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915053

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATIONS

Volume I - Main Report

Houdaille-Industries-Strippit Division
Village of Akron

Site No. 915053
Erie County

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

By:

ENGINEERING-SCIENCE

VOLUME I- MAIN REPORT

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

PHASE II INVESTIGATIONS - HOUDAILLE INDUSTRIES STRIPPIT DIVISION NYS SITE NUMBER 915053 ERIE COUNTY, NEW YORK

Prepared For:

DIVISION OF HAZARDOUS WASTE REMEDIATION
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
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MARCH 1991

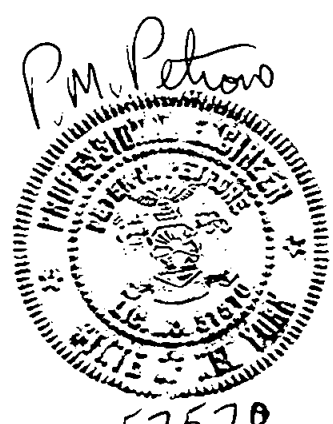

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TABLE OF CONTENTS

VOLUME I - MAIN REPORT

TABLE OF CONTENTS-CONTINUED

LIST OF TABLES

LIST OF FIGURES

SECTION I

EXECUTIVE SUMMARY

SITE BACKGROUND

The Houdaille Industries–Strippit Division site is located in eastern Erie County, New York, south of the Village of Akron. The two-acre landfill site is located behind the Strippit Division Plant at 1297 South Clarence Center Road, Town of Akron, New York. The site location is shown on the USGS Akron and Wolcottsville, New York, 7½-minute quadrangle maps (Figure I-1).

The Houdaille Industries-Strippit Division (now IDEX Corporation-Strippit Division) has owned the two-acre disposal site since 1956 (Figure I-2). The site was owned by the Buffalo Arms Corporation from approximately 1940 to 1950. The Buffalo Arms Corporation manufactured machine guns for the U.S. government and used the landfill site for disposal of spent cartridges, scrap lead and steel from the manufacturing process (ECDEP, 1984). Houdaille Industries-Strippit Division (Strippit) purchased the site in 1956 and used the landfill until about 1975 (NYSDEC, 1978). During the period 1956 to 1975, Strippit disposed approximately 20,000 gallons per year of water-soluble coolants, three tons per year of heat treatment sludge, and 450 cubic yards per year of refuse at the site (NYSDEC, 1978). An estimated 216 drums of heat treatment sludge waste were alleged to be stored on-site in 1980 (USEPA, 1980). All combustible materials were burned at the disposal site and the resulting ash and non-combustibles were buried in the landfill (Bartha, 1987). Waste solvents generated at the plant were reportedly used to ignite the combustible materials in the disposal area (Bartha, 1985).

Beginning in 1987, oil compounds and water-soluble coolants were collected and stored in an on-site underground storage tank prior to off-site recycling (Bartha, 1985). The landfill was covered with approximately 16,000 cubic yards of clean fill excavated during a plant expansion project in 1979 (ECDEP, 1984). In December 1981, the NYSDEC collected five soil samples and three water samples at the landfill site (NYSDEC, 1982). Analysis of the soil samples detected arsenic, lead, zinc, chromium and halogenated organics. Analysis of surface water samples from the drainage ditch adjacent to the landfill contained arsenic and zinc (NYSDEC, 1982).

A NYSDEC Phase I report was prepared in January 1986 by Engineering-Science, Inc. It included a preliminary HRS score and recommended that a Phase II investigation be performed to provide data necessary to calculate a final HRS score. On May 20, 1987, NUS Corporation conducted a site inspection on behalf of the USEPA and collected nine samples (five soil samples, two groundwater samples from private wells, one surface water sample and one sediment sample) (NUS, 1987). NUS found elevated concentrations of semivolatile organic compounds (including several polynuclear aromatic hydrocarbons [PAHs]) in the on-site soils

and in the sediment sample downgradient of the disposal site. The surface water sample contained detectable concentrations of several volatile organic compounds and one groundwater sample contained relatively high concentrations of antimony and cadmium.

PHASE II INVESTIGATION

The Phase II field investigation included a geophysical survey and installation of four groundwater monitoring wells. Surface water, groundwater, sediment and leachate samples were collected and analyzed and air monitoring was conducted to determine whether hazardous substances are present at the Strippit site.

SITE ASSESSMENT

The geologic stratigraphy of the site can be summarized as up to fifteen feet of fill overlying dense glacial till which overlies sandy-silt, glaciolacustrine deposits. The limestone bedrock is estimated to be over 100 feet deep at the site, based on the geologic logs of two gas wells drilled at the site.

Based on well borings, the dense till consists of two units, an upper sandy till and a lower silty till, with a total thickness of 40 to 50 feet. The dense till may provide a barrier to downward migration of contaminants; however, the till was penetrated by a gas well which could allow contamination to move from the landfill into the sandy-silt aquifer below the till. Four wells were installed in the sandy-silt aquifer. The original plan was to drill the wells into the bedrock aquifer which was believed to be directly below the till. However, the sandy-silt aquifer directly below the till is the first aquifer likely to be impacted by contaminants migrating through the till. A shallow perched water zone in the fill which overlies the dense glacial till at a depth of four to six feet did not yield significant volume of water to be considered an aquifer. The water levels in monitoring wells at the site are between 29 and 38 feet below the surface. The local groundwater flow is toward Murder's Creek to the northwest. During drilling, when the sandy-silt aquifer was encountered, the water rose in the borings several feet above the top of the sandy-silt, indicating the aquifer is confined by the glacial till.

To evaluate the presence of contamination, samples of soil, groundwater, leachate, surface water and sediment were collected and analyzed for Target Compound List (TCL) organic compounds (volatiles, semivolatiles, pesticides/PCBs) and Target Analyte List (TAL) metals and cyanide. NYSDEC Contract Laboratory Protocols (CLP), dated November 1987, were utilized for analytical methods and data reporting. The following paragraphs describe the analytical results by sample matrix. The summary tables list only those compounds and analytes detected in the samples. The footnotes and data qualifers used on Tables I-1 through I-6 are presented on Table I-7.

Subsurface Soil Sample Results

One subsurface soil sample was collected from well boring GW-4 for analysis (Table I-1). The one volatile organic compound (VOC) detected in the subsurface soil sample was acetone. Acetone is a common laboratory contaminant but was not

present in any laboratory or field blank samples, indicating it may be an on-site contaminant.

Seventeen TAL metals were detected in the subsurface soil; however, all metal concentrations were within the naturally-occurring range for New York State soils (Table I-1).

Leachate Results

One leachate sample was collected from the north side of a drainage ditch along the old railroad right-of-way south of the site. The two VOCs detected in the leachate were methylene chloride and acetone (Table I-2). Methylene chloride was also detected in the field blanks, therefore its presence is attributed to laboratory contamination. Acetone is thought to be a contaminant present on-site. The one semivolatile detected was 4-methlyphenol; however, it was present at a low concentration, below the contract-required detection limit.

Of the seventeen TAL metals which were detected in the leachate sample, aluminum, cobalt, iron, vanadium, and zinc were detected above the NYS Class C surface water standards. The same five metals were detected at concentrations above the standards in the surface water sample collected in the drainage ditch west of the site. The sample results are compared to Class C standards since the closest surface water body is Murder Creek, a Class C stream.

Groundwater Sample Results

Four groundwater samples were collected from the four monitoring wells installed at the Houdaille Industries-Strippit site, and a duplicate sample was collected from GW-4 and designated GW-5.

Five VOCs were detected in the groundwater samples (Table I-3); methylene chloride, acetone, toluene, 2-butanone and chloroform. The methylene chloride results have been rejected because it was also detected in the field quality control blank.

The presence of the other VOCs in the groundwater samples indicates these compounds may be present in the wastes on-site. Their presence in the upgradient groundwater samples may be caused by radial flow away from the landfill.

Sixteen TAL metals were detected in the groundwater samples (Table I-3). For six metals, aluminum, chromium, iron, magnesium, manganese and zinc, the concentrations in one or both downgradient wells exceeded the upgradient well concentrations by more than three times. This indicates a release to groundwater attributable to the site. The NYS groundwater standards for antimony, iron and sodium were exceeded by all wells at the site. The NYS groundwater standards were exceeded for magnesium and manganese only in downgradient well GW-4. The highest concentrations for most of the analytes were in the sample from GW-4; particularly noteworthy are the concentrations of iron, magnesium and manganese.

Surface Water Sample Results

Analytical results from the one downgradient surface water sample (SW-1) are presented on Table I-4. The sample was collected from a small drainage ditch west

of the site. Four VOCs and seventeen TAL metals were detected. No semivolatile compounds, pesticides or PCBs were detected.

The four volatile organic compounds detected were methylene chloride, acetone, 1,1-dichloroethane and 1,2- dichloroethene. The presence of methylene chloride is attributed to laboratory contamination, therefore the methylene chloride results have been rejected. No NYS Class C surface water standards exist for the other VOCs, but their presence indicates low-level contamination which is likely attributable to the site, due to the proximity of the disposal site to the ditch. Class C standards are used for comparison purposes since the closest surface water body is Murder Creek, a Class C stream.

Seventeen TAL metals were detected in the surface water sample (Table I-4). Five metals, aluminum, cobalt, iron, vanadium and zinc, were detected above NYS standards for Class C surface waters. Similarly, the groundwater and leachate also had elevated levels of aluminum, iron and zinc, but the levels of these metals in the surface water was several times higher than in the groundwater, and slightly higher than in the leachate.

Sediment Results

One sediment sample (SED-1) was collected from the drainage ditch west of the site in the same area as the surface water sample. The analytical results are presented in Tables I-5 and I-6. Three VOCs, twelve semivolatile organic compounds, and nineteen TAL metals were detected in the sediment sample.

The three VOCs detected were methylene chloride, acetone and total xylenes. The presence of methylene chloride is attributable to laboratory contamination. The presence of acetone and total xylenes indicates these compounds are present on-site.

Of the twelve semivolatile organic compounds detected in the sediment (Table I-5), all but diethylphthalate were detected in the soil or sediment samples collected by NUS during their 1987 site investigation (NUS, 1989). Nine of these compounds were polynuclear aromatic hydrocarbons (PAHs) with a total concentration of 12,970 μg/kg. PAHs are formed by combustion of organic compounds. The PAHs in the sediment are likely due to the refuse burning and ash disposal which occurred at the site. PAHs pose a direct contact threat because several PAH compounds are probable human carcinogens, and could be a threat should site users come into contact with the contaminated sediments.

Of the nineteen TAL metals detected in the sediment, only barium and cadmium exceeded the naturally-occurring range for these elements in the soil (Table I-6). The barium concentration in a sediment sample collected by NUS during their 1987 site investigation also exceeded the naturally-occurring range (NUS, 1989).

Contamination Assessment Summary

The leachate results indicated contamination with low levels of acetone and 4-methylphenol and relatively high levels of metals, particularly aluminum, cobalt, iron, vanadium, and zinc. The groundwater and surface water results indicated

contamination with low levels of VOCs and relatively high levels of aluminum, antimony, cobalt, iron, magnesium, manganese, vanadium, and zinc. The similarity in the types of metals detected at high concentrations in the leachate samples and the surface water and groundwater samples indicates the site is probably the source of these contaminants. The presence of the VOCs indicates hazardous wastes, or wastes containing hazardous substances, may have been disposed on-site. The PAHs detected in the sediment sample indicates a direct contact threat can be considered to be present at the site, although it is not an immediate threat to human health.

HAZARD RANKING SYSTEM SCORE

The Hazard Ranking System (HRS) was applied in order to estimate the relative risk associated with this site. As currently used by the NYSDEC, the HRS is employed to help evaluate inactive hazardous waste sites in New York State. This system takes into account the types of wastes at the site, receptors, and transport routes to calculate a numerical score for the site. As stated in 40CFR Subpart H Section 300.81, the HRS was developed by the USEPA to evaluate the relative potential for uncontrolled hazardous waste disposal sites to cause human health or safety problems or ecological and environmental damage. It is assumed by the USEPA and NYSDEC that a uniform application of the ranking system in each state will permit USEPA and NYSDEC to identify releases of hazardous substances that pose the greatest hazard to human health and/or the environment.

Under the HRS, three numerical scores are computed to express the relative risk or danger from the site. These scores take into account the population at risk, the potential for contamination of drinking water supplies, for direct human contact, for destruction of sensitive ecological systems, and other appropriate factors. The three scores are:

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

Based on the results of this and previous studies, the HRS scores for the Houdaille Industries-Strippit Division site have been calculated as follows:

S_M	= 39.16	S_{GW}	= 67.35
S_{FE}	= 0	S_{SW}	= 7.38
S_{DC}	= 25.00	S_A	- 0

RECOMMENDATIONS

The Phase II investigation at the Houdaille Industries-Strippit Division site was intended to determine whether the landfill is adversely impacting groundwater and surface water quality in the site vicinity. In general, the scope of the Phase II investigation was adequate to provide a site contamination assessment. Due to the contamination in the groundwater, the site has a moderately high HRS score because there are potential receptors (about 2000) who are relatively close to the site and rely on groundwater wells for drinking water. Future development of the area around the site may increase the potential impact of the site, by adding additional receptors.

It appears as though hazardous wastes may be present at the site, based on the presence of volatile organic compounds in the surface water and groundwater samples. However there was no documentation of hazardous waste disposal on-site identified during the Phase I and Phase II investigations. Proper closure of the landfill is warranted and surface water runoff controls are necessary. The extent of PAH contamination in sediments at the site should be investigated, unless the entire area is covered with sufficient clean fill to eliminate the direct contact threat. The impact of the groundwater contamination is difficult to assess. Other than the low concentrations of VOCs in the upgradient, (GW-2) and downgradient (GW-1) wells, the contaminants (metals) being released are not particularly toxic, or are below applicable standards. Nevertheless, there are indications of releases from the site, and there are potential receptors for the groundwater pathway. The most immediate means of determining whether the site is impacting groundwater users would be to sample residential drinking water supplies closest to the site.

Once the site is properly closed, groundwater monitoring on-site and off-site (residential wells) would be one means of determining whether impacts to receptors are, or could be, occurring.

