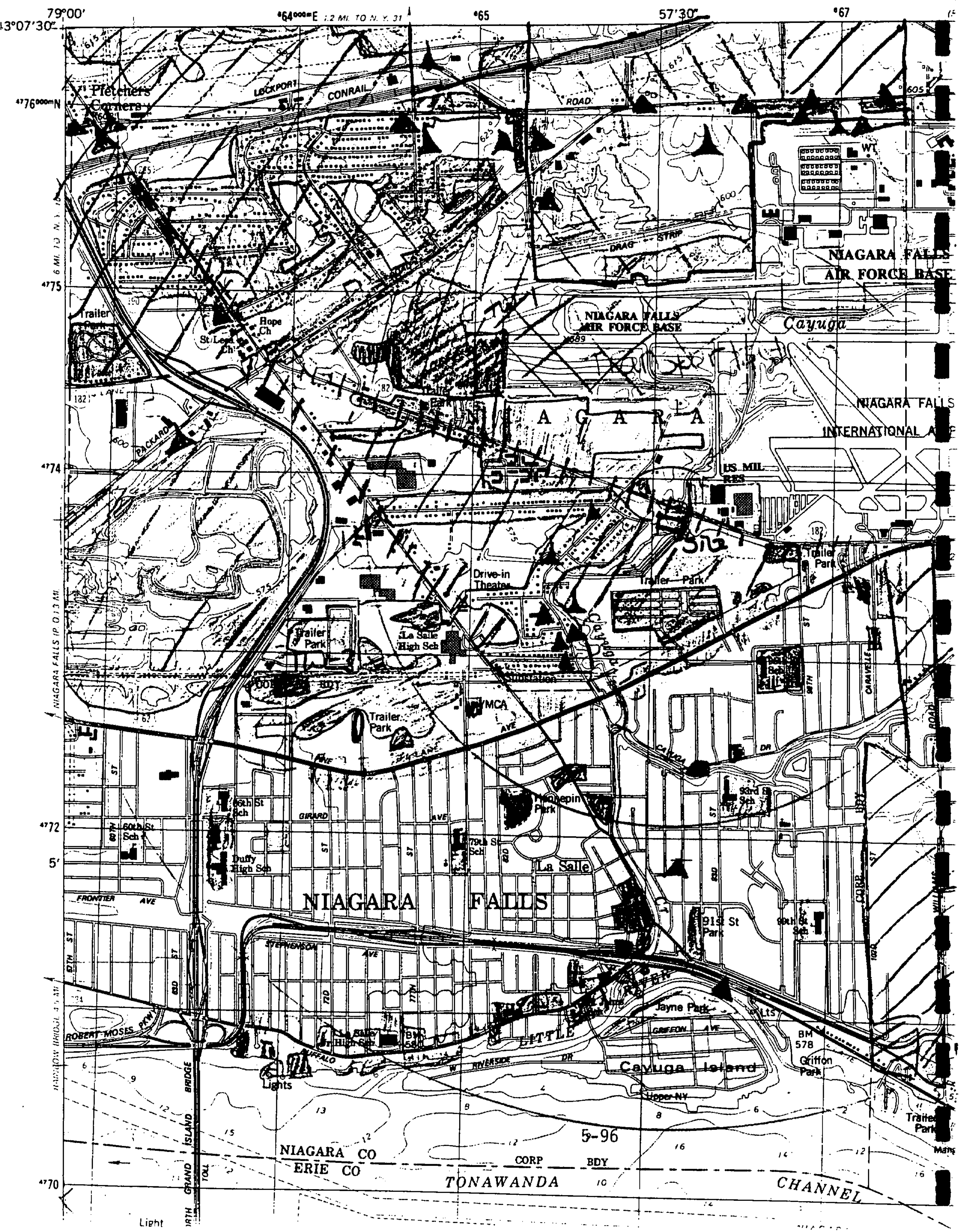
Topography by photogrammetric methods from aerial photographs and environment taken 1972. Field checked 1973. Map edited 1980

Supersedes 1:24,000-scale map dated 1965

(NIAGARA FALLS) 6170 II SE

MN GN

recycled paper



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65
57'30"
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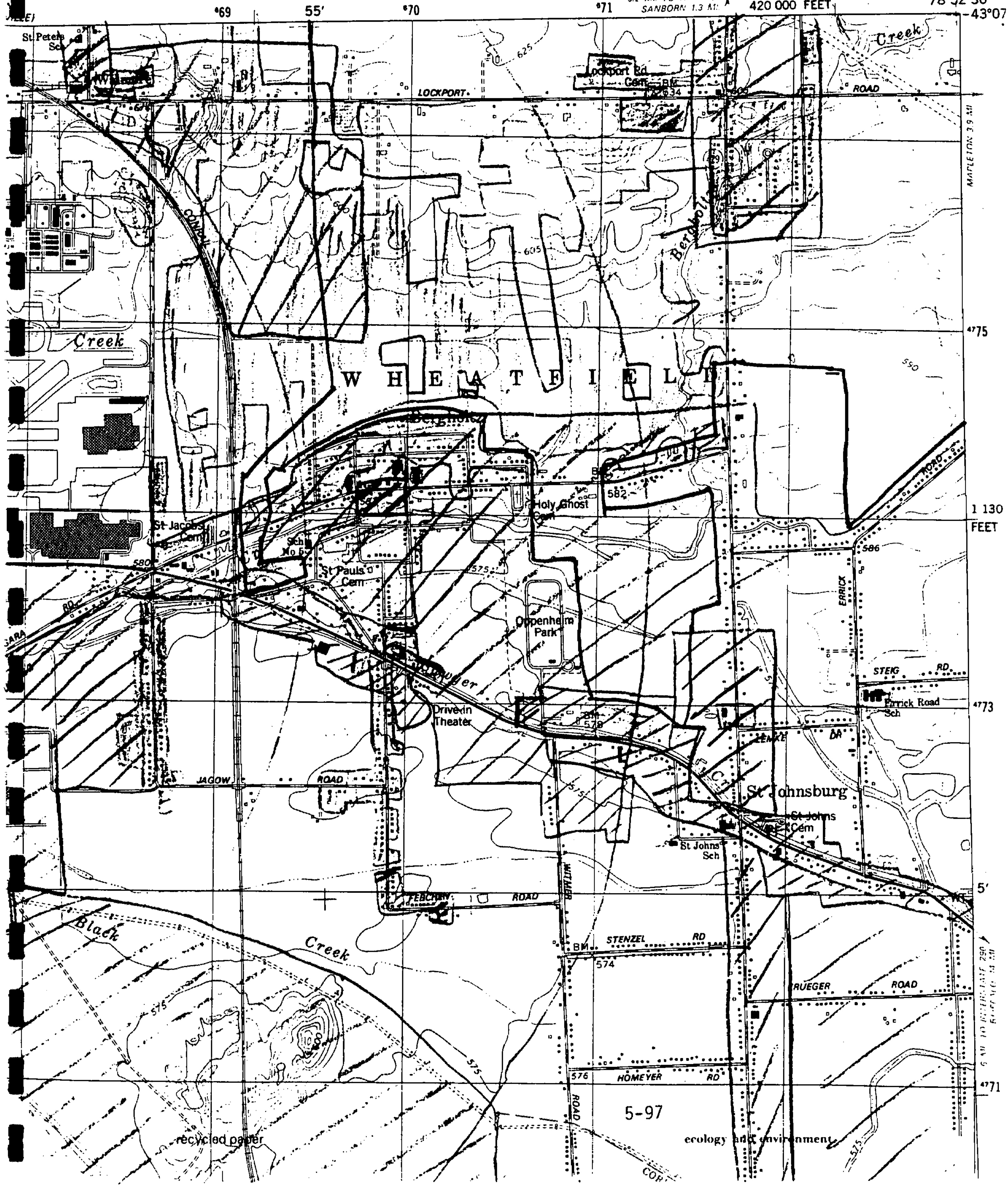
Fletchers Corners
LOCKPORT
CONRAIL
ROAD
DRAG STRIP
NIAGARA FALLS AIR FORCE BASE
Trailer Park
Hope Ch
St Leo Ch
4775
Cayuga
PACKARD
NIAGARA
NIAGARA FALLS INTERNATIONAL AIRPORT
4774
US MIL RES
Drive-in Theater
Trailer Park
La Salle High Sch
YMCA
CAYUGA
DR
GIRARD
AVE
66th St Sch
60th St Sch
Duffy High Sch
79th St Sch
Hennepin Park
93rd St Sch
La Salle
4772
5'
FRONTIER AVE
NIAGARA FALLS
STEPHENSON AVE
91st St Park
99th St Sch
ROBERT MOSES PKWY
LITTLE RIVER
Jayne Park
GRIFFON AVE
BM 578
Griffon Park
W RIVERSIDE DR
Cayuga Island
Lights
Upper NY
NORTH GRAND ISLAND BRIDGE
TOLL
NIAGARA CO
ERIE CO
CORP BDY
5-96
TONAWANDA CHANNEL
4770
Light


TONAWANDA WEST QUADRANGLE
NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW/4 TONAWANDA 15' QUADRANGLE
EW YORK
NSPORTATION
420 000 FEET
78°52'30"
43°07
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ROAD
Lockport Rd
Cem
Creek
W H E A T F I E L
Holy Ghost
Cem
St Jacobs
Cem
St Pauls
Cem
Oppenheim
Park
Drive-in
Theater
ERRICK
STEIG
RD
Errick Road
Sch
LENKE
DR
JAGOW
ROAD
St Johnsburg
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FEBCHIN
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WITMER
STENZEL
RD
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Creek
KRUEGER
ROAD
HOMEYER
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ROAD
1 130
FEET

REFERENCE 17

INTERVIEW ACKNOWLEDGMENT FORM

SITE NAME:	Dibacco #1 - Old Creek	I.D. NUMBER:	932056A
PERSON CONTACTED:	Ronald Gwozdek	DATE:	4-2-90
AFFILIATION:	Niagara County Health Department	PHONE NUMBER:	439-6109
ADDRESS:	5467 Upper Mountain Rd.	CONTACT PERSON(S):	J. Vangalio R. Leichner
TYPE OF CONTACT:	Personal Interview		

INTERVIEW SUMMARY

Mr. Gwozdek told us that there is only one municipal well in the county which is in the Town of Royalton, Village of Middleport. The rest of the county is on municipal water from the Niagara River. We had copies made of a file containing test data from the Village of Middleport well.

Water intakes for Niagara County are on U.S.G.S. maps. The Niagara Falls quad shows the Niagara Falls and Niagara County intakes. The Tonawanda West Quad shows the Lockport and North Tonawanda intakes and also the Tonawanda intakes which are not in Niagara County. Mr. Gwozdek recommended that we contact Mr. Paul Dickey, of the Department of Health in Niagara Falls, for specific water information relating to hazardous waste sites. The Department of Health has no list of people using well water because they test wells only on request. Mr. Gwozdek suggested that we contact the Town Water Superintendents to find out who is connected to the water supply. He provided us with a list of the water superintendents.

ACKNOWLEDGMENT

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

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

Signature: Ronald Gwozdek Date: 04-16-90

REFERENCE 18

INTERVIEW ACKNOWLEDGMENT FORM

SITE NAME: Dibacco #1

I.D. NUMBER: 932056A

PERSON CONTACTED: Burrell Buffington

DATE: 4/10/90

PHONE NUMBER: 518-783-3932

AFFILIATION: NY Natural Heritage Program

ADDRESS: 700 Troy-Schenectady Road
Albany, NY 12110

CONTACT PERSON(S): Judy Vangalio
Ralinda Leichner

TYPE OF CONTACT: map search

INTERVIEW SUMMARY

No significant habitats were found within 1.5 miles of the site after looking at Significant Habitat Maps (1980) prepared by the Habitat Inventory Unit for the NYSDEC Division of Fish and Wildlife Bureau of Wildlife.

One species, the sky blue aster (Aster odentangensis), may be found anywhere within 1.5 miles north of the Jane Park. It is classified S1 U (Map #4307911). This is considered a rare species of concern. No wildlife management or refuge areas were located within 1.5 miles of the site. This was based on the Natural Heritage Maps.

ACKNOWLEDGMENT

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

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

Signature: Burrell Buffington Date: 4/25/90

REFERENCE 19

INTERVIEW ACKNOWLEDGMENT FORM

SITE NAME: Dibacco #1

I.D. NUMBER: 932056A

PERSON CONTACTED: Don Woodcook

DATE: May 14, 1990

AFFILIATION: Town of Niagara Water Superintendent

PHONE NUMBER: 297-2150

ADDRESS: 7105 Lockport Road Niagara Falls, NY 14305

CONTACT PERSON(S): Judy Vangalio

TYPE OF CONTACT: phone interview

INTERVIEW SUMMARY

Mr. Woodcook is unaware of any wells in use in the vicinity of this site. All are connected to the public water supply whose intake is located in the Niagara River.

The area surrounding this site is mostly business/industrial with some residences. There are no farms that use groundwater for irrigation in the area.

ACKNOWLEDGMENT

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

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

Signature: Donald L Woodcock Jr. Date: 6/1/90

REFERENCE 20

KEY FOR LAND USE MAP

CATEGORY SYMBOLS

NEW YORK STATE LAND USE AND NATURAL RESOURCES INVENTORY

AREA LAND USE DATA

Active

Ao Orchard
Av Vineyard
Ah Horticulture
At High intensity -
Ac Cropland/cropland pasture
Ap Permanent pasture

Inactive

Ai Agriculture Inactive
Ui Urban Inactive
Uc Ui under construction

Specialty Farm

Ay Minks, game, aquatic ag, horse farms

Forestland

Fc Brush cover up to fully stocked poles less than 30 feet
Fn Forest over 30 feet
Fp Plantations, any size

Water

Wn Natural, any size
Wc Artificial, one acre
Ws Streams, rivers - 100 feet

Wetlands

Wb Bogs, shrub wetlands
Ww Wooded wetlands
Wm Marine wetlands, navigable (St. Lawrence)
Wh Hudson River

Non-Productive

Ns Sands
Nr Exposed rocks

Public

P All categories

Communications

Tt Area of service facilities

Residential

Rh High density, 50 feet frontage
Rm Medium density, 50-100 feet frontage
Rl Low density, over 100 feet frontage
Rs Strip with max of 1/3 intermixture of Cs commercial
Rr Rural hamlet
Re Estates, 5 acres
Rc Farm labor camp

Shoreline

Rk Shoreline developed

Commercial

Cu Urban (Downtown)
Cc Shopping center
Cs Commercial strip with max of 1/3 intermixture of Rs or density housing
Cr Resorts

Industrial

Il Light manufacturing
Ih Heavy manufacturing

Outdoor Recreation

OR ALL categories

Extractive

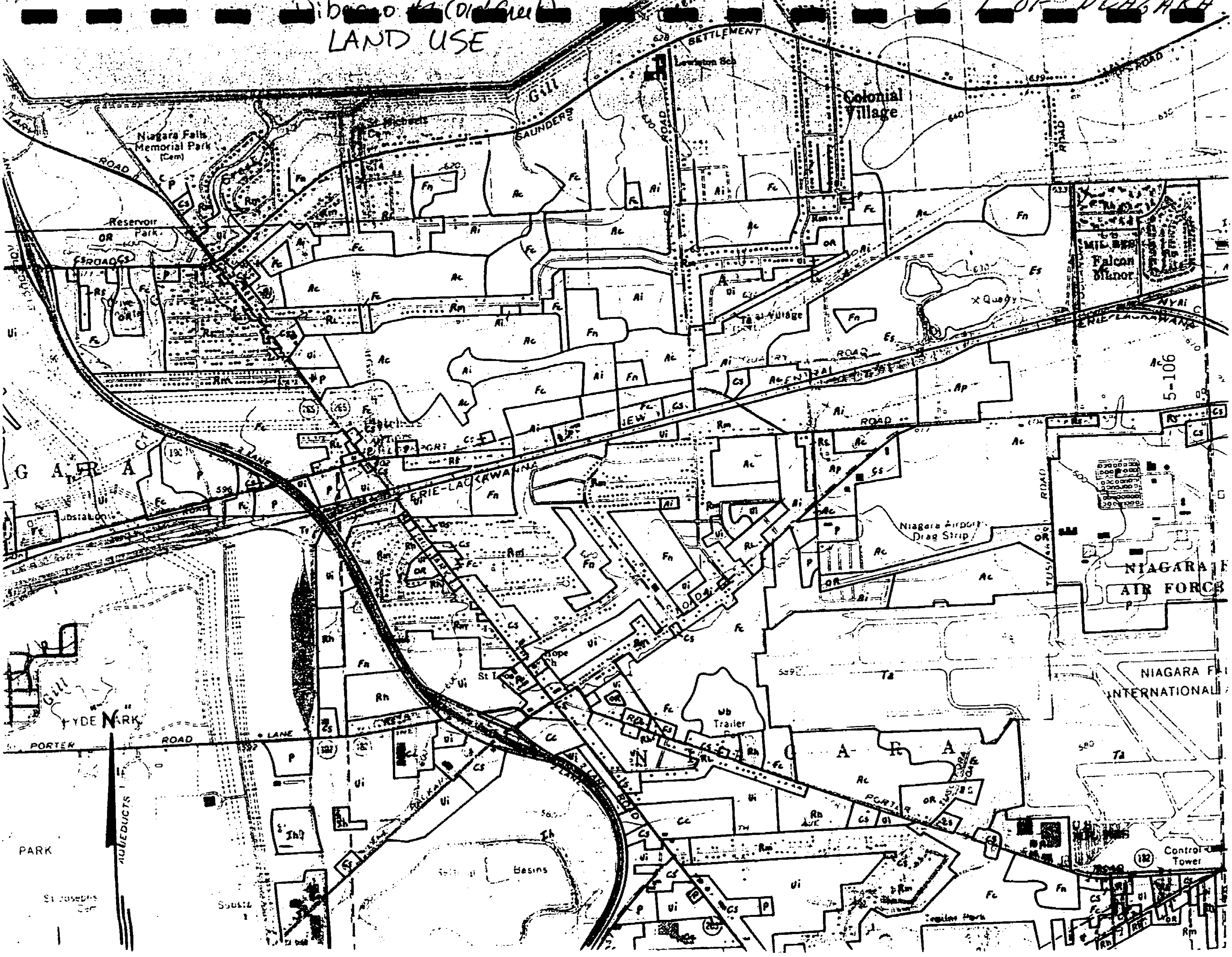
Eg Gravel, sand
Es Stone quarries
Em Minerals, cement, clay
Eu Oil, gas, salt

Transportation

Th Highway (limited access)
Tb Barge canal (channel, lock)
Tp Port or dock
Tl Locks or dams
Ts Shipyards
Ta Airport, any type
Tr Railroad

Land Area Not in New York State

LAND USE



Colonial Village
Niagara Falls Memorial Park (Cem)
Reservoir Park
Falcon Manor
Niagara Airport Drag Strip
NIAGARA FALLS AIR FORCE
NIAGARA FALLS INTERNATIONAL
ERIE-LACKAWANNA
PORTER ROAD
Trailer Park
Basins
Control Tower
HYDE PARK
AQUEDUCTS
PARK
5-106

REFERENCE 21

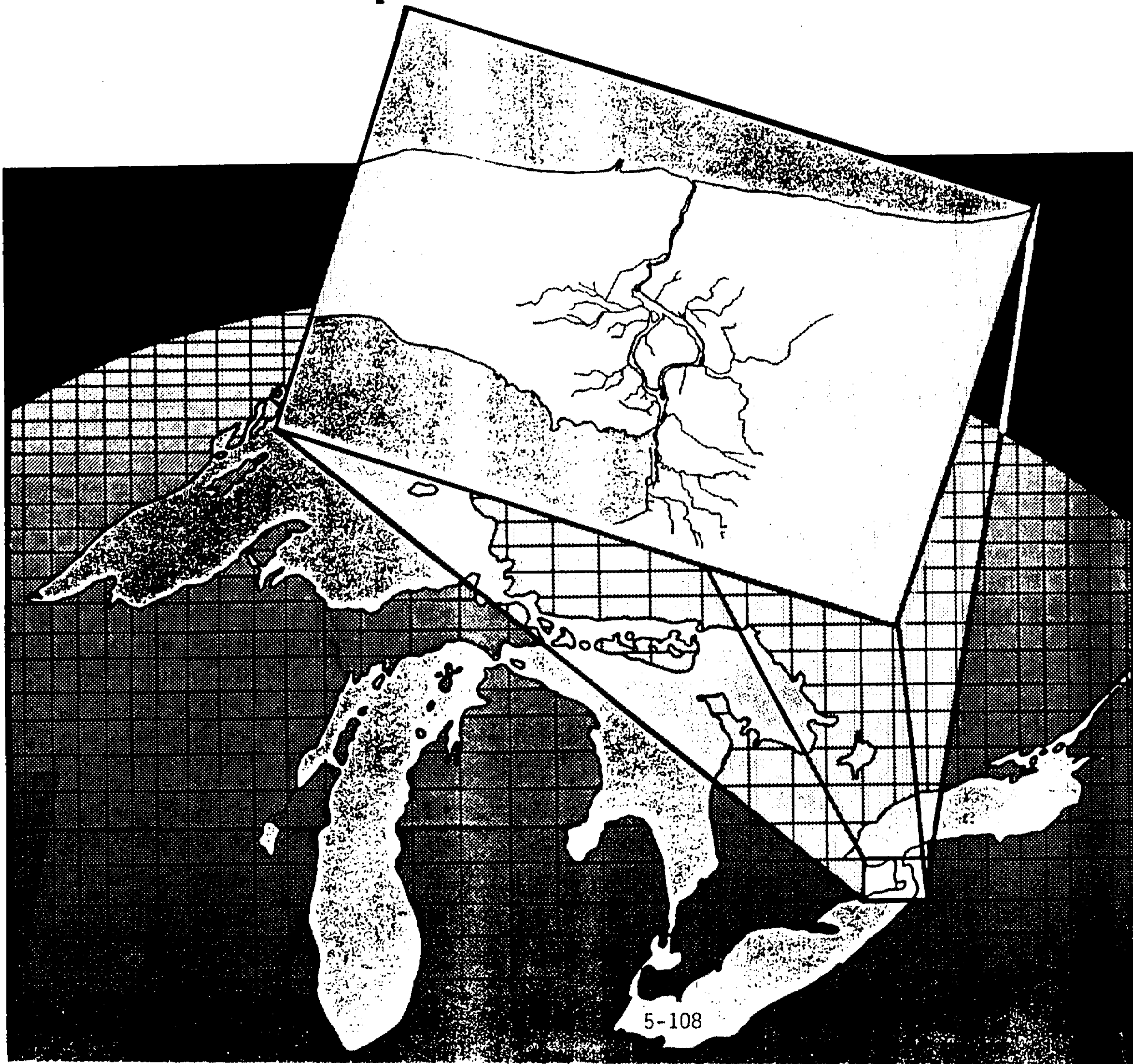
United States
Environmental Protection
Agency

Great Lakes National
Program Office
536 South Clark Street
Chicago, Illinois 60605

EPA-905/4-85-001
March 1985

EPA

Preliminary Evaluation Of Chemical Migration To Groundwater and The Niagara River from Selected Waste-Disposal Sites



5-108

Table C-32.--Analyses of surface-water samples from Old Creek Bed (Dibacco), site 95, Niagara Falls, N.Y., July 9, 1982.
[Locations shown in fig. C-52. Concentrations are in µg/L; dashes indicate that constituent or compound was not found, LT indicates it was found but below the quantifiable detection limit.]

	Sample number			
	1	2	3	4
pH	7.7	7.8	7.8	7.8
Specific conductance (µmho/cm)	1,670	1,480	1,670	1,630
Temperature (°C)	22.0	23.0	23.0	23.0
Inorganic Constituents				
Aluminum	260	281	276	311
Antimony	--	--	--	--
Arsenic	--	--	--	--
Barium	648	234	772	811
Beryllium	--	--	--	--
Cadmium	5	5	6	6
Chromium	20	22	20	21
Cobalt	--	--	--	--
Copper	--	--	--	--
Iron	463†	324†	312†	398†
Lead	14	10	--	21
Manganese	69	63	66	73
Mercury	--	--	--	--
Nickel	--	--	--	--
Selenium	--	--	--	--
Silver	--	--	--	--
Tellurium	--	--	--	--
Vanadium	--	--	--	--
Zinc	76	64	64	65
Organic compounds				
Priority pollutant				
Bis(2-ethylhexyl) phthalate	--	94	--	--
Nonpriority pollutants				
Diphenylamine	LT	LT	--	--
Heptanal[1]	--	8.8	--	--
2,3-Dichloro-2-methyl-butane	--	7.5	--	--
1,3-Dimethylbenzene[1]	--	20	--	--

[1] Tentative identification based on comparison with the National Bureau of Standards (NBS) library. No external standard was available. Concentration reported is semiquantitative and is based only on an internal standard. GC/MS spectra were examined and interpreted by GC/MS analysts.

† Exceeds USEPA criterion for maximum permissible concentration in drinking water or New York State standard for maximum concentration in ground water.

95. OLD CREEK BED (DiBacco no. 1) SITE NYSDEC 932056-a
(USGS field reconnaissance)

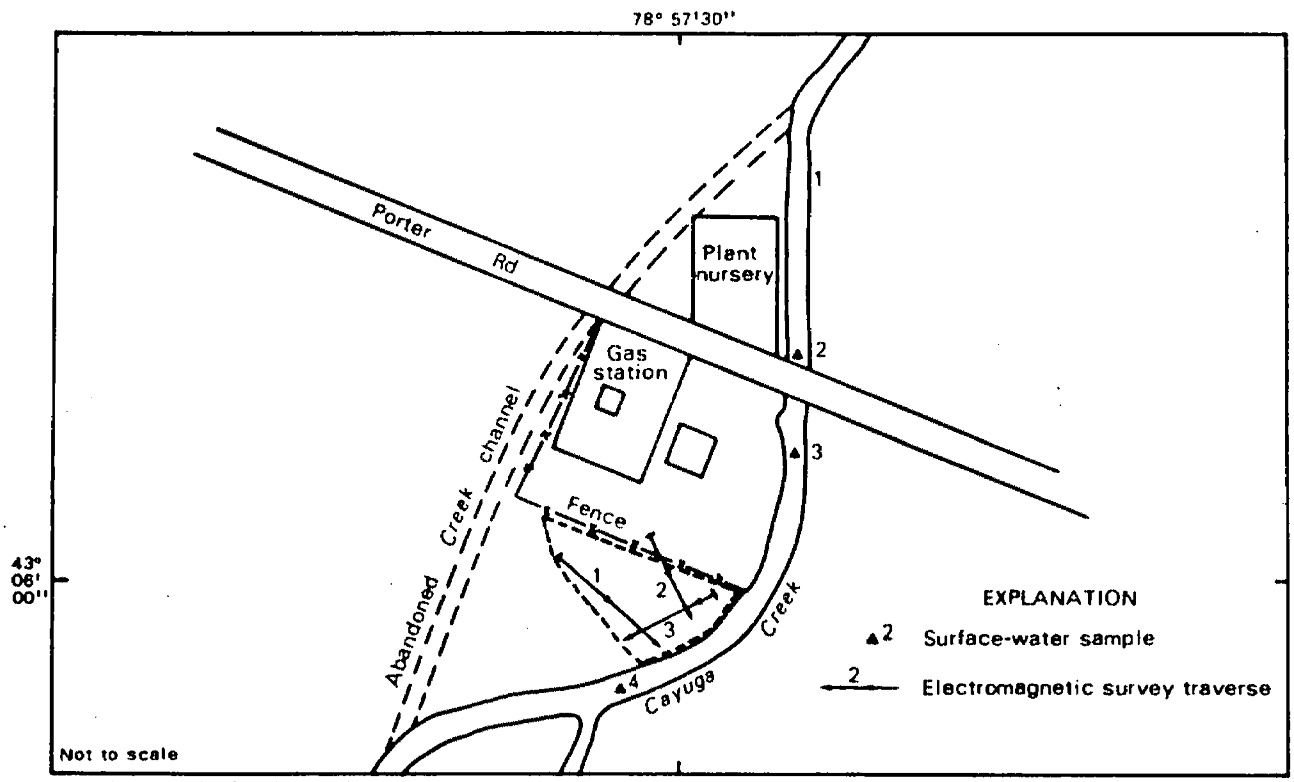
General information and chemical-migration potential.--This site, in the town of Niagara, has been used to dispose of fill containing rocks, broken concrete, and inert wastes from an abrasives-plant warehouse that was destroyed by fire in 1977. A chemical firm indicated that hexachlorocyclopentadiene catalyst may be buried there also. A sketch of the site is shown in figure C-52.

Although contaminant migration into Cayuga Creek seems possible because the fill material is in contact with the creek, the preliminary chemical data suggest that the potential for contaminant migration is limited. Future monitoring would be necessary to confirm the migration potential. (At present it is indeterminable.)

Geologic information.--The site consists of a lacustrine clay deposit overlying bedrock of Lockport Dolomite. No test holes could be drilled on the site because the fill was too rocky.

Hydrologic information.--No ground water was obtained, but topographic relief suggests that ground water flows southeastward toward Cayuga Creek.

Chemical information.--The Geological Survey collected four water samples from Cayuga Creek, next to the site, in 1982; locations are shown in figure C-52. Each sample was analyzed for copper, iron, lead, mercury, and organic compounds; results are given in table C-32. Lead exceeded the USEPA criterion for drinking water and the New York State ground-water standard. Sample 2 contained one organic priority pollutant; four organic nonpriority pollutants also were found.



Base from USGS field sketch, 1982

Figure C-52. Location of surface-water samples and electromagnetic-conductivity survey at Old Creek Bed (Dibacco no. 1), site 95, Niagara.