TABLE I-1
HOUDAILLE - STRIPPIT
SOIL RESULTS
TCL ORGANIC COMPOUNDS / TAL METALS (MG/KG)

ANALYTE	(1) AVG. RANGE IN NYS SOILS (mg/kg)	GW4-SS-1
ACETONE	NS	8 J
ALUMINUM	700 - >100,000	7,670
ARSENIC	0.1 - 100	2.3
BARIUM	10 - 500	54.8
BERYLLIUM	<1 - 15	0.84 B
CALCIUM	130 - 330,000	98,800 *
CHROMIUM (total)	1 - 2,000	10.2 *
COBALT	<3 - 70	3.9 B
COPPER	1 - 700	7.2
IRON	100 - >100,000	11,100 E*
LEAD	<10 - 700	10.6 *
MAGNESIUM	50 - 50,000	49,400 *
MANGANESE	<2 - 7,000	382 E
NICKEL	<5 - 7000	8.9
POTASSIUM	2,200 - 65,000	2,340
SODIUM	<500 - 100,000	246 B
VANADIUM	20 - 500	16.1
ZINC	<5 - 3,500	61.7 EN*

Footnote and qualifier list on Table I-7.

TABLE I-2
HOUDAILLE - STRIPPIT
LEACHATE RESULTS
TCL ORGANIC COMPOUNDS (UG/L) / TAL METALS (UG/L)

ANALYTE	(4) NYS STANDARD SURFACE WATER CLASS C (ug/l)	L-1
METHYLENE CHLORIDE		6 BR
ACETONE		41
4-METHYLPHENOL		6 J
ALUMINUM	100	14,700
ANTIMONY		25.5 B
ARSENIC	190	71.0 N
BARIUM		273
CALCIUM		163,000
CHROMIUM (total)		10.2
COBALT	5	7.0 B
COPPER		23.5 B@
IRON	300	30,200
LEAD		46.8
MAGNESIUM		49,000
MANGANESE		2,820
NICKEL		18.1 B
POTASSIUM		5,990
SODIUM		6,300
VANADIUM	14	25.7 B
ZINC	30	194

(4) NYSDEC Surface Water Quality Standards, 6 NYCRR, part 701.

Footnote and qualifier list on Table I-7

Note: CRDL for cobalt is 50 ug/l.

TABLE I-3
HOUDAILLE - STRIPPIT
GROUNDWATER RESULTS
TCL ORGANIC COMPOUNDS (UG/L) / TAL METALS (UG/L)

ANALYTE	(3) NYS STANDARD GROUNDWATER (UG/L)	GW-1	GW-2	GW-3	GW-4	GW-5 (duplicate)
METHYLENE CHLORIDE	5 b	3 BJR	6 BR	6 BR	-	-
ACETONE	50 b	11	35	-	-	-
CHLOROFORM	100 be	-	3 J	-	-	-
2-BUTANONE	50 b	-	11	-	-	-
TOLUENE	5 b	3 J	3 J	-	-	-
ALUMINUM	NS	513	838	1,770	5,680	5,370
ANTIMONY	3 e	44.3 B	48.0 B	40.9 B	35.7 B	25.7 B
ARSENIC	25 a	-	-	-	3.0 SN	-
BARIUM	1,000 a	191 B	1,120	121 B	221	206
CALCIUM	NS	93,500	268,000	55,000	265,000	239,000
CHROMIUM (total)	50 b	-	-	-	10.7	9.3 B
COPPER	<200 c	-	5.4 B	-	4.8 B	4.1 B
IRON	300 b*	465	462	3,360	14,000	12,900
LEAD	25 a	9.1	1.9 B	4.3 B	12.6	13.7
MAGNESIUM	35,000 e	8,760	789 B	30,000	47,100	40,500
MANGANESE	300 b*	34.3	12.0 B	153	326	281
NICKEL	700 f	12.4 B	-	10.9 B	-	8.2 B
POTASSIUM	NS	303,000	96,800	3,300 B	59,800	59,500
SODIUM	<20,000 c	161,000	229,000	38,000	40,100	37,900
VANADIUM	NS	13.2 B	6.7 B	6.0 B	15.6 B	14.7 B
ZINC	<300 c	-	-	19.8 B	42.0	36.9

Note: GW-5 is a duplicate of GW-4.

Footnote and qualifier list on Table I-7.

Note: CRDL for Antimony is 60 ug/l.

TABLE I-4
HOUDAILLE-STRIPPIT
SURFACE WATER RESULTS
TCL ORGANIC COMPUNDS / TAL METALS (UG/L)

ANALYTE	(4) NYS STANDARD SURFACE WATER CLASS C	SW-1
METHYLENE CHLORIDE		4 BJR
ACETONE		10
1,1-DICHLOROETHANE		19
1,2-DICHLOROETHENE		5
ALUMINUM	100	20,700
ANTIMONY		23.8 B
BARIUM		2,920
BERYLLIUM	11	1.1 B
CALCIUM		222,000
CHROMIUM (total)		31.3
COBALT	5	18.1 B
COPPER		45.8@
IRON	300	38,300
LEAD		60.7
MAGNESIUM		73,700
MANGANESE		3,310
NICKEL		56.5
POTASSIUM		40,700
SODIUM		70,900
VANADIUM	14	43.5 B
ZINC	30	393

(4) NYSDEC Surface Water Quality Standards, 6 NYCRR, part 701.

Footnote and qualifier list on Table I-7.

TABLE I-5
HOUDAILLE-STRIPPIT
SEDIMENT RESULTS
TCL ORGANIC COMPOUNDS (UG/KG)

ANALYTE	SED-1
METHYLENE CHLORIDE	4 JR
ACETONE	13 J
TOTAL XYLENES	6 J
DIETHYLPHTHALATE	6,700
PHENANTHRENE	1,600
DI-N-BUTYLPHTHALATE	630 J
FLUORANTHENE	2,400
PYRENE	1,800
BENZO(A)ANTHRACENE	1,000
BIS(2-ETHYLHEXYL)PHTHALATE	1,200 X
BENZO(B)FLUORANTHENE	1,600
BENZO(K)FLUORANTHENE	2,300
BENZO(A)PYRENE	970
INDENO(1,2,3-CD)PYRENE	720 J
BENZO(G,H,I)PERYLENE	580 J

Footnote and qualifier list on Table I-7.

TABLE I-6 HOUDAILLE - STRIPPIT SEDIMENT RESULTS TAL METALS (MG/KG)		
ANALYTE	(1) AVG. RANGE IN NYS SOILS (mg/kg)	SED-1
ALUMINUM	700 - >100,000	4,290
ARSENIC	0.1 - 100	1.7 B
BARIUM	10 - 500	1,140 N*
BERYLIUM	<1 - 15	0.28 B@
CADMIUM	0.01 - 7 (2)	16.2 N
CALCIUM	130 - 330,000	76,100
CHROMIUM (total)	1 - 2,000	30.7 N*
COBALT	<3 - 70	8.9 B
COPPER	1 - 700	39.6 N*
IRON	100 - >100,000	23,600
LEAD	<10 - 700	23.3
MAGNESIUM	50 - 50,000	11,800
MANGANESE	<2 - 7,000	1,040
NICKEL	<5 - 7000	19.5
POTASSIUM	2,200 - 65,000	858 B
SILVER	NS	2.7 N
SODIUM	<500 - 100,000	210 BE
VANADIUM	20 - 500	16.6
ZINC	<5 - 3,500	169 N

Footnote and qualifier list on Table I-7.

TABLE I-1
FOOTNOTE / QUALIFIER LIST

FOOTNOTES:

(1) USGS, 1984, Professional Paper 1270: New York State Soils.

(2) Booz, Allen & Hamilton, Inc. (1983): Range in U.S. Soils.

(3) New York State quality standard for class GA (source of potable water supply) groundwaters are the most stringent of applicable standards, criteria, or guidelines listed below:

a - NYSDEC Groundwater Quality Regulations, 6 NYCRR, Part 703, dated September 1990.

b - NYSDOH Maximum Contaminant Levels, Public Water Supplies, 10 NYCRR, Subpart 5-1, dated January 1989.

c - NYSDOH Standards, Sources of Water Supply, 10 NYCRR, Part 170.

d - USEPA Maximum Contaminant Levels, 40 CFR 141.

e - NYS Ambient Water Quality Guidance Values, TOGS 1.1.1 dated September 1990.

f - USEPA Health-based Criteria for Systemic Toxicants, dated May 1989.

* - If iron and manganese are present, total concentration of both should not exceed 500 ug/l.

(4) NYSDEC Surface Water Quality Standards, 6 NYCRR, part 701 and 702.

NS: No standard or guidance value established.

ND: The standard for this compound is below detection limit.

DATA QUALIFIERS (ORGANIC COMPOUNDS):

B: This flag is used when the analyte is found in the blank as well as the sample. It indicates possible or probable blank contamination and warns the data user to take appropriate action.

J: Indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero.

--: Indicates compound was analyzed for but not detected. Refer to Appendix D for detection limit.

X or T: Mass spectrum does not meet CLP criteria for confirmation, but compound presence is strongly suspected.

E: This flag is used to indicate that the quantitation of the analyte is outside the curve and that dilution was required to properly quantitate.

D: Flag is used to indicate the value for the target analyte was calculated from a dilution (see E flag above).

Y: Flag used when a matrix spike compound is also confirmed present in the unspiked sample.

R: Data Validation recommends that this value be rejected due to blank contamination.

@: This value, due to spreadsheet characteristics, appears as boxed. The value DOES NOT exceed quoted standards.

NS: No standard or guidance value established.

F: Surrogate recovery values were outside the CLP criteria windows. Value is considered an estimated concentration.

NA: Not analyzed.

Values bolded and/or boxed exceed quoted standards.

DATA QUALIFIERS (METALS):

B: Reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL).

U or -: Reported value is less than IDL.

N: Spiked sample recovery not within control limits.

*: Duplicate analysis (Relative Percent Difference) not within control limits.

W: Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

S: The reported value was determined by the Method of Standard Additions (MSA).

+: Correlation coefficient for the MSA is less than 0.995.

E: Reported value is estimated because of the presence of interference.

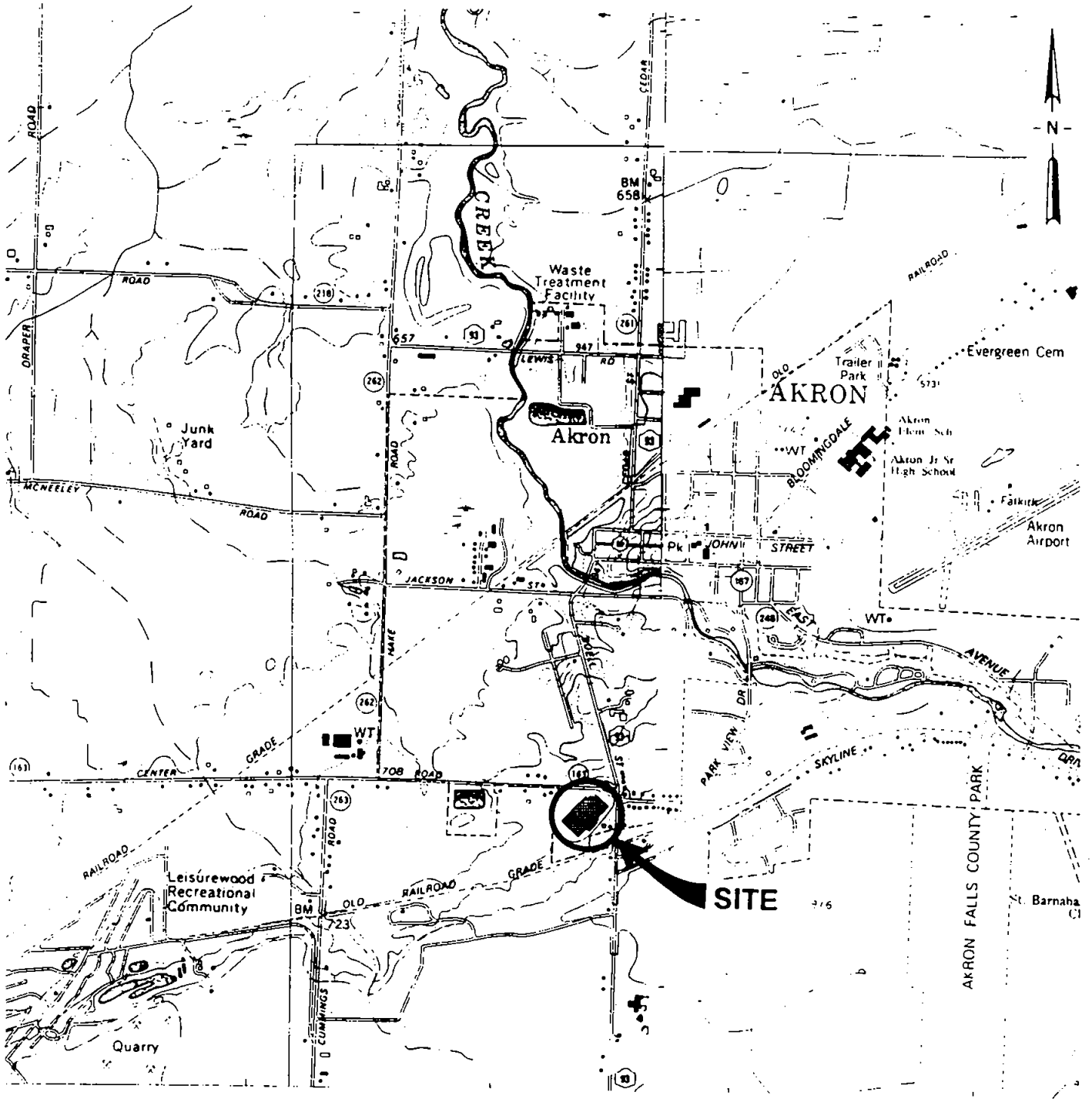
M: Duplicate injection precision not met.

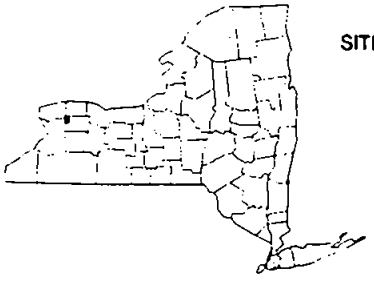
@: This value, due to spreadsheet characteristics, appears as boxed. The value DOES NOT exceed quoted standards.

NS: No standard or guidance value established.

NA: Not analyzed.

Values bolded and/or boxed exceed quoted standards.





QUADRANGLE LOCATION

SITE LOCATION: 78° 30' 14" W. Longitude
43° 00' 27" N. Latitude

SOURCE: U.S.G.S. 7.5 QUADRANGLE WOLCOTTSVILLE, NEW YORK AND AKRON, NEW YORK (1980)

SCALE: 1" = 2,000'

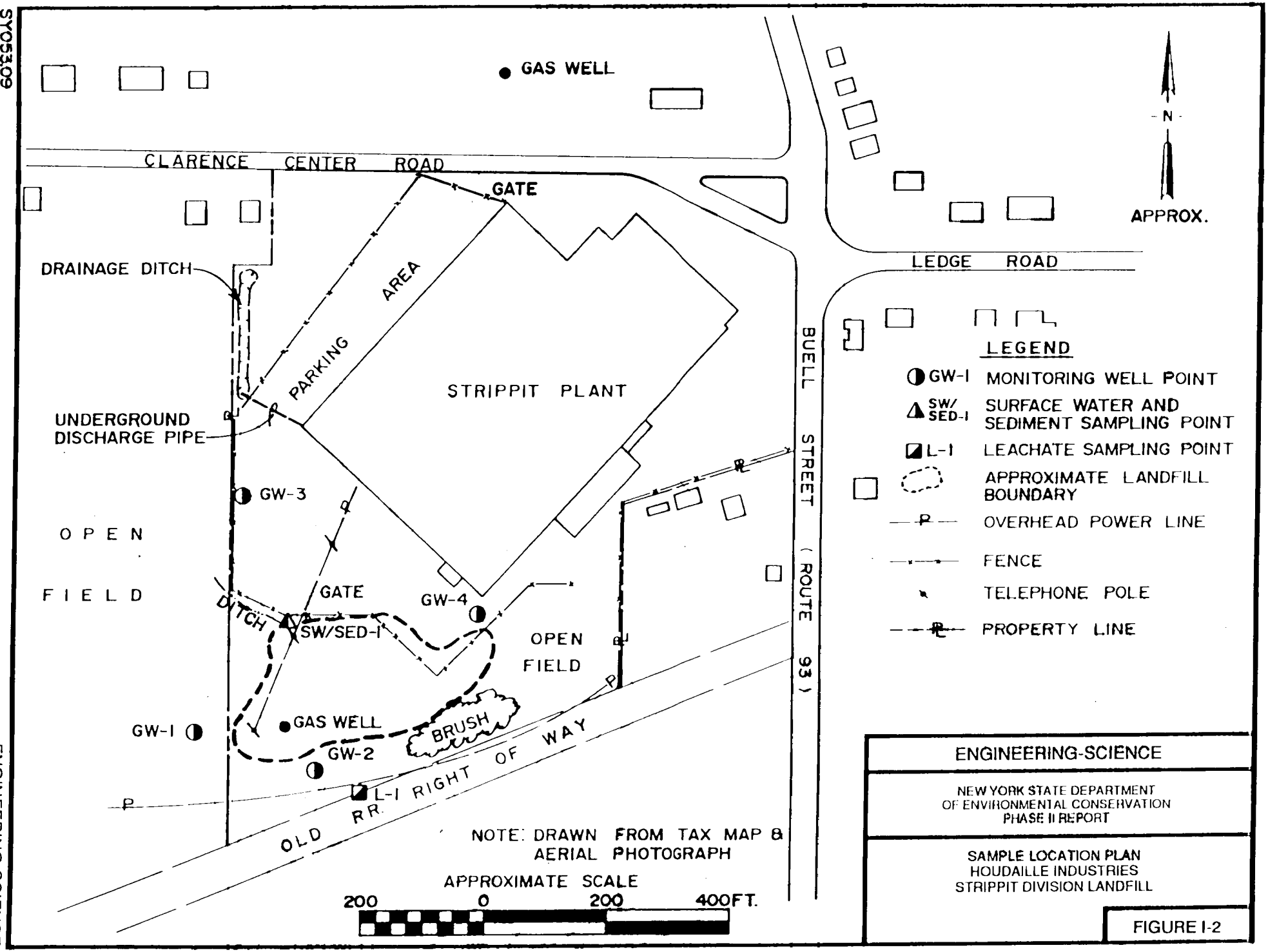
2,000 0 2,000 FEET

ENGINEERING-SCIENCE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT

SITE LOCATION MAP
HOUDAILLE INDUSTRIES
STRIPPIT DIVISION LANDFILL

FIGURE I-1


SY053.09
GAS WELL
CLARENCE CENTER ROAD
GATE
DRAINAGE DITCH
PARKING AREA
STRIPPIT PLANT
UNDERGROUND DISCHARGE PIPE
GW-3
OPEN FIELD
GATE
DITCH
SW/SED-1
GW-4
OPEN FIELD
GW-1
GAS WELL
BRUSH
GW-2
L-1
OLD RR RIGHT OF WAY
BUELL STREET (ROUTE 93)
LEDGE ROAD
APPROX.
N
LEGEND
GW-1 MONITORING WELL POINT
SW/SED-1 SURFACE WATER AND SEDIMENT SAMPLING POINT
L-1 LEACHATE SAMPLING POINT
APPROXIMATE LANDFILL BOUNDARY
OVERHEAD POWER LINE
FENCE
TELEPHONE POLE
PROPERTY LINE
NOTE: DRAWN FROM TAX MAP & AERIAL PHOTOGRAPH
APPROXIMATE SCALE
200 0 200 400FT.
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PHASE II REPORT
SAMPLE LOCATION PLAN HOUDAILLE INDUSTRIES STRIPPIT DIVISION LANDFILL
FIGURE I-2
ENGINEERING-SCIENCE

SECTION II

PURPOSE

The objectives of Phase II investigation are to determine if hazardous wastes are present at the site, if contaminants are present in groundwater, surface water, soils or air at the site, and to determine if contaminants are migrating from the site posing a potential threat to human health and the environment. Information gathered during this investigation will allow the Department of Environmental Conservation to establish the relative risk posed by the site, to reclassify the site on the New York State List of Inactive Hazardous Waste Sites, or remove the site from the list if this is justified by the findings of this investigation.

The NYSDEC Phase II investigation consisted of a preliminary hydrogeologic investigation and evaluation in order to collect additional field data necessary to identify the occurrence and extent of contamination, determine if any imminent health hazard exists, and prepare a site investigation report, including a final Hazard Ranking System (HRS) score.

The Houdaille Industries-Strippit Division (now IDEX Corporation-Strippit Division) has owned the two-acre disposal site since 1956. The site was owned by the Buffalo Arms Corporation from approximately 1940 to 1950. The Buffalo Arms Corporation manufactured machine guns for the U.S. Government, and used the site for disposal of spent cartridges, scrap lead, and steel from the manufacturing process (ECDEP, 1984). Houdaille Industries-Strippit Division (Strippit) purchased the property in 1956 and used the disposal site until about 1975 (NYSDEC, 1978). During the period 1956 to 1975, Strippit disposed of approximately 20,000 gallons per year of water-soluble coolants, three tons per year of heat treatment sludge, and 450 cubic yards per year of refuse (NYSDEC 1982).

A NYSDEC Phase I report was prepared in January 1986, by Engineering-Science, Inc., which included a preliminary HRS score. The report recommended that a Phase II investigation be performed to provide the data necessary to calculate a final HRS score. On May 10, 1987, NUS Corporation conducted a site inspection on behalf of the USEPA and collected nine samples, including five soil samples, two groundwater samples from private wells, one surface water sample, and one sediment sample (NUS, 1987). This NYSDEC Phase II investigation was designed to supplement the limited groundwater data previously collected.

SECTION III

SCOPE OF WORK

INTRODUCTION

Field work for the Phase II investigation at the Houdaille Industries-Strippit Division (Strippit) site began on October 23, 1989 and was completed on June 8, 1990. The Phase II Work Plan was prepared and approved by NYSDEC, prior to commencing the field investigations. The Work Plan was later revised with NYSDEC approval, based on preliminary findings during drilling. The original Work Plan included the installation of four monitoring wells which were to be screened in the bedrock aquifer. This was revised when a water-bearing sandy-silt unit was encountered in the first well boring location. The decision was made to screen the monitoring wells within the sandy-silt aquifer since it was the first water-bearing zone encountered.

PHASE II SITE INSPECTION

The scope of the investigation is summarized in Table III-1 and is described below. All field work was performed or supervised by qualified Engineering-Science, Inc. (ES) staff in accordance with the NYSDEC-approved Quality Assurance Project Plan and Health and Safety Project Plan. Field procedures for the site investigation tasks are presented in Appendix A.

Geophysical Survey

A geophysical survey utilizing electromagnetic (EM) methods was conducted across and around the perimeter of the disposal area during October 1989. The instrument used was a EM-31D Terrain Conductivity Meter. Conductivity measurements were collected over a survey grid at 25-foot intervals to identify conductive contaminant plumes in the groundwater and conductive contaminant sources in the unsaturated zone. Details of the geophysical survey methodology and survey findings are presented in Appendix B.

Monitoring Well Installations

Four monitoring wells were installed around the landfill site between May 11, 1990 and May 25, 1990 by Rochester Drilling Co., Inc. The location of these wells is shown on Figure III-1. All wells monitor the sandy-silt unit underlying dense glacial till. The upgradient well for the landfill is considered to be GW-2; monitoring wells GW-1, GW-3 and GW-4 are considered downgradient wells (Table III-2). Local groundwater flow in the monitored zone is predominantly to the northwest.

The wells were drilled and constructed in accordance with NYSDEC guidelines. Split spoon samples were collected at five-foot intervals above the water table and continuously below the water table. One split-spoon soil sample from boring GW-4 was collected and analyzed for TCL organic compounds, TAL metals, and cyanide

based on elevated photoionization detector readings. Three split-spoon samples were collected at various depths in well boring GW-1 and analyzed for grain-size characteristics.

The monitoring wells were constructed with two-inch inside diameter threaded, flush-joint, NSF-approved PVC pipe and 0.010-inch slotted screen. Bentonite pellet seals were used to isolate the screened sections from above. Water levels in the wells were measured on at least two dates following installation and development.

All monitoring wells were developed using Teflon bailers. Monitoring well GW-2 required flushing using a clean rubber hose and the Mobile B-61 rig pump. Water used to flush out monitoring well GW-2 was from the potable water supplied by the Village of Akron water system. All wells were bailed for a period of at least five hours or until the water turbidity was less than 50 NTUs and the temperature, pH, and conductivity stabilized. The water supply used for drilling was not sampled or analyzed as part of the Phase II investigation.

The monitoring wells were capped with a vented PVC cap and covered by a lockable protective steel casing. Field procedures for the monitoring well installations are presented in Appendix A. Analytical results for the soil samples are discussed in Section IV and listed in Appendix D. Boring logs, well schematics and geotechnical analyses results are included in Appendix C.

Groundwater Sampling and Analysis

Groundwater samples were collected from each of the Phase II monitoring wells on June 7, 1990. These samples were analyzed for TCL organic compounds (volatiles, semivolatiles, pesticides, and PCBs), TAL metals, and cyanide. In addition, a trip blank was analyzed for TCL volatiles, and a wash blank was analyzed for TCL organic compounds, TAL metals and cyanide. The laboratory quality control matrix spike (MS) and matrix spike duplicate (MSD) samples were collected from GW-3. A duplicate sample, GW-5, was collected at GW-4 to determine the reproducibility of sample results. All laboratory analyses and reporting utilized the November, 1987 NYSDEC Contract Laboratory Protocols (CLP).

Groundwater samples were collected with disposable polyethylene bailers and dedicated polypropylene line. Field procedures for the groundwater sampling are presented in Appendix A. Analytical results are discussed in Section IV and contained in Appendix D. Field sampling records for all samples, including the groundwater samples, are presented in Appendix D.

Surface Water and Sediment Sampling and Analyses

One downgradient surface water (SW-1) and one sediment sample (SED-1) were collected on June 7, 1990. In addition, MS and MSD samples for sediments were collected at the SED-1 location. All surface water and sediment samples were analyzed for TCL organic compounds, TAL metals and cyanide.

The surface water and sediment samples were collected immediately downgradient of the fill area, between an 18-inch culvert and a vertical pipe (non-functional) (Figure III-1). The surface water sample was collected with a glass

beaker from a depression which was excavated in the bottom of the ditch to allow surface water to collect. This was necessary because of the shallow water level in the ditch. The sediment sample was collected with a decontaminated stainless steel trowel. Field procedures are presented in Appendix A, and the analytical results are discussed in Section IV and listed in Appendix D.

Leachate Sampling and Analyses

One leachate sample (L-I) was collected on June 7, 1990 and analyzed for TCL organic compounds, TAL metals, and cyanide.

The leachate sample was collected south of the site from a yellow-colored seep in a drainage ditch along the old railroad right-of-way. The leachate sample was collected with a glass beaker from a depression which was excavated in the ground surface to allow leachate to collect. Field procedures are presented in Appendix A, and the analytical results are discussed in Section IV and listed in Appendix D.

Air Monitoring

A Photovac Total Ionizables Present (TIP-II) was used to monitor for volatile organic compounds present in the air. This monitoring was performed as a health and safety measure during on-site field work. Air in the breathing zone (four to five feet above ground) was monitored during drilling and sampling activities. Soil samples and the headspace over each monitoring well were also screened as a preliminary means of determining the presence of volatile organic compounds.

The Photovac was calibrated daily to a standard of 100 ppm isobutylene. The Photovac is equipped with a 10.6 ev lamp, suitable for detecting most volatile organic compounds commonly found at hazardous waste sites such as toluene, xylene, ethylbenzene, benzene, trichloroethene, vinyl chloride, etc. Because the Photovac is not calibrated to all of these specific compounds, it provides readings of total ionizables present (i.e. volatile organic compounds with a ionization potential at or below 10.6 ev) relative to the isobutylene standard. The readings that the Photovac Tip II provides are best used for background/downgradient comparisons.