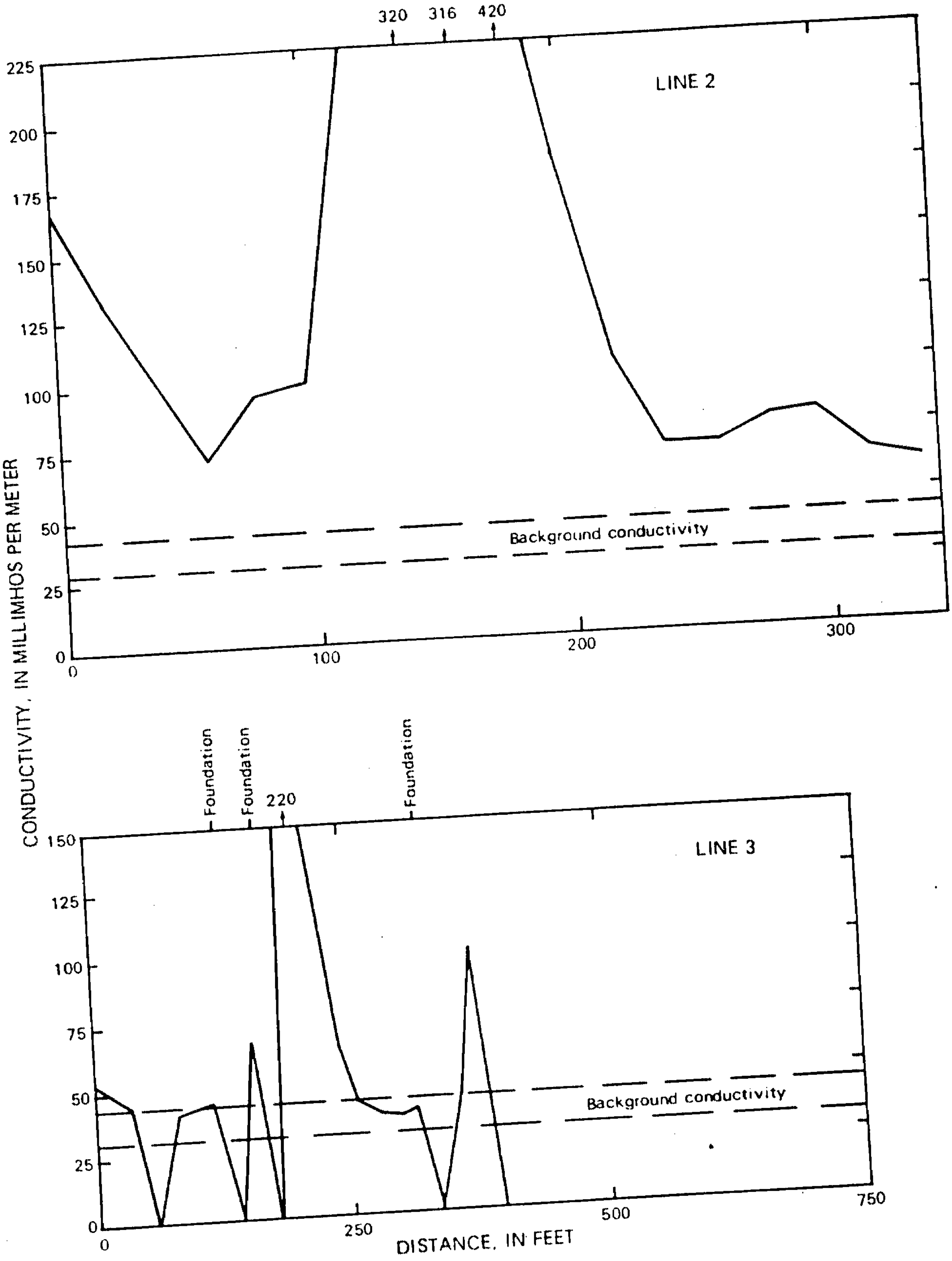


Figure C-53 (continued). Results of electromagnetic-conductivity survey at Old Creek Bed (Dibacco no. 1), site 95, Niagara, lines 2 and 3.

Electromagnetic survey.--The U.S. Geological Survey conducted an electromagnetic survey with three survey lines on the site. Locations are shown in figure C-52; the values are plotted in fig. C-53.

Line 1.--The high conductivity value at the northern end of line 1 is probably related to the proximity of Roberts and Disney Roads. The next 200 ft were run in the open field next to Roberts Road. Though fairly uniform, the relatively high conductivities in this area indicate artificial fill. This conclusion is supported by map 28 of the New York State Museum and Science Service (Muller, 1977), which indicates this site to be in the same deposit as the Niagara County Refuse Disposal site (site 81). If this is correct, background conductivity values should be considerably lower than those in the vicinity of the open field near Roberts Road.

Line 2.--Beyond the open field crossed by lines 1 and 2 is a mound of fill. Conductivity values along both lines were considerably higher near the fill than elsewhere. Line 2 showed the more dramatic fluctuations, which suggests buried metallic refuse within the mounds. All readings taken along the present bank of Cayuga Creek were between 15 and 20 mmho/m, which is probably the local background range.

Line 3.--Line 3 was run mostly over visible refuse and showed the irregular elevated values that might be expected from undifferentiated waste material.

Source of data.--Muller, E. H., 1977, Quaternary geology of New York, Niagara Sheet: New York State Museum and Science Service, Map and Chart Series, no. 28, 1 sheet.

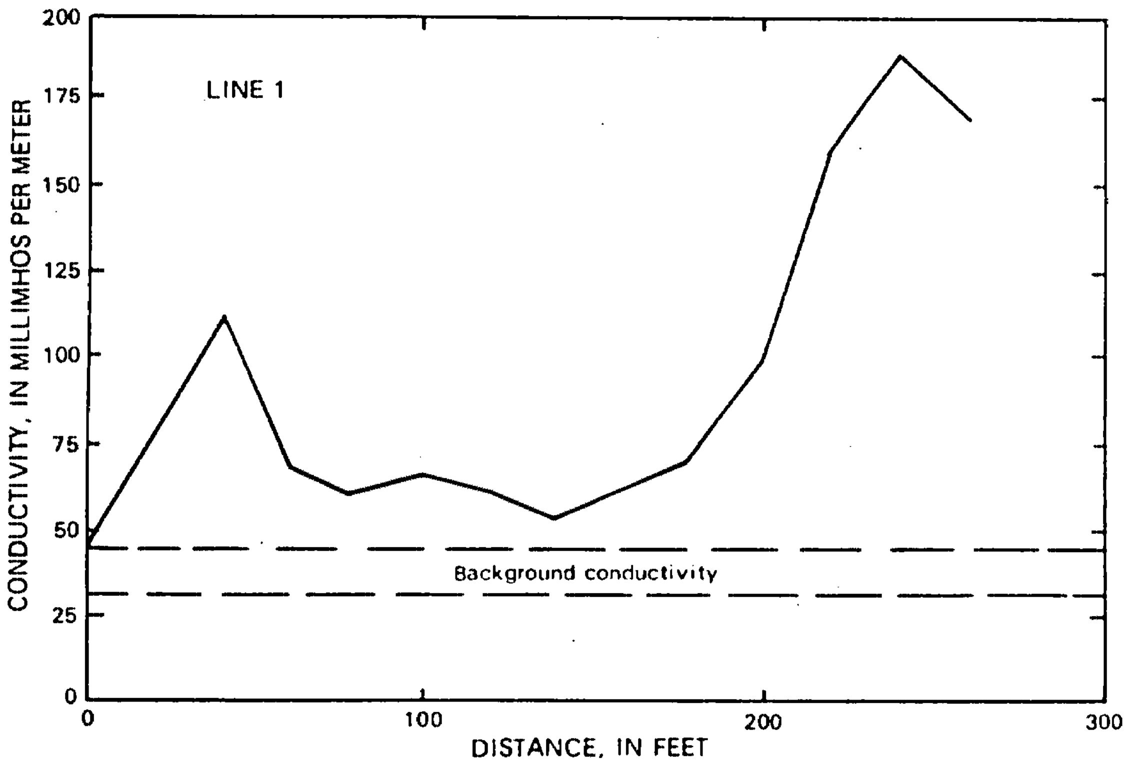


Figure C-53. Results of electromagnetic-conductivity survey at Old Creek Bed (Dibacco no. 1), site 95, Niagara, line 1.

REFERENCE 22

SEE APPENDIX C OF THIS REPORT

REFERENCE 23

TOWN OF NIAGARA

COUNTY OF NIAGARA, STATE OF NEW YORK

NIAGARA FALLS, N. Y.

7105 LOCKPORT ROAD
NIAGARA FALLS, NEW YORK 14305

PHONE 297-2150

November 14, 1990

Ms. Carol Waddell
Ecology and Environmental Inc.
368 Pleasentview Dr.
Lancaster, NY 14086

RE: Dibbacc #1 Landfill
Old creek bed
South of 9115 Porter Rd.
Town of Niagara

Dear Ms. Waddel:

To the best of my knowledge and belief there is no flammable material buried at the above location.

Respectfully,

James A. Walsh
Building Inspector
Town of Niagara

JAW/pc

CONTACT REPORT

Telephone ( )   Meeting ( )   Other ( )

AGENCY: Town of Niagara,

ADDRESS: 7105 Lockport Rd
Niagara Falls NY 14305

PHONE NO.: 716-297-2150

PERSON CONTACTED: James A. Walsh, Building Inspector

TO: 2:05 -

FROM: Carol Waddell-Sheets

DATE: 11/8/90

SUBJECT: Fire Hazards at Dibacco #1 - Old Creek bed site

CC:

Mr Walsh stated that There was no known fire hazard at this site.

He will send me a letter to this fact

REFERENCE 24

DANGEROUS PROPERTIES of INDUSTRIAL MATERIALS

Seventh Edition

N. Irving Sax
Richard J. Lewis, Sr.

5-118

HCD075 ***HR: D***

2,2',3,3',6,6'-HEXACHLORO-1,1'-BIPHENYL

CAS: 38411-22-2 NIOSH: DV 5359000

mf: $C_{12}H_4Cl_6$ mw: 360.86

SYN: 2,3,6,2',3',6'-HEXACHLOROBIPHENYL

TOXICITY DATA:	CODEN:
dnd-mus-orl 36400 µg/kg/5D	CBINA8 27,99,79
oms-mus-orl 36400 µg/kg/5D	CBINA8 27,99,79
orl-mam TDLo:563 µg/kg (30D pre):REP	TOXID9 4,83,84

THR: Experimental reproductive effects. Mutagenic data. When heated to decomposition it emits toxic fumes of Cl^-. See also 3,3',4,4',5,5'-HEXACHLOROBIPHENYL; and CHLORINATED HYDROCARBONS, AROMATIC.

HCD100 ***HR: 3***

3,3',4,4',5,5'-HEXACHLOROBIPHENYL

CAS: 32774-16-6 NIOSH: DV 5355000

mf: $C_{12}H_4Cl_6$ mw: 360.86

SYN: 3,4,5,3',4',5'-HEXACHLOROBIPHENYL

TOXICITY DATA:	CODEN:
orl-mus TDLo:10 mg/kg (6-15D preg):TER	TXAPA9 61,269,81
orl-mus TDLo:80 mg/kg (6-15D preg):REP	TXAPA9 61,269,81
orl-mus TDLo:20 mg/kg (5-15D preg):TER	APTOD9 19,A22,80
orl-gpg LD50:500 µg/kg	EVHPAZ 60,57,85

THR: Deadly poison by ingestion. An experimental teratogen. Experimental reproductive effects. When heated to decomposition it emits toxic fumes of Cl^-. See also CHLORINATED HYDROCARBONS, AROMATIC.

HCD500 ***HR: 2***

HEXACHLOROBUTANE

CAS: 26523-63-7 NIOSH: EK 4375000

mf: $C_4H_4Cl_6$ mw: 264.78

SYN: PCB2

TOXICITY DATA:	CODEN:
orl-mus LD50:2000 mg/kg	GISAAA 28,9,63
orl-gpg LD50:940 mg/kg	GISAAA 28,9,63

THR: Moderately toxic by ingestion. When heated to decomposition it emits toxic fumes of Cl^-. See also CHLORINATED HYDROCARBONS, ALIPHATIC.

HCE000 ***HR: 3***

HEXACHLORO-2,5-CYCLOHEXADIEN-1-ONE

CAS: 599-52-0 NIOSH: GU 5600000

mf: C_6Cl_6O mw: 300.76

SYNS:
2,3,4,4,5,6-HEXACHLORCYKLOHEXA-2,5-DIEN-1-ON (CZECH)
HEXACHLORFENOL (CZECH)
HEXACHLORO-2,5-CYCLOHEXADIENONE
USAF DO-65

TOXICITY DATA:	CODEN:
skn-rbt 500 mg/24H SEV	28ZPAK -,86,72
eye-rbt 100 mg/24H MOD	28ZPAK -,86,72
orl-rat LD50:218 mg/kg	28ZPAK -,86,72
ipr-mus LD50:50 mg/kg	NTIS** AD277-689

THR: A poison by ingestion and intraperitoneal routes. A eye and skin and eye irritant. When heated to decomposition it emits toxic fumes of Cl^-.

HCE500 ***HR: 3***

HEXACHLOROCYCLOPENTADIENE

CAS: 77-47-4 NIOSH: GY 1225000

DOT: 2646

mf: C_5Cl_6 mw: 272.75

$ClC=CClCCl_2CCl=CCl$

PROP: Yellow- to amber-colored liquid, pungent odor. Mp: 9.9°, bp: 239°, fp: −2°, flash p: none (OC), d: 1.715 @ 15.5°/15.5°, vap d: 9.42.

SYNS:
C-56
HCCPD
HEXACHLORCYKLOPENTADIEN (CZECH)
NCI-C55607
PCL
RCRA WASTE NUMBER U130

TOXICITY DATA:	CODEN:
skn-mky 10 mg SEV	AMIHAB 11,459,55
skn-rbt 500 mg/4H SEV	VELPB* 50101-2,76
eye-rbt 20 mg/24H MOD	28ZPAK -,30,72
eye-rbt 100 mg/5M SEV	VELPB* 50101-2,76
skn-gpg 20 mg MLD	AMIHAB 11,459,55
orl-rbt TDLo:975 mg/kg (6-18D preg):TER	TXAPA9 53,497,80
orl-rat LD50:113 mg/kg	28ZPAK -,30,72
ihl-rat LC50:1600 ppb/4H	JTEHD6 9,743,82
ihl-mus LCLo:1500 ppb/7H	TXAPA9 53,497,80
orl-rbt LDLo:420 mg/kg	PCOC** -,586,66
ihl-rbt LCLo:1500 ppb/7H	TXAPA9 53,497,80
skn-rbt LD50:430 mg/kg	34ZIAG -,308,69

EPA Extremely Hazardous Substances List. Community Right To Know List. Reported in EPA TSCA Inventory.

ACGIH TLV: TWA 0.01 ppm

DOT Classification: Corrosive Material; Label: Corrosive; IMO: Poison B; Label: Poison

THR: A deadly poison by inhalation and poison by ingestion. Moderately toxic by skin contact. Experimental teratogenic effects. Corrosive. A severe skin and eye irritant. May explode on contact with sodium. When heated to decomposition it emits toxic fumes of Cl^-. See also CHLORINATED HYDROCARBONS, ALIPHATIC.

HCF000 ***HR: 3***

1,2,3,4,7,8-HEXACHLORODIBENZO-p-DIOXIN

CAS: 57653-85-7 NIOSH: HP 3280000

mf: $C_{12}H_2Cl_6O_2$ mw: 390.84

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 State	02 Site Number
NY	932056A

II. SITE NAME AND LOCATION

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No., or Specific Location Identifier
Dibacco Site 1, Old Creek Site	On the southside of Porter Rd. behind 9115 Porter Rd.

03 City	04 State	05 Zip Code	06 County	07 County Code	08 Cong. Dist.
Town of Niagara	NY	14304	Niagara	063	36

09 Coordinates
Latitude 4 3° 0 6′ 0 1. 6
Longitude 7 8° 5 7′ 3 4 .5″

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
4 / 30 / 90
Month Day Year

02 Site Status
[ ] Active
[x] Inactive

03 Years of Operation
1977 Beginning Year | 1978 Ending Year [ ] Unknown

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 [x] F. State Contractor E & E (Name of Firm)
[ ] G. Other (Specify) ______

05 Chief Inspector	06 Title	07 Organization	08 Telephone No.
Jon Nickerson	Geologist	E & E	(716) 684-8060
09 Other Inspectors	**10 Title**	**11 Organization**	**12 Telephone No.**
Carol Waddell - Sheets	Geologist	E & E	(716) 684-8060
			( )
			( )
			( )
			( )

13 Site Representatives Interviewed	14 Title	15 Address	16 Telephone No.
Joseph C. Weber III	The Weber Group	9200 Niagara Falls Blvd. P.O. Box 392 LaSalle Station Niagara Falls, NY 14304	(716) 297-1770
			( )
			( )
			( )
			( )

17 Access Gained by (Check one)	18 Time of Inspection	19 Weather Conditions
permission	0945	Clear, sunny 75°F

IV. INFORMATION AVAILABLE FROM

01 Contact	02 Agency/Organization	03 Telephone No.
Carol Waddell-Sheets	E & E	(716) 684-8060

04 Person Responsible for Site Inspection Form	05 Agency	06 Organization	07 Telephone No.	08 Date
Carol Waddell-Sheets	E & E		(716) 684-8060	10 / 12 / 90 (Month Day Year)

EPA — POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 2 - WASTE INFORMATION	I. IDENTIFICATION 01 State: NY 02 Site Number: 932056A

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (Check all that apply)

[X] A. Solid
[X] B. Powder, Fines
[ ] C. Sludge
[ ] D. Other ________ (Specify)
[ ] E. Slurry
[ ] F. Liquid
[ ] G. Gas

02 Waste Quantity at Site (Measure of waste quantities must be independent)

Tons ________
Cubic Yards ________
No. of Drums ________

03 Waste Characteristics (Check all that apply)

[X] A. Toxic
[X] B. Corrosive
[ ] C. Radioactive
[X] 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			
PSD	Pesticides			
OCC	Other organic chemicals	Unknown		Hexachlorocyclopentadiene
IOC	Inorganic chemicals	Unknown		Silica, alumina, silicon carbide
ACD	Acids			
BAS	Bases			
MES	Heavy Metals	Unknown		Lead, copper

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	Hexachlorocyclopentadiene	1655	Landfill	0	ppm
MES	Lead	999	Landfill	<16	ppm

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)

Niagara County DOH 1981
Phase I Report 1984

02[UZ]YP3080:D3158/5820/4

EPA — POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS	I. IDENTIFICATION 01 State: NY 02 Site Number: 932056A

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [ ] A. Groundwater Contamination 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
03 Population Potentially Affected 0 04 Narrative Description

There are no domestic wells or intakes within 3 miles of the site, however, several metals were found in groundwater samples collected from the site.

01 [ ] B. Surface Water Contamination 02 [X] Observed (Date 6/24/81) [ ] Potential [ ] Alleged
03 Population Potentially Affected ______ 04 Narrative Description:

Lead, copper, and organic compounds were found in Cayuga Creek, however, the concentrations were below NYSDEC standards.
Ref. USGS 1982

01 [ ] C. Contamination of Air 02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
03 Population Potentially Affected ______ 04 Narrative Description:

None observed using an organic vapor analyzer or HNu during the site inspection and drilling operations.

01 [ ] D. Fire/Explosive Conditions 02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
03 Population Potentially Affected ______ 04 Narrative Description:

None suspected.

01 [X] E. Direct Contact 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
03 Population Potentially Affected 3,500 04 Narrative Description:

The presence of lead and organics in the surface water and soil samples provide the opportunity for direct contact.

01 [X] F. Contamination of Soil 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
03 Area Potentially Affected 0.5 acre 04 Narrative Description:

PAHs and lead were found in soil samples.
Ref. Analytical results

01 [ ] G. Drinking Water Contamination 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
03 Population Potentially Affected 0 04 Narrative Description:

None suspected no wells within 3 miles of the location in use. Municipal water in use only.
Ref. Gwodzik 1990, Dicky 1990, Woodcock 1990

01 [ ] H. Worker Exposure/Injury 02 [ ] Observed (Date ______) [ ] Potential [ ] Alleged
03 Workers Potentially Affected 0 04 Narrative Description:

None suspected or observed.

01 [ ] I. Population Exposure/Injury 02 [ ] Observed (Date ______) [X] Potential [ ] Alleged
03 Population Potentially Affected 3,500 04 Narrative Description:

The exposed portions of the landfill provide the opportunity for injury due to physical hazards and potential hazards.
E & E site reconnaissance, April 1990.

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT EPA PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS (Cont.)	I. IDENTIFICATION	
	01 State NY	02 Site Number 932056A

II. HAZARDOUS CONDITIONS AND INCIDENTS (Cont.)

01 [ ] J. Damage to Flora — 02 [ ] Observed (Date ________) [ ] Potential [ ] Alleged
04 Narrative Description:

None observed during the E & E reconnaissance. The area is well overgrown except where debris is exposed.

01 [ ] K. Damage to Fauna — 02 [ ] Observed (Date ________) [ ] Potential [ ] Alleged
04 Narrative Description:

None observed previously nor during E & E reconnaissance.

01 [ ] L. Contamination of Food Chain — 02 [ ] Observed (Date ________) [ ] Potential [ ] Alleged
04 Narrative Description:

Unknown

01 [ ] M. Unstable Containment of Wastes (Spills/Runoff/Standing liquids, Leaking drums) — 02 [X] Observed (Date 4/30/90) [ ] Potential [ ] Alleged
03 [ ] Population Potentially Affected 3,500 — 04 Narrative Description:

Waste is not contained and is exposed along creek and in lowland area.
E & E reconnaissance 1990.

01 [ ] N. Damage to Offsite Property — 02 [ ] Observed (Date ________) [ ] Potential [ ] Alleged
04 Narrative Description:

Unknown, no visible effects in immediate areas surrounding the landfill.

01 [ ] O. Contamination of Sewers, Storm/ Drains, WWTPs — 02 [ ] Observed (Date ________) [X] Potential [ ] Alleged
04 Narrative Description: Storm runoff during periods of high precipitation may run into storm sewers due to flooding caused by low permeable soils.
USDA 1972.

01 [ ] P. Illegal/Unauthorized Dumping — 02 [X] Observed (Date 4/30/90) [ ] Potential [ ] Alleged
04 Narrative Description:

Visible debris piles, probably attributable to fugitive dumping.

05 Description of Any Other Known, Potential, or Alleged Hazards

III. TOTAL POPULATION POTENTIALLY AFFECTED <10,000 present in the immediate area.

IV. COMMENTS

The most obvious hazard is the loose debris exposed on the south face. This acts as a physical hazard.
E & E reconnaissance 1990.

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

Phase I Report 1984
USGS 1982
E & E reconnaissance 1990

02[UZ]YP3080:D3158/5820/4

EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	932056A

II. PERMIT INFORMATION None

01 Type of Permit Issued (Check all apply)	02 Permit Number	03 Date Issued	04 Expiration Date	05 Comments
[ ] A. NPDES NA				
[ ] 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	04 Treatment (Check all that apply)	05 Other
[ ] A. Surface Impoundment			[ ] A. Incineration	[ ] A. Buildings On Site
[ ] B. Piles			[ ] B. Underground Injection	
[ ] C. Drums, Above Ground			[ ] C. Chemical/Physical	
[ ] D. Tank, Above Ground			[ ] D. Biological	
[ ] E. Tank, Below Ground			[ ] E. Waste Oil Processing	
[X] F. Landfill	.5	Acre	[ ] F. Solvent Recovery	06 Area of Site
[ ] G. Landfarm			[ ] G. Other Recycling Recovery	
[ ] H. Open dump			[ ] H. Other ____ (specify)	0.5 Acres
[ ] I. Other ____ (Specify)				

07 Comments
Site was used as a landfill for fine debris from Carborundum, debris from paper company, and possibly fly ash and hexachlorocyclopentadiene.

IV. CONTAINMENT

01 Containment of Wastes (Check one)

[ ] A. Adequate, Secure [ ] B. Moderate [X] C. Inadequate, Poor [ ] D. Insecure, Unsound, Dangerous

02 Description of Drums, Diking, Liners, Barriers, etc.

No liners present. A berm lies between between the lowland and Cayuga Creek but is breached during periods of high rain. E & E site reconnaissance.

V. ACCESSIBILITY

01 Waste Easily Accessible: [X] Yes [ ] No
02 Comments: Lack of fencing or other restrictions in east, west, and south.

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

E & E site reconnaissance, April 30, 1990.
Niagara County DOH 1981

EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 State	02 Site Number
NY	932056A

II. DRINKING WATER SUPPLY

01 Type of Drinking Supply (Check as applicable)

	Surface	Well
Community	A. [X]	B. [ ]
Non-community	C. [ ]	D. [ ]

02 Status

Endangered	Affected	Monitored
A. [ ]	B. [ ]	C. [ ]
D. [ ]	E. [ ]	F. [ ]

03 Distance to Site

A >4 miles (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)

[X] D. Not Used, Unusable

02 Population Served by Groundwater 0

03 Distance to Nearest Drinking Water Well >4 miles (mi)

04 Depth to Groundwater 13 - 16 (ft)

05 Direction of Groundwater Flow South

06 Depth to Aquifer of Concern 13 - 16 (ft)

07 Potential Yield of Aquifer 2,000 (gpd)

08 Sole Source Aquifer Unknown [ ] Yes [X] No

09 Description of Wells (including usage, depth, and location relative to population and buildings)

No known usage of wells within 3 miles. Only municipal water from Niagara River is used.

10 Recharge Area

[X] Yes

[ ] No

Comments: Aquifers recharge through overlying sediments

11 Discharge Area

[X] Yes

[ ] No

Comments: Cayuga Creek acts as a discharge point for upper aquifer

IV. SURFACE WATER

01 Surface Water (Check one)

[ ] A. Reservoir, Recreation, Drinking Water Source

[ ] B. Irrigation, Economically Important Resources

[ ] C. Commercial, Industrial

[X] D. Not Currently Used

02 Affected/Potentially Affected Bodies of Water

Name:	Affected	Distance to Site
Niagara River	[ ]	2.3 (mi)
Cayuga Creek	[X]	adjacent to site (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. <10,000	B. <50,000	C. <75,000
No. of Persons	No. of Persons	No. of Persons

02 Distance to Nearest Population

Adjacent to site (mi)

03 Number of Buildings Within Two (2) Miles of Site

15,000

04 Distance to Nearest Off-Site Home

Adjacent to site (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)

A combination of rural and densely populated developments are located within 1 mile of the site.

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EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA (Cont.)

I. IDENTIFICATION

01 State	02 Site Number
NY	932056A

VI. ENVIRONMENTAL INFORMATION

01 Permeability of Unsaturated Zone (Check one)

[ ] A. $10^{-6} - 10^{-8}$ cm/sec [X] 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)

[X] 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	04 Depth of Contaminated Soil Zone	05 Soil pH
13 - 16 (ft)	0 - 4'	6.1 - 7.6

06 Net Precipitation	07 One Year 24-Hour Rainfall	08 Site Slope	Direction of Site Slope	Terrain Average Slope
8 (in)	2.1 (in)	0 - 2 %	South	0 %

09 Flood Potential

Site is in 10 Year Floodplain

10 [ ] Site is on Barrier Island, Coastal High Hazard Area, Riverine Floodway

11 Distance to Wetlands (5 acre minimum)

ESTUARINE NA OTHER

A. ____ (mi) B. 0.7 (mi)

12 Distance to Critical Habitat (of endangered species)

1.2 (mi)

Endangered Species: Aster Odentagensis - rare species of concern

13 Land Use in Vicinity

Distance to:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREA; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME AG LAND	AG LAND
A. .1 (mi)	B. .1 (mi)	C. 0.75 (mi)	D. 0.3 (mi)

14 Description of Site in Relation to Surrounding Topography

The site is generally flat, sloping gently to the west and north. There is a 6-8' embankment that leads from the principal debris pile to a lowland to the south.