TABLE III-1

SUMMARY OF PHASE II TASKS
HOUDAILLE INDUSTRIES-STRIPPIT DIVISION

Tasks	Description of Task
Review and Update Work Plan	Reviewed the information in the Phase I report and supplemental data, conducted a site visit, examined aerial photos and maps, and reviewed the Phase II work plan.
Records Search/Background Data Collection.	Augmented Phase I information by contacting or visiting headquarters and regional offices of NYSDEC and various county agencies.
Site Reconnaissance	Checked proposed monitoring well locations and examined terrain for accessibility by drill rigs. In addition, determined appropriate locations of surface water and sediment sampling points.
Soil Borings/Monitoring Well Installation	Installed four wells. Four borings were drilled to depths between 50 and 70 feet. Wells were constructed with 2-inch inside diameter PVC with 5 to 10 feet of 0.010-inch slotted well screen.
Sampling and Analysis	
Soil Samples from Borings	Soil samples were collected continuously from well borings. Three grain-size analyses were performed. One sample was analyzed for TCL organic compounds, TAL metals, and cyanide.

TABLE III-1, CONTINUED

Tasks	Description of Task
Sampling and Analysis, Continued	
Groundwater Samples	Five groundwater samples were collected and analyzed for TCL organic compounds, TAL metals, and cyanide.
Surface Water Sample	One surface water sample was collected and analyzed for TCL organic compounds, TAL metals, and cyanide.
Sediment Sample	One sediment sample was collected and analyzed for TCL organic compounds, TAL metals, and cyanide.
Leachate Sample	One leachate sample was collected and analyzed for TCL organic compounds, TAL metals and cyanide.
Air Monitoring	The presence of volatile organic compounds was monitored during on-site activities using a Photovac TIP-II.
Site Assessment	A preliminary site contamination assessment was conducted to complete the final HRS score and HRS documentation records.
Report Preparation	Prepared a final report containing significant Phase I information, additional Phase II field data, final HRS score and HRS documentation records, and site contamination assessments.
Project Management	Project coordination administration and reporting.

TABLE III-2

MONITORING WELL LOCATIONS AND SPECIFICATIONS HOUDAILLE INDUSTRIES - STRIPPIT DIVISION

Well Number	Unit Screened	Location	Top of Screen Depth (Feet)*	Top of Screen Elevation (Feet)**	Bottom of Screen Depth (Feet)*	Bottom of Screen Elevation (Feet)**
GW-1	Lacustrine Sandy-Silt	Downgradient	50	700.0	55	695
GW-2	Lacustrine Sandy-Silt	Upgradient	60	700.8	70	690.8
GW-3	Lacustrine Sandy-Silt	Downgradient	40	698.7	50	688.7
GW-4	Lacustrine Sandy-Silt	Downgradient	40	708.9	50	698.9

* Depths in feet below ground surface.

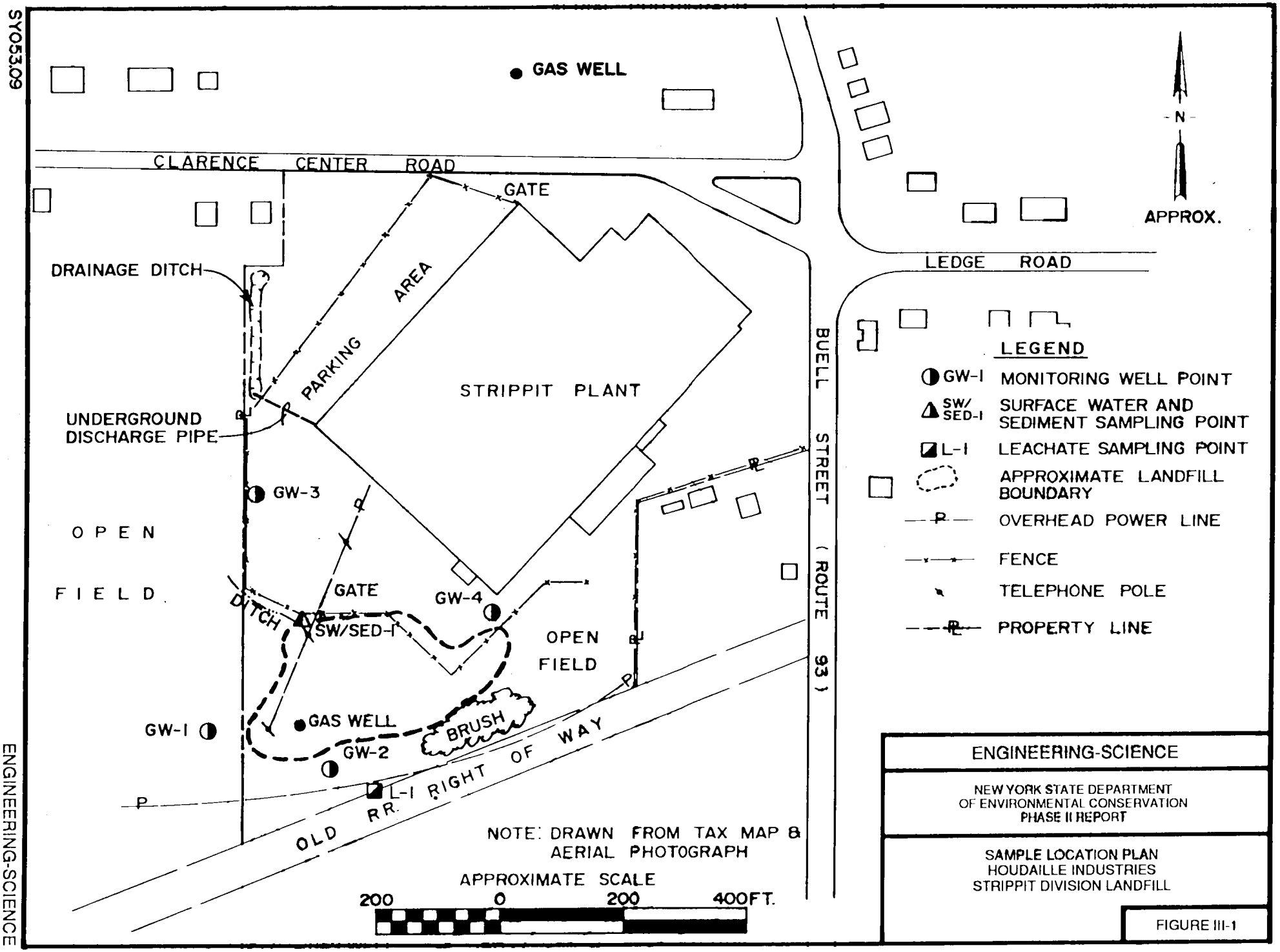
** Elevations in feet above sea level.

TABLE III-3

SUBSURFACE SOIL SAMPLE LOCATION
HOUDAILLE INDUSTRIES - STRIPPIT DIVISION

Sample ID	Well Location	Matrix	Depths (Feet)* Composited From:	Location
GW-4-SS-1	GW-4	Soil	5-7, 10-12 15-17, 20-22	Downgradient

* Depth in feet below ground surface.


SY053.09
GAS WELL
CLARENCE CENTER ROAD
GATE
DRAINAGE DITCH
PARKING AREA
STRIPPIT PLANT
UNDERGROUND DISCHARGE PIPE
GW-3
OPEN FIELD
GATE
DITCH
SW/SED-1
GW-4
OPEN FIELD
GW-1
GAS WELL
GW-2
BRUSH
L-1
OLD RR. RIGHT OF WAY
BUELL STREET (ROUTE 93)
LEDGE ROAD
APPROX.
N
LEGEND
GW-1 MONITORING WELL POINT
SW/SED-1 SURFACE WATER AND SEDIMENT SAMPLING POINT
L-1 LEACHATE SAMPLING POINT
APPROXIMATE LANDFILL BOUNDARY
OVERHEAD POWER LINE
FENCE
TELEPHONE POLE
PROPERTY LINE
NOTE: DRAWN FROM TAX MAP & AERIAL PHOTOGRAPH
APPROXIMATE SCALE
200 0 200 400FT.
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT
SAMPLE LOCATION PLAN
HOUDAILLE INDUSTRIES
STRIPPIT DIVISION LANDFILL
FIGURE III-1
ENGINEERING-SCIENCE

SECTION IV

SITE ASSESSMENT

SITE HISTORY

The Houdaille Industries-Strippit Division (now IDEX Corporation-Strippit Division) has owned the two-acre disposal site since 1956. The site was owned by the Buffalo Arms Corporation from approximately 1940 to 1950. The Buffalo Arms Corporation manufactured machine guns for the U.S. Government and used the site for disposal of scrap cartridges, scrap lead and steel from the manufacturing process (ECDEP, 1984). Houdaille Industries-Strippit Division (Strippit) purchased the site in 1956 and used the disposal site until about 1975 (NYSDEC, 1978). During the period 1956 to 1975, Strippit disposed approximately 20,000 gallons per year of water-soluble coolants, three tons per year of heat treatment sludge, and 450 cubic yards per year of refuse at the site (NYSDEC 1978). An estimated 216 drums of heat treatment sludge waste were alleged to be stored on-site in 1980 (USEPA 1980). All combustible materials were burned at the site and the resulting ash and noncombustibles were buried in the landfill (Bartha, 1987). Waste solvents generated at the plant were reportedly used to ignite the combustible materials at the disposal area (Bartha 1985).

Beginning in 1987, oil compounds and water-soluble coolants were collected and stored in an on-site underground storage tank prior to off-site recycling (Bartha 1985). The waste disposal practices between 1975 and 1987 are not clearly documented in the available records for the site. The landfill was covered with approximately 16,000 cubic yards of clean fill, which was excavated during a plant expansion project in 1979 (ECDEP, 1984). In December 1981, the NYSDEC collected five soil samples and three water samples at the landfill site (NYSDEC, 1982). Analysis of the soil samples found detectable concentrations of arsenic, lead, zinc, chromium and halogenated organics. Analysis of surface water samples from the drainage ditch adjacent to the landfill detected moderately high concentrations of arsenic and low levels of zinc (NYSDEC, 1982).

A NYSDEC Phase I report prepared in January 1986, by Engineering-Science, Inc., included a preliminary HRS score. The report recommended that a Phase II investigation be performed to provide data necessary to calculate a final HRS score. On May 25, 1987, NUS Corporation conducted a site inspection on behalf of the USEPA and collected nine samples, including five soil samples, two groundwater samples, one surface water sample and one sediment sample (NUS, 1987). NUS found elevated semivolatile organic compounds, including several polynuclear aromatic hydrocarbons (PAHs), in the on-site soils and downstream sediment. The surface water sample contained detectable concentrations of volatile organic compounds and groundwater sample contained relatively high concentrations of antimony and cadmium.

REGIONAL SETTING

Regional Geology

The Strippit site is located in the Southern Ontario Plain of the Erie- Ontario Lowlands Physiographic Province. The Southern Ontario Plain Province is an area of generally subdued topography, characteristic of glacial till plains and preglacial lacustrine plains. Relief on the present land surface is due to preglacial erosion of the bedrock and subsequent topographic modification by glaciation.

Bedrock in the Southern Ontario plain consists of Cambrian to Devonian-age shale, limestone, and dolomite. These sediments are relatively flat-lying with a gentle dip of 30 to 40 feet per mile to the south. The sedimentary sequence is approximately 3000 feet thick at the shore of Lake Ontario and thickens southward to over 10,000 feet. The site is directly underlain by the Middle Devonian-age Onondaga Limestone. The sedimentary sequence is underlain by deformed and metamorphosed Precambrian crystalline rocks (ES, 1986).

Unconsolidated deposits of glacial till overlie the bedrock throughout most of the region. The till deposits consist of a heterogeneous mix of clay, silt, sand and boulder-sized material which was contained in glacial ice and was deposited in its present location as the ice melted (ES, 1986).

Regional Hydrology

The site lies within the Murder Creek watershed (USGS, 1980). Surface water in the vicinity of this site ultimately reaches Murder Creek, located approximately 3/4-mile north of the site. Murder Creek is classified by the NYSDEC as a Class C surface water (NYSDEC 1985). Class C surface waters are designated as suitable for fishing and fish propagation and for primary and secondary contact recreation.

The bedrock of this region consists of highly fractured limestone, dolostone, and shale. Most of the rocks constitute a deep aquifer with regional flow to the south. Groundwater also occurs in the sandy glacial deposits. These sand lenses act as shallow aquifers, whereas lacustrine clays, and the dense, clay-rich glacial tills, often form aquitards. Fine-grained sediments, such as silts and clays, which were deposited in lacustrine or riverine settings frequently contain horizontal laminations and sand lenses. These sand lenses facilitate lateral groundwater movement through the surrounding low-permeability materials.

Site Topography

The Strippit site is located in the Village of Akron, Erie County, New York State. The disposal site is a landfill located directly south of the plant building (Figure IV-1). The original ground surface was flat, with a gentle slope to the north. The landfill has raised the ground surface by approximately 10 feet. At present, a variety of hard fill materials are visible in the landfill (ES, 1986).

The site is located at the edge of the Village of Akron. South of the site is unoccupied property and pasture land, east of the site is a railroad right-of-way and residences. West of the site are open fields. Surface water runoff flows into a ditch

along the western and northern borders of the disposal area. The ditch conducts water north across the Strippit property.

There are two deep natural gas wells on the property. One is located within the disposal area; the other is located north of the Strippit property. There is a private well serving approximately 400 people living in Quarry Hills Estates, located 2.5 miles southeast of the site (NYSDOH, 1982).

SITE HYDROGEOLOGY

The information used to develop the discussions in this subsection included the four monitoring well borings and installations, New York State Department of Transportation (NYSDOT) and United States Geological Survey (USGS) topographic maps, NYS Museum and Science Service Bedrock Geology and Quaternary Geology Map, and field observations.

Geology

As part of the Phase II site investigation activities, four monitoring wells were installed at the site (Figure IV-2). The subsurface stratigraphy can be characterized as up to 12 feet of fill material overlying 40 to 50 feet of glacial till which overlies a glaciolacustrine, sandy-silt. Middle Devonian-age Onondaga Limestone bedrock underlies the site at a depth of 110 to 120 feet, based on gas well logs (Nahya, 1990). Well boring log information is summarized in Table IV-1. A cross section of the site geology is located in Figure IV-3 and presented in Figure IV-4.