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

USDA 1972
Freeze and Cherry 1979
Site Bore Logs, Appendix C
Niagara County Land Use Inventory
E & E site reconnaissance
Endangered Habitat maps
USDOC - Climate Atlas of the U.S. 1979

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EPA	POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 6 - SAMPLE AND FIELD INFORMATION	I. IDENTIFICATION 01 State: NY 02 Site Number: 932056A

II. SAMPLES TAKEN - Samples taken during Phase II investigation.

Sample Type	01 Number of Samples Taken	02 Samples Sent to	03 Estimated Date Results Available
Groundwater	3	E & E's Analytical Services Center (ASC)	
Surface Water	3	ASC	
Waste			
Air			
Runoff			
Spill			
Soil	5 surface/ subsurface 5 sediment	ASC	
Vegetation			
Other			

III. FIELD MEASUREMENTS TAKEN

01 Type	02 Comments
Air	Monitored ambient air with an organic vapor analyzer and HNu photoionization detector
	No detectable air contaminants

IV. PHOTOGRAPHS AND MAPS

01 Type [X] Ground [X] Aerial

02 In Custody of Ecology and Environment
(Name of Organization or Individual)

03 Maps
[X] Yes
[ ] No

04 Location of Maps
Ecology and Environment Headquarters, Buffalo, New York

V. OTHER FIELD DATA COLLECTED (Provide narrative description of sampling activities)

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

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Number 932056A

II. CURRENT OWNER(S) / PARENT COMPANY (if applicable)

Current Owner			Parent Company		
01 Name Joseph C. Weber, III		02 D+B Number	08 Name		09 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 9200 Niagara Falls Blvd.		04 SIC Code	10 Street Address (P.O. Box, RFD #, etc.)		11 SIC Code
05 City Niagara Falls	06 State NY	07 Zip Code 14304-0312	12 City	13 State	14 Zip Code
01 Name J. Juron and K. Lozina		02 D+B Number	08 Name		09 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 537 15th Street		04 SIC Code	10 Street Address (P.O. Box, RFD #, etc.)		11 SIC Code
05 City Niagara Falls	06 State NY	07 Zip Code 14301	12 City	13 State	14 Zip Code
01 Name Richard G., James J. & R.S. Juron		02 D+B Number	08 Name		09 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 8880 Disney Drive		04 SIC Code	10 Street Address (P.O. Box, RFD #, etc.)		11 SIC Code
05 City Niagara Falls	06 State NY	07 Zip Code 14301	12 City	13 State	14 Zip Code
01 Name Walter S. & Idama Fellon		02 D+B Number	08 Name		09 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 9115 Porter Road		04 SIC Code	10 Street Address (P.O. Box, RFD #, etc.)		11 SIC Code
05 City Town of Niagara	06 State NY	07 Zip Code 14300	12 City	13 State	14 Zip Code

III. PREVIOUS OWNER(S) (List most recent first) / IV. REALTY OWNER(S) (if applicable, most recent first)

Previous Owner			Realty Owner		
01 Name McClendon Blacktop Co.		02 D+B Number	01 Name Michigan Mayne Realty		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 3214 Hasley Drive		04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.) 1305 Delaware Avenue		04 SIC Code
05 City Niagara Falls	06 State NY	07 Zip Code 14304	05 City Buffalo	06 State NY	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)

New York State Owners Listing, Phase I Report 1983

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 8 – OPERATOR INFORMATION – NA

I. IDENTIFICATION	
01 State	02 Site Number
NY	932056A

II. CURRENT OPERATOR (if different from Owner)				OPERATOR'S PARENT COMPANY (if applicable)		
01 Name None		02 D+B Number		10 Name		11 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code
05 City	06 State	07 Zip Code		14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner					

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)				PREVIOUS OPERATORS' PARENT COMPANIES (if applicable)		
01 Name Apex Salvage Co.		02 D+B Number		10 Name		11 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code
05 City	06 State	07 Zip Code		14 City	15 State	16 Zip Code
08 Years of Operation 1977 – 1978	09 Name of Owner During This Period Michigan Mayne Realty					
01 Name		02 D+B Number		10 Name		11 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code
05 City	06 State	07 Zip Code		14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner During This Period					
01 Name		02 D+B Number		10 Name		11 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code
05 City	06 State	07 Zip Code		14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner During This Period					

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

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	932056A

II. ON-SITE GENERATOR - NA

01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City	06 State	07 Zip Code

III. OFF-SITE GENERATOR(S) - NA

01 Name Carborundum Company		02 D+B Number	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 2050 Cory Road		04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City Sanborn	06 State NY	07 Zip Code 14132	05 City	06 State	07 Zip Code
01 Name International Paper Company		02 D+B Number	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 18 Argonne Drive		04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City Kenmore	06 State NY	07 Zip Code 14217	05 City	06 State	07 Zip Code

IV. TRANSPORTER(S) - NA

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)

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 State	02 Site Number
NY	932056A

II. PAST RESPONSE ACTIVITIES None

01 [ ] A. Water Supply Closed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] B. Temporary Water Supply Provided 02 Date ______ 03 Agency ______
04 Description:

01 [ ] C. Permanent Water Supply Provided 02 Date ______ 03 Agency ______
04 Description:

01 [ ] D. Spilled Material Removed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] E. Contaminated Soil Removed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] F. Waste Repackaged 02 Date ______ 03 Agency ______
04 Description:

01 [ ] G. Waste Disposed Elsewhere 02 Date ______ 03 Agency ______
04 Description:

01 [ ] H. On-Site Burial 02 Date ______ 03 Agency ______
04 Description:

01 [ ] I. In Situ Chemical Treatment 02 Date ______ 03 Agency ______
04 Description:

01 [ ] J. In Situ Biological Treatment 02 Date ______ 03 Agency ______
04 Description:

01 [ ] K. In Situ Physical Treament 02 Date ______ 03 Agency ______
04 Description:

01 [ ] L. Encapsulation 02 Date ______ 03 Agency ______
04 Description:

01 [ ] M. Emergency Waste Treatment 02 Date ______ 03 Agency ______
04 Description:

01 [ ] N. Cutoff Walls 02 Date ______ 03 Agency ______
04 Description:

01 [ ] O. Emergency Diking/Surface Water Diversion 02 Date ______ 03 Agency ______
04 Description:

01 [ ] P. Cutoff Trenches/Sump 02 Date ______ 03 Agency ______
04 Description:

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POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT EPA PART 10 - PAST RESPONSE ACTIVITIES (Cont.)	I. IDENTIFICATION 01 State: NY 02 Site Number: 932056A

II. PAST RESPONSE ACTIVITIES (Cont.) None

01 [ ] Q. Subsurface Cutoff Wall 02 Date ______ 03 Agency ______
04 Description:

01 [ ] R. Barrier Walls Constructed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] S. Capping/Covering 02 Date ______ 03 Agency ______
04 Description:

01 [ ] T. Bulk Tankage Repaired 02 Date ______ 03 Agency ______
04 Description:

01 [ ] U. Grout Curtain Constructed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] V. Bottom Sealed 02 Date ______ 03 Agency ______
04 Description:

01 [ ] W. Gas Control 02 Date ______ 03 Agency ______
04 Description:

01 [ ] X. Fire Control 02 Date ______ 03 Agency ______
04 Description:

01 [ ] Y. Leachate Treatment 02 Date ______ 03 Agency ______
04 Description:

01 [ ] Z. Area Evacuated 02 Date ______ 03 Agency ______
04 Description:

01 [ ] 1. Access to Site Restricted 02 Date ______ 03 Agency ______
04 Description:

01 [ ] 2. Population Relocated 02 Date ______ 03 Agency ______
04 Description:

01 [X] 3. Other Remedial Activities 02 Date 6/23/82 03 Agency ______
04 Description:

NYSDEC requested owner consent for drilling USGS monitoring wells.

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

NCDOH 1981
Beuchi 1982
Nickerson 1990, E & E

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POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT EPA PART 11 - ENFORCEMENT INFORMATION	I. IDENTIFICATION	
	01 State NY	02 Site Number 932056A

II. ENFORCEMENT INFORMATION

01 Past Regulatory/Enforcement Action [ ] Yes [X] No

02 Description of Federal, State, Local Regulatory/Enforcement Action

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

NCDOH 1981

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6

6. REFERENCES

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__________, 1988, Lead Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review, U.S. Fish and Wildlife Service, U.S. Department of the Interior. Document Location: Ecology and Environment, Inc., Buffalo, New York.

Freeze, R.A. and J.A. Cherry, 1979, Groundwater, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 604 pp. Document Location: Ecology and Environment, Inc., Buffalo, New York.

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APPENDIX A

SITE-SPECIFIC SAFETY PLAN

ecology and environment, inc.

SITE SAFETY PLAN

Version 988

A. GENERAL INFORMATION

Project Title: Diarco #1 Project No.: YP-3020

TDD/Pan No.:

Project Manager: T. Nickerson Project Dir.:

Location(s): Niagara Falls

Prepared by: T Nickerson Date Prepared: 4/24/90

Approval by: C. Foley Date Approved: 4-27-90

Site Safety Officer Review: Date Reviewed:

Scope/Objective of Work: 3) drilling and installation of monitoring wells and collection of soil and surface water samples

Proposed Date of Field Activities: 1) Geophysical Survey; 2) Site Inspection

Background Info: Complete: [X] Preliminary (No analytical data available) [ ]

Documentation/Summary:

Overall Chemical Hazard:	Serious [ ] Low [X]	Moderate [ ] Unknown [ ]
Overall Physical Hazard	Serious [ ] Low [ ]	Moderate [ ] Unknown [ ]

B. SITE/WASTE CHARACTERISTICS

Waste Type(s):

Liquid [X] Solid [X] Sludge [ ] Gas/Vapor [X]

Characteristic(s):

Flammable/ Ignitable [ ]	Volatile [ ]	Corrosive [ ]	Acutely Toxic [ ]
Explosive [ ]	Reactive [ ]	Carcinogen [X]	Radioactive* [ ]

Other: Irritating

Physical Hazards:

Overhead [ ]	Confined* Space [ ]	Below Grade [ ]	Trip/Fall [X]
Puncture [X]	Burn [ ]	Cut [X]	Splash [ ]
Noise [ ]	Other:		

*Requires completion of additional form and special approval from the Corporate Health/Safety group. Contact RSC or HQ.

...Description and Unusual Features (see Sampling Plan for detailed description): Dump site of concrete, hexachlorocyclopentadiene wastes, copper, ~~lead~~; spent abrasives from carborundum; organic chemists present

Locations of Chemicals/Wastes: Buried near surface; uncontainerized

Estimated Volume of Chemicals/Wastes: Unknown; probably less than 25 yds^3

Site Currently in Operation Yes: [ ] No: [X]

C. HAZARD EVALUATION

List Hazards by Task (i.e., drum sampling, drilling, etc.) and number them. (Task numbers are cross-referenced in Section D)

Physical Hazard Evaluation: Task 2: Site Recon: Hazards are trip and fall, cut, and puncture. Concrete rubble at surface could lead to difficulties in Task 5, drilling

Task 3: Same as Task 2 hazards

Chemical Hazard Evaluation: See attached sheets for all safety data

Compound	PEL/TWA	Route of Exposure	Acute Symptoms	Odor Threshold	Odor Description
C-56 Hexachlorocyclopentadiene					
ALUMINA					
Copper					
Lead					

Note: Complete and attach a Hazard Evaluation Sheet for major known contaminant.

ite Control: Attach map, use back of this page, or sketch of site showing hot zone, contamination reduction, zone, etc.

Perimeter identified? [✓] Site secured? [✓]

Work Areas Designated? [✓] Zone(s) of Contamination Identified? [NO

r l Protection (TLD badges required for all field personnel):

Anticipated Level of Protection (Cross-reference task numbers to Section C):

	A	B	C	D
Task 1		✓	✓	✓
Task 2		✓	✓	✓
Task 3		✓	✓	✓
Task 4				

(Expand if necessary)

ifications: Will go to level C depending on Results of air monitoring Level C, watch for irritation of skin, respiratory tract and mucous membranes. Upgrade to level B if irritation noticed

ion Levels for Excavation of Work Zone Pending Reassessment of Conditions:

- Level D: O_2 <19.5% or >25%, explosive atmosphere >10% LEL, organic vapors above background levels, particulates >_____ mg/m^3, other _____________.
- Level C: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapor (in breathing zone) >5 ppm, particulates >_____ mg/m^3, other __________.
- Level B: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapors (in breathing zone) >500 ppm, particulates >_____ mg/m^3, other ___________.
- Level A: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapors >500 ppm, particulates >_____ mg/m^3, other ________.

Monitoring (daily calibration unless otherwise noted):

Contaminant of Interest	Type of Sample (area, personal)	Monitoring Equipment	Frequency of Sampling
C-56 (Hexachlorocyclopentadiene)	AIR	Hnu, OVA	CONTINUOUS

(Expand if necessary)

tamination Solutions and Procedures for Equipment, Sampling Gear, etc.:

- WASH SKIN WITH SOAP AND water - Set up handwash station on site
- DISCARD DISPOSABLE BOOTIES, gloves AND TYVEK or saranax SUITS

Personnel Decon Protocol: -WASH HANDS WITH SOAP + WATER

Decon Solution Monitoring Procedures, if Applicable: N/A

Special Site Equipment, Facilities, or Procedures (Sanitary Facilities and Lighting Must Meet 29 CFR 1910.120):

-ONSITE TOILET AVAILABLE

Site Entry Procedures and Special Considerations:

Work Limitations (time of day, weather conditions, etc.) and Heat/Cold Stress Requirements:

Heat Stress Could Be A Factor Depending on Weather

Daylight hours only, No work during electrical storm

General Spill Control, if applicable: N/A

Investigation-Derived Material Disposal (i.e., expendables, decon waste, cuttings):

Double Bag Disposable after gear; Place in Dumpster at site

Sample Handling Procedures Including Protective Wear:

None to note

Team Member*	Responsibility
Tom Nickerson	Team Leader
Rawda Leichner	Site Safety Officer

*All entries into exclusion zone require Buddy System use. All E & E field staff participate in medical monitoring program and have completed applicable training per 29 CFR 1910.120. Respiratory protection program meets requirements of 29 CFR 1910.134, and ANSI Z88.2 (1980).

E. EMERGENCY INFORMATION

(Use supplemental sheets, if necessary)

LOCAL RESOURCES

(Obtain a local telephone book from your hotel, if possible)

Ambulance 911

Hospital Emergency Room 911 , OR Mount St. Mary's 297-4800

Poison Control Center 878-7654

Police (include local, county sheriff, state) 911 , Niagara Co. Sheriff 439-9393

Fire Department 911

Airport

Agency Contact (EPA, State, Local USCG, etc.) Valerie Lauzze (NYSDEC) 518/457-9538

Local Laboratory

UPS/Fed. Express

Client/EPA Contact

Site Contact Mr. Joseph Webber

SITE RESOURCES

Site Emergency Evacuation Alarm Method —

Water Supply Source Fire Hydrant on Porter Road

Telephone Location, Number None on site

Cellular Phone, if available

Radio

Other

EMERGENCY CONTACTS

1. Dr. Raymond Harbison (Univ. of Florida) .... (501) 221-0465 or (904) 462-3277, 3281
   Alachua, Florida (501) 370-8263 (24 hours)
2. Ecology and Environment, Inc., Safety Director
   Paul Jonmaire .... (716) 684-8060 (office)
   (716) 655-1260 (home)
3. Regional Office Contact .... Paul Jonmaire ...... 655-1260 (home)
   684-8060 (office)
4. FITOM, TATOM, or Office Manager .... ____ (home)

MEDTOX HOTLINE

1. Twenty-four hour answering service: (501) 370-8263

   What to report:

   - State: "this is an emergency."
   - Your name, region, and site.
   - Telephone number to reach you.
   - Your location.
   - Name of person injured or exposed.
   - Nature of emergency.
   - Action taken.

2. A toxicologist, (Drs. Raymond Harbison or associate) will contact you. Repeat the information given to the answering service.

3. If a toxicologist does not return your call within 15 minutes, call the following persons in order until contact is made:

   a. **24 hour hotline - (716) 684-8940**
   b. Corporate Safety Director - Paul Jonmaire - home # (716) 655-1260
   c. Assistant Corp. Safety Officer - Steven Sherman - home # (716) 688-0084

EMERGENCY ROUTES

(NOTE: Field Team must Know Route(s) Prior to Start of Work)

Directions to hospital (include map) Mount St. Mary's Hospital of Niagara Falls
- 5300 Military Road, Lewiston
- Left off site onto Porter Rd
- Porter & Military left, then Right at intersection
- Proceed NORTH on Military; Hospital on left

Emergency Egress Routes to Get Off-Site

A-7

recycled paper

ecology and environment

F. EQUIPMENT CHECKLIST

PROTECTIVE GEAR

Level A	No.
SCBA	
SPARE AIR TANKS	
ENCAPSULATING SUIT (Type ______________)	
SURGICAL GLOVES	
NEOPRENE SAFETY BOOTS	
BOOTIES	
GLOVES (Type ______________)	
OUTER WORK GLOVES	
HARD HAT	
CASCADE SYSTEM	
5-MINUTE ESCAPE COOLING VEST	

Level B	No.
SCBA	
SPARE AIR TANKS	
PROTECTIVE COVERALL (Type ______________)	
RAIN SUIT	
BUTYL APRON	
SURGICAL GLOVES	
GLOVES (Type ______________)	
OUTER WORK GLOVES	
NEOPRENE SAFETY BOOTS	
BOOTIES	
HARD HAT WITH FACE SHIELD	
CASCADE SYSTEM	
MANIFOLD SYSTEM	

Level C	No.
ULTRA-TWIN RESPIRATOR	✓
POWER AIR PURIFYING RESPIRATOR	
CARTRIDGES (Type GMC H)	✓
5-MINUTE ESCAPE MASK	
PROTECTIVE COVERALL (Type Saranal)	✓
RAIN SUIT	
BUTYL APRON	
SURGICAL GLOVES	
GLOVES (Type Neoprene & Surgical)	✓
OUTER WORK GLOVES	
NEOPRENE SAFETY BOOTS	
HARD HAT ~~WITH FACE SHIELD~~	✓
BOOTIES	✓
HARDHAT	
TLD Badge	✓

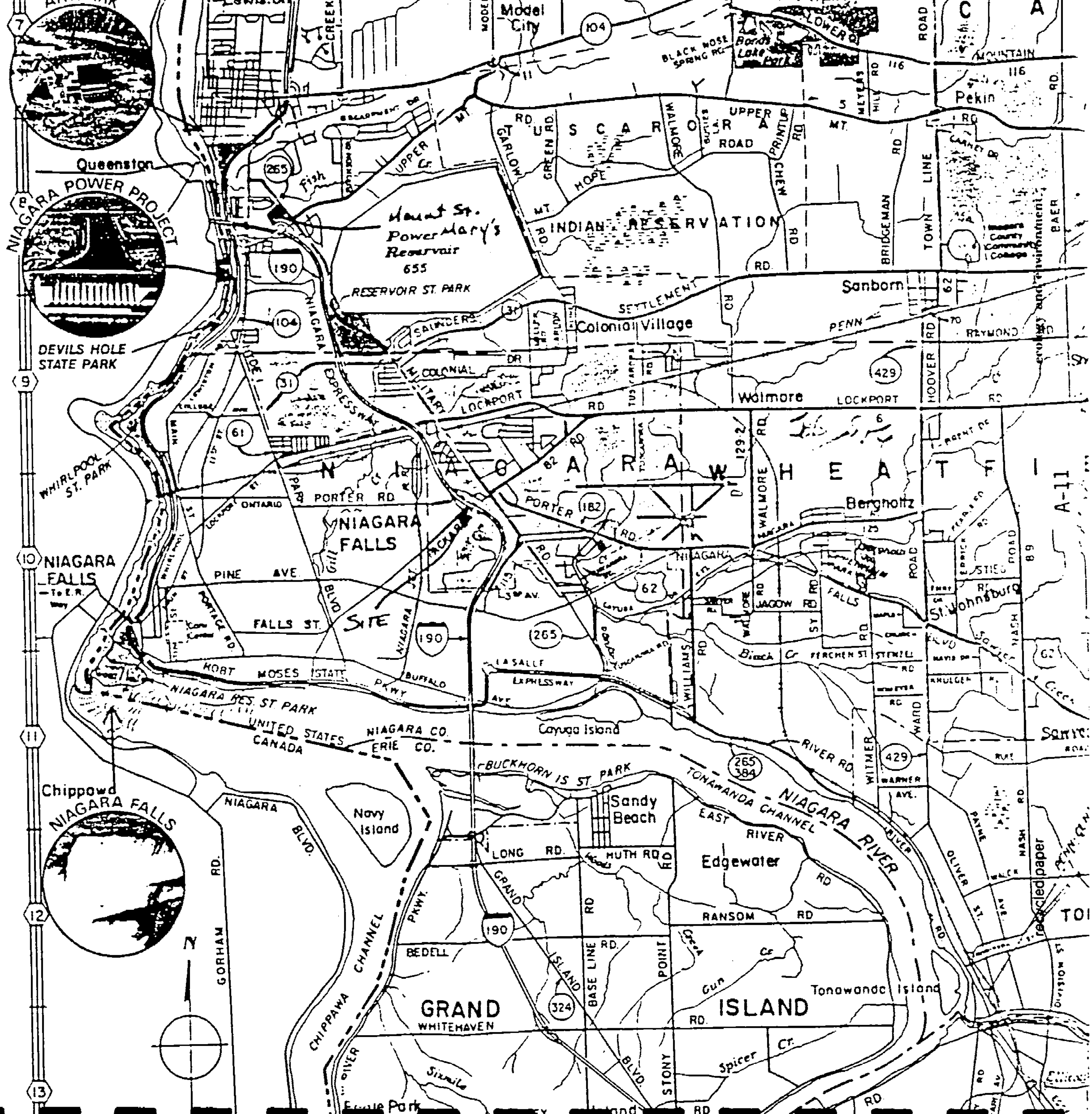
Level D	No.
ULTRA-TWIN RESPIRATOR (Available)	✓
CARTRIDGES (Type GMC-H)	✓
5-MINUTE ESCAPE MASK (Available)	
PROTECTIVE COVERALL (Type Tyvek)	✓
RAIN SUIT	✓
NEOPRENE SAFETY BONDS	✓
BOOTIES	✓
WORK GLOVES Neoprene + Surgical	✓
HARD HAT WITH FACE SHIELD	✓
SAFETY GLASSES	✓
TLD Badge	✓

INSTRUMENTATION	No.
OVA	1 ✓
THERMAL DESORBER	
O2/EXPLOSIMETER W/CAL. KIT	1 ✓.
PHOTOVAC TIP	
HNu (Probe 10.2)	✓
MAGNETOMETER	✓
PIPE LOCATOR	
WEATHER STATION	
DRAEGER PUMP, TUBES ______	
BRUNTON COMPASS	✓
MONITOX CYANIDE	
HEAT STRESS MONITOR	
NOISE EQUIPMENT ______	
PERSONAL SAMPLING PUMPS	
EM-31	✓
RADIATION EQUIPMENT	
DOCUMENTATION FORMS	
PORTABLE RATEMETER	
SCALER/RATEMETER	
NaI Probe	
ZnS Probe	
GM Pancake Probe	
GM Side Window Probe	
MICRO R METER	
ION CHAMBER	
ALERT DOSIMETER	
POCKET DOSIMETER	
RAD MINI	✓
FIRST AID EQUIPMENT	
FIRST AID KIT	✓
OXYGEN ADMINISTRATOR	
STRETCHER	
PORTABLE EYE WASH	
BLOOD PRESSURE MONITOR	
FIRE EXTINGUISHER	

DECON EQUIPMENT	No.
WASH TUBS	
BUCKETS	
SCRUB BRUSHES	
PRESSURIZED SPRAYER	
DETERGENT (Type hand soap)	✓
SOLVENT (Type ______)	
PLASTIC SHEETING	
TARPS AND POLES	
TRASH BAGS	✓
TRASH CANS	
MASKING TAPE	
DUCT TAPE	✓
PAPER TOWELS	✓
FACE MASK	
FACE MASK SANITIZER	
FOLDING CHAIRS	
STEP LADDERS	
DISTILLED WATER	✓
SAMPLING EQUIPMENT	
8 OZ. BOTTLES	
HALF-GALLON BOTTLES	
VOA BOTTLES	
STRING	
HAND BAILERS	
THIEVING RODS WITH BULBS	
SPOONS	
KNIVES	
FILTER PAPER	
PERSONAL SAMPLING PUMP SUPPLIES	

VAN EQUIPMENT	No.
TOOL KIT	
HYDRAULIC JACK	
LUG WRENCH	
TOW CHAIN	
VAN CHECK OUT	
Gas	
Oil	
Antifreeze	
Battery	
Windshield Wash	
Tire Pressure	
MISCELLANEOUS	
PITCHER PUMP	
SURVEYOR'S TAPE	
100 FIBERGLASS TAPE	✓
300 NYLON ROPE	
NYLON STRING	
SURVEYING FLAGS	✓
FILM + DISPOSABLE Camera	✓
WHEEL BARROW	
BUNG WRENCH	
SOIL AUGER	
PICK	
SHOVEL	
CATALYTIC HEATER	
PROPANE GAS	
BANNER TAPE	
SURVEYING METER STICK	
CHAINING PINS & RING	
TABLES	
WEATHER RADIO	
BINOCULARS	
MAGAPHONE	

MISCELLANEOUS (Cont.)	No.
SHIPPING EQUIPMENT	
COOLERS	
PAINT CANS WITH LIDS, 7 CLIPS EACH	
VERMICULITE	
SHIPPING LABELS	
DOT LABELS: "DANGER"	
"UP"	
"INSIDE CONTAINER COMPLIES ..."	
"HAZARD GROUP"	
STRAPPING TAPE	
BOTTLE LABELS	
BAGGIES	
CUSTODY SEALS	
CHAIN-OF-CUSTODY FORMS	
FEDERAL EXPRESS FORMS	
CLEAR PACKING TAPE	



Queenston
NIAGARA POWER PROJECT
DEVILS HOLE STATE PARK
WHIRLPOOL ST. PARK
NIAGARA FALLS
Chippawa
NIAGARA FALLS
Model City
Lower
Mountain
Pekin
TUSCARORA
INDIAN RESERVATION
Mount St. Mary's
Power Reservoir
655
RESERVOIR ST. PARK
Sanborn
Colonial Village
Walmore
Lockport
NIAGARA FALLS
WHEATFIELD
Bergholtz
St. Johnsburg
PORTER RD
PINE AVE.
FALLS ST.
Site
ROBT MOSES STATE PKWY
NIAGARA RES. ST PARK
UNITED STATES
CANADA
NIAGARA CO.
ERIE CO.
Cayuga Island
BUCKHORN IS ST PARK
Sandy Beach
Navy Island
Edgewater
NIAGARA RIVER
TONAWANDA CHANNEL
CHIPPAWA CHANNEL
GRAND ISLAND
Tonawanda Island
NIAGARA BLVD.
GORHAM RD.
N
A-11
recycled paper

C-56
6/84
(1)

CHEMICAL NAME
HEXACHLOROCYCLOPENTADIENE

FORMULA
C5CL6

SYNONYMS
C-56
NCI-C55607
PERCHLOROCYCLOPENTADIENE
GRAPH OX
HRS 1655
UN 2646

PERMISSIBLE EXPOSURE LIMIT
10 PPB ACGIH TWA
30 PPB ACGIH STEL
EXPERIMENTAL CARCINOGEN (NTP)
ODOR THRESHOLD 0.15-0.33 PPM
REPORTABLE QUANTITIES - 1 LB CWA 311(B)(4) - 1 LB CWA 307(A)
1 LB RCRA 3001 - 1 LB PROPOSED RQ
CERCLA HAZARD RATINGS - TOXICITY 3 - IGNITABILITY 0 - REACTIVITY 0 -
PERSISTENCE 3

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION
113 MG/KG ORAL-RAT
LD50

PHYSICAL DESCRIPTION
PALE YELLOW LIQUID WITH A PUNGENT ODOR

CHEMICAL AND PHYSICAL PROPERTIES
MOLECULAR WEIGHT: 272.75
BOILING POINT AT 1 ATM, F: 462.2 F
SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE
FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF OC: NONE
VAPOR PRESSURE AT 20C MM HG: NA
MELTING POINT, F: 49.82 F
UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: NONFLAMMABLE
LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: NONFLAMMABLE
TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
9IINNCCOO CCLLOOTT GGOOGGGG WWAASSHH CCHHAANN RREEMMOO PPPPOOVV PREC
RROOUUTT SSYYNNPP FFIIRRAA BBUULLLL SSPPEECC

PERSONAL PROTECTIVE EQUIPMENT
NO NIOSH/OSHA DATA: RECOMMEND
PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH LIQUID
WEAR IMPERVIOUS CLOTHING
WEAR GLOVES
WEAR FACESHIELD (8 INCH MINIMUM)

PLACE CONTAMINATED CLOTHING IN CLOSED CONTAINERS FOR STORAGE UNTIL LAUNDERED OR DISCARDED
IF CLOTHING IS TO BE LAUNDERED, INFORM PERSON PERFORMING OPERATION OF CONTAMINANT'S HAZARDOUS PROPERTIES

GOGGLES
NO STANDARD REQUIREMENT, BUT ADVISE EYE PROTECTION TO PREVENT ANY POSSIBILITY OF EYE CONTACT

WASHING CHEMICALS FROM THE SKIN
NO STANDARD REQUIREMENT, BUT ADVISE WASHING IMMEDIATELY WHEN SKIN BECOMES CONTAMINATED

2

ROUTINE CHANGING OF WORK CLOTHING
NO STANDARD REQUIREMENT, BUT ADVISE CHANGING IF THERE IS ANY POSSIBILITY THAT CLOTHING MAY BE CONTAMINATED

CLOTHING REMOVAL FOLLOWING ACCIDENTAL CONTAMINATION
NO STANDARD REQUIREMENT, BUT ADVISE REMOVING IMMEDIATELY IF IT BECOMES WET

SPECIFIC EMERGENCY PROVISIONS
NO NIOSH/OSHA DATA, ADVISE:
EYE-WASH FOUNTAIN WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES' EYES MAY BE EXPOSED TO SUBSTANCE
QUICK DRENCHING FACILITIES WITHIN IMMEDIATE WORK AREA WHERE EMPLOYEES MAY BE EXPOSED TO SUBSTANCE
EATING AND SMOKING SHOULD NOT BE PERMITTED IN IMMEDIATE WORK AREA
WATER FOUNTAIN PROHIBITED IN WORK AREA

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

NO SPEC ADVISE:
- CHEMICAL CARTRIDGE RESPIRATOR
  WITH AN ORGANIC VAPOR CARTRIDGE

HIGH LEVELS:
- SUPPLIED-AIR RESPIRATOR
  WITH A FULL FACE-PIECE, HELMENT, OR HOOD

FIREFIGHTING:
- SELF-CONTAINED BREATHING APPARATUS
  WITH A FULL FACE-PIECE
  OPERATED IN PRESSURE-DEMAND OR POSITIVE-PRESSURE MODE

ROUTE OF ENTRY INTO BODY
INGESTION
INHALATION
SKIN ABSORPTION
SKIN OR EYE CONTACT

3

SYMPTOMS
SKIN BURNS
ABDOMINAL IRRITATION
MUCOUS MEMBRANE IRRITATION
RESPIRATORY IRRITATION
RESPIRATORY DISTRESS
REPRODUCTIVE EFFECTS

FIRST AID PROCEDURES FOLLOWING EXPOSURE
IF THIS CHEMICAL GETS INTO THE EYES, IMMEDIATELY WASH THE EYES WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING THE LOWER AND UPPER LIDS. GET MEDICAL ATTENTION IMMEDIATELY. CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL.

IF THIS CHEMICAL GETS ON THE SKIN, IMMEDIATELY WASH CONTAMINATED SKIN WITH SOAP OR MILD DETERGENT & WATER. IF THIS CHEMICAL SOAKS CLOTHING, IMMEDIATELY REMOVE CLOTHING & WASH SKIN WITH SOAP OR MILD DETERGENT & WATER. GET MEDICAL ATTENTION PROMPTLY.

IF A PERSON BREATHES IN LARGE AMOUNTS OF THIS CHEMICAL, MOVE THE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED PERFORM ARTIFICIAL RESPIRATION. KEEP THE AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

IF THIS HALOGENATED HYDROCARBON HAS BEEN SWALLOWED. REMOVE BY GASTRIC LAVAGE OR EMESIS. MAINTAIN BLOOD PRESSURE BY ADMINISTERING 5% GLUCOSE INTRAVENOUSLY. DO NOT GIVE STIMULANTS. GET FURTHER MEDICAL TREAT-MENT IMMEDIATELY.
(DREISBACH - HANDBOOK OF POISONING, 11TH ED.)

BULLETINS
05 02 83 MICHIGAN WASTE DUMP CONTAINING THE PESTICIDE C-56 IS ORDERED TO RESUME CLEANUP

SPECIAL INFORMATION
TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
IINNCCOO
TYPE WHAT INFORMATION YOU REQUIRE:
/ALL/, SPECIFIC INFORMATION (BY 4-LETTER COMMAND), /HELP/, OR /NONE/.
IINNCCOO

INCOMPATIBILITIES
NONE
WHAT INFORMATION YOU REQUIRE:

Chemical Fact Sheet* March 1983

ALUMINUM OXIDE

The information in this sheet applies to workplace exposure resulting from processing, manufacturing, storing or handling and is not designed for the population at large. Any generalization beyond occupational exposures should not be made. The best industrial hygiene practice is to maintain concentrations of all chemicals at levels as low as practical.

Chemical Names: Aluminum trioxide; CAS 1344-28-1.

Trade Names: Alundum, Bauxite, Bayerite, Boehmite, Diaspore, Gibbsite, Alumina, Corundum, Faserton and others.

Uses: In the production of aluminum; manufacture of abrasives, refractories, ceramics, insulators, catalysts, paper, fluxes, synthetic gems, spark plugs, lightbulbs, and others.

PHYSICAL INFORMATION

Appearance: White to red powders, balls or lumps.

Odor: None.

Behavior in Water: Insoluble, will sink. May react slowly to form aluminum hydroxide.

HEALTH HAZARD INFORMATION

OSHA Standard: Average 8 hour exposure -- 15 mg/m^3 (Nuisance Dust).

NIOSH Recommended Limit: None established.

ACGIH Recommended Limit: Average 8 hour exposure -- 10 mg/m^3 (Nuisance Dust).

Short Term Exposure:

Inhalation: Dust particles are abrasive and may cause irritation, chest pain and shortness of breath.

Skin: May cause irritation.

Eyes: May cause irritation.

Ingestion: A hydrated form, aluminum hydroxide gel, is used as an antacid and may cause constipation.

Long Term Exposure:

Inhalation of high dust concentration may damage the respiratory tract. Aluminum oxide, usually accompanied by exposure to silicates and iron compounds, has been linked to emphysema and other respiratory diseases. Individuals with lung diseases should be protected from exposure.

*Prepared by the Bureau of Toxic Substance Assessment, New York State Department of Health. For an explanation of the terms and abbreviations used, see "Toxic Substances: How Toxic is Toxic" available from the New York State Department of Health.

EMERGENCY AND FIRST AID INSTRUCTIONS

Inhalation: Move victim to fresh air. Give artificial respiration or oxygen, as necessary. Seek medical attention, as necessary.

Skin: Wash affected area with soap and water. Do not rub excessively.

Eyes: Rinse with plenty of water for at least 15 minutes. Take care not to rub. Seek medical attention if necessary.

Ingestion: No adverse effects expected.

FIRE AND EXPLOSION INFORMATION

General: Non-flammable.

REACTIVITY

Conditions to Avoid: None special.

Materials to Avoid: May react violently with chlorine trifluoride and cause violent polymerization of ethylene oxide.

PROTECTIVE MEASURES

Storage and Handling: Store in closed containers protected from physical damage. Keep dust level down.

Engineering Controls: Use ventilation to control dust levels. Sinks, showers and eyewash stations should be available.

Protective Clothing (Should not be substituted for proper handling and engineering controls): Safety goggles and gloves may be useful in areas of high dust levels.

Protective Equipment: A dust mask may be necessary at high dust levels.

PROCEDURES FOR SPILLS OR LEAKS

Warn other workers of spill. Put on appropriate protective clothing and equipment. Sweep into suitable container taking care not to raise dust levels. May be disposed of as an inert solid in a landfill. However, contact the regional office of the New York State Department of Environmental Conservation for any regulations concerning disposal.

For more information:

Contact the Industrial Hygienist or Safety Officer at your worksite or the New York State Department of Health, Bureau of Toxic Substance Assessment, Empire State Plaza, Tower Building, Albany, New York 12237.

CAL FORMULA
PB

SYNONYMS
WHITE LEAD
C.I. PIGMENT METAL 4
C.I. 77575
LEAD FLAKE

····LEAD····

PERMISSIBLE EXPOSURE LIMIT
50 UG/M3 OSHA TWA - 0.15 MG/M3 ACGIH TWA - 0.45 MG/M3 ACGIH STEL
TERATOGEN SUSPECT REPORTABLE QUANTITIES 1 LB CWA 307(A) CERCLA
HAZARD RATING TOXICITY -3- IGNITABILITY -0- REACTIVITY -2-
PERSISTENCE -3- FOR RATING DEFINITIONS, ACCESS /STAT/

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION
VARIABLE TO
INORGANIC COMPOUND

PHYSICAL DESCRIPTION
VARIABLE IN DESCRIPTION TO PARTICULAR COMPOUND

MOLECULAR WEIGHT: 207.19
BOILING POINT AT 1 ATM, F: 1783F
SOLUBILITY IN WATER, G/100 G WATER AT 20C: INSOLUBLE
FLASH POINT, CLOSED CUP, F (OR OPEN CUP IF OC): INCOMBUSTABLE
VAPOR PRESSURE AT 20 C MM HG: 0.00MM
MELTING POINT, F: 473F
UPPER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: INCOMBUSTABLE
LOWER EXPLOSIVE LIMIT IN AIR, % BY VOLUME: INCOMBUSTABLE
SPECIFIC GRAVITY 11.35

INCOMPATIBILITIES
STRONG OXIDIZERS
PEROXIDES
ACTIVE METALS
SODIUM
POTASSIUM

PROTECTIVE EQUIPMENT REQUIREMENTS:
PREVENT SKIN CONTACT
WEAR IMPERVIOUS CLOTHING
WEAR GLOVES
WEAR FACESHIELD (8 INCH MINIMUM)
PREVENT REPEATED OR PROLONGED SKIN CONTACT
PROVIDE CONTAINER TO STORE CLOTHING UNTIL LAUNDERED OR DISCARDED
WEAR SPLASH/DUST PROOF GOGGLES
PLACE CONTAMINATED CLOTHING IN CLOSED CONTAINER UNTIL
LAUNDERED OR DISCARDED

INFORM PERSONS HANDLING CONTAMINATED CLOTHING OF HAZARDOUS
PROPERTIES OF SUBSTANCE

WEAR IMPERVIOUS BOOTS

EMPLOYEE SHOULD WASH:
AT THE END OF EACH WORK SHIFT

REMOVE CLOTHING:
IMMEDIATELY IF IT IS CONTAMINATED

THE FOLLOWING EQUIPMENT SHOULD BE AVAILABLE:
EYEWASH, QUICK DRENCH

RESPIRATOR SELECTION (UPPER LIMIT DEVICES PERMITTED)

0.5 MG/M3 :
HIGH-EFFICIENCY PARTICULATE RESPIRATOR

2.5 MG/M3 :
HIGH-EFFICIENCY PARTICULATE RESPIRATOR
WITH A FULL FACEPIECE

50 MG/M3 :
POWERED AIR-PURIFYING RESPIRATOR
WITH A HIGH-EFFICIENCY FILTER
TYPE C SUPPLIED AIR
SUPPLIED AIR RESPIRATOR
OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE,

100 MG/M3 :
TYPE C SUPPLIED AIR
SUPPLIED AIR RESPIRATOR
WITH A FULL FACEPIECE
OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE,
TYPE C SUPPLIED AIR
SUPPLIED AIR RESPIRATOR
WITH A FULL FACE-PIECE, HELMET, OR HOOD
OPERATED IN PRESSURE-DEMAND, POSITIVE-PRESSURE,

FIREFIGHTING :
SELF-CONTAINED BREATHING APPARATUS
WITH A FULL FACEPIECE
OPERATED IN PRESSURE DEMAND OR POSITIVE-PRESSURE MODE

SYMPTOMS:
LASSITUDE
INSOMNIA
CYANOSIS
EYE GROUNDS
GINGIVAL LEAD LINE
ANOREXIA
WEIGHT LOSS
MALNUTRITION
CONSTIPATION
ABDOMINAL PAIN
HYPOTENSION
ANEMIA
TREMORS
WRIST DROP
REPRODUCTIVE EFFECTS
LOWERED SPERM COUNT

FIRST AID

IF THIS CHEMICAL GETS INTO THE ... DIATELY WASH THE EYES WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING THE LOWER AND UPPER LIDS. GET MEDICAL ATTENTION IMMEDIATELY. CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL.

IF THIS CHEMICAL GETS ON THE SKIN, IMMEDIATELY WASH CONTAMINATED SKIN WITH SOAP OR MILD DETERGENT & WATER. IF THIS CHEMICAL SOAKS CLOTHING, IMMEDIATELY REMOVE CLOTHING & WASH SKIN WITH SOAP OR MILD DETERGENT & WATER. GET MEDICAL ATTENTION PROMPTLY.

IF A PERSON BREATHES IN LARGE AMOUNTS OF THIS CHEMICAL, MOVE THE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED PERFORM ARTIFICIAL RESPIRATION. KEEP THE AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

INGESTED LEAD:

EMERGENCY TREATMENT - REMOVE BY GASTRIC LAVAGE WITH DILUTE MAGNESIUM SULFATE OR SODIUM SULFATE ... OR BY EMESIS. TREAT CEREBRAL EDEMA WITH ... ISOLONE OR OTHER CORTICOSTEROID.

BULLETINS

06 18 82 OSHA ISSUES ADMINI... STAY ON REMOVAL OF SOME WORKERS WHEN WHOLE BLOOD EXCEEDS 50 ... LEAD CONTENT.
05 16 82 OSHA ADDED PROVISION ... STANDARD THAT LABS TESTING HUMAN BLOOD MUST BE APPROVED-L... LABS AVAILABLE FROM OSHA
11 12 82 QUALITATIVE RESPIRATO... FOR 10 TIMES PEL OR LESS ONLY

CHEMTOX Data

-- IDENTIFIERS --

CHEMTOX RECORD: [illegible]   LAST UPDATE OF THIS RECORD: 03/31/90

NAME: COPPER

SYNONYMS: NONE

CAS: 7440-50-8   RTECS: GL5325000

FORMULA: Cu   MOL WT: At. Wt. = 63.546

CHEMICAL CLASS: Metal

See other identifiers listed below under Regulations.

-- PROPERTIES --

PHYSICAL DESCRIPTION: YELLOW TO BROWN COLORED METAL

BOILING POINT:	2857 K	2583.6 C	4214.9 F
MELTING POINT:	1356 K	1082.6 C	1981.1 F
FLASH POINT:			
AUTO IGNITION:	NA		
VAPOR PRESSURE:	1MM @ 1628 C		
UEL:	NA		
LEL:	NA		
VAPOR DENSITY:	No data		
SPECIFIC GRAVITY:			
DENSITY:	8.92		
WATER SOLUBILITY:	INSOLUBLE		

INCOMPATIBILITIES: ACETYLENE

REACTIVITY WITH WATER: No data on water reactivity

REACTIVITY WITH COMMON MATERIALS: No data

STABILITY DURING TRANSPORT: No Data

NEUTRALIZING AGENTS: No data

POLYMERIZATION POSSIBILITIES: No data

TOXIC FIRE GASES: None reported other than possible metal and vapors

ODOR DETECTED AT (ppm):

ODOR DESCRIPTION:

100 % ODOR DETECTION: No data

-- REGULATIONS --

DOT HAZARD CLASS: No class given

DOT GUIDE:

DOT ID NUMBER:

DOT SHIPPING NAME:

STCC NUMBER:

CLEAN AIR ACT:

EPA WASTE NUMBER:

CERCLA REF:

RQ DESIGNATION: D 5000 pounds (2270 kg)

SARA TPQ VALUE: Not listed

SARA Sect. 312 categories:

Acute toxicity: adverse effect to

target organs.

LISTED IN SARA Sect. 313: Yes

NFPA CODES:
HEALTH HAZARD (BLUE): Unspecified
FLAMMABILITY (RED) : Unspecified
REACTIVITY (YELLOW): Unspecified
SPECIAL : Unspecified

-- TOXICITY DATA --

TARGET ORGANS: RESP SYSTEM, SKIN, EYES, INCREASED RISK OF WILSON'S DISEASE
SYMPTOMS: [illegible]

CONC IDLH: NA ppm

ACGIH TLV: 0.2 mg/M3 fume
ACGIH STEL: Not specified

OSHA PEL: Transitional Limits:
PEL - (fume - 0.1) (Dusts and mists - 1)mg/M3
Final Rule Limits:
TWA - (fume - 0.1) (Dusts and mists -1) mg/M3

CARCINOGEN?: N STATUS:

CARCINOGEN LISTS:
IARC: Not listed
NIOSH: Not listed
NTP: Not listed
ACGIH: Not listed.

HUMAN TOXICITY DATA: (Source: NIOSH RTECS)
orl hmn TDLo:120 ug/kg PHRPA6 73,910,58
GASTROINTESTINAL
Nausea or vomiting

LD50 Value: Not in RTECS 1988

OTHER SPECIES TOXICITY DATA: (Source: NIOSH RTECS 1988)

ipr-mus LD50:3500 ug/kg

Reproductive toxicity (1988 RTECS):
This chemical is a mammalian reproductive toxin.

-- PROTECTION AND FIRST AID --
PROTECTION SUGGESTED:
FROM THE CHRIS MANUAL:

RECOMMENDED RESPIRATION PROTECTION Source: NIOSH POCKET GUIDE (85-114)
OSHA (COPPER)
5 mg/M3: Any dust and mist respirator except single-use respirators. * Substance reported to cause eye irritation or damage may require eye protection.
10 mg/M3: Any dust and mist respirator except single-use and quarter-mask respirators. * Substance reported to cause eye irritation or [illegible] / Any supplied-air respirator. *

recycled paper ecology and environment

Substance reported to cause eye irritation or damage may require eye protection. / Any self-contained breathing apparatus. * Substance reported to cause eye irritation or damage may require eye protection.
25 mg/M3: Any powered air-purifying respirator with a dust and mist filter. * Substance reported to cause eye irritation or damage may require eye protection. / Any supplied-air respirator operated in a continuous flow mode. * Substance reported to cause eye irritation or damage may require eye protection.
50 mg/M3: Any air-purifying full facepiece respirator with a high-efficiency particulate filter. / Any self-contained breathing apparatus with a full facepiece. / Any supplied-air respirator with a full facepiece. / Any powered air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter. * Substance reported to cause eye irritation or damage may require eye protection.
1000 mg/M3: Any supplied-air respirator with a half-mask and operated in a pressure-demand or other positive pressure mode. * Substance reported to cause eye irritation or damage may require eye protection.
2000 mg/M3: Any supplied-air respirator with a full facepiece and operated in a pressure-demand or other positive pressure mode.
EMERGENCY OR PLANNED ENTRY IN UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS.: Any self-contained breathing apparatus with full facepiece and operated in a pressure-demand or other positive pressure mode. / Any supplied-air respirator with a full facepiece and operated in pressure-demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive pressure mode.
ESCAPE: Any air-purifying full facepiece respirator with a high-efficiency particulate filter. / Any appropriate escape-type self-contained breathing apparatus.

------------------------------- INITIAL INCIDENT RESPONSE -------------------------------

US Department of Transportation Guide to Hazardous Materials Transport Information - Publication DOT 5800.4 (1987).
DOT SHIPPING NAME:
DOT ID NUMBER:
No guide information for this compound.

DISCLAIMER: The data shown above on this chemical represents a best effort on the part of the compilers of the CHEMTOX database to obtain useful, accurate, and factual data. The use of these data shall be in accordance with the guidelines and limitations of the user's CHEMTOX license agreement. The COMPILERS of the CHEMTOX database shall not be held liable for inaccuracies or omissions within this database, or in any of its printed or displayed output forms.

APPENDIX B

GEOPHYSICAL SURVEY

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

PHASE II INVESTIGATIONS
GEOPHYSICAL SURVEY

Dibacco Site No. 1, Old Creek
Site Number 932056a
City of Niagara Falls, Niagara County

May 1990

Prepared for:

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, Commissioner

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

Prepared by:

Ecology and Environment Engineering, P.C.

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

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Michael J. O'Toole, Jr., P.E., Director

Prepared by:

TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

This geophysical investigation report for Dibacco Site No. 1, Old Creek (I.D. No. 932056A) on Disney Drive in the City of Niagara Falls, Niagara County, New York, was prepared by Ecology and Environment Engineering, P.C. (E & E), under contract to the New York State Department of Environmental Conservation (NYSDEC). The geophysical investigation consisted of an EM31 (electromagnetic terrain conductivity) survey and a portable proton magnetometer (total earth field magnetics) survey. This report includes field data (Appendix A) and contour maps (Appendix B) for the geophysical survey performed at this site on April 30, 1990 as part of the Phase II Investigation. Additionally, interpretations of the data generated, along with conclusions, are provided in this report.

2. OBJECTIVES

The geophysical survey program at the Dibacco Site No. 1, Old Creek, was designed to achieve several general goals. The main objectives of the geophysical methods used were to optimize the locations of the three proposed groundwater monitoring wells; reduce the risks associated with drilling into unknown terrain and wastes; reduce overall project time and cost; improve the accuracy and confidence of the investigation; identify the existence and boundaries of buried waste or groundwater contamination plumes; and determine vertical and horizontal anomalies.

3. METHODS

For the purpose of performing ground conductivity (EM31) and geomagnetic (magnetometer) surveys, grid coordinates were established in locations which correspond to the three proposed on-site groundwater monitoring wells.

Survey grids 1 through 3 included the proposed locations of monitoring wells GW-1 through GW-3 as follows:

Geophysical Survey Grid No.	Proposed Monitoring Well Included
1	GW-1
2	GW-2
3	GW-3

All geophysical survey grids were 1,600 square feet in area. The X and Y axes of each survey grid were oriented approximately east-west and north-south, respectively. Precise compass orientations were obtained for each of the survey grid axes. These orientations are indicated on the geophysical contour maps (see Appendix B). Coordinate 0,0 is located in the southwest corner of each survey grid. Semi-permanent wooden stakes mark the proposed monitoring well locations for reference during drilling.

Horizontal and vertical dipole readings in north-south and east-west orientations were recorded at each node while performing the electromagnetic ground conductivity survey with a Geonics, Ltd. EM31 instrument. The effective depths of penetration provided by the EM31 in the vertical and horizontal dipole modes are $\leq$ 18 feet and $\leq$ 9 feet, respectively. Geomagnetic readings were recorded at each node in both north-south and east-west orientations using an EG+G Unimag II (Model G-846) Portable Proton Magnetometer. The response of the magnetometer is proportional to the mass of the ferrous target. The effective depths of the EM31 and magnetometer were considered adequate to delineate any buried materials that may be encountered while drilling.

All geophysical field data were initially recorded in two logbooks dedicated to this site investigation. Magnetometer data were reduced after using background station readings to correct the recorded values for diurnal variations. EM31 ground conductivity data were averaged for north-south and east-west orientations for the vertical and horizontal dipole positions. The reduced geophysical data were then plotted and contoured for each magnetometer and EM31 survey (see Appendices A and B).

4. DATA INTERPRETATION

EM31 and Magnetometer Interpretations

The purpose of interpreting the results of the EM31 and magnetometer surveys at Dibacco Site No. 1, Old Creek, is to provide a probable explanation for anomalous data contours. The presence of buried waste, metal objects, and utilities is often manifested as relatively increased or decreased nodal readings and gradient values.

The following interpretations are based on the geophysical contour maps (see Appendix B) generated from the ground conductivity and geomagnetic field measurements listed in Appendix A. These three geophysical survey grids encompass the three proposed groundwater monitoring well locations as proposed by NYSDEC in the Phase II Investigation Work Plan for the site (see Figure 4-1).

The following discussion provides details of each of the three geophysical survey grids.

Survey Grid Area No. 1. A review of magnetometer data contours at survey grid No. 1 indicates that this 1,600-square-foot survey area contains three significant geomagnetic field anomalies. Magnetic contours range from 55,573 gammas to 56,759 gammas. The three steepest geomagnetic gradients observed in the survey grid are near coordinates 10,10, 20,30, and 0,40. The source of these increases in geomagnetic field strength may be attributed to a shallow ferrous metal object northeast of the survey grid. Much metallic debris, including an abandoned refrigerator, was seen in the area.

Contours of EM31 data exhibit a shallow ground conductivity in the vertical and horizontal dipole survey modes at survey grid No. 1. One anomaly is identified at coordinate 0,20. The negative readings in the

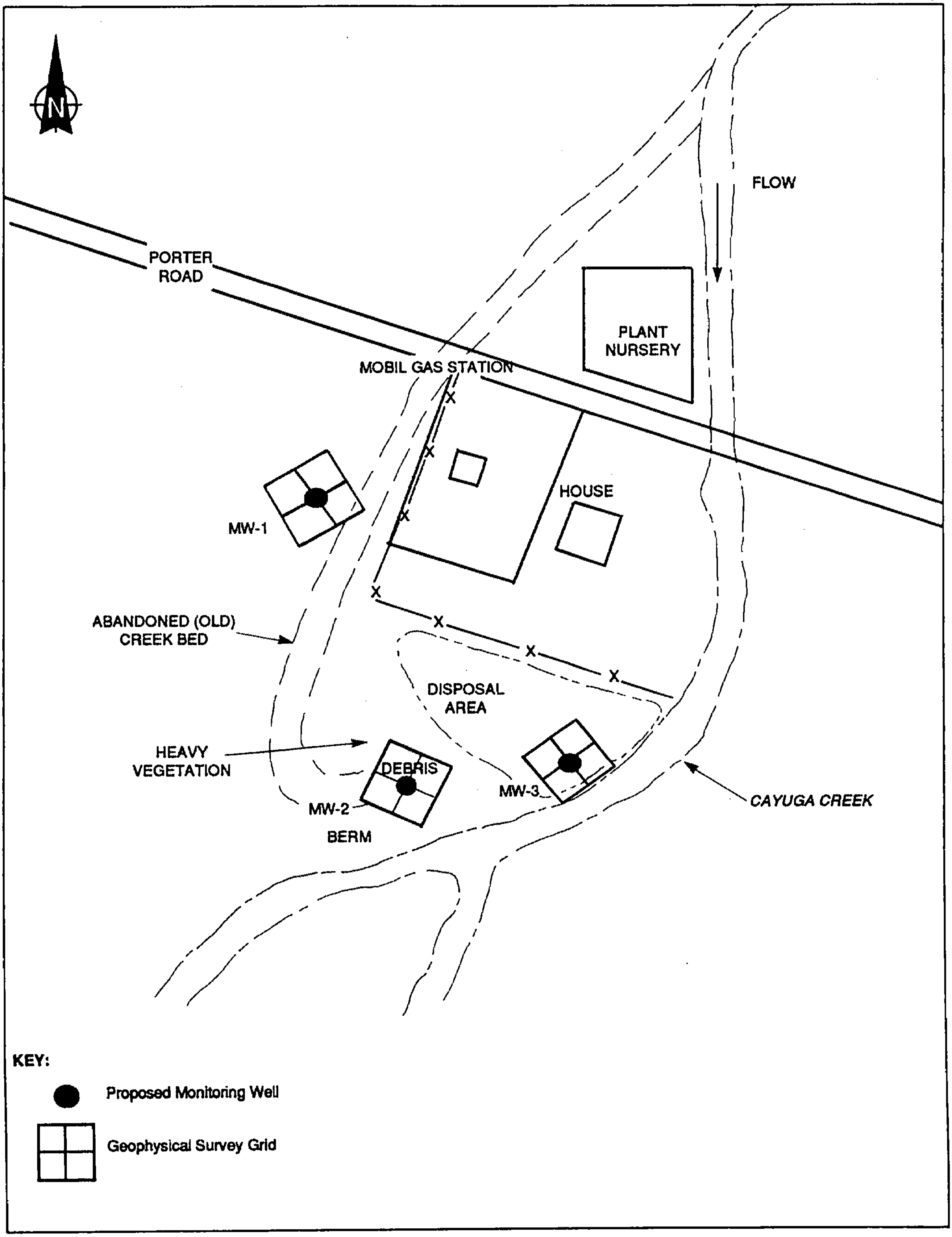


Figure 4 -1
GEOPHYSICAL SURVEY AND PROPOSED GROUNDWATER MONITORING WELL LOCATIONS DIBACCO SITE NO. 1

southern portion of this survey grid are indicative of a buried metallic object.

The installation of proposed groundwater monitoring well GW-1 at the location indicated on the contour map (see Appendix B) is acceptable. The well location may be moved 10 feet east (to grid coordinate 30,20) if necessary for better assurance of avoiding buried metallic objects.

Survey Grid Area No. 2. A review of magnetometer data contours at survey grid No. 2 indicates that this 1,600-square-foot survey area exhibits a low geomagnetic field gradient. Magnetic contours range from 56,317 gammas to 58,447 gammas. An isolated increase in magnetic field strength (56,527 to 58,447 gammas) is observed at grid coordinate 0,40. A second anomaly, not quite as great in strength, is noted at coordinate 10,0. These anomalies may be attributed to small ferrous metal objects at shallow depths.

Contours of EM31 data indicate shallow ground conductivity gradients in the horizontal and vertical dipole modes at survey grid No. 2. Ground conductivity ranges from 56 to 108 millimhos/meter at this survey area. A sharp gradient at coordinate 0,0 is seen in the plot of the vertical dipole.

The installation of proposed groundwater monitoring well GW-2 at the location indicated on the contour map (see Appendix B) is acceptable. The well location may be moved 10 feet in any direction, if necessary, to facilitate drill-rig access.

Survey Grid Area No. 3. A review of magnetometer data contours at survey grid No. 3 indicates that this 1,600-square-foot survey area exhibits an increase in geomagnetic gradient in the northeast corner of this survey area. An additional geomagnetic anomaly is observed at grid coordinate 10,40. The anomalies are suspected to represent shallow ferrous metal objects.

Contours of EM31 data indicate minor, shallow ground conductivity gradients in the horizontal and vertical dipole modes at survey grid No. 3. Ground conductivity ranges from 28 to 47 millimhos/meter at this survey area.

The installation of the proposed groundwater monitoring well GW-3 at the location indicated on the contour map (see Appendix B) is acceptable. The well location could be moved, if necessary, to the west, east, or south to facilitate drill-rig access.

5. CONCLUSIONS AND RECOMMENDATIONS

Based upon the interpretations discussed in Section 4, the placement of the three proposed groundwater monitoring wells has some flexibility within each grid area of Dibacco Site No. 1, Old Creek. Monitoring well GW-1 could be moved 10 feet east to coordinate 30,20 to avoid an anomaly in the southwest and north-central portions of survey grid area No. 1. Monitoring well GW-2 could be moved 10 feet in any direction to facilitate drill-rig access, as the majority of the grid area does not appear to contain any buried metallic objects. Monitoring well GW-3 could be moved east or west up to 20 feet to facilitate drill-rig access, if necessary, as the surveys do not indicate the presence of buried metallic objects in the central part of survey grid area No. 3.

Prior to drilling, the local underground-utility locating service should be contacted to indicate possible public utilities buried in the vicinity of the drill sites.

All proposed well locations should be confirmed with a NYSDEC representative prior to the commencement of drilling.

APPENDIX A

MAGNETOMETER AND EM31
SURVEY DATA

Table A-1

AVERAGE NORTH-SOUTH/EAST-WEST GROUND CONDUCTIVITY READINGS WITH EM31

DIBACCO SITE NO. 1, OLD CREEK

Survey Grid No. 1

Station #	Vertical Dipole (millimhos/meter)	Horizontal Dipole (millimhos/meter)
0,0	77	47
0,10	NEG*	62
0,20	147	94
0,30	65	50
0,40	65	58
10,0	70	51
10,10	NEG	71
10,20	71	52
10,30	72	50
10,40	71	48
20,0	71	48
20,10	78	51
20,20	73	51
20,30	97	54
20,40	57	53
30,0	74	53
30,10	61	66
30,20	68	65
30,30	45	73
30,40	58	59
40,0	82	62
40,10	64	75
40,20	73	85
40,30	63	82
40,40	82	59

[UZ]YP3030:D2963, #3168, PM=30

*Negative meter readings (NEG) indicate very high conductivities beyond the capabilities of the instrument.

Table A-1 (Cont.)

AVERAGE NORTH-SOUTH/EAST-WEST GROUND CONDUCTIVITY READINGS WITH EM31

DIBACCO SITE NO. 1, OLD CREEK

Survey Grid No. 2

Station #	Vertical Dipole (millimhos/meter)	Horizontal Dipole (millimhos/meter)
0,0	72	56
0,10	100	65
0,20	76	62
0,30	73	61
0,40	69	56
10,0	97	69
10,10	91	79
10,20	78	71
10,30	75	60
10,40	70	48
20,0	99	85
20,10	89	78
20,20	82	70
20,30	77	63
20,40	72	54
30,0	94	85
30,10	89	80
30,20	82	70
30,30	79	65
30,40	75	63
40,0	106	85
40,10	95	86
40,20	89	75
40,30	84	75
40,40	82	65

[UZ]YN3030:D2963, #3168, PM=30

Table A-1 (Cont.)

AVERAGE NORTH-SOUTH/EAST-WEST GROUND CONDUCTIVITY READINGS WITH EM31

DIBACCO SITE NO. 1, OLD CREEK

Survey Grid No. 3

Station #	Vertical Dipole (millimhos/meter)	Horizontal Dipole (millimhos/meter)
0,0	39	28
0,10	34	28
0,20	36	30
0,30	40	32
0,40	28	41
10,0	34	28
10,10	36	30
10,20	39	32
10,30	39	35
10,40	38	32
20,0	36	30
20,10	38	31
20,20	41	32
20,30	44	38
20,40	34	32
30,0	40	32
30,10	40	32
30,20	42	34
30,30	45	37
30,40	37	33
40,0	40	32
40,10	43	34
40,20	44	35
40,30	47	40
40,40	30	33

[UZ]YN3030:D2963, #3168, PM=30

Table A-2

AVERAGE NORTH-SOUTH/EAST-WEST MAGNETOMETER READINGS

DIBACCO SITE NO. 1, OLD CREEK

Grid No. 1

Station #	Average N-S/E-W (Gammas)	Corrected Data* (Gammas)
0,0	56,646	56,646
0,10	56,573	56,573
0,20	56,516	56,516
0,30	56,742	56,742
0,40	56,437	56,438
10,0	56,643	56,644
10,10	56,313	56,314
10,20	56,594	56,595
10,30	56,758	56,759
10,40	56,722	56,723
20,0	56,677	56,678
20,10	56,662	56,663
20,20	56,598	56,600
20,30	57,000	57,002
20,40	56,670	56,672
30,0	56,587	56,589
30,10	56,710	56,712
30,20	56,675	56,677
30,30	56,667	56,669
30,40	56,517	56,519
40,0	56,615	56,618
40,10	56,679	56,682
40,20	56,745	56,748
40,30	56,669	56,672
40,40	56,516	56,519

[UZ]YP3030:D2963, #3167, PM=34

*Data has been corrected for natural magnetic fluctuations (i.e., drift) by using data obtained at an off-site base station.

Table A-2 (Cont.)