Well boring GW-2 encountered fill from the surface to a depth of approximately eight feet. The fill consisted of brown, medium-size sand and gravel with some dark black silt. No odors were associated with the dark silt material. In all well borings except GW-3, coarse sandy glacial till was present beneath the fill, with a silty till underlying it. In GW-3, the silty till was encountered just below the fill. The silty till forms a confining layer for the underlying water-bearing unit. A water-bearing fine sandy-silt underlies the confining till in all the well borings at 40 to 60 feet below the surface. These sediments are interpreted to be glaciolacustrine deposits. They comprise the aquifer of concern which is the focus of this Phase II investigation. The relative percentage of silt and sand in this unit varies laterally. In some well borings, such as GW-3 and GW-4, fine sand predominates; in well borings GW-1 and GW-2, the sediments are predominantly silty. Laboratory grain-size analyses of this unit from GW-2 categorizes it as a sandy-silt (Table IV-2). The permeability of this material is estimated to be between 10^{-5} and 10^{-7} centimeters per second (cm/sec), based on the grain-size characteristics (Freeze and Cherry, 1979).

Groundwater Hydrology

Four groundwater monitoring wells were installed at the Strippit landfill to determine groundwater flow directions and to assess the groundwater quality. The locations of the wells are shown on Figure IV-3. Monitoring well construction data and water level data are presented on Table IV-3.

The wells at the site monitor groundwater in the sandy-silt, which is confined by the overlying till. Monitoring well GW-2 is the upgradient well and monitoring wells GW-1, GW-3 and GW-4 are downgradient wells. The wells are screened at the groundwater interface with 10-foot screens, with the exception of GW-1. A five-foot screen with a pre-installed sand pack was used in well GW-1. The depth to groundwater from ground level in the wells ranged from 29 to 35 feet on June 7, 1990 (Table IV-3).

Based on information from two dates when water levels in the wells were measured, the groundwater flows northwest from the landfill toward Murder Creek (Figure IV-5). Shallow groundwater may be temporarily perched above the confining till at a depth of approximately four to six feet below ground surface. There may also be radial flow off the landfill, due to mounding effects beneath it. These effects are suspected but cannot be conclusively shown since a well in the middle of the landfill was not installed.

The confining till ranged in thickness from 36 to 52 feet. This unit may reduce the vertical movement of contaminated groundwater from the fill material downward into the sandy-silt aquifer below it. However, the till is penetrated by a gas well in the middle of the landfill and this may be a pathway for hydrologic connection between the two units. Since well pairs screened at different elevations were not a part of the work plan, vertical flow gradients could not be determined.

Surface Water Hydrology

The only surface water body associated with this site is Murder Creek, located approximately 3/4-miles north of the site. Murder Creek flows north to Tonawanda Creek. Murder Creek is classified by the NYSDEC as a Class C surface water (NYSDEC, 1985).

SITE CONTAMINATION ASSESSMENT

The Strippit site is a landfill containing waste materials from Buffalo Arms machine gun manufacturing and Strippit's activities. The landfill is approximately two acres in size, and the fill is up to 15 feet thick. The site was used for disposal from the 1940s until the site was covered in 1979 (Bartha, 1985). According to a Strippit employee, approximately 20,000 gallons per year of water-soluble coolant (1956 to 1968), three tons per year of heat treatment sludge (1950 to 1979), and 450 cubic yards per year of refuse (1956 to 1979) were disposed in the landfill (Bartha, 1985). According to the USEPA site assessment, the heat treatment sludge poses a hazard to groundwater, although the presence of hazardous substances in the sludge is not known (USEPA, 1980). The solvents and combustible refuse were burned and the resulting ash was landfilled. The Buffalo Arms Corporation used the site for disposal of scrap metal and spent cartridges (Bartha, 1985). In 1979, the site was covered with approximately 16,000 cubic yards of clean fill from plant expansion excavations.

In December 1981, the NYSDEC collected five soil samples and three water samples adjacent to the landfill, including one surface water sample from the ditch

draining the site. Analysis of the soil samples found significant concentrations of arsenic, lead, zinc, chromium, and halogenated organics (NYSDEC, 1982), which have been attributed to metal fabrication operations of a previous site owner, Buffalo Arms Corporation (Bartha, 1985). Analyses of surface water samples detected mercury and selenium concentrations at or below Safe Drinking Water Standards and trace amounts of arsenic, lead, and zinc (NYSDEC, 1982).

In 1987, the NUS Corporation undertook an investigation of the site for the USEPA. A total of nine environmental samples were collected; five soil samples, two groundwater samples from private wells, one surface water sample and one sediment sample. In the sediment and soil samples, 17 semivolatile compounds and one PCB compound were detected. Five volatile organic compounds (VOCs) were detected in the surface water sample. Twenty metals were detected in the soil and sediment samples. Barium and magnesium exceeded the ranges for naturally-occurring levels in NYS soils. In the downgradient groundwater sample (NUS-GW-1), the only parameter to exceeded NYS groundwater standards was iron (NUS, 1989).

In 1985, a Phase I investigation was conducted by ES for the NYSDEC. The Phase I effort for the Strippit site included the following: collection and review of existing data; preparation of a preliminary Hazard Ranking Score (HRS) for the site; conducting a site investigation/responsible parties interview; development of a preliminary hydrogeologic model; completion of required HRS documentation; development of a work plan and estimated costs for further investigations at the site; and preparation of a summary report. The Phase I report concluded that the available data were inadequate to prepare a final HRS score. There was little information available concerning the aquifer of concern (ES, 1986).

PHASE II INVESTIGATION RESULTS

The following subsections summarize the results of the Phase II investigation sampling and analytical tasks. Whenever possible, samples were collected upgradient of the site to establish ambient or background conditions. These levels were compared to those found on-site, downstream, or downgradient of the site. Concentrations downstream or downgradient of the site which are in excess of three times the upgradient concentration may indicate a release from a contaminant source located on-site. This criterion is generally recognized by the USEPA and NYSDEC as instituting a "significantly higher" concentration for purposes of scoring an HRS observed release for a particular pathway. Therefore, reference is made to the number and types of analytes considered to be observed releases under each pathway as discussed in the following subsections.

The analytical results have been compared to the applicable NYSDEC ambient water quality standards and guidance values. The standards and guidance values provided are for the applicable surface water and groundwater classifications. Standards that have been promulgated for surface water appear in 6NYCRR Parts 701 and 702, and for groundwater in 6NYCRR Part 703 and 10NYCRR Part 5. The standards referenced on the analytical summary tables in this section are the most stringent of the applicable standards, since one or more standards could apply. For

example, the Class GA groundwater standard for benzene is "not detectable", while the maximum contaminant level (MCL) is 5 ug/l. In this case, the most stringent of the two, the Class GA standard, will be listed on the summary table.

The analytical results in this section have been validated by reviewing the sample holding times, and evaluating laboratory blank samples. Sample holding time refers to the time between sample receipt by the laboratory and sample extraction and analysis. Maximum sample holding times are specified in the November 1987 NYSDEC CLP methods. The analytical data summary tables found in this section identify the violations of sample holding times. In those cases the data are considered valid, but the concentrations are considered to be estimated values, likely to be biased low.

Data validation also includes an evaluation of laboratory blank results. If a compound is detected in one or more blank samples, the maximum concentrations reported in the blank(s) are used to validate the field sample concentrations. The presence of a compound in a field sample is considered attributable to laboratory contamination if the concentration in the field sample is less than five times the blank sample concentration. For common laboratory contaminants methylene chloride, acetone, toluene, 2-butanone, chloroform, and common phthalate esters, the criterion is ten times the blank sample concentration. Sediment results have been compared to published naturally-occurring ranges in New York State or conterminous United States soils. Only the analytes detected are presented on the analytical data summary tables (Table IV-4 through IV-9).

The field procedures utilized for the sampling are presented in Appendix A. A complete list of analytical results can be found in Appendix D. A list of the footnotes and data qualifiers used on the analytical summary tables (Tables IV-4 through IV-9) is presented on Table IV-10.

Subsurface Soil Contamination Assessment

One subsurface soil sample was collected from well boring GW-4 and analyzed for TCL organic compound (volatiles, semivolatiles, pesticides, PCBs), TAL metals and cyanide. Results are presented in Table IV-4. The sample, identified as GW-4-SS-1, was a composite of four split-spoon samples (5-7 feet, 10-12 feet, 15-17 feet and 20-22 feet), which all had PID readings above background

One volatile organic compound, acetone, was identified in the soil sample at 8 μg/kg. Although acetone is a common laboratory contaminant, it was not present in any of the laboratory or field blank samples. Therefore it may be considered an on-site contaminant. No other organic compounds were detected in the soil sample.

Seventeen TAL metals were detected in the subsurface soil sample (Table IV-4). The concentrations of all 17 metals were within the referenced naturally-occurring ranges for New York State soils.

Leachate Contamination Assessment

One leachate sample (L-1) was collected from the north side of a drainage ditch along the old railroad right-of-way south of the site. The leachate sample was analyzed for TCL organic compounds, TAL metals, and cyanide (Table IV-5).

Two VOCs, methylene chloride and acetone, were detected in the leachate sample. Methylene chloride was also detected in the laboratory blank, therefore the presence of methylene chloride has been attributed to blank contamination. Acetone was also detected in the leachate sample, but not in the field or laboratory blanks, indicating it may be a contaminant present on-site.

One semivolatile organic compound, 4-methylphenol, was detected in the leachate sample at a low concentration, below the detection limit.

Seventeen TAL metals were detected in the leachate sample (Table IV-5). Five metals, aluminum, cobalt, iron, vanadium, and zinc were present in the leachate sample at concentrations above the NYS standards for Class C surface waters.

Groundwater Contamination Assessment

Four groundwater samples were collected from monitoring wells GW-1 through GW-4 and a field duplicate sample (GW-5) was collected from GW-4 to determine the representativeness of the sampling methods. The samples were analyzed for TCL organic compounds, TAL metals and cyanide. Sample GW-2 is the upgradient location for the sandy-silt aquifer; GW-1, GW-3 and GW-4 are the downgradient locations.

Up to five VOCs were detected in upgradient well GW-2 (Table IV-6). The VOCs were methylene chloride, acetone, toluene, 2-butanone and chloroform. Methylene chloride was the only VOC detected in the downgradient well GW-3; however, methylene chloride was also detected in GW-1 and the field blank. Therefore, the methylene chloride in the groundwater samples is most likely a result of laboratory contamination, and the results have been rejected. The presence of the other VOCs in the groundwater samples, particularly acetone, indicates they are likely to be contaminants present at the site. Their presence in the upgradient well may be due to radial flow of shallow groundwater away from the landfill. There are no other suspected upgradient sources of contamination.

Sixteen TAL metals were detected in the groundwater samples (Table IV-6). The concentrations of aluminum, chromium, iron, magnesium, manganese, and zinc in one or both downgradient wells exceeded the concentrations in the upgradient well sample (GW-2) by more than three times. The NYS groundwater standards for antimony, iron and sodium were exceeded in all wells at the site. The NYS groundwater standards were exceeded for magnesium and manganese only in downgradient well GW-4. The highest concentrations for most of the metals were in the sample collected at GW-4; particularly noteworthy are the high concentrations of iron, magnesium and manganese. The GW-4 and GW-5 results were generally comparable, indicating the sampling methods yielded representative samples.

Surface Water Contamination Assessment

One downgradient surface water sample (SW-1) was collected from a drainage ditch west of the site. This sample was analyzed for TCL organic compounds, TAL metals, and cyanide.

Four volatile organic compounds, methylene chloride, acetone, 1,1-dichloroethane and 1,2-dichloroethene were detected in the surface water sample (Table IV-7). The presence of methylene chloride is attributed to laboratory contamination. No Class C surface water standards exist for the other VOCs detected, but their presence indicates low-level contamination which is likely attributable to the site.

Seventeen TAL metals were detected in the surface water samples (Table IV-7). The concentrations of five metals, aluminum, cobalt, iron, vanadium, and zinc were above NYS standards for Class C surface water. Similarly, the groundwater and leachate also had elevated levels of aluminum, iron and zinc. However, the levels of these metals in the surface water were several times higher than in the groundwater, and slightly higher than in the leachate.

Sediment Contamination Assessment

One sediment sample (SED-1) was collected from the drainage ditch west of the site at the same location as surface water sample (SW-1). The sediment sample was analyzed for TCL organic compounds, TAL metals, and cyanide.

Three VOCs, methylene chloride, acetone and total xylenes, were detected in the sediment sample (Table IV-8). The presence of methylene chloride is attributed to laboratory contamination. The presence of acetone and total xylenes indicates these contaminants may be present on-site.

Twelve semivolatile organic compounds were detected in the sediment sample (Table IV-8). These semivolatile organic compounds, except diethylphthalate, were also detected in the soils and/or sediment sampled by NUS in 1987 (NUS, 1989). Nine of the compounds on Table IV-8 are polynuclear aromatic hydrocarbons (PAHs), having a total concentration of 12,970 μg/kg.

PAHs are formed as a result of the combustion of organic compounds, and originate from natural sources such as forest fires, and industrial sources such as coal-burning power plants. The presence of PAHs in the sediment at the Strippit site is not surprising, given the reports of refuse burning on-site. The PAHs in the sediment sample probably originated from that activity, or the ash that was disposed in the landfill. The presence of PAHs is of some concern since they pose a direct contact threat; many PAHs are considered probable human carcinogens.

Nineteen TAL metals were detected in the sediment sample (Table IV-9). The concentrations of barium and cadmium exceeded the published naturally-occurring ranges for these metals. The concentration of barium detected in the sediment samples by NUS in 1987 also exceeded the published range (NUS, 1989).

Contamination Assessment Summary

The leachate results indicated contamination with low levels of acetone and 4-methylphenol and relatively high levels of metals, particularly aluminum, cobalt, iron, vanadium, and zinc. The groundwater and surface water results indicated contamination with low levels of VOCs and relatively high levels of aluminum, antimony, cobalt, iron, magnesium, manganese, vanadium, and zinc. The similarity in the types of metals detected at high concentrations in the leachate samples and the surface water and groundwater samples indicates the site is probably the source of these contaminants. The presence of the VOCs indicates hazardous wastes, or wastes containing hazardous substances, may have been disposed on-site. The PAHs detected in the sediment sample indicates a direct contact threat can be considered to be present at the site, although it is not an immediate threat to human health. Most homes near the site are on public water; however the potential exists for private wells downgradient from the site which are not served by the public water supply to be impacted. The site may be impacting surface water quality in Murder Creek since contamination was detected in the on-site ditch which discharges to the creek. The sediment and soil samples collected by ES and NUS indicate the presence of PAHs, which may be moving off-site by erosion.