AVERAGE NORTH-SOUTH/EAST-WEST MAGNETOMETER READINGS

DIBACCO SITE NO. 1, OLD CREEK

Grid No. 2

Station #	Average N-S/E-W (Gammas)	Corrected Data* (Gammas)
0,0	56,377	56,377
0,10	56,436	56,436
0,20	56,431	56,432
0,30	56,645	56,646
0,40	56,658	56,659
10,0	56,164	56,165
10,10	56,407	56,409
10,20	56,579	56,581
10,30	56,634	56,636
10,40	56,677	56,679
20,0	56,248	56,251
20,10	56,519	56,522
20,20	56,774	56,777
20,30	56,650	56,654
20,40	56,637	56,641
30,0	56,275	56,279
30,10	56,400	56,405
30,20	56,566	56,571
30,30	56,612	56,617
30,40	56,563	56,569
40,0	56,305	56,311
40,10	56,311	56,317
40,20	56,521	56,527
40,30	56,520	56,527
40,40	58,440	58,447

[UZ]YP3030:D2963, #3167, PM=34

*Data has been corrected for natural magnetic fluctuations (i.e., drift) by using data obtained at an off-site base station.

Table A-2 (Cont.)

AVERAGE NORTH-SOUTH/EAST-WEST MAGNETOMETER READINGS

DIBACCO SITE NO. 1, OLD CREEK

Grid No. 3

Station #	Average N-S/E-W (Gammas)	Corrected Data* (Gammas)
0,0	56,688	56,688
0,10	56,700	56,700
0,20	56,657	56,657
0,30	56,590	56,590
0,40	56,540	56,540
10,0	56,627	56,627
10,10	56,704	56,704
10,20	56,647	56,647
10,30	56,568	56,568
10,40	56,323	56,323
20,0	56,752	56,752
20,10	56,729	56,729
20,20	56,649	56,650
20,30	56,562	56,563
20,40	56,589	56,590
30,0	56,703	56,704
30,10	56,679	56,680
30,20	56,671	56,672
30,30	56,624	56,625
30,40	56,657	56,658
40,0	56,732	56,732
40,10	56,687	56,688
40,20	56,675	56,676
40,30	56,660	56,661
40,40	56,187	56,188

[UZ]YP3030:D2963, #3167, PM=34

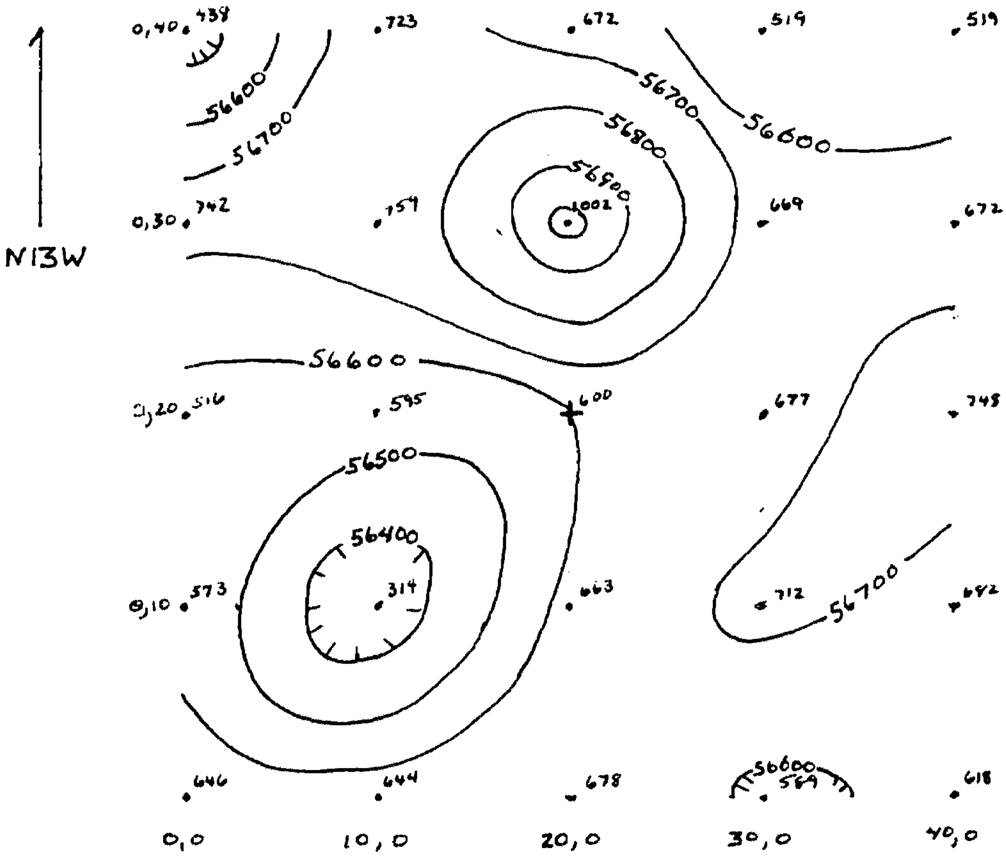
*Data has been corrected for natural magnetic fluctuations (i.e., drift) by using data obtained at an off-site base station.

APPENDIX B

MAGNETOMETER AND
EM31 SURVEY CONTOUR MAPS

DIBACCO #1
Groundwater Monitoring
WELL #1

MAGNETOMETER

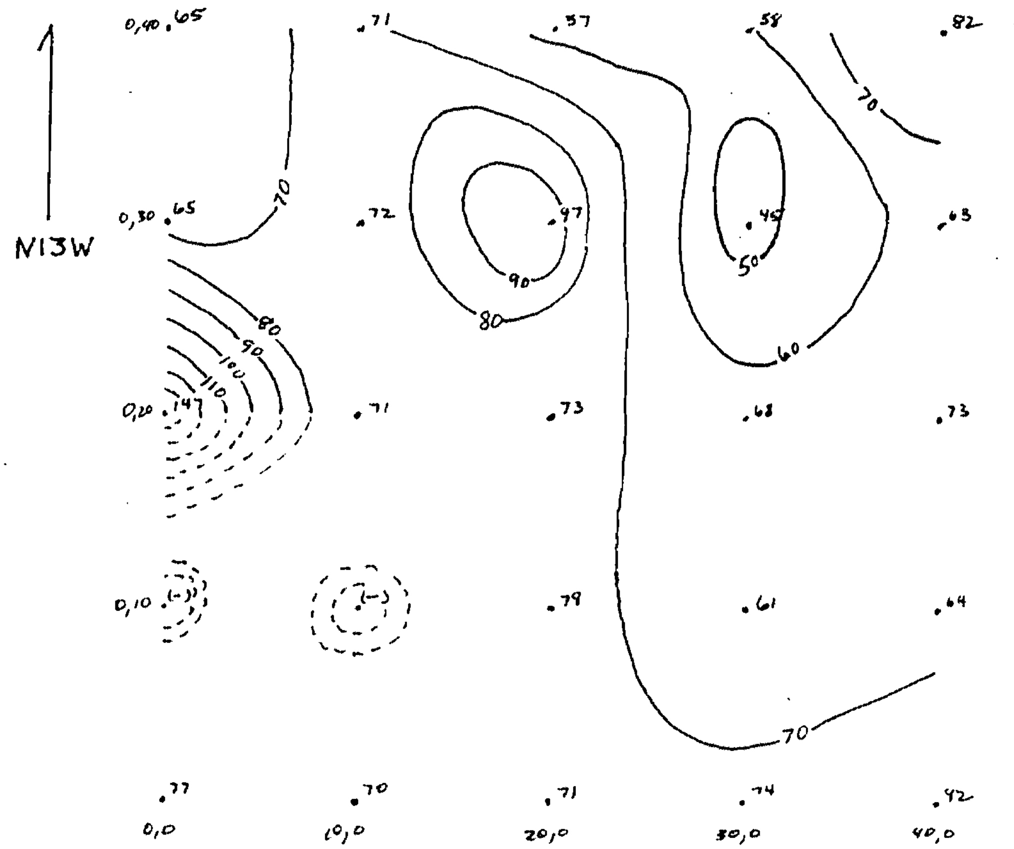


CONTOUR INTERVAL 100γ
Grid Interval 10'
+ WELL LOCATION

All data background corrected

DIBACCO #1
Groundwater Monitoring
WELL #1

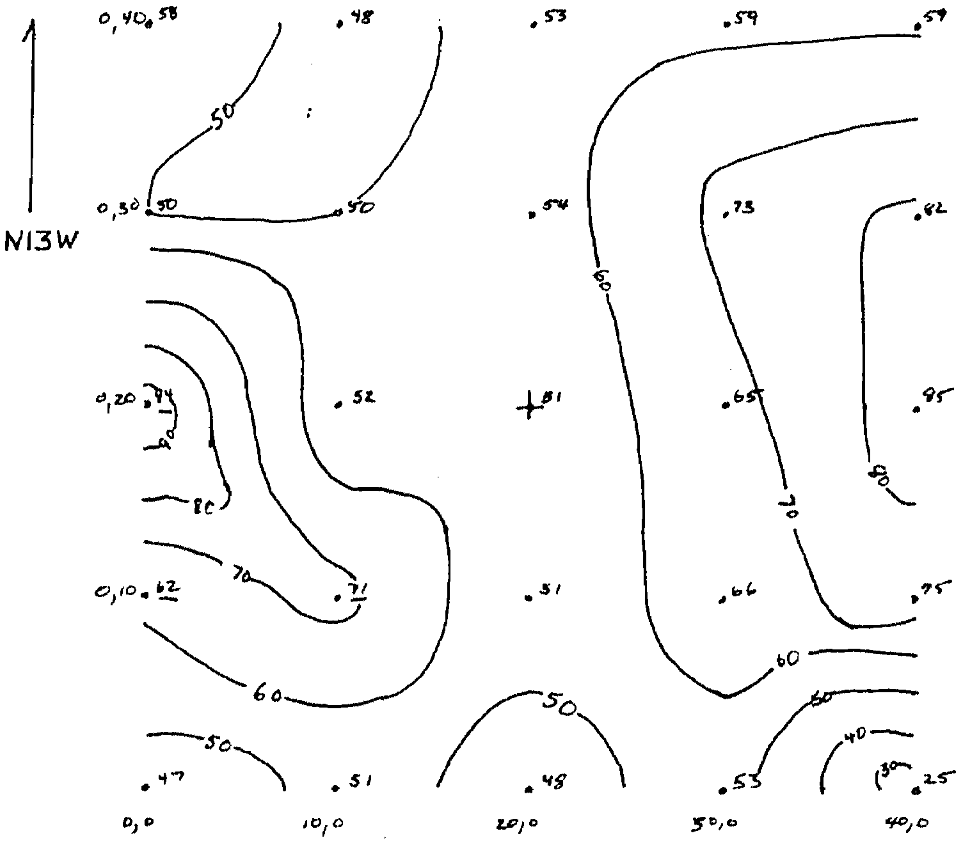
EM-31
VERTICAL DIPOLE



Contour Interval 10 millimHos/meter
Grid Interval 10'
+ WELL LOCATION

DIBACCO #1
Groundwater Monitoring
WELL # 1

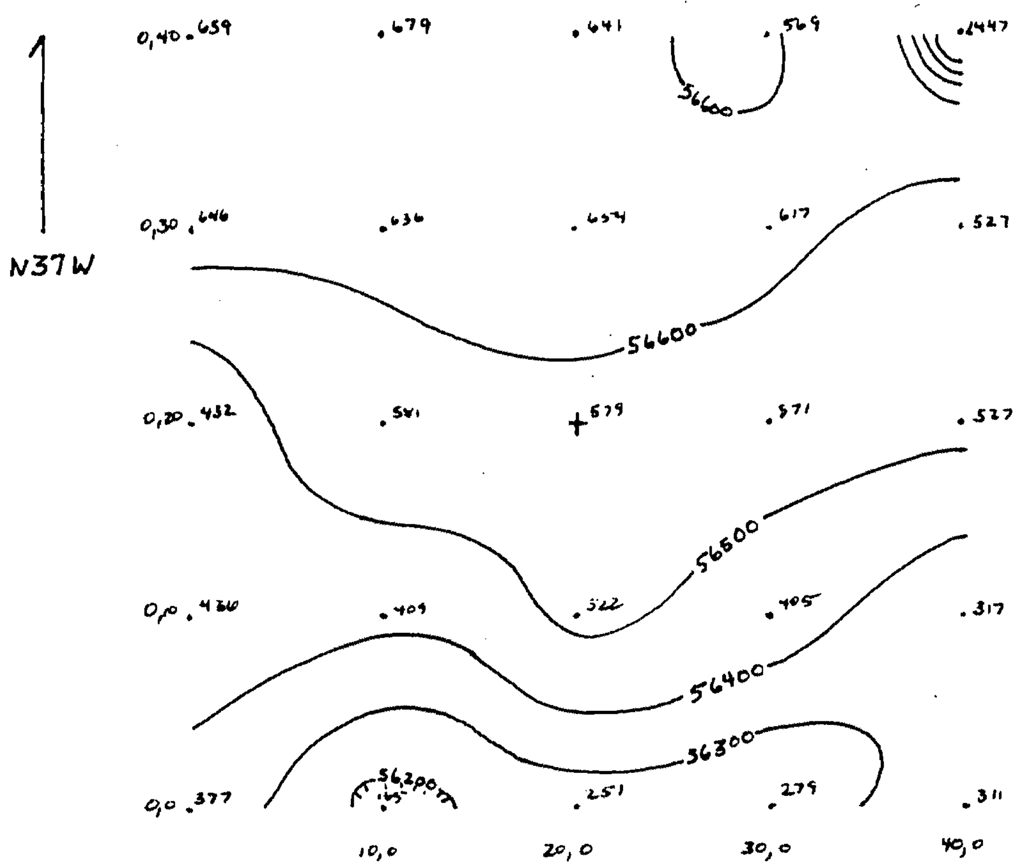
EM-31
HORIZONTAL DIPOLE



CONTOUR INTERVAL 10 millimHos/meter
Grid Interval 10'
+ WELL location

DiBAcco #1
Groundwater Monitoring
WELL #2

MAGNETOMETER

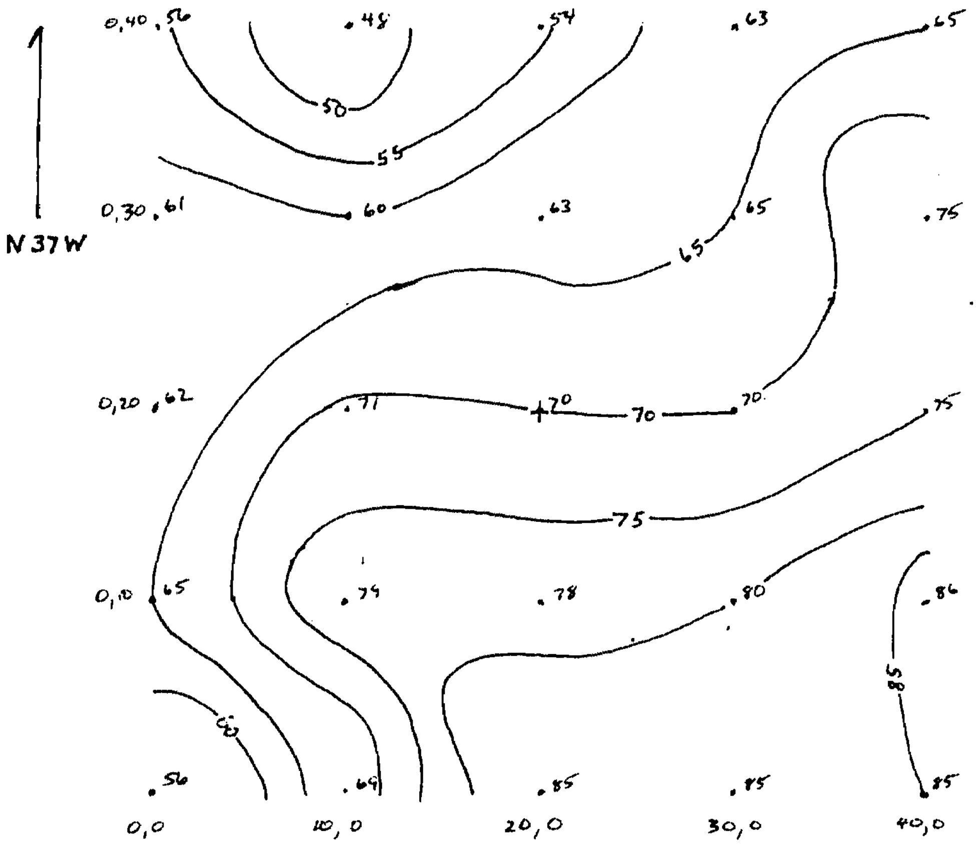


Contour Interval - 100γ
Grid Interval 10'
+ WELL LOCATION

ALL DATA Background corrected

DIBACCO #1
Groundwater Monitoring
WELL #2

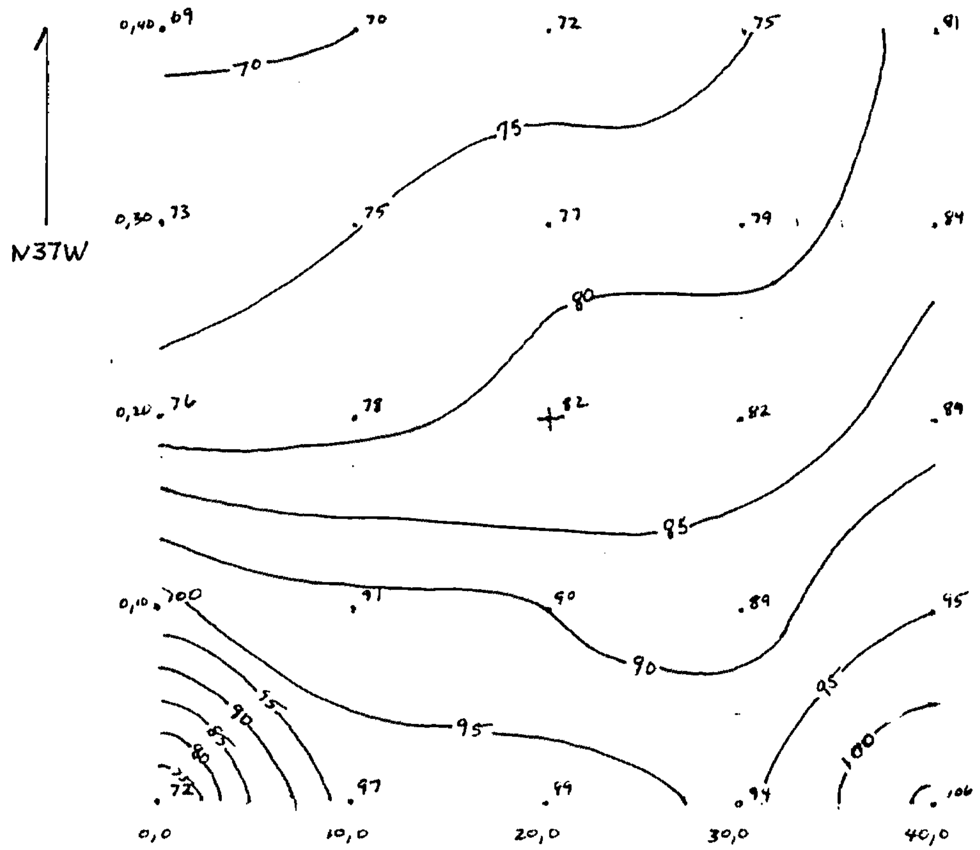
EM-31
HORIZONTAL DIPOLE



CONTOUR INTERVAL 5 millimHos/meter
Grid Interval 10'
+ well location

Di Bacco #1
Groundwater Monitouring
Well #2

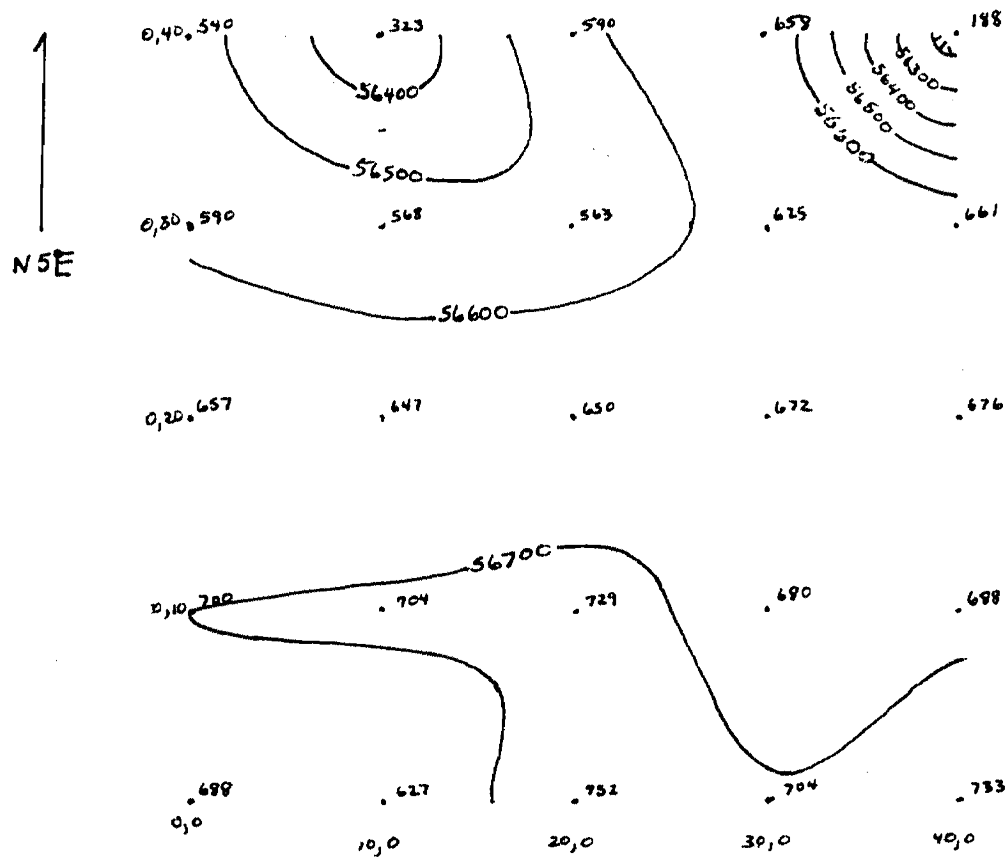
EM-31
Vertical Dipole



Contour Interval 5 millimhos/meter
Grid interval 10'
+ well location

DIBACCO #1
Groundwater Monitoring
WELL #3

MAGNETOMETER



CONTOUR INTERVAL
Grid Interval 10'
+ well Location

ALL data background corrected

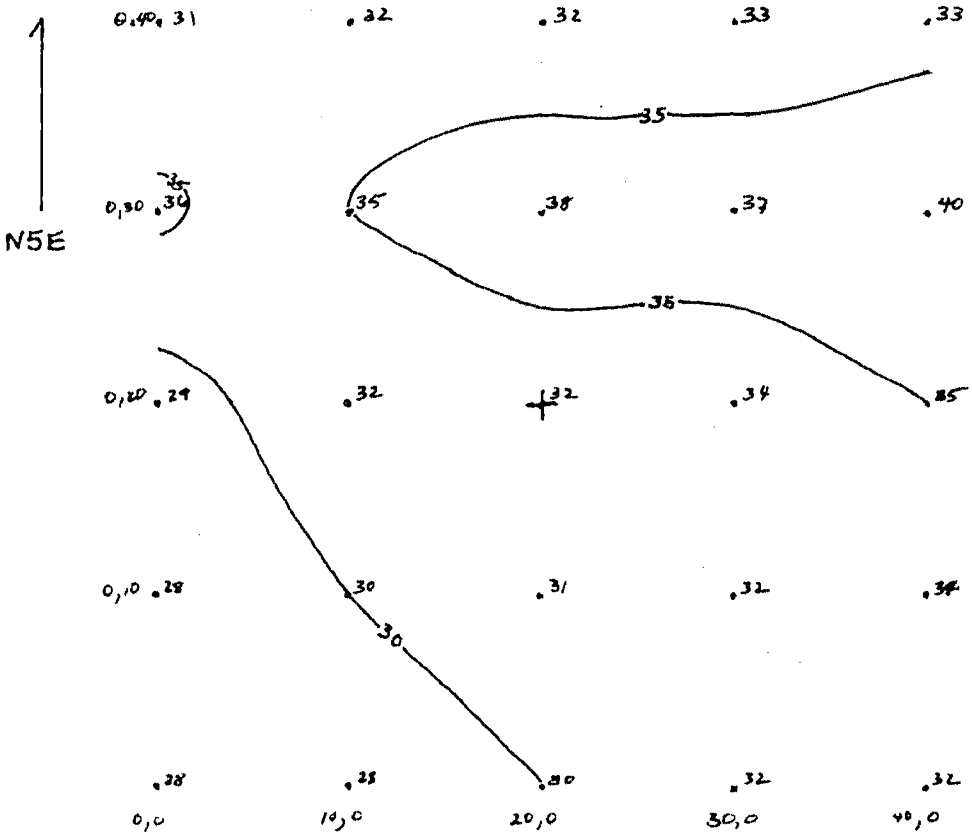
DIBACCO #1
Groundwater Monitoring
WELL #3

EM-31
VERTICAL DIPOLE

CONTOUR INTERVAL 5 millimHos/meter
Grid Interval 10'
+ WELL LOCATION

Dibacco #1
Groundwater Monitoring
WELL #3

EM-31
Horizontal Dipole



Contour Interval millimhos/meter
Grid Interval 10'
+ WELL LOCATION

APPENDIX C

SUBSURFACE BORING LOGS

DATE
STARTED 7/2/90
FINISHED 7/2/90
SHEET 1 OF 1

E + E DRILLING AND TESTING CO., INC.
SUBSURFACE LOG

HOLE NUMBER GW-1
SURFACE ELEVATION
GROUNDWATER DEPTH 10.7' bgs before construction

PROJECT Dibacco #1 - Old Creek YP 3040
LOCATION South of Potter Rd., West of Mobil station

DEPTH – FT	WELL DIAGRAM	SAMPLE TYPE	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	PROFILE (Cl Si Sd Gr)	FIELD IDENTIFICATION OF SOILS	NOTES
0–2		SS	1 (0-2')	4	6	7	3		0-2': Medium brown and tan sand with gravel-sized debris/slag, organic material at the top, little black silty sand (fly ash?)	50% recovery ∅ppm-OVA
2–4	3.5'									Cuttings-2'-4'-med. brown silty clay, dry, small balls
4–6	5.5'	SS	2 (4-6')	4	6	8	6		4'-6': Light to medium brown silty clay, stiff, dry, thin vertical lines of grayish color	30% recovery ∅ppm-OVA
6–8	6.5'									Cuttings-4'-9' as above, small balls
9–11		SS	3 (9-11')	9	5	5	7		9'-11': Medium brown clay, moderate plasticity, several areas of white crystalline material with grayish and greenish tint- some along vertical breaks, less stiff than above	50% recovery ∅ppm-OVA
11–14										Cuttings 11'-14'- reddish brown clay, soft, forms large balls
14–16		SS	4 (14-16')	5	6	6	6		14'-16': Reddish brown silty sand with clay, fairly cohesive, moist (rock in end of spoon)	25% recovery 3ppm immed., then ∅ppm
16½	16.5'								16½' ⇒ Split spoon refusal Approx. ½" rock in bottom of spoon	
									T.D. = 16½ feet	

640088

CLASSIFICATION/BY B. Leichner

recycled paper
ecology and environment

DATE
STARTED 7/2/90
FINISHED 7/2/90
SHEET 1 OF 1

E + E DRILLING AND TESTING CO., INC.
SUBSURFACE LOG

HOLE NUMBER GW-2
SURFACE ELEVATION
GROUNDWATER DEPTH 13.8 bgs before const.

PROJECT Dibacco #1 - Old Creek YP 3040

LOCATION South of disposal area North of berm

DEPTH – FT	WELL DIAGRAM	SAMPLE TYPE	SAMPLE NO.	BLOWS ON SAMPLER 0-6 / 12-18	BLOWS ON SAMPLER 6-12 / 18-24	PROFILE (Cl Sl Sd Gr)	FIELD IDENTIFICATION OF SOILS	NOTES
0–2		SS	1 (0-2')	3 / 6	4 / 9		0-2': Brown to orangish brown clay, organic material at top, mod. plasticity, organic material interspersed throughout, occasional rust staining, stiff, dry, slightly moist at top	40% recovery Øppm-OVA
4								Cuttings 2'-5' brown clay, not balling
5–7	4.5'	SS	2 (5'-7')	5 / 6	6 / 11		5'-7': Brown clay, low to mod. plasticity, some orange and green-gray staining, vertical breaks with greenish gray staining and white crystalline material, stiff	95% recovery Øppm-OVA
6–8	6.5', 7.5'							Cuttings 7'-10' brown clay, large balls, soft
10–12		SS	3 (10'-12')	4 / 6	5 / 8		10'-12': Brown clay as above, white crystalline material and gray staining on vertical and horizontal surfaces, softer in these areas	50% recovery Øppm-OVA
13–15		SS	4 (13'-15')	6 / 15	15 / 15		13'-15': Brown silty clay with gravel, moist to wet, gravel is up to 1½", subangular to subrounded. Till.	50% recovery Øppm-OVA
15–17	15.5'	SS	5 (15'-17')	4 / Refusal	5		15'-17': Brown clay and silty clay with gravel, wet. Bedrock at 15'7"	20% recovery up to 4ppm-OVA
							T.D. = 15½ feet	

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DATE
STARTED 7/3/90
FINISHED 7/3/90
SHEET 1 OF 2

E + E DRILLING AND TESTING CO., INC.
SUBSURFACE LOG

HOLE NUMBER GW-3
SURFACE ELEVATION
GROUNDWATER DEPTH 28 bgs before const.

PROJECT Dibacco #1-Old Creek VP 3040
LOCATION East of GW-2 along Cayuga Creek

DEPTH – FT	WELL DIAGRAM	SAMPLE TYPE	SAMPLE NO.	BLOWS ON SAMPLER 0/6 – 12/18	BLOWS ON SAMPLER 6/12 – 18/24	PROFILE Cl Si Sd Gr	FIELD IDENTIFICATION OF SOILS	NOTES
0		SS	1 0-2'	4 / 6	5 / 9		0-2': Brown silty clay with organic material at top of sample and interspersed throughout, stiff, no plasticity, dry and crumbly	10% recovery Øppm-OVA 0ppm HNu
1								
2		SS	2 2-4'	4 / 7	7 / 9		2'-4': Medium brown silty clay, tan and grayish staining scattered throughout, stiff, dry and crumbly	35% recovery Øppm-OVA HNu-less than 1ppm (moisture)
3								
4		SS	3 4-6'	5 / 7	5 / 8		4'-6': Medium brown clay with some silt, several natural horizontal breaks with light reddish brown to tan staining along surface, grayish, rust, and tan-brown staining scattered throughout, low plasticity, less stiff than above, dry	50% recovery Øppm OVA Øppm HNu
5								
6		SS	4 6-8'	3 / 5	5 / 7		6'-8': Brown to red brown clay, white crystalline material on vertical and horizontal surfaces; white, gray, and tan staining throughout, rare gravel, softer than above esp. in areas of natural breaks, greenish gray staining on these surfaces, moister than above, cuttings formed medium sized balls	40% recovery Øppm OVA Øppm HNu
7								
8		SS	5 8-10'	2 / 5	4 / 7			
9								

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DATE
STARTED 7/3/90
FINISHED 7/3/90
SHEET 2 OF 2

E + E DRILLING AND TESTING CO., INC.
SUBSURFACE LOG

HOLE NUMBER GW-3
SURFACE ELEVATION
GROUNDWATER DEPTH 2.8'

PROJECT Dibacco #1 - Old Creek YP 3040
LOCATION East of GW-2 along Cayuga Creek

DEPTH – FT	WELL DIAGRAM	SAMPLE TYPE	SAMPLE NO.	BLOWS ON SAMPLER 0/6, 12/18	BLOWS ON SAMPLER 6/12, 18/24	PROFILE (Cl Si Sd Gr)	FIELD IDENTIFICATION OF SOILS	NOTES
							8'-10': Brown clay and reddish brown silty clay (60/40). Brown clay as above. Silty clay has occasional subrounded coarse sand to gravel particles, moister than above, cuttings-small balls	60% recovery OVA - Øppm HNu->1ppm (moisture)
10		SS	6 10-12'	2 / 10	12 / 11			
11							10'-12': Red brown silty clay as above, moister, rock at bottom-dolomite	20% recovery OVA - 4 ppm HNu - up to 3ppm
12		SS	7 12-14'	3	50 for 4"		12'-14': Reddish clay with gravel (60%), weathered dolomite, gray, oily odor, no meter readings (40%)	40% recovery OVA HNu > Øppm
13							T.D. = 13 feet	Split spoon refusal - 13'
14								

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DATE	E + E DRILLING AND TESTING CO., INC. SUBSURFACE LOG	
STARTED 7/3/90		HOLE NUMBER BH-1
FINISHED		SURFACE ELEVATION
SHEET 1 OF 1		GROUNDWATER DEPTH

PROJECT Dibacco #1 - Old Creek
YP 3040

LOCATION Behind Mobil Station
Approx 50' S of fence

DEPTH – FT	WELL DIAGRAM	SAMPLE TYPE	SAMPLE NO.	BLOWS ON SAMPLER 0/6 12/18	BLOWS ON SAMPLER 6/12 18/24	PROFILE Cl Sl Sd Gr	FIELD IDENTIFICATION OF SOILS	NOTES
0		SS	1 0'-2'				0-2': Red brown silty clay with little gravel and some organic material, Orange, rust, and black staining, also some fly ash and slag at bottom, dry and crumbly. Little clay, moderate plasticity, softer than silty clay.	40% recovery
1								
2		SS	2 2'-4'				2'-4': Black and gray black very fine sand-to silt-sized particles ⇒ fly ash, wet at bottom	100% recovery
3								
4								

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APPENDIX D

ANALYTICAL DATA SUMMARY SHEETS FROM WATER AND SOIL SAMPLING

GLOSSARY OF DATA QUALIFIERS

CODES RELATING TO IDENTIFICATION

B = Not detected substantially above the level reported in laboratory or field blanks.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm results.

CODES RELATING TO QUANTITATION

J = Analyte present. Reported value may not be accurate or precise.

K = Analyte present. Reported value may be biased high. Actual value expected to be lower.

L = Analyte present. Reported value may be biased low. Actual value expected to be higher.

[ ]= Inorganic analyte present. As values approach the IDL the quantitation may not be accurate.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

DATA SUMMARY FORM: VOLATILES 1

WATER SAMPLES
(ug/L)

Site Name: Dibacco #1

Case #: 9001623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No.	PW-1		GW-1		GW-2		GW-3		SW-1		SW-4		SW-5		SW-5MS		SW-5MSD	
	Dilution Factor	1.0		250		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
	Location	Drill Water														(Field Duplicate)		(Field Duplicate)	
CRQL	COMPOUND																		
10	Chloromethane																		
10	Bromomethane																		
10	*Vinyl Chloride																		
10	Chloroethane																		
5	*Methylene Chloride	110	B	47000	B	8	B	2	B	2	B	2	B	3	B	3	B	3	B
10	Acetone	15	B	4200	B			11	B			9	B	8	B	8	B	8	B
5	Carbon Disulfide																		
5	*1,1-Dichloroethene																		
5	1,1-Dichloroethane																		
5	*Total-1,2-Dichloroethene																		
5	Chloroform	33																	
5	*1,2-Dichloroethane																		
10	*2-Butanone																		
5	*1,1,1-Trichloroethane																		
5	*Carbon Tetrachloride																		
10	Vinyl Acetate																		
5	Bromodichloromethane	11																	

CRQL = Contract Required Detection Limit

*Action Level Exists

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DATA SUMMARY FORM: V O L A T I L E S 2

WATER SAMPLES
(ug/L)

Site Name: Dibacco #1

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No.	DW-1	GW-1	GW-2	GW-3	SW-1	SW-4	SW-5	SW-5MS	SW-5MSD
	Dilution Factor	1.0	250	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Location	Drill Water								
CRQL	COMPOUND									
5	*1,2-Dichloropropane									
5	Cis-1,3-Dichloropropene									
5	Trichloroethene									
5	Dibromochloromethane	4 J								
5	1,1,2-Trichloroethane									
5	*Benzene									
5	Trans-1,3-Dichloropropene									
5	Bromoform									
10	4-Methyl-2-pentanone									
10	2-Hexanone									
5	*Tetrachloroethene									
5	1,1,2,2-Tetrachloroethane									
5	*Toluene									
5	*Chlorobenzene									
5	*Ethylbenzene									
5	*Styrene									
5	*Total Xylenes									

CRDL = Contract Required Detection Limit

*Action Level Exists

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DATA SUMMARY FORM: V O L A T I L E S 1

Site Name: Dibucco #1

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

WATER SAMPLES
(ug/L)

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

	Sample No.	VBLKW1	VBLKW8	VBLKW4						
	Dilution Factor	1.0	1.0	1.0						
	Location									
CRQL	COMPOUND									
10	Chloromethane									
10	Bromomethane									
10	*Vinyl Chloride									
10	Chloroethane									
5	*Methylene Chloride	7	3 J	5						
10	Acetone	20	14	10						
5	Carbon Disulfide									
5	*1,1-Dichloroethene									
5	1,1-Dichloroethane									
5	*Total-1,2-Dichloroethene									
5	Chloroform									
5	*1,2-Dichloroethane									
10	*2-Butanone									
5	*1,1,1-Trichloroethane									
5	*Carbon Tetrachloride									
10	Vinyl Acetate									
5	Bromodichloromethane									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: VOLATILES 2

WATER SAMPLES
(ug/L)

Site Name: Dibucco #1

Case #: 9001.123 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	COMPOUND									
	Sample No.	VBLKW1	VBLKW8	VBLKW9						
	Dilution Factor	1.0	1.0	1.0						
	Location									
5	*1,2-Dichloropropane									
5	Cis-1,3-Dichloropropene									
5	Trichloroethene									
5	Dibromochloromethane									
5	1,1,2-Trichloroethane									
5	*Benzene									
5	Trans-1,3-Dichloropropene									
5	Bromoform									
10	4-Methyl-2-pentanone									
10	2-Hexanone									
5	*Tetrachloroethene									
5	1,1,2,2-Tetrachloroethane									
5	*Toluene									
5	*Chlorobenzene									
5	*Ethylbenzene									
5	*Styrene									
5	*Total Xylenes									

CRDL = Contract Required Detection Limit

*Action Level Exists

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DATA SUMMARY FORM: V O L A T I L E S 1

Site Name: Dibacco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001-623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

	Sample No.	BH-1		S-1		S-2		S-3		S-4		S-5		SED-1		SED-2		SED-3	
	Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
	% Moisture	36		18		25		20		25		12		46		53		13	
	Location	Borehole																	
CRQL	COMPOUND																		
10	Chloromethane																		
10	Bromomethane																		
10	Vinyl Chloride																		
10	Chloroethane																		
5	Methylene Chloride	12	B	5	B	5	B	6	B	9	B	3	B	8		10	B	5	B
10	Acetone	39	B															8	B
5	Carbon Disulfide																		
5	1,1-Dichloroethene																		
5	1,1-Dichloroethane																		
5	Total-1,2-Dichloroethene																		
5	Chloroform																		
5	1,2-Dichloroethane																		
10	2-Butanone																		
5	1,1,1-Trichloroethane																		
5	Carbon Tetrachloride																		
10	Vinyl Acetate																		
5	Bromodichloromethane																		

CRDL = Contract Required Detection Limit

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DATA SUMMARY FORM: V O L A T I L E S 2

SOIL SAMPLES
(ug/Kg)

Site Name: Cibacco #1

Case #: 9001623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	COMPOUND																		
	Sample No.	BH-1		S-1		S-2		S-3		S-4		S-5		SED-1		SED-2		SED-3	
	Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
	% Moisture	36		18		25		20		25		12		46		53		13	
	Location	Borehole																	
5	1,2-Dichloropropane																		
5	Cis-1,3-Dichloropropene																		
5	Trichloroethene	4	J	2	J														
5	Dibromochloromethane																		
5	1,1,2-Trichloroethane																		
5	Benzene																		
5	Trans-1,3-Dichloropropene																		
5	Bromoform																		
10	4-Methyl-2-pentanone																		
10	2-Hexanone																		
5	Tetrachloroethene																		
5	1,1,2,2-Tetrachloroethane																		
5	Toluene	15																	
5	Chlorobenzene																		
5	Ethylbenzene	39																	
5	Styrene																		
5	Total Xylenes	210																	

CRQL = Contract Required Quantitation Limit

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DATA SUMMARY FORM: V O L A T I L E S 1

Site Name: Dibucco #1

Case #: 9001.623 Sampling Date(s): 7/3 7/7/7/18/90

SOIL SAMPLES
(ug/Kg)

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	COMPOUND	SED-4	SED-5	S-4MS	S-4MSD	VBLKS1	VBLKS2	VBLKS8	VBLKS4	VBLKS10
	Sample No.	SED-4	SED-5	S-4MS	S-4MSD	VBLKS1	VBLKS2	VBLKS8	VBLKS4	VBLKS10
	Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	% Moisture	25	29	25	25	—	—	—	—	—
	Location			(Field Duplicate)	(Field Duplicate)					
10	Chloromethane									
10	Bromomethane									
10	Vinyl Chloride									
10	Chloroethane									
5	Methylene Chloride	4 B	5 B	10 B	14 B	6	7	4 J	4 J	12
10	Acetone		11 B			10	11	6 J		27
5	Carbon Disulfide									
5	1,1-Dichloroethene									
5	1,1-Dichloroethane									
5	Total-1,2 Dichloroethene									
5	Chloroform									
5	1,2-Dichloroethane									
10	2 Butanone									
5	1,1,1-Trichloroethane									
5	Carbon Tetrachloride									
10	Vinyl Acetate									
5	Bromodichloromethane									

CRDL = Contract Required Detection Limit

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DATA SUMMARY FORM: V O L A T I L E S 2

Site Name: D.bacco # 1

SOIL SAMPLES
(ug/Kg)

Case #: 900/1623 Sampling Date(s): 7/27/7,7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	COMPOUND	SED-4	SED-5	S-4MS	S-4MSD	VBLKS1	VBLKS2	VBLKS8	VBLKS9	VBLKS[illegible]
	Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	% Moisture	25	29	25	25	—	—	—	—	—
	Location									
5	1,2-Dichloropropane									
5	Cis-1,3-Dichloropropene									
5	Trichloroethene									
5	Dibromochloromethane									
5	1,1,2-Trichloroethane									
5	Benzene									
5	Trans-1,3-Dichloropropene									
5	Bromoform									
10	4-Methyl-2-pentanone									
10	2-Hexanone									
5	Tetrachloroethene									
5	1,1,2,2-Tetrachloroethane									
5	Toluene									
5	Chlorobenzene									
5	Ethylbenzene									
5	Styrene									
5	Total Xylenes		4 J							

CRQL = Contract Required Quantitation Limit

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VOA

DATA SUMMARY FORM: TENTATIVELY INDENTIFIED COMPOUNDS

Site Name: Dibacco #1

WATER SAMPLES
(ug/L)

Case #: 9001.623 Sampling Date: 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No.	DW-1		GW-1		GW-2		GW-3		SW-1		SW-4		SW-5		VBLKW1		VBLKW8	
	Dilution Factor	1.0		250		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
	Location																		
	COMPOUND																		
	Hexane, #110543	12	B	3500	B	8.0	B	8.0	B	9.0	B	9.0	B	9.0	B	8.0	J	13	J

CRQL = Contract Required Quantitation Limit

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VOA

DATA SUMMARY FORM: TENTATIVELY INDENTIFIED COMPOUNDS

Site Name: Dibacco #1

WATER SAMPLES
(ug/L)

Case #: 9001.623 Sampling Date: 7/3,7/17,7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No.	VBLKW9																	
	Dilution Factor	1.0																	
	Location																		
	COMPOUND																		
	Hexane #110543	8.0	J																

CRQL = Contract Required Quantitation Limit

VOA

DATA SUMMARY FORM: TENTATIVELY INDENTIFIED COMPOUNDS

Site Name: Dibacco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001.623 Sampling Date: 7/3,7/17,7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((1 - % moisture/100)

CRQL	Sample No.	BH-1		VBLKS1		VBLKS2		VBLKS10											
	Dilution Factor	1.0		1.0		1.0		1.0											
	% Moisture	36		—		—		—											
	Location																		
	COMPOUND																		
	Hexane #110543	9.8	B	7.4	J	8.4	J	9.0	J										

CRQL = Contract Required Quantitation Limit

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D-13

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DATA SUMMARY FORM: B N A S 1

Site Name: Dibacco # 1

WATER SAMPLES
(ug/L)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No. / Dilution Factor / Location / COMPOUND	DW-1 / 1.0 / Drill Water		GW-1 / 1.0		GW-2 / 1.0		GW-3 / 1.0		SW-1 / 1.0		SW-4 / 1.0		SW-5 / 1.0		SW-5MS / 1.0 / (Field Duplicate)		SW-5MSD / 1.0 / (Field Duplicate)	
10	Phenol																		
10	bis(2-Chloroethyl)ether																		
10	2-Chlorophenol																		
10	*1,3-Dichlorobenzene																		
10	*1,4-Dichlorobenzene																		
10	Benzyl Alcohol																		
10	1,2-Dichlorobenzene																		
10	2-Methylphenol																		
10	bis(2-Chloroisopropyl)ether																		
10	4-Methylphenol																		
10	N-Nitroso-di-n-propylamine																		
10	Hexachloroethane																		
10	Nitrobenzene																		
10	Isophorone																		
10	2-Nitrophenol																		
10	2,4-Dimethylphenol																		
50	Benzoic Acid																		
10	bis(2-Chloroethoxy)methane																		
10	2,4-Dichlorophenol																		
10	1,2,4-Trichlorobenzene																		
10	Naphthalene																		
10	4-Chloroaniline																		

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 2

Site Name: D.bacco #1

WATER SAMPLES
(ug/L)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	COMPOUND	DW-1	GW-1	GW-2	GW-3	SW-1	SW-4	SW-5	SW-5MS	SW-5MSD
	Sample No.	DW-1	GW-1	GW-2	GW-3	SW-1	SW-4	SW-5	SW-5MS	SW-5MSD
	Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Location	Drill Water								
10	Hexachlorobutadiene									
10	4-Chloro-3-methylphenol									
10	2-Methylnaphthalene									
10	Hexachlorocyclopentadiene									
10	2,4,6-Trichlorophenol									
50	2,4,5-Trichlorophenol									
10	2-Chloronaphthalene									
50	2-Nitroaniline									
10	Dimethylphthalate									
10	Acenaphthylene									
10	2,6-Dinitrotoluene									
50	3-Nitroaniline									
10	Acenaphthene									
50	2,4-Dinitrophenol									
50	4-Nitrophenol									
10	Dibenzofuran									
10	2,4-Dinitrotoluene									
10	Diethylphthalate									
10	4-Chlorophenyl-phenylether									
10	Fluorene									
50	4-Nitroaniline									
50	4,6-Dinitro-2-methylphenol									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 3

Site Name: Dibacco #1

WATER SAMPLES
(ug/L)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

	Sample No.	DW-1		GW-1		GW-2		GW-3		SW-1		SW-4		SW-5		SW-5MS		SW-5MSD	
	Dilution Factor	1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
	Location	Drill Water																	
CRDL	COMPOUND																		
10	N-Nitrosodiphenylamine																		
10	4-Bromophenyl-phenylether																		
10	*Hexachlorobenzene																		
50	*Pentachlorophenol																		
10	Phenanthrene																		
10	Anthracene																		
10	Di-n-butylphthalate	2	B	13	B	6	B	2	B	5	B	3	B	7	B	4	B	8	B
10	Fluoranthene																		
10	Pyrene																		
10	Butylbenzylphthalate																		
20	3,3-Dichlorobenzidine																		
10	Benzo(a)anthracene																		
10	Chrysene																		
10	bis(2-Ethylhexyl)phthalate	21	B	16	B	16	B	8	B	7	B	9	B	7	B	7	B	10	B
10	Di-n-octylphthalate																		
10	Benzo(b)fluoranthene																		
10	Benzo(k)fluoranthene																		
10	Benzo(a)pyrene																		
10	Indeno(1,2,3-cd)pyrene																		
10	Dibenz(a,h)anthracene																		
10	Benzo(g,h,i)perylene																		

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 1

WATER SAMPLES
(ug/L)

Site Name: Dibacco #1

Case #: 9001.623 Sampling Date(s): 7/3,7/17,7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	COMPOUND									
	Sample No.	SBLKW1	SBLKW7							
	Dilution Factor	1.0	1.0							
	Location									
10	Phenol									
10	bis(2-Chloroethyl)ether									
10	2-Chlorophenol									
10	*1,3-Dichlorobenzene									
10	*1,4-Dichlorobenzene									
10	Benzyl Alcohol									
10	1,2-Dichlorobenzene									
10	2-Methylphenol									
10	bis(2-Chloroisopropyl)ether									
10	4-Methylphenol									
10	N-Nitroso-di-n-propylamine									
10	Hexachloroethane									
10	Nitrobenzene									
10	Isophorone									
10	2-Nitrophenol									
10	2,4-Dimethylphenol									
50	Benzoic Acid									
10	bis(2-Chloroethoxy)methane									
10	2,4-Dichlorophenol									
10	1,2,4-Trichlorobenzene									
10	Naphthalene									
10	4-Chloroaniline									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 2

Site Name: Dibacco #1

WATER SAMPLES
(ug/L)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

	Sample No.	SBLKW1	SBLKW7								
	Dilution Factor	1.0	1.0								
	Location										
CRQL	COMPOUND										
10	Hexachlorobutadiene										
10	4-Chloro-3-methylphenol										
10	2-Methylnaphthalene										
10	Hexachlorocyclopentadiene										
10	2,4,6-Trichlorophenol										
50	2,4,5-Trichlorophenol										
10	2-Chloronaphthalene										
50	2-Nitroaniline										
10	Dimethylphthalate										
10	Acenaphthylene										
10	2,6-Dinitrotoluene										
50	3-Nitroaniline										
10	Acenaphthene										
50	2,4-Dinitrophenol										
50	4-Nitrophenol										
10	Dibenzofuran										
10	2,4-Dinitrotoluene										
10	Diethylphthalate										
10	4-Chlorophenyl-phenylether										
10	Fluorene										
50	4-Nitroaniline										
50	4,6-Dinitro-2-methylphenol										

CRQL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 3

WATER SAMPLES
(ug/L)

Site Name: D. hacco #1

Case #: 9001.623 Sampling Date(s): 9/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRDL	COMPOUND	Sample No. SBLKW1		SBLKW7									
	Dilution Factor	1.0		1.0									
	Location												
10	N-Nitrosodiphenylamine												
10	4-Bromophenyl phenylether												
10	*Hexachlorobenzene												
50	*Pentachlorophenol												
10	Phenanthrene												
10	Anthracene												
10	Di-n-butylphthalate	3	J	2	J								
10	Fluoranthene												
10	Pyrene												
10	Butylbenzylphthalate												
20	3,3-Dichlorobenzidine												
10	Benzo(a)anthracene												
10	Chrysene												
10	bis(2-Ethylhexyl)phthalate	23		10									
10	Di-n-octylphthalate												
10	Benzo(b)fluoranthene												
10	Benzo(k)fluoranthene												
10	Benzo(a)pyrene												
10	Indeno(1,2,3-cd)pyrene												
10	Dibenz(a,h)anthracene												
10	Benzo(g,h,i)perylene												

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 1

Site Name: Dibucco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	Sample No.	BH-1	S-1	S-2	S-3	S-4	S-5	SED-1	SED-2	SED-3
	Dilution Factor	2.0	1.0	1.0	5.0	1.0	1.0	1.0	1.0	1.0
	% Moisture	36	18	25	20	25	12	46	53	13
	Location	Borehole								
CRQL	COMPOUND									
330	Phenol									
330	bis(2-Chloroethyl)ether									
330	2-Chlorophenol									
330	1,3-Dichlorobenzene									
330	1,4-Dichlorobenzene									
330	Benzyl Alcohol									
330	1,2-Dichlorobenzene		47 J							
330	2-Methylphenol									
330	bis(2-Chloroisopropyl)ether									
330	4-Methylphenol									
330	N-Nitroso-di-n-propylamine									
330	Hexachloroethane									
330	Nitrobenzene									
330	Isophorone									
330	2-Nitrophenol									
330	2,4-Dimethylphenol									
1600	Benzoic Acid									
330	bis(2-Chloroethoxy)methane									
330	2,4-Dichlorophenol									
330	1,2,4-Trichlorobenzene									
330	Naphthalene		51 J			83 J		100 J	240 J	
330	4-Chloroaniline									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 2

Site Name: Dibucco #1

SOIL SAMPLES (ug/Kg)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	Sample No.	BH-1	S-1	S-2	S-3	S-4	S-5	SED-1	SED-2	SED-3
	Dilution Factor	2.0	1.0	1.0	5.0	1.0	1.0	1.0	1.0	1.0
	% Moisture	36	18	25	20	25	12	46	53	13
	Location									
CRQL	COMPOUND									
330	Hexachlorobutadiene									
330	4-Chloro-3-methylphenol									
330	2-Methylnaphthalene		87 J		72 J	80 J		91 J	110 J	
330	Hexachlorocyclopentadiene									
330	2,4,6-Trichlorophenol									
1600	2,4,5-Trichlorophenol									
330	2-Chloronaphthalene									
1600	2-Nitroaniline									
330	Dimethylphthalate									
330	Acenaphthylene	110 J			1000 J	53 J				
330	2,6-Dinitrotoluene									
1600	3-Nitroaniline									
330	Acenaphthene		49 J		330 J		99 J	590 J	380 J	
1600	2,4-Dinitrophenol									
1600	4-Nitrophenol									
330	Dibenzofuran	73 J	65 J		420 J	220 J	50 J	340 J	260 J	
330	2,4-Dinitrotoluene									
330	Diethylphthalate									
330	4-Chlorophenyl-phenylether									
330	Fluorene	200 J	160 J		1400 J	530	100 J	700	500 J	
1600	4-Nitroaniline									
1600	4,6-Dinitro-2-methylphenol									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 3

Site Name: Dibacco #1

SOIL SAMPLES (ug/Kg)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit: (CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	COMPOUND	BH-1		S-1		S-2		S-3		S-4		S-5		SED-1		SED-2		SED-3	
	Sample No.	BH-1		S-1		S-2		S-3		S-4		S-5		SED-1		SED-2		SED-3	
	Dilution Factor	2.0		1.0		1.0		5.0		1.0		1.0		1.0		1.0		1.0	
	% Moisture	36		18		25		20		25		12		46		53		13	
	Location																		
330	N-Nitrosodiphenylamine																		
330	4-Bromophenyl-phenylether																		
330	Hexachlorobenzene																		
1600	Pentachlorophenol																		
330	Phenanthrene	1200		1200		430	J	9400		3200		900		5500		2600		140	J
330	Anthracene	240	J	220	J	73	J	3100		640		210	J	1300		710			
330	Di-n-butylphthalate	1300	B	88	B	320	B	140	B	210	B	1200	B	1800	B	700	B	440	B
330	Fluoranthene	2000		1800		800		21000		4600		1300		5600		3100		220	J
330	Pyrene	1800	L	2000	L	450	L	17000	L	4500	L	1100	L	4700	L	2200		210	L
330	Butylbenzylphthalate																		
1600	3,3-Dichlorobenzidine																		
330	Benzo(a)anthracene	530		910		270	J	8800		2400		620		3000		1500		110	J
330	Chrysene	940		900		310	J	8400		2300		590		2200		1300		130	J
330	bis(2-Ethylhexyl)phthalate	1300	B	920	B	690	B	960	B	640	B	660	B	1100	B	1000	B	620	B
330	Di-n-octylphthalate																		
330	Benzo(b)fluoranthene	1300		1400		330	J	1700		2400		920		3100		2000		240	J
330	Benzo(k)fluoranthene					320	J			1600									
330	Benzo(a)pyrene	730		780		240	J	4500		2100		560		1700		1100		130	J
330	Indeno(1,2,3-cd)pyrene	410	J	630		250	J	6700		1200		350	J	1700		710		100	J
330	Dibenz(a,h)anthracene	110	J	200	J	55	J	1300	J	330	J	90	J	350	J	320	J		
330	Benzo(g,h,i)perylene	430	J	550		250	J	5300		1100		320	J	1400		720		96	J

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 1

Site Name: Dibucco #1

SOIL SAMPLES (ug/Kg)

Case #: 9001.632 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	Sample No.	SED-4	SED-5	S-4 MS	S-4 MSD	BH-1 MS	BH-1 MSD	SBLK51	SBLK58	SBLK52
	Dilution Factor	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0
	% Moisture	25	29	25	25	36	36	—	—	—
	Location			(Field Duplicate)	(Field Duplicate)	(Lab Replicate)	(Lab Replicate)			
CRQL	COMPOUND									
330	Phenol									
330	bis(2-Chloroethyl)ether									
330	2-Chlorophenol									
330	1,3-Dichlorobenzene									
330	1,4-Dichlorobenzene									
330	Benzyl Alcohol									
330	1,2-Dichlorobenzene									
330	2-Methylphenol									
330	bis(2-Chloroisopropyl)ether									
330	4-Methylphenol									
330	N-Nitroso-di-n-propylamine									
330	Hexachloroethane									
330	Nitrobenzene									
330	Isophorone									
330	2-Nitrophenol									
330	2,4-Dimethylphenol									
1600	Benzoic Acid									
330	bis(2-Chloroethoxy)methane									
330	2,4-Dichlorophenol									
330	1,2,4-Trichlorobenzene									
330	Naphthalene			72 T						
330	4-Chloroaniline									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 2

Site Name: D. bacco #1

SOIL SAMPLES
(ug/Kg)

Case #: 900.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	Sample No.	SED-4		SED-5		S-4MS		S-4MSD		BH-1MS		BH-1MSD		SBLKS1		SBLKS8		SBLKS2	
	Dilution Factor	1.0		1.0		1.0		1.0		2.0		2.0		1.0		1.0		1.0	
	% Moisture	25		24		25		25		36		36		—		—		—	
	Location																		
CRQL	COMPOUND																		
330	Hexachlorobutadiene																		
330	4-Chloro-3-methylphenol																		
330	2-Methylnaphthalene					71	J												
330	Hexachlorocyclopentadiene																		
330	2,4,6-Trichlorophenol																		
1600	2,4,5-Trichlorophenol																		
330	2-Chloronaphthalene																		
1600	2-Nitroaniline																		
330	Dimethylphthalate																		
330	Acenaphthylene					56	J			93	J	120	J						
330	2,6-Dinitrotoluene																		
1600	3-Nitroaniline																		
330	Acenaphthene																		
1600	2,4-Dinitrophenol																		
1600	4-Nitrophenol																		
330	Dibenzofuran					220	J	130	J	52	J	590	J						
330	2,4-Dinitrotoluene																		
330	Diethylphthalate																		
330	4-Chlorophenyl-phenylether																		
330	Fluorene	57	J			570		330	J	95	J	140	J						
1600	4-Nitroaniline																		
1600	4,6-Dinitro-2-methylphenol																		

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 3

Site Name: Dibucco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001.123 Sampling Date(s): 7/3, 7/17, 7/18/10

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100

CRQL	COMPOUND	SED-4		SED-5		S-4MS		S-4MSD		BH-1MS		BH-1MSD		SBLKS1		SBLKS8		SBLKS	
	Dilution Factor	1.0		1.0		1.0		1.0		2.0		2.0		1.0		1.0		1.0	
	% Moisture	25		29		25		25		36		36		—		—		—	
	Location																		
330	N-Nitrosodiphenylamine																		
330	4-Bromophenyl-phenylether																		
330	Hexachlorobenzene																		
1600	Pentachlorophenol																		
330	Phenanthrene	450				3500		2100		730	J	880	J						
330	Anthracene	93	J			660		430	J	150	J	170	J						
330	Di-n-butylphthalate	290	B	250	B	220	B	320	B	1200	B	79	B			1000		680	
330	Fluoranthene	640				4000		3100		1200		1600							
330	Pyrene	540	L		UL		UL		UL		UL		UL						
330	Butylbenzylphthalate																		
1600	3,3-Dichlorobenzidine																		
330	Benzo(a)anthracene	270	J			2400		1600		540	J	560	J						
330	Chrysene	260	J			2100		1500		540	J	650	J						
330	bis(2-Ethylhexyl)phthalate	900	B	640	B	2200	B	2200	B	2700	B	3500	B	950		540		620	
330	Di-n-octylphthalate																		
330	Benzo(b)fluoranthene	440				3400		1700		850	J	1100	J						
330	Benzo(k)fluoranthene							1200											
330	Benzo(a)pyrene	240	J			2000		1400		480	J	570	J						
330	Indeno(1,2,3-cd)pyrene	160	J			1300		830		300	J	340	J						
330	Dibenz(a,h)anthracene					310	J	230	J										
330	Benzo(g,h,i)perylene	150	J			1100		770		250	J	350	J						