The impact of the groundwater contamination is difficult to assess. Other than the low concentrations of VOCs in the upgradient, (GW-2) and downgradient (GW-1) wells, the contaminants (metals) being released are not particularly toxic, or are below applicable standards. Nevertheless, there are indications of releases from the site, and there are potential receptors for the groundwater pathway. The most immediate means of determining whether the site is impacting groundwater users would be to sample residential drinking water supplies closest to the site.

Two residential water supplies were sampled in 1987 and analyzed for volatile and semivolatile organic compounds, pesticide/PCBs and metals. The wells sampled are located north (GW-1) and south (GW-2) of the Houdaille-Strippit site (refer to Reference #24). Neither of the wells showed evidence of contamination attributable to the site. The samples were collected from a tap and no information was provided on the well construction details, such as the depth of the well intake and the type of aquifer screened. Additional confirmatory sampling and analysis of these and other nearby wells may provide more conclusive evidence of the presence or lack of impact attributable to the site.

Once the site is properly closed, groundwater monitoring on-site and off-site (residential wells) would be one means of determining whether impacts to receptors are, or could be, occurring.

TABLE IV-1
STRATIGRAPHY SUMMARY
PHASE II WELL BORINGS
HOUDAILLE INDUSTRIES-STRIPPIT DIVISION
(Depth in Feet Below Ground Surface)

Stratigraphic Unit	GW-1 750.0*	GW-2 760.8*	GW-3 738.7*	GW-4 748.9*
Soil/fill	0-3	0-8	0-4	0-3
Upper Sandy Till	3-30	8-40	---	3-25
Lower Silty Till	30-50	40-60	4-40	25-42
Lacustrine Sandy-Silt	50-55	60-70	40-50	42-50

* Elevation of ground surface in feet above mean sea level.

Note: The sand in the sandy-silt unit in GW-3 was coarser and had less silt than the other locations.

TABLE IV-2

GRAIN-SIZE CHARACTERISTICS
HOUDAILLE INDUSTRES-STRIPPIT DIVISION

Well Boring Number	Sample Depth* (Feet)	Gravel (%)	Sand (%)	Silt and Clay(%)	Unified Classi-fication	Stratigraphic Unit
GW-1	10-12	7.1	44.1	49.8	ML	Upper Sandy Till
GW-1	40-42	2.0	16.6	81.4	ML	Lower Silty Till
GW-1	52-54	0	26.4	73.6	ML	Lacustrine Sandy-Silt

* Depth in feet below ground surface.

ML Silty Soil

TABLE IV-3

WATER LEVEL DATA
HOUDAILLE INDUSTRIES-STRIPPIT DIVISION SITE

Well Identification	Ground Surface Elevation (feet)*	Top PVC Well Pipe Elevation (feet)*	Well Screen Interval Elevation (feet)*	Date: 5/22/90		Date: 6/7/90	
				Water Level Depth (feet)**	Water Level Elevation (feet)*	Water Level Depth (feet)**	Water Level Elevation (feet)*
GW-1	750.00	752.63	700.00 - 695.00	38.10	714.53	38.14	714.49
GW-2	760.80	762.78	700.80 - 690.80	-***	-***	40.20	722.58
GW-3	738.71	740.81	698.71 - 688.71	31.0	709.81	30.91	709.90
GW-4	748.90	750.82	708.90 - 698.90	35.65	715.17	35.15	715.67

* Feet above mean sea level

** Water level depth from top of PVC well pipe in feet

*** Well not yet developed

TABLE IV-4
HOUDAILLE - STRIPPIT
SOIL RESULTS
TCL ORGANIC COMPOUNDS / TAL METALS (MG/KG)

ANALYTE	(1) AVG. RANGE IN NYS SOILS (mg/kg)	GW4-SS-1
ACETONE	NS	8 J
ALUMINUM	700 - >100,000	7,670
ARSENIC	0.1 - 100	2.3
BARIUM	10 - 500	54.8
BERYLLIUM	<1 - 15	0.84 B
CALCIUM	130 - 330,000	98,800 *
CHROMIUM (total)	1 - 2,000	10.2 *
COBALT	<3 - 70	3.9 B
COPPER	1 - 700	7.2
IRON	100 - >100,000	11,100 E*
LEAD	<10 - 700	10.6 *
MAGNESIUM	50 - 50,000	49,400 *
MANGANESE	<2 - 7,000	382 E
NICKEL	<5 - 7000	8.9
POTASSIUM	2,200 - 65,000	2,340
SODIUM	<500 - 100,000	246 B
VANADIUM	20 - 500	16.1
ZINC	<5 - 3,500	61.7 EN*

Footnote and qualifier list on Table I-7.

TABLE IV-5
HOUDAILLE - STRIPPIT
LEACHATE RESULTS
TCL ORGANIC COMPOUNDS (UG/L) / TAL METALS (UG/L)

ANALYTE	(4) NYS STANDARD SURFACE WATER CLASS C (ug/l)	L-1
METHYLENE CHLORIDE		6 BR
ACETONE		41
4-METHYLPHENOL		6 J
ALUMINUM	100	14,700
ANTIMONY		25.5 B
ARSENIC	190	71.0 N
BARIUM		273
CALCIUM		163,000
CHROMIUM (total)		10.2
COBALT	5	7.0 B
COPPER		23.5 B@
IRON	300	30,200
LEAD		46.8
MAGNESIUM		49,000
MANGANESE		2,820
NICKEL		18.1 B
POTASSIUM		5,990
SODIUM		6,300
VANADIUM	14	25.7 B
ZINC	30	194

(4) NYSDEC Surface Water Quality Standards, 6 NYCRR, part 701.

Footnote and qualifier list on Table 1-7

Note: CRDL for cobalt is 50 ug/l.

TABLE IV-6
HOUDAILLE - STRIPPIT
GROUNDWATER RESULTS
TCL ORGANIC COMPOUNDS (UG/L) / TAL METALS (UG/L)

ANALYTE	(3) NYS STANDARD GROUNDWATER (UG/L)	GW-1	GW-2	GW-3	GW-4	GW-5
METHYLENE CHLORIDE	5 b	3 BJR	6 BR	6 BR	-	-
ACETONE	50 b	11	35	-	-	-
CHLOROFORM	100 be	-	3 J	-	-	-
2-BUTANONE	50 b	-	11	-	-	-
TOLUENE	5 b	3 J	3 J	-	-	-
ALUMINUM	NS	513	838	1,770	5,680	5,370
ANTIMONY	3 e	44.3 B	48.0 B	40.9 B	35.7 B	25.7 B
ARSENIC	25 a	-	-	-	3.0 SN	-
BARIUM	1,000 a	191 B	1,120	121 B	221	206
CALCIUM	NS	93,500	268,000	55,000	265,000	239,000
CHROMIUM (total)	50 b	-	-	-	10.7	9.3 B
COPPER	<200 c	-	5.4 B	-	4.8 B	4.1 B
IRON	300 b*	465	462	3,360	14,000	12,900
LEAD	25 a	9.1	1.9 B	4.3 B	12.6	13.7
MAGNESIUM	35,000 e	8,760	789 B	30,000	47,100	40,500
MANGANESE	300 b*	34.3	12.0 B	153	326	281
NICKEL	700 f	12.4 B	-	10.9 B	-	8.2 B
POTASSIUM	NS	303,000	96,800	3,300 B	59,800	59,500
SODIUM	<20,000 c	161,000	229,000	38,000	40,100	37,900
VANADIUM	NS	13.2 B	6.7 B	6.0 B	15.6 B	14.7 B
ZINC	<300 c	-	-	19.8 B	42.0	36.9

Note: GW-5 is a duplicate of GW-4.

Footnote and qualifier list on Table I-7.

Note: CRDL for Antimony is 60 ug/l.

TABLE IV-7
HOUDAILLE-STRIPPIT
SURFACE WATER RESULTS
TCL ORGANIC COMPUNDS / TAL METALS (UG/L)

ANALYTE	(4) NYS STANDARD SURFACE WATER CLASS C	SW-1
METHYLENE CHLORIDE		4 BJR
ACETONE		10
1,1-DICHLOROETHANE		19
1,2-DICHLOROETHENE		5
ALUMINUM	100	20,700
ANTIMONY		23.8 B
BARIUM		2,920
BERYLLIUM	11	1.1 B
CALCIUM		222,000
CHROMIUM (total)		31.3
COBALT	5	18.1 B
COPPER		45.8@
IRON	300	38,300
LEAD		60.7
MAGNESIUM		73,700
MANGANESE		3,310
NICKEL		56.5
POTASSIUM		40,700
SODIUM		70,900
VANADIUM	14	43.5 B
ZINC	30	393

(4) NYSDEC Surface Water Quality Standards, 6 NYCRR, part 701.

Footnote and qualifier list on Table I-7.

TABLE IV-8
HOUDAILLE-STRIPPIT
SEDIMENT RESULTS
TCL ORGANIC COMPOUNDS (UG/KG)

ANALYTE	SED-1
METHYLENE CHLORIDE	4 JR
ACETONE	13 J
TOTAL XYLENES	6 J
DIETHYLPHTHALATE	6,700
PHENANTHRENE	1,600
DI-N-BUTYLPHTHALATE	630 J
FLUORANTHENE	2,400
PYRENE	1,800
BENZO(A)ANTHRACENE	1,000
BIS(2-ETHYLHEXYL)PHTHALATE	1,200 X
BENZO(B)FLUORANTHENE	1,600
BENZO(K)FLUORANTHENE	2,300
BENZO(A)PYRENE	970
INDENO(1,2,3-CD)PYRENE	720 J
BENZO(G,H,I)PERYLENE	580 J

Footnote and qualifier list on Table I-7.

TABLE IV-9 HOUDAILLE - STRIPPIT SEDIMENT RESULTS TAL METALS (MG/KG)		
ANALYTE	(1) AVG. RANGE IN NYS SOILS (mg/kg)	SED-1
ALUMINUM	700 - >100,000	4,290
ARSENIC	0.1 - 100	1.7 B
BARIUM	10 - 500	1,140 N*
BERYLIUM	<1 - 15	0.28 B@
CADMIUM	0.01 - 7 (2)	16.2 N
CALCIUM	130 - 330,000	76,100
CHROMIUM (total)	1 - 2,000	30.7 N*
COBALT	<3 - 70	8.9 B
COPPER	1 - 700	39.6 N*
IRON	100 - >100,000	23,600
LEAD	<10 - 700	23.3
MAGNESIUM	50 - 50,000	11,800
MANGANESE	<2 - 7,000	1,040
NICKEL	<5 - 7000	19.5
POTASSIUM	2,200 - 65,000	858 B
SILVER	NS	2.7 N
SODIUM	<500 - 100,000	210 BE
VANADIUM	20 - 500	16.6
ZINC	<5 - 3,500	169 N

Footnote and qualifier list on Table I-7.

TABLE IV-10
FOOTNOTE / QUALIFIER LIST

FOOTNOTES:

(1) USGS, 1984. Professional Paper 1270: New York State Soils.

(2) Booz, Allen & Hamilton, Inc. (1983): Range in U.S. Soils.

(3) New York State quality standard for class GA (source of potable water supply) groundwaters are the most stringent of applicable standards, criteria, or guidelines listed below:

a - NYSDEC Groundwater Quality Regulations, 6 NYCRR, Part 703, dated September 1990.

b - NYSDOH Maximum Contaminant Levels, Public Water Supplies, 10 NYCRR, Subpart 5-1, dated January 1989.

c - NYSDOH Standards, Sources of Water Supply, 10 NYCRR, Part 170.

d - USEPA Maximum Contaminant Levels, 40 CFR 141.

e - NYS Ambient Water Quality Guidance Values, TOGS 1.1.1 dated September 1990.

f - USEPA Health-based Criteria for Systemic Toxicants, dated May 1989.

* - If iron and manganese are present, total concentration of both should not exceed 500 ug/l.

(4) NYSDEC Surface Water Quality Standards, 6 NYCRR, part 701 and 702.

NS: No standard or guidance value established.

ND: The standard for this compound is below detection limit.

DATA QUALIFIERS (ORGANIC COMPOUNDS):

B: This flag is used when the analyte is found in the blank as well as the sample. It indicates possible or probable blank contamination and warns the data user to take appropriate action.

J: Indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero.

--: Indicates compound was analyzed for but not detected. Refer to Appendix D for detection limit.

X or T: Mass spectrum does not meet CLP criteria for confirmation, but compound presence is strongly suspected.

E: This flag is used to indicate that the quantitation of the analyte is outside the curve and that dilution was required to properly quantitate.

D: Flag is used to indicate the value for the target analyte was calculated from a dilution (see E flag above).

Y: Flag used when a matrix spike compound is also confirmed present in the unspiked sample.

R: Data Validation recommends that this value be rejected due to blank contamination.

@: This value, due to spreadsheet characteristics, appears as boxed. The value DOES NOT exceed quoted standards.

NS: No standard or guidance value established.

F: Surrogate recovery values were outside the CLP criteria windows. Value is considered an estimated concentration.

NA: Not analyzed.

Values bolded and/or boxed exceed quoted standards.

DATA QUALIFIERS (METALS):

B: Reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL).

U or -: Reported value is less than IDL.

N: Spiked sample recovery not within control limits.

*: Duplicate analysis (Relative Percent Difference) not within control limits.

W: Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

S: The reported value was determined by the Method of Standard Additions (MSA).

+: Correlation coefficient for the MSA is less than 0.995.

E: Reported value is estimated because of the presence of interference.