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 1

Site Name: Dibacco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

CRQL	Sample No.	SBLKS7	SBLKS3							
	Dilution Factor	1.0	1.0							
	% Moisture	—	—							
	Location									
CRQL	COMPOUND									
330	Phenol									
330	bis(2-Chloroethyl)ether									
330	2-Chlorophenol									
330	1,3-Dichlorobenzene									
330	1,4-Dichlorobenzene									
330	Benzyl Alcohol									
330	1,2-Dichlorobenzene									
330	2-Methylphenol									
330	bis(2-Chloroisopropyl)ether									
330	4-Methylphenol									
330	N-Nitroso-di-n-propylamine									
330	Hexachloroethane									
330	Nitrobenzene									
330	Isophorone									
330	2-Nitrophenol									
330	2,4-Dimethylphenol									
1600	Benzoic Acid									
330	bis(2-Chloroethoxy)methane									
330	2,4-Dichlorophenol									
330	1,2,4-Trichlorobenzene									
330	Naphthalene									
330	4-Chloroaniline									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: B N A S 2

Site Name: Dibucco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

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	Sample No.	SBLKS7		SBLKS3															
	Dilution Factor	1.0		1.0															
	% Moisture	—		—															
	Location																		
CRQL	COMPOUND																		
330	Hexachlorobutadiene																		
330	4-Chloro-3-methylphenol																		
330	2-Methylnaphthalene																		
330	Hexachlorocyclopentadiene																		
330	2,4,6-Trichlorophenol																		
1600	2,4,5-Trichlorophenol																		
330	2-Chloronaphthalene																		
1600	2-Nitroaniline																		
330	Dimethylphthalate																		
330	Acenaphthylene																		
330	2,6-Dinitrotoluene																		
1600	3-Nitroaniline																		
330	Acenaphthene																		
1600	2,4-Dinitrophenol																		
1600	4-Nitrophenol																		
330	Dibenzofuran																		
330	2,4-Dinitrotoluene																		
330	Diethylphthalate																		
330	4-Chlorophenyl-phenylether																		
330	Fluorene																		
1600	4-Nitroaniline																		
1600	4,6-Dinitro-2-methylphenol																		

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CRQL = Contract Required Quantitation Limit

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DATA SUMMARY FORM: B N A S 3

Site Name: Dibacco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100

	Sample No.	SBLKS7	SBLKS3						
	Dilution Factor	1.0	1.0						
	% Moisture	—	—						
	Location								
CRQL	COMPOUND								
330	N-Nitrosodiphenylamine								
330	4-Bromophenyl-phenylether								
330	Hexachlorobenzene								
1600	Pentachlorophenol								
330	Phenanthrene								
330	Anthracene								
330	Di-n-butylphthalate	360	760						
330	Fluoranthene								
330	Pyrene								
330	Butylbenzylphthalate								
1600	3,3-Dichlorobenzidine								
330	Benzo(a)anthracene								
330	Chrysene								
330	bis(2-Ethylhexyl)phthalate	440	880						
330	Di-n-octylphthalate								
330	Benzo(b)fluoranthene								
330	Benzo(k)fluoranthene								
330	Benzo(a)pyrene								
330	Indeno(1,2,3-cd)pyrene								
330	Dibenz(a,h)anthracene								
330	Benzo(g,h,i)perylene								

CRQL = Contract Required Quantitation Limit

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DATA SUMMARY FORM: TENTATIVELY INDENTIFIED COMPOUNDS

Site Name: Dibacco #1

SOIL SAMPLES (ug/Kg)

Case #: 9001.623 Sampling Date: 7/18/90

To calculate sample quantitation limit: (CRQL * Dilution Factor) / ((1 - % moisture/100)

CRQL	Sample No.	SED-1		SED-2															
	Dilution Factor	1.0		1.0															
	% Moisture	46		53															
	Location																		
	COMPOUND																		
	Dibenzothiophene CAS# 132650	250	J																
	Benzo[h]quinoline CAS # 230273	250	J																
	9 H-Carbazole CAS # 86748	190	J	500	J														
	4H-Cyclopenta[def] phenanthrene CAS # 203645			500	J														

CRQL = Contract Required Quantitation Limit

DATA SUMMARY FORM: PESTICIDES AND PCBS

Site Name: Dibacco #1

WATER SAMPLES
(ug/L)

Case #: 9001, 623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No.	DW-1	GW-1	GW-2	GW-3	SW-1	SW-4	SW-5	PBLKW1	PBLKW2
	Dilution Factor	1	1	1	1	1	1	1	1	1
	Location									
CRQL	COMPOUND									
0.05	alpha-BHC									
0.05	beta-BHC									
0.05	delta-BHC									
0.05	*Gamma-BHC (Lindane)									
0.05	*Heptachlor									
0.05	Aldrin									
0.05	Heptachlor Epoxide									
0.05	Endosulfan I									
0.10	Dieldrin									
0.10	4,4'-DDE									
0.10	*Endrin									
0.10	Endosulfan II									
0.10	4,4'-DDD									
0.10	Endosulfan Sulfate									
0.10	4,4'-DDT									
0.5	*Methoxychlor									
0.10	Endrin ketone									
0.5	*Alpha-Chlordane									
0.5	*Gamma-Chlordane									
1.0	*Toxaphene									
0.5	*Aroclor-1016									
0.5	*Aroclor-1221									
0.5	*Aroclor-1232									
0.5	*Aroclor-1242									
0.5	*Aroclor-1248									
1.0	*Aroclor-1254									
1.0	*Aroclor-1260									

CRDL = Contract Required Detection Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

DATA SUMMARY FORM: PES.ICIDES AND PCBS

Site Name: Dibacco #1

WATER SAMPLES
(ug/L)

Case #: 9001, 623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No. / Dilution Factor / Location / COMPOUND	SW-SMS / 1 / (Field Duplicate)		SW-SMSD / 1 / (Field Duplicate)													
0.05	alpha-BHC																
0.05	beta-BHC																
0.05	delta-BHC																
0.05	*Gamma-BHC (Lindane)																
0.05	*Heptachlor																
0.05	Aldrin																
0.05	Heptachlor Epoxide																
0.05	Endosulfan I																
0.10	Dieldrin																
0.10	4,4'-DDE																
0.10	*Endrin																
0.10	Endosulfan II																
0.10	4,4'-DDD																
0.10	Endosulfan Sulfate																
0.10	4,4'-DDT																
0.5	*Methoxychlor																
0.10	Endrin ketone																
0.5	*Alpha-Chlordane																
0.5	*Gamma-Chlordane																
1.0	*Toxaphene																
0.5	*Aroclor-1016																
0.5	*Aroclor-1221																
0.5	*Aroclor-1232																
0.5	*Aroclor-1242																
0.5	*Aroclor-1248																
1.0	*Aroclor-1254																
1.0	*Aroclor-1260																

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

DATA SUMMARY FORM: P E S T I C I D E S AND P C B S

SOIL SAMPLES
(ug/Kg)

Site Name: Dibacco #1

Case #: 9001 623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/10

	Sample No.	BH-1	S-1	S-2	S-3	S-4	S-5	SED-1	SED-2	SED-3
	Dilution Factor	4	5	4	10	5	10	2	2	1
	% Moisture	36	18	25	20	24	18	46	53	13
	Location									
CRQL	COMPOUND									
8	alpha-BHC									
8	beta-BHC									
8	delta-BHC									
8	Gamma-BHC (Lindane)									
8	Heptachlor									
8	Aldrin									
8	Heptachlor Epoxide									
8	Endosulfan I									
16	Dieldrin									
16	4,4'-DDE									
16	Endrin									
16	Endosulfan II								78	
16	4,4'-DDD									
16	Endosulfan Sulfate									
16	4,4'-DDT									
80	Methoxychlor									
16	Endrin ketone								38 J	
80	Alpha-Chlordane								30 J	
80	Gamma-Chlordane									
160	Toxaphene									
80	Aroclor-1016									
80	Aroclor-1221									
80	Aroclor-1232									
80	Aroclor-1242									
80	Aroclor-1248									
160	Aroclor-1254									
160	Aroclor-1260									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

recycled paper

DATA SUMMARY FORM: P E S T I C I D E S AND P C B S

Site Name: Dibacco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001 623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

OL	Sample No.	SED-4	SED-5	PBLKS1	PBLKS2	PBLKS3	PBLKS4	PBLKS5	PBLKS6	PBLKS7
	Dilution Factor	1	1	1	1	1	1	1	1	1
	% Moisture	25	29	—	—	—	—	—	—	—
	Location									
	COMPOUND									
	alpha-BHC									
	beta-BHC									
	delta-BHC									
	Gamma-BHC (Lindane)									
	Heptachlor									
	Aldrin									
	Heptachlor Epoxide									
	Endosulfan I									
8	Dieldrin									
6	4,4'-DDE									
6	Endrin									
6	Endosulfan II									
6	4,4'-DDD									
6	Endosulfan Sulfate									
5	4,4'-DDT									
0	Methoxychlor									
5	Endrin ketone									
0	Alpha-Chlordane									
0	Gamma-Chlordane									
50	Toxaphene									
0	Aroclor-1016									
0	Aroclor-1221									
)	Aroclor-1232									
)	Aroclor-1242									
)	Aroclor-1248									
0	Aroclor-1254									
0	Aroclor-1260									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

DATA SUMMARY FORM: PESTICIDES AND PCBS

Site Name: Dibacco #1

SOIL SAMPLES
(ug/Kg)

Case #: 9001 623 Sampling Date(s): 7/3, 7/17, 7/18/90

To calculate sample quantitation limit:
(CRQL * Dilution Factor) / ((100 - % moisture)/100)

recycled paper

D-34

	Sample No.	BH-1MS	S-4MS	SED-3MS	BH-1MSD	S-4MSD	SED-3MSD			
	Dilution Factor	4	5	1	4	5	1			
	% Moisture	35	24	13	35	24	13			
	Location	(Lab Replicate)	(Field Duplicate)	(Lab Replicate)	(Lab Replicate)	(Field Duplicate)	(Lab Replicate)			
OL	COMPOUND									
	alpha-BHC									
	beta-BHC									
	delta-BHC									
	Gamma-BHC (Lindane)									
	Heptachlor									
	Aldrin									
	Heptachlor Epoxide									
	Endosulfan I									
8	Dieldrin									
8	4,4'-DDE									
6	Endrin									
5	Endosulfan II									
5	4,4'-DDD									
5	Endosulfan Sulfate									
5	4,4'-DDT									
)	Methoxychlor									
5	Endrin ketone									
)	Alpha-Chlordane									
)	Gamma-Chlordane									
50	Toxaphene									
)	Aroclor-1016									
)	Aroclor-1221									
)	Aroclor-1232									
)	Aroclor-1242									
)	Aroclor-1248									
0	Aroclor-1254									
0	Aroclor-1260									

CRQL = Contract Required Quantitation Limit

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

recycled paper

DATA SUMMARY FORM: I N O R G A N I C S

Site Name: Dibacco #1- Old Creek

WATER SAMPLES
(ug/L)

Case #: 9001.623 Sampling Date(s): 7/3, 7/17, 7/18/90

+Due to dilution, sample quantitation limit is affected. See dilution table for specifics.

CRDL	Sample No. / Dilution Factor / Location / ANALYTE	DW-1	GW-1	GW-2	GW-3	SW-1	SW-4	SW-5			
200	Aluminum	260	45400	32900	1540	[193]	[173]	289			
60	Antimony										
10	*Arsenic	[3.6]	10.8	[5.8]	[1.2]						
200	Barium	[50.6]	380	330	[37.8]	[58.5]	[50.8]	[48.2]			
5	Beryllium										
5	*Cadmium		5.7	6.0							
5000	Calcium	37600	626000	731000	152000	228000	193000	180000			
10	*Chromium		66.0	52.4							
50	Cobalt		[38.0]	[26.2]							
25	Copper		89.9	52.9							
100	Iron	275	76800	55100	2180	219	224	354			
5	*Lead	[1.5]	158	110	5.6	3.4	[2.6]	3.1			
5000	Magnesium	8100	343000	485000	52200	51500	46700	43600			
15	Manganese	27.6	2510	2200	446	61.8	67.9	69.5			
0.2	Mercury		0.22								
40	*Nickel		84.4	58.8		[12.4]					
5000	Potassium	[1060]	13500	13800	[3540]	8580	7040	6540			
5	Selenium	UL	UL	UL	UL	UL	UL	UL			
10	Silver										
5000	Sodium	8850	73500	137000	61800	92900	75400	68700			
10	Thallium										
50	Vanadium		89.2	72.1							
20	Zinc	[8.4]	874	439	25.2	25.2	[18.5]	21.6			
10	*Cyanide										

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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DATA SUMMARY FORM: I N O R G A N I C S

Site Name: Dibacco #1 -Old Creek

SOIL SAMPLES
(mg/Kg)

Case #: 9001.623 Sampling Date(s): ~~7/3, 7/17,~~ 7/18/90

+Due to dilution, sample quantitation limit is affected. See dilution table for specifics.

D-36

CRDL	Sample No.	BH-1		S-1		S-2		S-3		S-4		S-5		SED-1		SED-2		SED-3		SED-4	
	Dilution Factor																				
	% Solids	64.4		82.0		75.1		80.1		75.6		81.8		53.9		47.3		87.0		74.9	
	Location																				
CRDL	ANALYTE																				
40	Aluminum	12700		10200		12400		11700		12000		5850		10500		15100		17500		12400	
12	Antimony		UL		UL		UL		UL		UL		UL		UL		UL		UL		UL
2	Arsenic	20.0	L	3.5		4.2		4.1		7.1		4.3		5.0		6.8		3.3		3.6	
40	Barium	162		87.7		99.2		103		112		123		91.8		154		148		105	
1	Beryllium	[0.36]																[0.46]			
1	Cadmium	2.1		3.5		3.1		3.4		2.9		3.2		2.0		3.9		2.7		2.5	
1000	Calcium	26500		12500		11800		28500		35600		65800		66200		20900		9570		32200	
2	Chromium	21.5		30.9		26.2		24.9		23.8		56.5		25.2		35.0		24.3		17.2	
10	Cobalt	[13.5]		[6.4]		[8.7]		[8.0]		[8.2]		[4.0]		[9.3]		[14.6]		17.5		13.7	
5	Copper	23.9		28.8		23.7		26.5		23.4		28.2		25.8		34.9		14.4		14.0	
20	Iron	24200		18000		21900		20100		21800		11900		19100		24800		26000		23000	
1	*Lead	63.0		121		370		20.7		18.0		179		53.8		35.9		31.1		29.4	
1000	Magnesium	10100		6940		6970		14000		20700		29900		25400		10900		7630		15800	
3	Manganese	749		480		606		640		603		591		500		500		675		891	
0.2	Mercury			0.14		0.22		0.17		0.39		0.45				0.25					
8	Nickel	19.6		17.2		21.2		18.6		21.8		14.1		26.0		30.6		28.3		22.0	
1000	Potassium	[1410]		1450		1770		1780		1770		[974]		[1670]		[2090]		1650		[1270]	
1	Selenium	[0.50]	L		UL	[0.92]	L	[0.80]	L	[0.38]	L		UL		UL	[0.82]	L	[0.26]	L		UL
2	Silver																				
1000	Sodium	[389]								[156]		[136]		[320]						[213]	
2	Thallium																				
0	Vanadium	32.7		21.1		28.2		24.7		27.0		15.7		22.4		34.6		28.2		24.2	
1	Zinc	122		216		529		154		162		343		566		599		468		491	
2	Cyanide															2.7					

CRDL = Contract Required Detection Limit

*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

DATA SUMMARY FORM: INORGANICS

Site Name: Dibacco #1 - Old Creek

Case #: 9001.623 Sampling Date(s): ~~7/3, 7/17,~~ 7/18/90

SOIL SAMPLES
(mg/Kg)

*Due to dilution, sample quantitation limit is affected. See dilution table for specifics.

D-37

	Sample No.	SED-5	
	Dilution Factor		
	% Solids	70.7	
	Location		
CRDL	ANALYTE		
40	Aluminum	21500	
12	Antimony		UL
2	Arsenic	[1.8]	
40	Barium	161	
1	Beryllium	[0.53]	
1	Cadmium	4.0	
1000	Calcium	7430	
2	Chromium	27.1	
10	Cobalt	14.3	
5	Copper	26.0	
20	Iron	32500	
1	*Lead	20.4	
1000	Magnesium	8340	
3	Manganese	290	
0.2	Mercury		
8	Nickel	29.8	
1000	Potassium	1880	
1	Selenium		UL
2	Silver		
1000	Sodium	[259]	
2	Thallium		
10	Vanadium	39.9	
[illegible]	Zinc	1342	
2	Cyanide		

CRDL = Contract Required Detection Limit

*Action Level Exists

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revised 12/88

DATA SUMMARY FORM: V O L A T I L E S 1

WATER SAMPLES
(ug/L)

Site Name: Dibacco #1

Case #: 932056A Sampling Date(s): July 1991 by NYSDEC

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No.	GW-1	GW-2	GW-2MN	GW-3	FB	Trip Blank			
	Dilution Factor	—	—	—	—					
	Location									
	COMPOUND									
10	Chloromethane									
10	Bromomethane									
10	*Vinyl Chloride									
10	Chloroethane									
5	*Methylene Chloride					0.5 J	1 J			
10	Acetone									
5	Carbon Disulfide									
5	*1,1-Dichloroethene									
5	1,1-Dichloroethane									
5	*Total-1,2-Dichloroethene									
5	Chloroform									
5	*1,2-Dichloroethane									
10	*2-Butanone									
5	*1,1,1-Trichloroethane									
5	*Carbon Tetrachloride									
10	Vinyl Acetate									
5	Bromodichloromethane									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

revised 12/88

DATA SUMMARY FORM: V O L A T I L E S 2

WATER SAMPLES
(ug/L)

Site Name: Dibacco #1

Case #: 932056A Sampling Date(s): July 19, 1991 NYSDEC

To calculate sample quantitation limit:
(CRQL * Dilution Factor)

CRQL	Sample No. / Dilution Factor / Location / COMPOUND	GW-1	GW-2	GW-3	FB	Trip Blank				
5	*1,2-Dichloropropane				1 J					
5	Cis-1,3-Dichloropropene									
5	Trichloroethene									
5	Dibromochloromethane									
5	1,1,2-Trichloroethane									
5	*Benzene									
5	Trans-1,3-Dichloropropene									
5	Bromoform									
10	4-Methyl-2-pentanone									
10	2-Hexanone									
5	*Tetrachloroethene									
[illegible]	1,1,2,2-Tetrachloroethane									
[illegible]	*Toluene				3 J					
[illegible]	*Chlorobenzene									
5	*Ethylbenzene									
5	*Styrene									
5	*Total Xylenes									

CRDL = Contract Required Detection Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

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APPENDIX E

PHOTOGRAPHY LOGS

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: YP-3031

Camera: Make Kodak Fling Weekender

SN:

Photographer: J. Nickerson

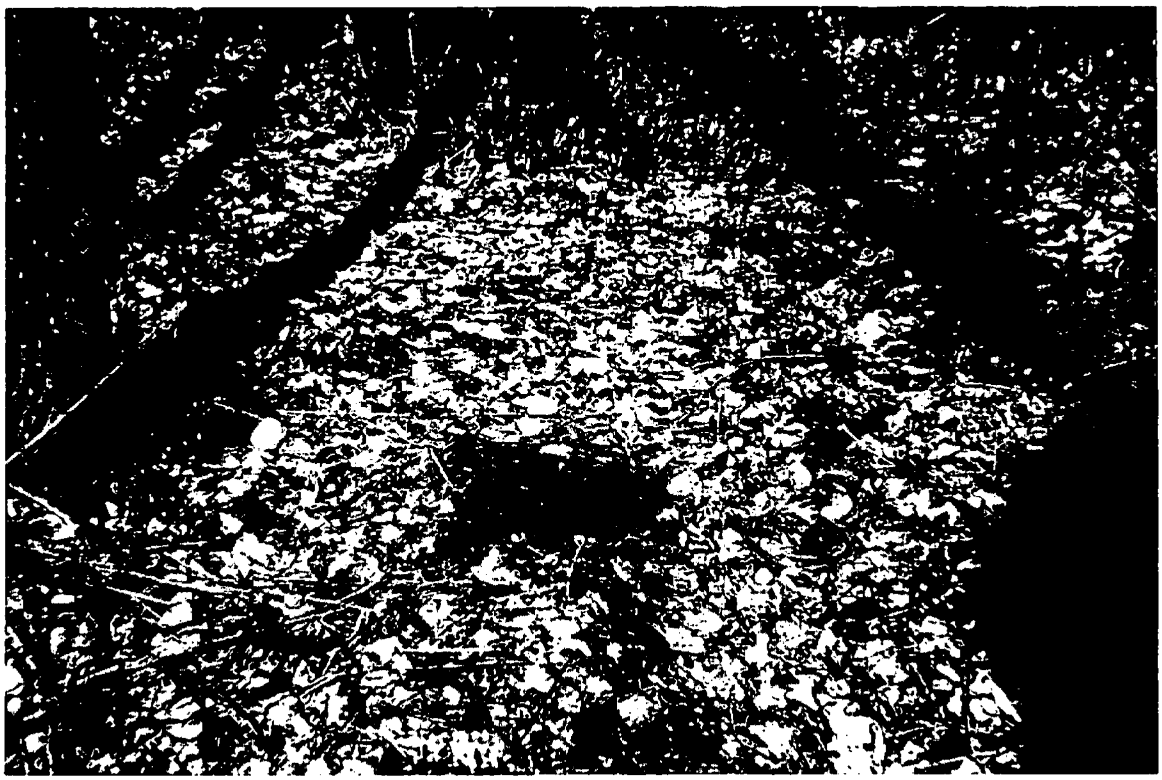
Date/Time: 4/30/90 / 1403

Lens: Type

SN:

Frame No.: Roll 1-3

Comments: Fly ash mound, stone scraping to expose the fly ash beneath.



02[UZ]YP3080:D3154/3849/4

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: YP-3031

Camera: Make Kodak Fling Weekender

SN:

Photographer: J. Nickerson

Date/Time: 4/30/90 / 1403

Lens: Type

SN:

Frame No.: Roll 1-4

Comments: Geophysical survey grid for GW-2 on north side of the embankment looking east.

02[UZ]YP3080:D3154/3849/4

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: YP-3031

Camera: Make Kodak Fling Weekender

SN:

Photographer: J. Nickerson

Date/Time: 4/30/90 / 1403

Lens: Type

SN:

Frame No.: Roll 1-5

Comments: Geophysical survey grid for GW-3 facing east by Cayuga Creek showing the berm of the existing creek with background.

02[UZ]YP3080:D3154/3849/4

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: YP-3031

Camera: Make Kodak Fling Weekender

SN:

Photographer: J. Nickerson

Date/Time: 4/30/90 / 1403

Lens: Type

SN:

Frame No.: Roll 1-6

Comments: Geophysical survey grid for GW-3 facing north by Cayuga Creek showing the exposed debris at the base of the pile.

02[UZ]YP3080:D3154/3849/4

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC E & E Job No.: YP-3031

Camera: Make Kodak Fling Weekender SN:

Photographer: J. Nickerson Date/Time: 4/30/90 / 1403

Lens: Type SN: Frame No.: Roll 1-7

Comments: Looking northeast up Cayuga Creek showing the berm of the existing creek and intermittent nature of the creek.

02[UZ]YP3080:D3154/3849/4

ecology and environment, inc.

P H O T O G R A P H I C   R E C O R D

Client: NYSDEC

E & E Job No.: YP-3031

Camera: Make Kodak Fling Weekender

SN:

Photographer: J. Nickerson

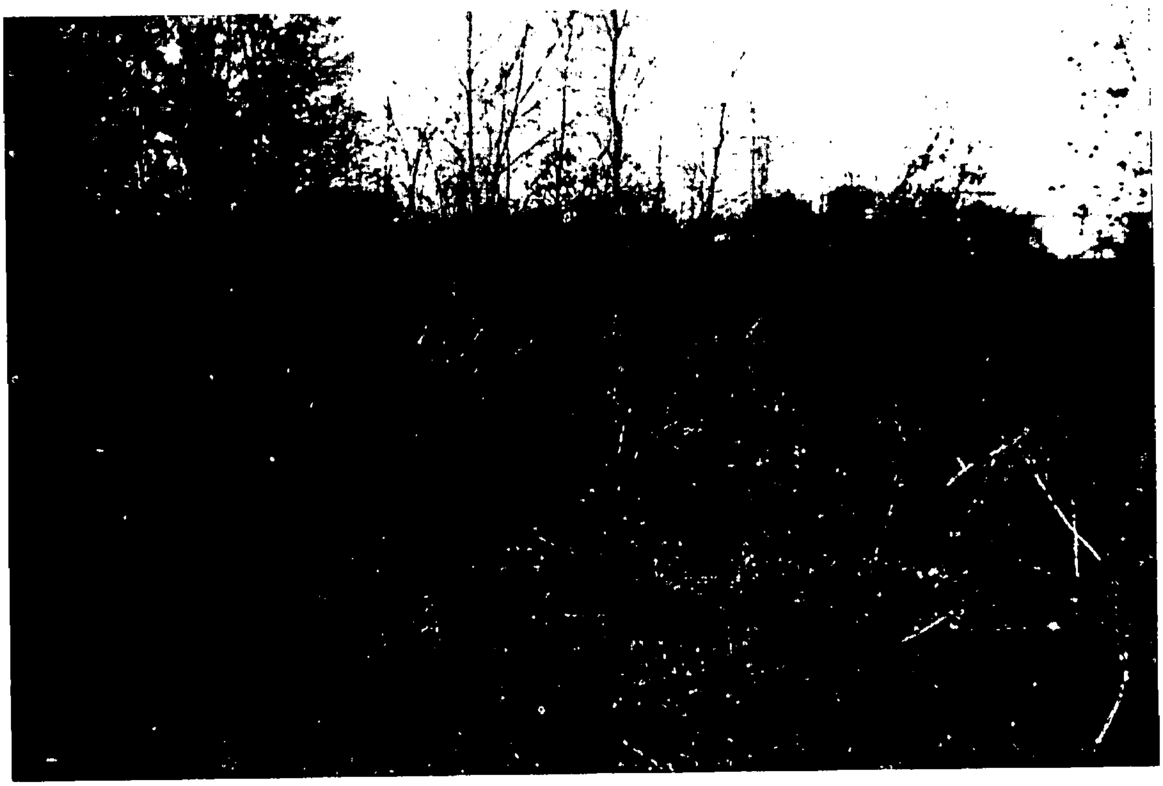
Date/Time: 4/30/90 / 1403

Lens: Type

SN:

Frame No.: Roll 1-8

Comments: Geophysical survey grid for GW-1 facing northwest showing the flat terrain present over the upper section of the landfill.



02[UZ]YP3080:D3154/3849/4

ecology and environment, inc.

P H O T O G R A P H I C   R E C O R D

Client: NYSDEC

E & E Job No.: YP-3031

Camera: Make Kodak Fling Weekender

SN:

Photographer: C. Eich

Date/Time: 4/30/90 / 1636

Lens: Type

SN:

Frame No.: Roll 1-9

Comments: Drill rig positioned on BH-1 behind the gas station, looking north.

02[UZ]YP3080:D3154/3849/4

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC

E & E Job No.: YP-3031

Camera: Make Kodak Fling Weekender

SN:

Photographer: C. Eich

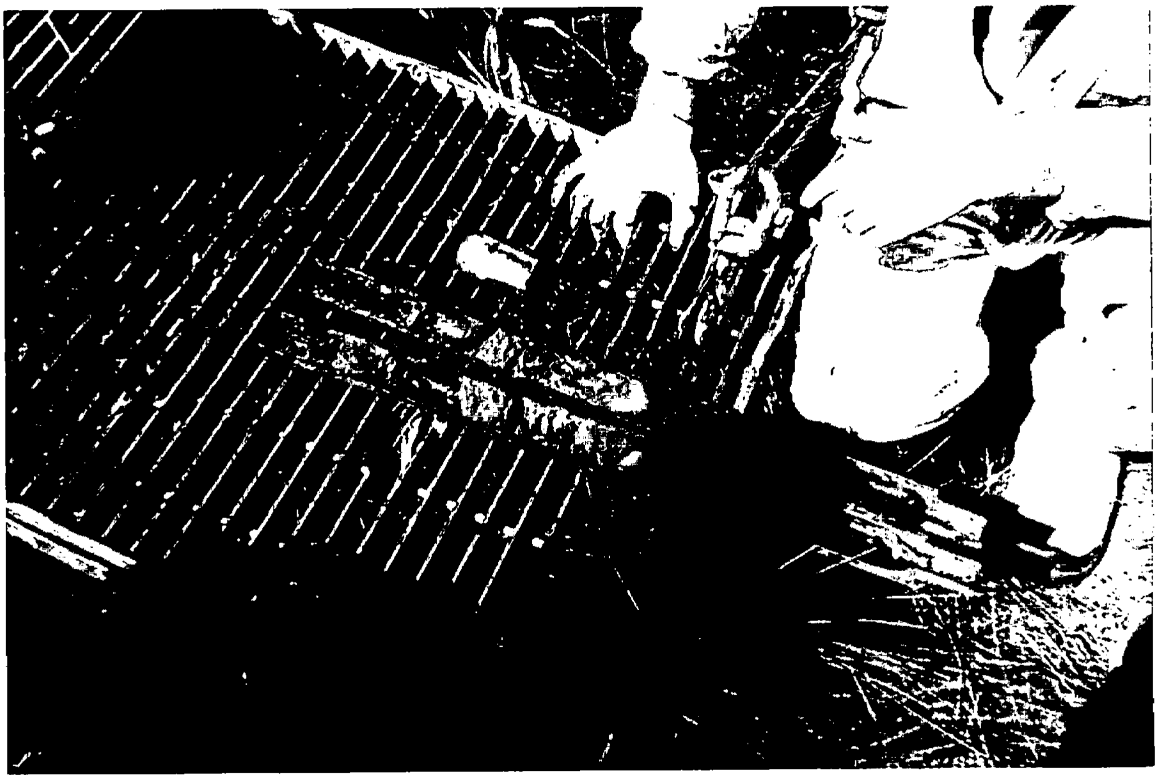
Date/Time: 4/30/90 / 1636

Lens: Type

SN:

Frame No.: Roll 1-10

Comments: Split Spoon sample 2-4 feet from BH-1 behind the gas station.



02[UZ]YP3080:D3154/3849/4

APPENDIX F

GEOTECHNICAL ANALYSIS

1810 North 12th Street
P.O. Box 2186
Toledo, Ohio 43603
(419) 241-7175
Fax # (419) 241-1808

Registered Engineers, Chemists and Geologists

William F. Boyle, president
Thomas R. Uhler, P.E., vice president Technical Services
Richard L. Johnson, P.E., chief Geotechnical Division

Founded in 1927

Toledo Testing Laboratory

November 2, 1990

C. Waddell
Ecology and Environment, Inc.
368 Pleasantview Drive
Lancaster, New York 14086

RE: LABORATORY TESTING
OF SUBMITTED SOIL SAMPLES
DIBACCO #1 - OLD CREEK
YOUR PROJECT NO.: YP-3040
YOUR P.O. NO. 54964
T.T.L. JOB NO. 11420

Gentlemen:

Please find enclosed the results of laboratory analyses completed on submitted soil samples from the Dibacco # 1 - Old Creek, project per your referenced purchase order number. These samples were received at our office on October 23, 1990.

If you should have any questions or comments, or if we can be of any further assistance please feel free to contact us.

Very truly yours,

TOLEDO TESTING LABORATORY
Steven L. Bouws
Geotechnical Engineer

Richard L. Johnson

Richard L. Johnson
Chief Geotechnical Engineer

RLJ/SLB/dmr

Project No. 11420

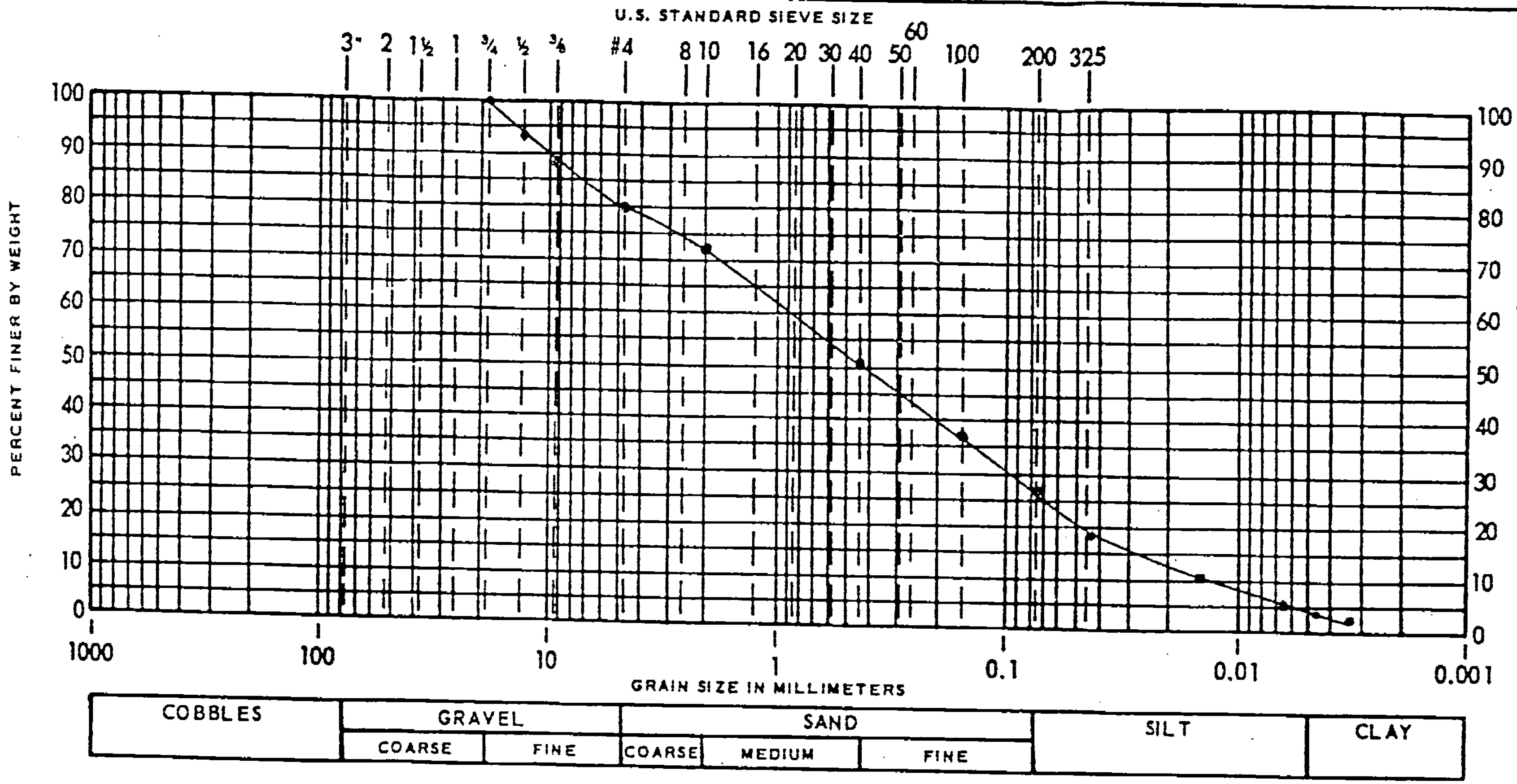
TOLEDO TESTING LABORATORY, INC.

TABULATION OF TEST DATA

Test Boring or Test Pit Number	Sample Number	Depth of Sample	Elevation of Sample Tip	Standard Penetration (Number of Blows/Foot Unless Otherwise Stated)	Natural Water Content (Percent of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (PSF)		Particle Size Distribution: Gravel (Percent)	Coarse Sand (Percent)	Medium Sand (Percent)	Fine Sand (Percent)	Silt (Percent)	Clay (Percent)	Colloids (Percent)	Atterberg Limits: Liquid Limit (Percent)	Plastic Limit (Percent)	Plasticity Index (Percent)	Unified Soil Classification System Designation
GW1	GW-1	0'-2'							20	8	21	23	23	5					
GW1	GW-1	14'-16'														28	14	14	CL
GW2	GW-2	10'-12'														47	22	25	CL
GW2	GW-2	13'-15'														15	13	2	ML
GW3	GW-3	10'-12'														28	15	13	CL

Figure 1

SOIL CLASSIFICATION SHEET



PROJECT Dibacco #1 - Old Creek
Your Project No. YP-3040
BORING NO. GW1
SAMPLE NO. GW-1
DEPTH 0' - 2'
CLASSIFICATION

NATURAL % MOISTURE
LIQUID LIMIT
PLASTIC LIMIT
PLASTICITY INDEX
COLOR
REMARKS Your P.O. NO. 54964
T.T.L. Job No. 11420

Toledo Testing Laboratory, Inc.

Figure 2

APPENDIX G

DIBACCO SITE 1 SURVEY MAP

LEGEND

- SOIL BORING
- MONITORING WELL
- SURFACE SOIL SAMPLE LOCATION
- SURFACE WATER/SEDIMENT SAMPLE LOCATION

COORDINATE LIST

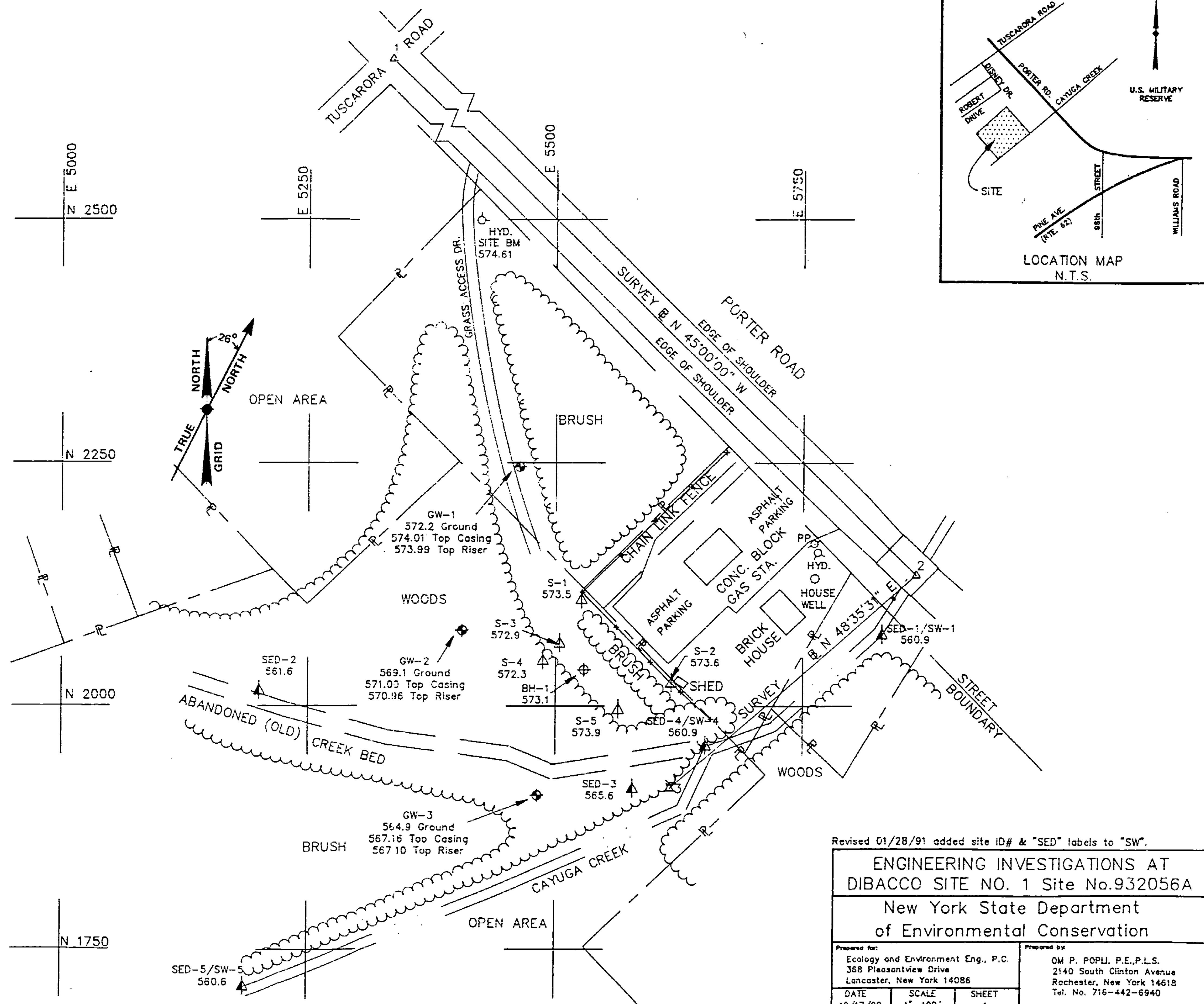
NAME	NORTH	EAST
GW-1	2246	5463
GW-2	2078	5405
GW-3	1908	5482
SED-1/SW-1	2073	5831
SED-2	2015	5201
SED-3	1914	5578
SED-4/SW-4	1958	5652
SED-5/SW-5	1711	5186
S-1	2109	5526
S-2	2023	5618
S-3	2065	5505
S-4	2046	5487
S-5	1996	5564
BH-1	2037	5529
PK 1	3000.00	5000.00
PK 2	2134.55	5865.45
HUB 3	1915.20	5616.72

NOTE: Coordinate grid system is assumed.

Elevations are referenced to the centerline pavement of Porter Road over Cayuga Creek with an assumed elevation of 575.00.

Baseline points 1 and 2 are PK nails and Baseline point 3 is a Hub and Tack.

Property lines shown are approximate and were derived from a map of survey of part of lots 2, 5 & 6, TWP-13, R-9, by McIntosh & McIntosh, P.C., dated 9/29/89,—furnished by Ecology & Environment Eng., P.C.



Revised 01/28/91 added site ID# & "SED" labels to "SW".

ENGINEERING INVESTIGATIONS AT DIBACCO SITE NO. 1 Site No.932056A

New York State Department of Environmental Conservation

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DATE	SCALE	SHEET
10/17/90	1" = 100'	1

APPENDIX H

FIELD NOTES

ecology and environment, inc.

International Specialists in the Environment

DRILLING +
SAMPLING
LOGBOOK

Job Number YF3040

DIBACCO #1
PORTER RD.
NIAGRA FALLS, NY

MONDAY JULY 2 1990

WEATHER: SUNNY WARM 65°, WINDS OUT OF WEST ~5 mph

0700 C EKN ARRIVES AT E+E HQ TO PICK UP SPOONS + OTHER SUPPLIES

0745 ARRIVE AT WAREHOUSE TO PICK-UP MONITORING EQUIPMENT + PPE (SUPPORT ... OVA + ...)

0800 LEAVE FOR SITE w/ R LEICHNER

0845 ARRIVE ON-SITE LEE PENROD + FRED WALDAU (AA+D) AND YOUCUS ERK (DEC) ON-SITE

LOCATED 3 MW LOCATIONS + BORING LOCATION

0905 BEGIN STEAM CLEANING RIG + EQUIP

0930 Begin setting up at GW-1

0946 Setting up for 1st split spoon - 0-2'

0950 Site safety meeting

Attendance:

[signature] E+E

[signature] E+E

[signature] HAD

Yavuz Erk NYSDEC

Lee Penrod AA

E+E + AA+D DON LEVEL D PROTECTION

0955 BEGIN SAMPLING 0-2' IN MW-1

0ppm on OVA of SPLIT SPOON

1000 BEGIN AUGERING TO 5'

CONDUCTED UPWIND DOWNWIND OVA SURVEY WITH METHANE FILTER ON-LINE + OFF LINE. 0ppm AT N, S, E + W POINTS

0ppm AT BASE OF AUGER

1005 AUGERED TO 4' - 0ppm IN AUGER

COLLECTING 4'-6' SPLIT SPOON.

7/2/90

1010 0ppm on Split spoon
1023 Auger to 9' 0ppm in Auger
Split spoon Sampling 9'-11' - 0ppm on sample
1029 Augering to 14'
1035 Collecting 14'-16' Split spoon Sample - 3ppm in shoe, 0ppm in Auger + BZ. Not enough recovery for HSL
1050 Augered to ~16.5' + Hit something solid
0ppm in Auger
Tried to split spoon but it just bounced 1/4"-1/2" rock in shoe of split spoon
It appears we are on top of bedrock (said to occur below 15')
1125 Yavoz + Ralinda return to site after informing V. Lauzze of situation. Valerie said to grout hole + move to next location.
1138 Pulling up augers.
When last 5' section of auger was pulled up, it was full of water. Water level in hole 10.7' BGS. Bottom of boring at 15' (1½' of cave in)
1200 Yavuz left site tell V. Lauzze new situation. We feel we should put well in but just want to inform Val.
Augers being put back down in hole to ream out caved in material.
Steam cleaned screen + riser.
1220 Yavuz back on-site. We will put well in at this location

Chad

TUESDAY JULY 2, 1996

WEATHER: SUNNY, WARM, WINDS W 5mph

PERSONNEL + EQUIPMENT ON-SITE:

C. EICH E+E

R. LEICHNER E+E

L. PENROD AA+D

F. WALDAU AA+D

DODGE CARAVAN, B-57 ATV MOUNTED DRILL

RIG, UTILITY TRUCK + RAM PICK-UP

0730 C. EICH ARRIVES AT WAREHOUSE TO FILL + CALIBRATE OVA, PICKED UP BOTTLES FOR DRILL WATER SAMPLE

0750 C. EICH + R. LEICHNER LEAVE WAREHOUSE, STOP AT LAB TO PRESERVE WATER BOTTLES

0845 ARRIVE ON-SITE. STOPPED TO GET ICE ON WAY. AA+D ON-SITE. CUTTING MORE TREES TO GET RIG TO GW-3

CALIBRATED HNu TO 54 ppm @ SPAN 10.0

BACKGROUND OVA + HNu READINGS 0ppm

0918 HELD ON-SITE SAFETY MEETING

Rolinda Leichner E&E

Lee Penrod AA

Fred Waldau AA

Chad Eich E+E

0922 Begin first split spoon 0-2' AT GW-3

0924 COLLECTED [illegible] SPLIT SPOON - 0ppm ON OVA, 0ppm ON HNu

0926 AUGERED TO 2'

0930 COLLECTING 2'-4' SPLIT SPOON. DAMP GROUND + HUMIDITY CAUSING HNu TO GO BELOW SCALE IN WOODS. 0ppm ON OVA

AUGERING TO 4' 0ppm IN BZ

Chad Eich

7/5/90

0938 COLLECTING 4'-6' SPLIT SPOON - 0ppm
on OVA.
AUGERING TO 6'
0945 HNu READING 0 NOW, NOT BELOW
COLLECTING 6'-8' SPLIT SPOON 0ppm ON OVA
(FRAME 14 - AUGERING GW-3) 1ppm ON HNu
HOWEVER NEEDLE RETURNED TO ZERO VERY SLOWLY
INDICATING FOGGED LAMP
ce 7/5/90 STEAM CLEANED SPLIT SPOONS
~~100~~ 1002 COLLECTED 8'-10' SPLIT SPOON. 0ppm ON OVA
<1ppm ON HNu (SLOW RESPONSE)
AUGERING TO 10'
1006 COLLECTING 10'-12' SPLIT SPOON - FRAME 13
0ppm ON OVA UP TO 3ppm ON HNu
1011 V. LAUZZE (DEC) ARRIVES ON-SITE
COLLECTING 12'-14' SPLIT SPOON. HIT BEDROCK
BETWEEN 12.5 + 13'. 0ppm ON HNu + OVA.
WATER IN SPOON - WATER AT 2.8' BGS
GETTING AN OILY ODOR FROM ROCKS IN BOTTOM
OF AUGER BUT NO READINGS.
1038 V. LAUZZE LEAVES SITE TO CALL OFFICE.
WATER LEVEL STILL 2.8' BGS
WE WILL USE 7' OF SCREEN
1040 PUNCHED OUT CLAY PLUGGING BOTTOM OF AUGER
DIDN'T WORK. PULLED UP AUGER TO CLEAN IT OUT.
RAN AUGER BACK IN TO HOLE. V. LAUZZE RETURNS
1110 ADDING SAND PACK.
1134 SAND UP TO 5' BGS -2 BAGS
~~K~~ ce ADDING BENSEAL UP TO 3'
1140 WE WILL NOT GROUT THE HOLE YET, BUT LET
BENSEAL SET FOR 1 HR THEN DEVELOP IT (SO WE
DON'T HAVE TO BRING RIG BACK DOWN HERE) THIS WAS
OK'D BY VALERIE GROUT HOLE AFTER DEVELOPING

1240 BEGIN DEVELOPING GW-3 -
WATER LEVEL 3.58' TOC
DIRTY BROWN WATER - PUMPING @ 1 GAL/MIN

TIME	TEMP	pH	COND	NTU'S	GALS PURGED	COMMENTS
1246	70.8°F	7.14 s.u.	1,350 µS/cm	>200	5	
1253	66.2°F	6.74 s.u.	1,160 µS/cm	>200	15	
1258	64.9°F	6.80 s.u.	1,140 µS/cm	>200	25	
1304	60.9°F	6.75 s.u.	1,110 µS/cm	>200	35	
1314	62.3°F	7.24 s.u.	1,070 µS/cm	>200	55	
1325	62.1°F	7.25 s.u.	1,060 µS/cm	>200	75	
1335	62.1°F	7.27 s.u.	1,060 µS/cm	>200	95	
1345	61.6°F	7.12 s.u.	1,050 µS/cm	>200	115	
1356	61.6	7.24	1,050	>200	135	
1405	61.0	7.24	1,050	>200	155	
1430	62.2	7.30	1,050	>200	200	

1432 HEARD 3 GUNSHOTS (DEFINATELY NOT FIREWORKS)
DIRECTLY BEHIND US ON OTHER SIDE OF BERM
WE CALLED OUT TO THE SHOOTER + LOOKED OVER
BERM BUT SAW NO ONE.
VALERIE + I DECIDED TO STOP DEVELOPING 10 MIN
EARLY DUE TO SHOTS.
1438 V. LAUZZE LEAVES SITE.
GROUTED HOLE TO GRADE w/ CEMENT/BENT.
MIXTURE. PLACED STEEL CASING OVER WELL.
1443 PACKING UP.
1450 R. LEICHNER RETURNS TO SITE AFTER CALLING E+E.
RECEIVED NO GUIDANCE AS TO HOW DEEP OR
EXPECTATIONS OF SOIL BORING. VALERIE NOT

ON-SITE. SHE HAD SAID TO DRILL TO CLAY
+ NOT BEYOND.

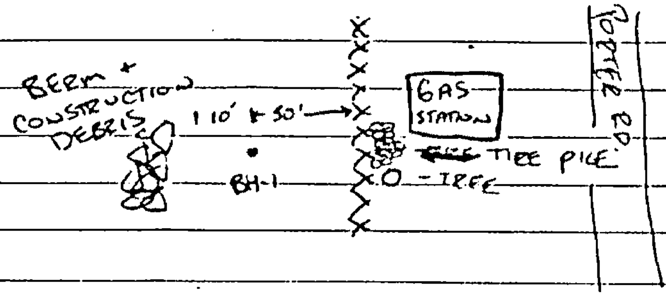
1515 TOOK SHOVEL TO FLAT AREA BEHIND GAS STATION TO SEE HOW DEEP CLAY IS. RIG STUCK IN CREEK BED

1540 CLAY APPEARS TO BE 8"-10" DOWN. WE WILL SPLIT SPOON DOWN + SEE WHAT WE GET WHEN THEY FINISH STEAM CLEANING THE RIG

1615 FINISHED STEAM CLEANING. LOCATED A SPOT FOR THE BORING

1630 RIG SET UP AT BORING LOCATION

1636 COLLECTED 0-2' SPLIT SPOON AT BH-1
FRAME 12 - BH-1 LOCATION
0ppm ON HNU + OVA - FLY ASH ON BOTTOM OF CORE



1642 2'-4' SPLIT SPOON - NO RECOVERY.
WILL TRY AGAIN

1650 2'-4' SPOON - DARK GRAY ASH. BOTTOM 8" SATURATED. COLLECTED SAMPLE BH-1 COMPOSITE FROM 0'-4'.

1700 STEAM CLEANING SPOONS, A-ROD + PART OF RIG. WE WILL NOT DEVELOP ANY OF THE REMAINING WELLS TODAY AS IT IS GETTING LATE.

1710 FINISHED STEAMING. GOING OVER COSTING SHEET w/ LEE FOR TODAYS DRILLING.

1725 COLLECTED DRILL WATER SAMPLE DW-1

1735 PACKAGED SAMPLE.

1750 LEFT SITE FOR LAB

1820 DROPPED OF EQUIPMENT + SUPPLIES
1849 DROPPED SAMPLES OFF AT LAB + THEN
RETURNED VAN

1405 WATER LEVEL IN GW-2 8.76' TOC
(TOP OF PVC) DEPTH OF GW-2
17.05' TOC
BEGIN DEVELOPING GW-2 -0ppm on HNu
(UNITO)

TIME	TEMP	pH	COND	NTU'S	GALS	
1407	NO THERMOMETER	6.75	13,900	>200	1	LT BROWN
			12,200	>200	4	DARK BROWN
1413		6.71	"	"	"	"
1420		6.73	12,300	>200	~5	DARK BROWN

1413 VERY LITTLE WATER IN WELL ~3"
1420 GETTING VERY LITTLE WATER IN BAILER. >1"
CONSIDER GW-2 DEVELOPED. WATER LEVEL
METER WON'T EVEN RECORD WATER LEVEL
1430 MOVED TO GW-1 - OPENED COVER - 0ppm
ON HNu
WATER LEVEL - 10.45' TOC
WELL DEPTH 17.7' TOC
1435 BEGIN DEVELOPING GW-1

TIME	TEMP	pH	COND	NTU'S	GALS	
1438	N/A	7.08	6,200	>200	1	DK BROWN
1444		7.07	6,500	>200	5	DK BROWN
1456	WATER LEVEL 14.5' AFTER BAILING ~7					
1458		7.02	3,900	>200	10	
1514		7.17	3400	>200	15	
1535		7.28	2300	>200	20	

1550	7.52	1700	7200	35 MED	- LT. BROWN
1606	8.92	1700	7200	30	"
1629	METER NOT WORKING	1600	7200	35	"
1635	"	~~1900~~ 1600	7200	37	"

PH METER READING IN TEENS (UP TO 17) + JUMPING GREATLY. NTU'S NEVER BELOW 200. FINAL WATER LEVEL READING AFTER REMOVING LAST BAILER 14.94' TOC.

1645 C. EICH + B. KOERNER LEAVE SITE. LEE, ROCKY + JOHN OF AA+D ARRIVE ON-SITE TO MOVE RIGS.

WEDNESDAY JULY 10

0930 ARRIVED AT E+E ESC FOR EQUIP. LAB TO PRESERVE BOT.
1020 LEFT FOR SITE IN PERS. VEHICLE. STOPPED FOR ICE
1110 C. EICH ARRIVES ON-SITE. B KOERNER HERE
GOING TO CHECK WATER LEVEL IN GW-3
0ppm on HNU WHEN OPENING CAP.
~~NO WATER IN WELL~~ CE
DEPTH OF GW-3 14.35' TOC
WATER LEVEL 4.9' TOC
1255 * GW 2 ~ " 8.81' TOC
DEPTH OF WELL 17.09' TOC
1305 GW 1 - LEVEL 11.7' TOC
DEPTH OF WELL 17.75 TOC
1325 TEMP - 64.6 - GW 1 | 1336 TEMP 62.6
PH - ~~3.75~~ CE 6.77 | PH 7.03
COND - 2.35 $^{s}/_{m}$ X 1000 | COND 2.26 x 1000
PURGED 3+ GALS | NTU'S >200
1350 GW-2
TEMP - 62.2
pH - ~~15.47~~ CE 6.77
COND - 4.08 X 1000
NTU'S >200
1359 AFTER PURGING 4.25+ GALS FROM GW-2
TEMP. 62.0
pH - 6.73
COND - 4.22 x 1000
NTU'S - >200
C. EICH BACK ON-SITE
1411 TOOK 1ST BAILER OUT OF GW-3
pH - 6.96 NTU'S - >200
COND - 1.18 x 1000
TEMP 63.8°F

1417 AFTER PURGING 5+ GALS FROM GW-3
pH - 7.22
Temp - 6.30
Cond - 1.08 x 1,000
NTU'S - >200

* WATER LEVEL INDICATOR IS SCREWING UP. C. EICH WILL DRIVE TO LEWISTON SITE TO BORROW THERE METER.

1209 ARRIVE AT LEWISTON. THEY ARE NOT DONE W/ WATER LEV. IND BUT WILL GIVE IT UP FOR AN HOUR

1245 BACK AT DIBACCO. TOOK WATER LEVELS IN ALL WELLS. GW-3 OK. + DROVE METER BACK TO LEWISTON WHILE B KOERNER REMAINED ON-SITE TO PURGE WELLS.

1335 LEFT LEWISTON FOR DIBACCO

1445 COLLECTED SOIL SAMPLE S-1 NEAR SW CORNER OF FENCE BEHIND GAS STATION. PIN FLAG MARKS LOCATION

1452 COLLECTED SAMPLE S-2 NEAR SE CORNER OF FENCE BEHIND SHED OF HOUSE NEXT TO GAS STATION.

COLLECTED SAMPLE S-3 AT OPENING TO CLEAR AREA

COLLECTED SAMPLE S-4 AT WEST END OF CONSTRUCTION DEBRIS PILE

COLLECTED SAMPLE S-5 AT EAST END CONSTRUCTION DEBRIS PILE, BEFORE THE GOES OVER THE EDGE OF THE HILL DOWN TO THE CREEK.

DROPPED SAMPLES OFF AT LAB.

THURSDAY JULY 11, 1990

C. EICH + B. KOERNER PREPARING TO SAMPLE DIBACCO

0900 PICK UP RENTAL VAN, WAREHOUSE + E+E HQ.

1125 STOPPED AT LAB TO RESERVE BOTTLES

1215 ARRIVE ON-SITE CAL. HNU, LABELED BOTTLES FOR WELL

1240 OPENED GW-~~3~~1 0ppm ON HNU

1245 pH - 7.32

COND - 1.81 x1000 NTU'S 7200

TEMP - 67.2°F

WATER AT 11.9' TOC

COLLECTED SAMPLE GW-~~3~~1

1315 ARRIVED AT GW-2

WATER LEVEL 8.9' TOC

pH - 7.02

TEMP - 62.7°F

COND - 2.10 x1000

NTU'S - 7200

1320 COLLECTED SAMPLE GW-2

1326 AT GW-3

WATER LEVEL 4.99' TOC

pH - 7.51

COND - 1.31 x 1000

TEMP - 63.3°F

NTU'S 7200

1340 COLLECTED SAMPLE GW-3

LABELED REMAINING SAMPLE CONTAINERS

1415 COLLECTED SAMPLE ~~SW~~-4

pH 8.18

TEMP 73.3

COND 1.56 x1000

NTU'S

1420 COLLECTED SAMPLE SED-4

OF

PILE

-N

WE WALKED DOWNSTREAM OF SW-4
LOCATION MORE THAN 1/4 MILE + FOUND
NO POINT WHERE THE CREEK SPLITS
AS SHOWN ON THE SITE MAP.
SO WE PICKED A POINT SEVERAL
HUNDRED YARDS DOWNSTREAM OF SW-4
1449 COLLECTED SAMPLE SW-5, MS/MSD
TEMP 26.2
pH 7.92
COND 1.57
NTU'S
1455 COLLECTED SAMPLE SED-5
1515 COLLECTED SAMPLE SED-3. NO
WATER IN CREEKBED FOR SW. SAMPLE.
TOOK SAMPLES TO VAN.
1532 COLLECTED SAMPLE SED-2 NO WATER
IN CREEKBED FOR SW.
1545 COLLECTED SAMPLE SW-1 FROM
CREEK NEAR PORTER RD
1550 COLLECTED SAMPLE SED-1.
ALL SAMPLES PUT ON ICE + LOGGED ON C
FORM
1610 LEFT SITE FOR E+E ASC
1700 DROPPED OFF SAMPLES. DROVE TO E+E HQ
TO DROP OFF B. KOENER
1730 STOPPED AT E+E ESC BUT NO ONE THERE
ACCEPT EQUIPMENT.
1750 HOME

Chad [illegible]

MONDAY AUGUST 27 1990

WEATHER: HOT HUMID SUNNY, 85°

PERSONNEL: C. EICH (E+E)

BRIAN MERRITT (OM POPLI)

1245 C. EICH + B MERRITT LEFT E+E HQ FOR DiBACCO'S SITE. CHAD WILL SHOW BRIAN LOCATION OF 3 WELL AND SAMPLING + BORING LOCATIONS

1330 ARRIVE ON-SITE, WALKED SITE, MARKED EACH LOCATION ON A MAP AND REFLAGGED EACH LOCATION WITH FLAGGING TAPE. GAVE BRIAN A SET OF WELL KEYS SO HE CAN SURVEY TO TOP OF PVC.

1445 FINISHED MARKING LOCATIONS, HEADING BACK TO E+E

.OC

TO