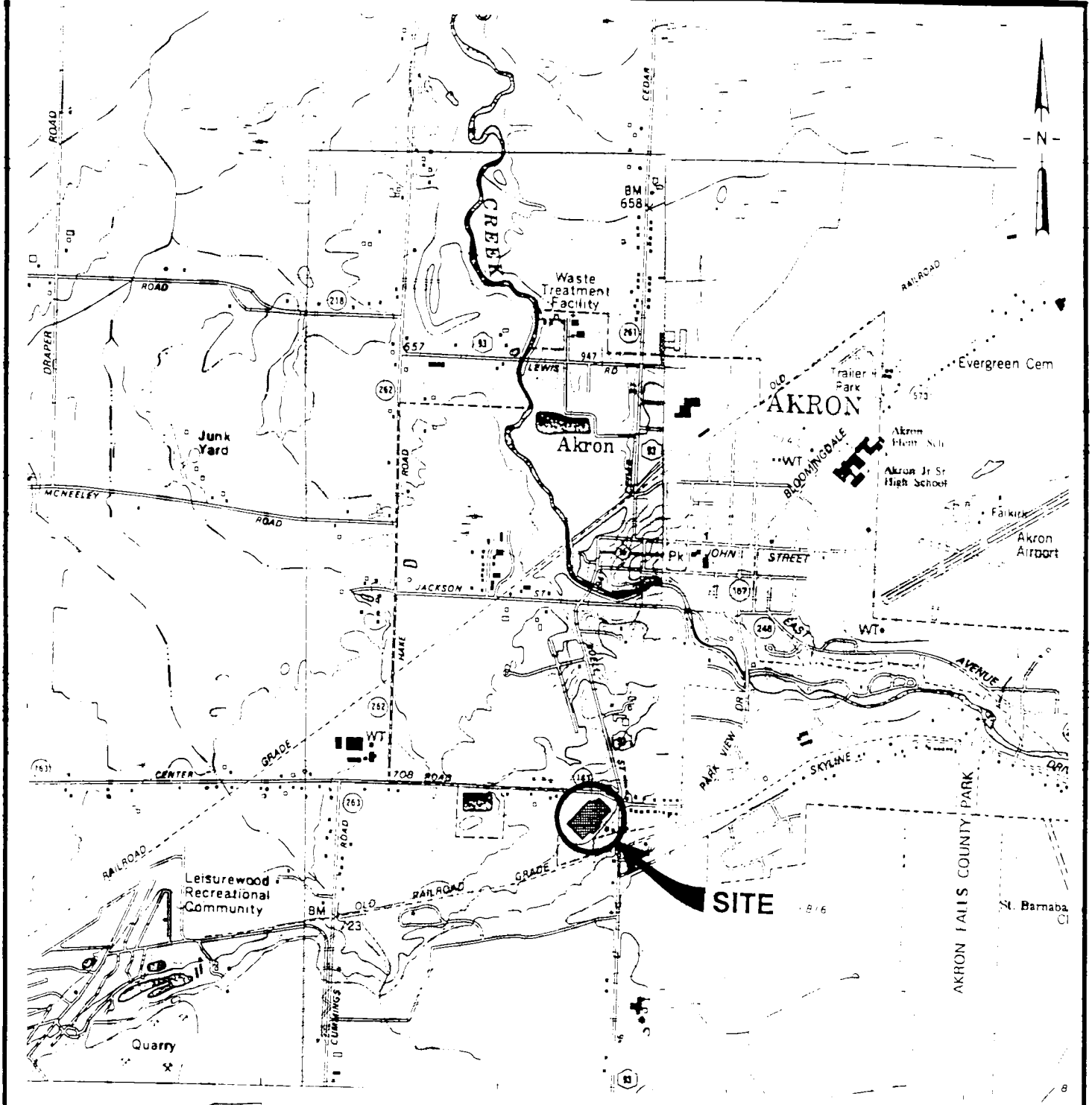
M: Duplicate injection precision not met.

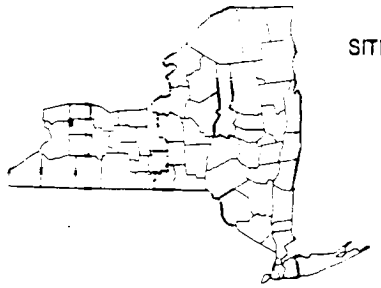
@: This value, due to spreadsheet characteristics, appears as boxed. The value DOES NOT exceed quoted standards.

NS: No standard or guidance value established.

NA: Not analyzed.

Values bolded and/or boxed exceed quoted standards.





QUADRANGLE LOCATION

SITE LOCATION: 78° 30' 14" W. Longitude
43° 00' 27" N. Latitude

SOURCE: U.S.G.S. 7.5 QUADRANGLE WOLCOTTSVILLE, NEW YORK AND AKRON, NEW YORK (1980)

SCALE: 1" = 2,000'

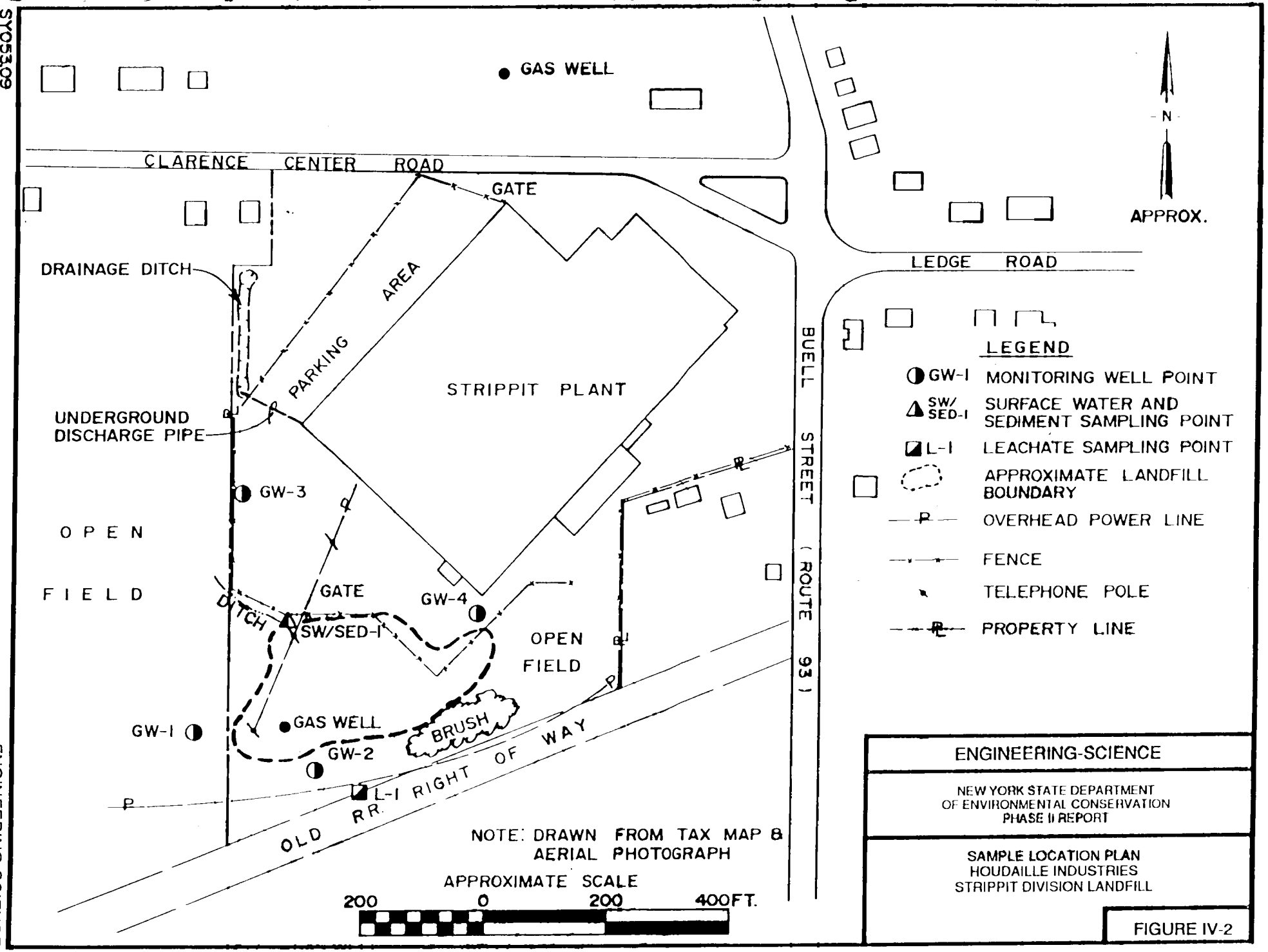
2,000 0 2,000 FEET

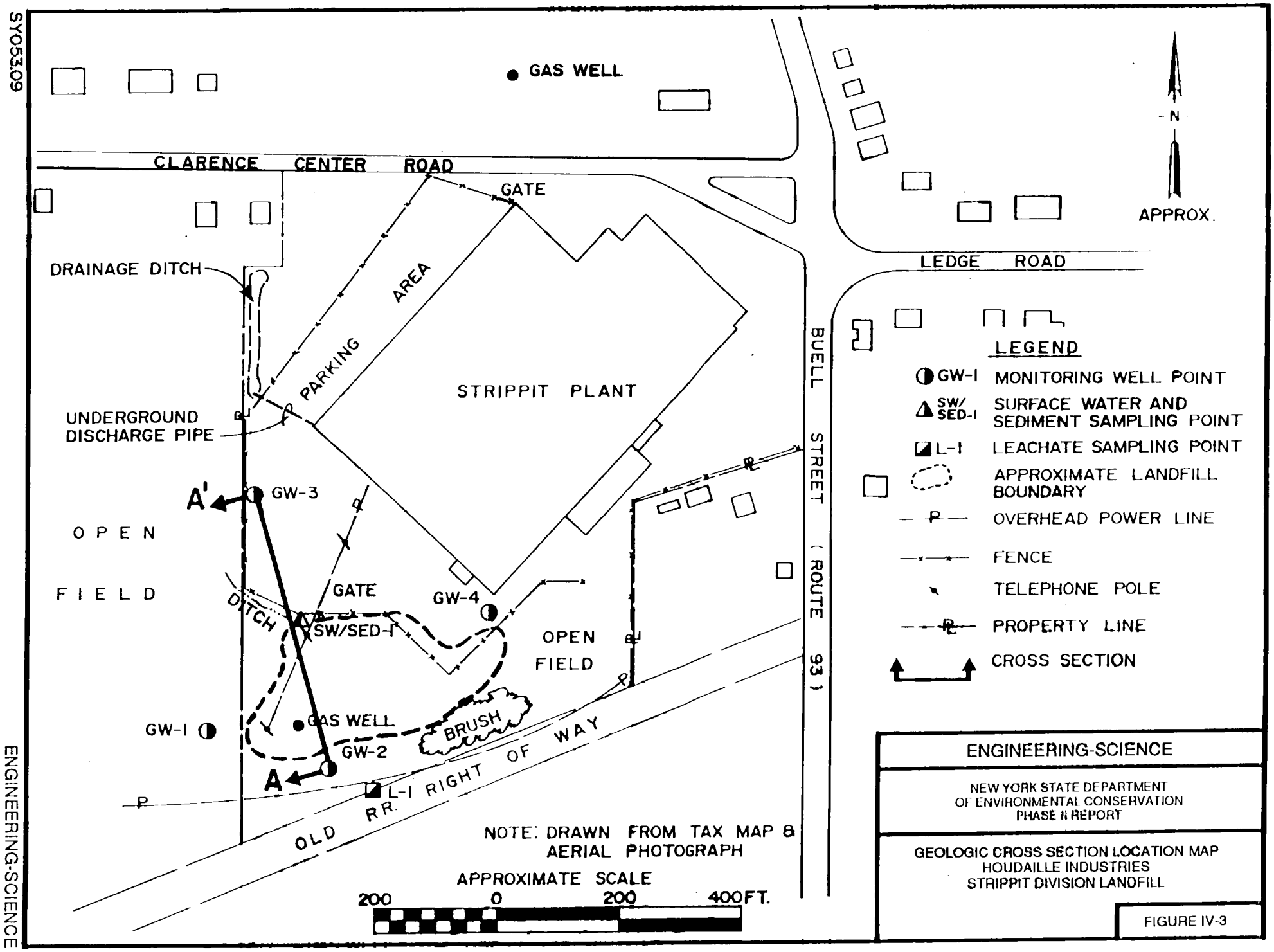
ENGINEERING-SCIENCE

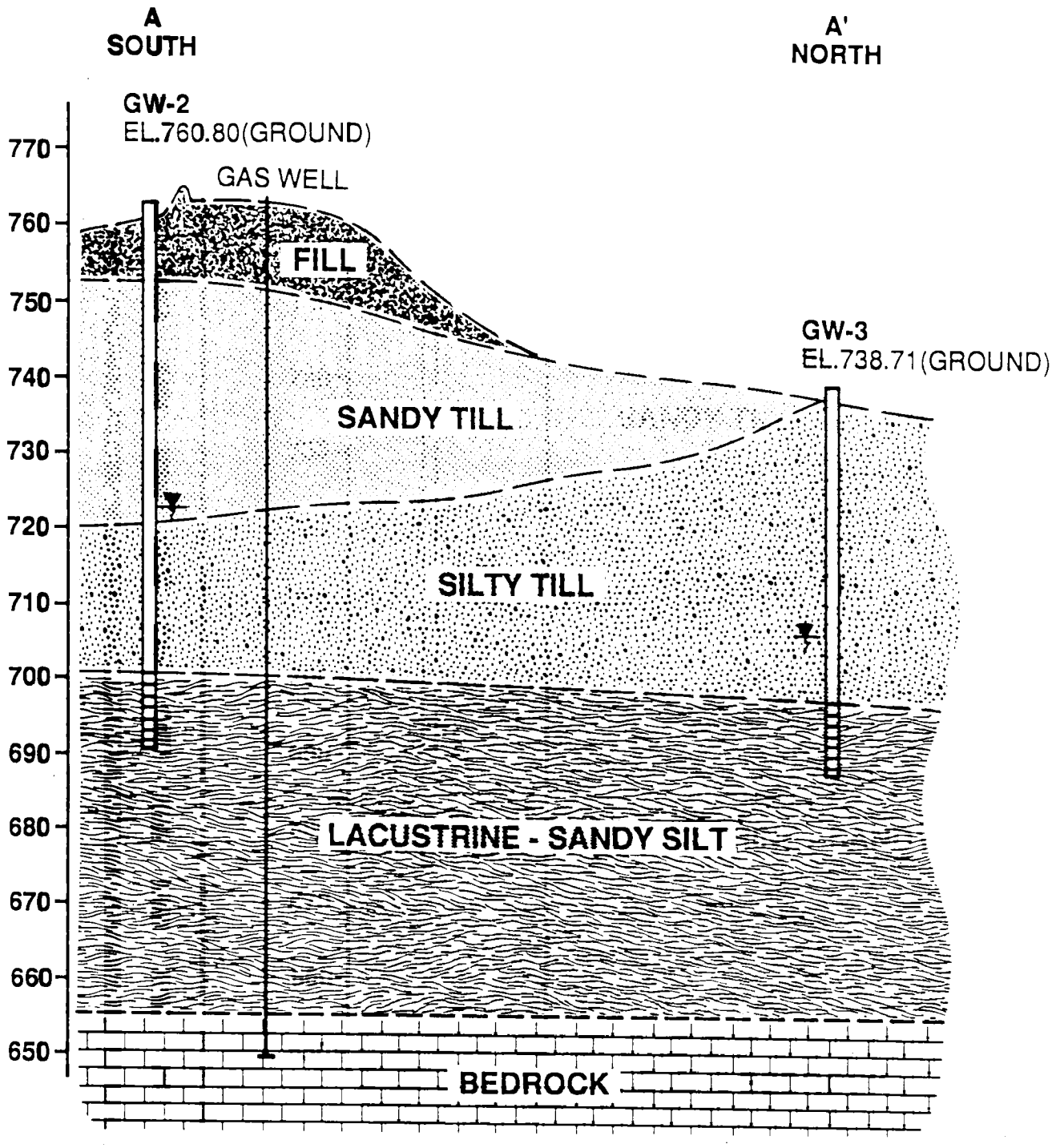
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT

SITE LOCATION MAP
HOUDAILLE INDUSTRIES
STRIPPIT DIVISION LANDFILL

FIGURE IV-1


SY053.09
GAS WELL
CLARENCE CENTER ROAD
GATE
DRAINAGE DITCH
PARKING AREA
STRIPPIT PLANT
UNDERGROUND DISCHARGE PIPE
GW-3
OPEN FIELD
GATE
DITCH
SW/SED-1
GW-4
OPEN FIELD
GW-1
GAS WELL
BRUSH
GW-2
L-1
OLD RR. RIGHT OF WAY
BUELL STREET (ROUTE 93)
LEDGE ROAD
APPROX.
N
LEGEND
GW-1 MONITORING WELL POINT
SW/SED-1 SURFACE WATER AND SEDIMENT SAMPLING POINT
L-1 LEACHATE SAMPLING POINT
APPROXIMATE LANDFILL BOUNDARY
OVERHEAD POWER LINE
FENCE
TELEPHONE POLE
PROPERTY LINE
NOTE: DRAWN FROM TAX MAP & AERIAL PHOTOGRAPH
APPROXIMATE SCALE
200 0 200 400FT.
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT
SAMPLE LOCATION PLAN
HOUDAILLE INDUSTRIES
STRIPPIT DIVISION LANDFILL
FIGURE IV-2
ENGINEERING-SCIENCE


SY053.09
GAS WELL
CLARENCE CENTER ROAD
GATE
N
APPROX.
DRAINAGE DITCH
PARKING AREA
LEDGE ROAD
STRIPPIT PLANT
UNDERGROUND DISCHARGE PIPE
BUELL STREET (ROUTE 93)
A'
GW-3
OPEN FIELD
GATE
GW-4
DITCH
SW/SED-1
OPEN FIELD
GW-1
GAS WELL
BRUSH
GW-2
A
L-1
OLD RR. RIGHT OF WAY
NOTE: DRAWN FROM TAX MAP & AERIAL PHOTOGRAPH
APPROXIMATE SCALE
200 0 200 400FT.
LEGEND
GW-1 MONITORING WELL POINT
SW/SED-1 SURFACE WATER AND SEDIMENT SAMPLING POINT
L-1 LEACHATE SAMPLING POINT
APPROXIMATE LANDFILL BOUNDARY
OVERHEAD POWER LINE
FENCE
TELEPHONE POLE
PROPERTY LINE
CROSS SECTION
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PHASE II REPORT
GEOLOGIC CROSS SECTION LOCATION MAP HOUDAILLE INDUSTRIES STRIPPIT DIVISION LANDFILL
FIGURE IV-3
ENGINEERING-SCIENCE



NOTE:WATER LEVEL ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL

LEGEND

WATER LEVEL IN WELLS (6-7-90)

INFERRED BOUNDARY

VERTICAL EXAGGERATION: 5X

HORIZONTAL SCALE

100 0 100 FT.

100 '

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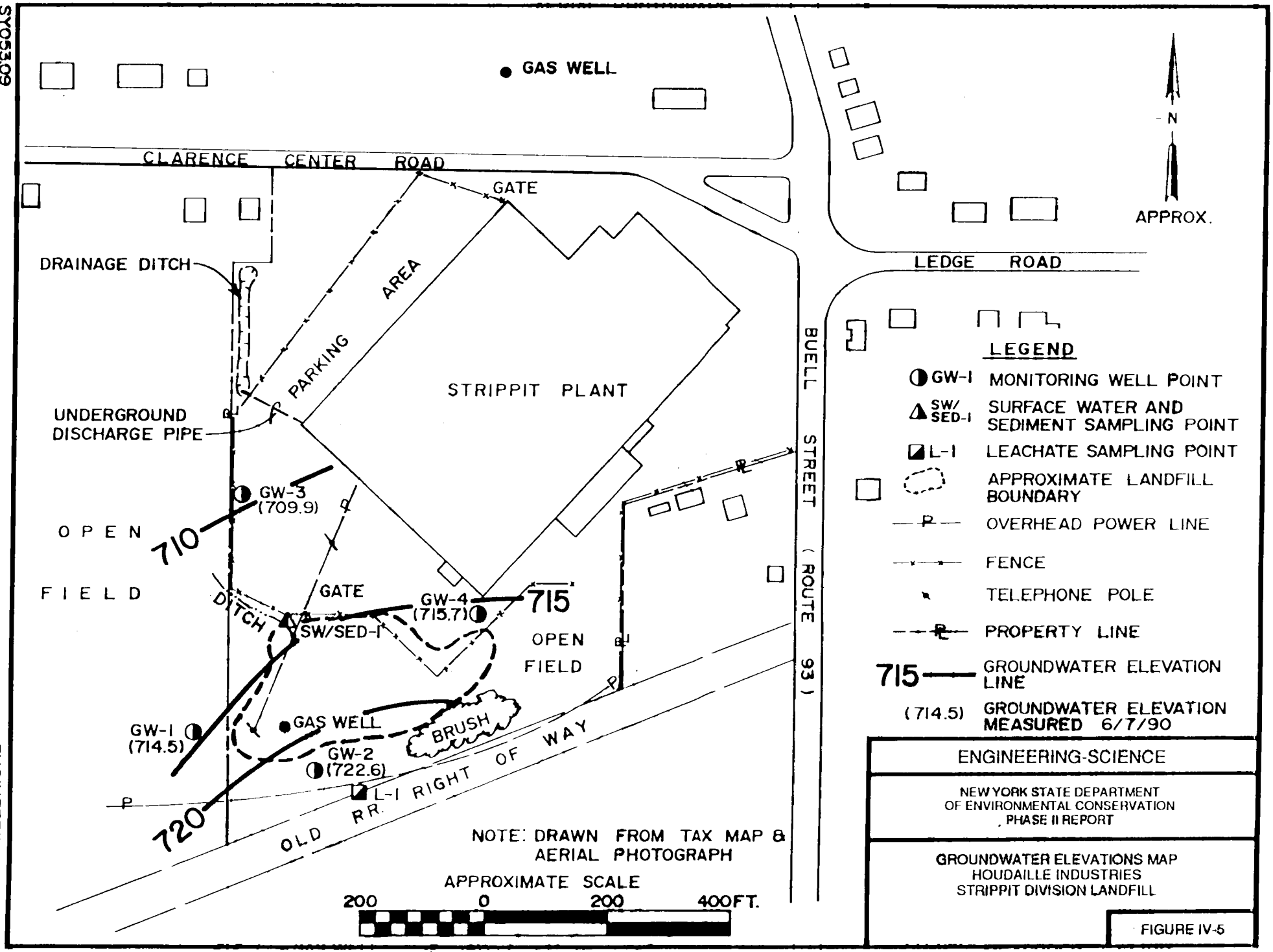
PHASE II REPORT

GEOLOGIC CROSS SECTION A - A'
HOUDAILLE INDUSTRIES
STRIPPIT DIVISION LANDFILL

FIGURE IV-4


SY053.09
GAS WELL
CLARENCE CENTER ROAD
GATE
DRAINAGE DITCH
PARKING AREA
STRIPPIT PLANT
UNDERGROUND DISCHARGE PIPE
GW-3 (709.9)
710
OPEN FIELD
GATE
DITCH
SW/SED-1
GW-4 (715.7)
715
OPEN FIELD
GW-1 (714.5)
GAS WELL
BRUSH
GW-2 (722.6)
L-1
720
OLD RR. RIGHT OF WAY
BUELL STREET (ROUTE 93)
LEDGE ROAD
N
APPROX.
LEGEND
GW-1 MONITORING WELL POINT
SW/SED-1 SURFACE WATER AND SEDIMENT SAMPLING POINT
L-1 LEACHATE SAMPLING POINT
APPROXIMATE LANDFILL BOUNDARY
OVERHEAD POWER LINE
FENCE
TELEPHONE POLE
PROPERTY LINE
715 GROUNDWATER ELEVATION LINE
(714.5) GROUNDWATER ELEVATION MEASURED 6/7/90
NOTE: DRAWN FROM TAX MAP & AERIAL PHOTOGRAPH
APPROXIMATE SCALE
200 0 200 400FT.
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT
GROUNDWATER ELEVATIONS MAP
HOUDAILLE INDUSTRIES
STRIPPIT DIVISION LANDFILL
FIGURE IV-5
ENGINEERING-SCIENCE

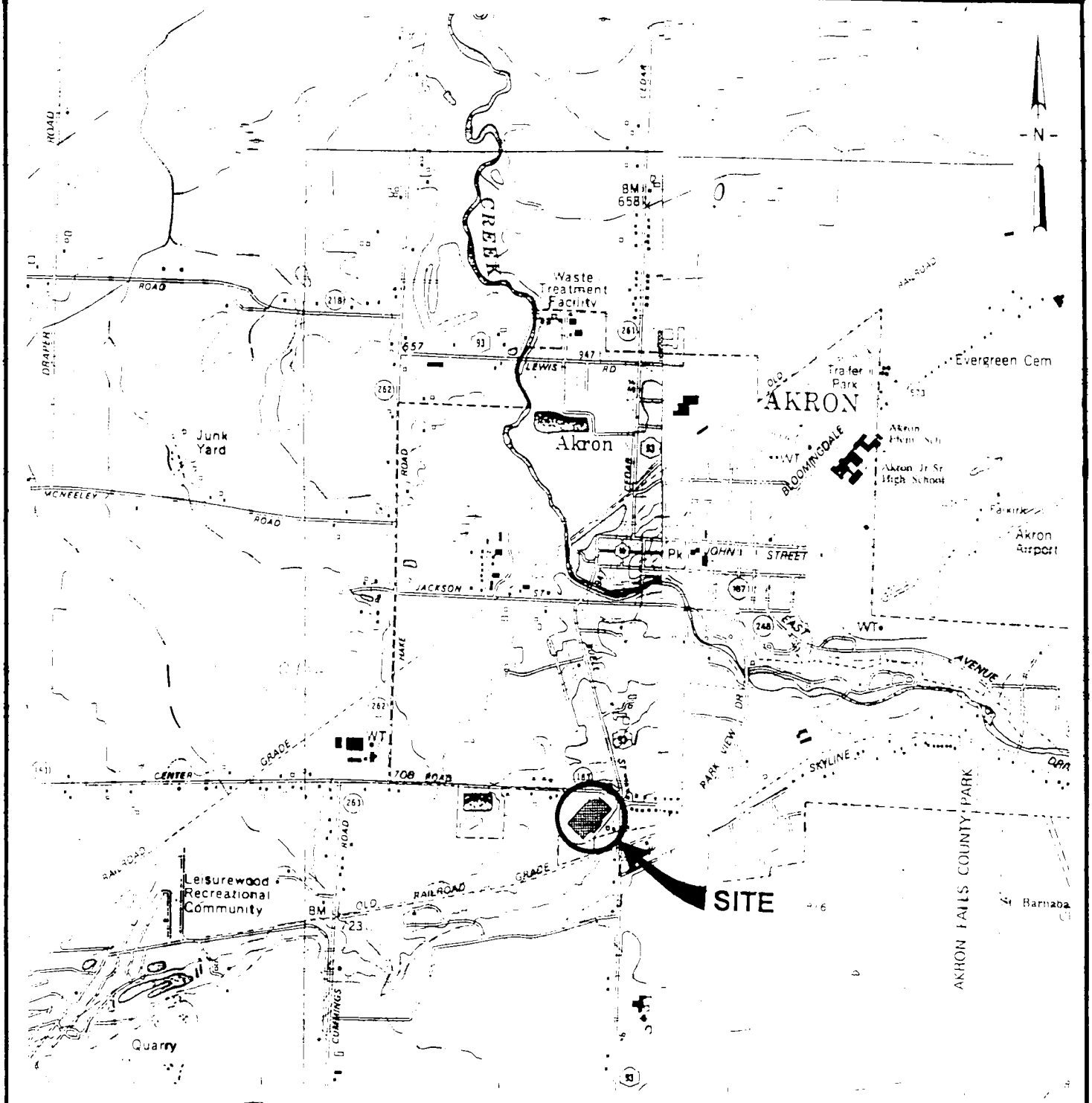
SECTION V

FINAL APPLICATION OF HAZARDOUS RANKING SYSTEM

NARRATIVE SUMMARY

The Houdaille Industries (now IDEX)-Strippit Division (Strippit) site is a two-acre landfill south of the IDEX-Strippit plant facility in the Village of Akron, New York (Figure V-1). The landfill is presently inactive. The surrounding land use is mixed commercial, agricultural and residential. A fence exists along the side of the site adjacent to the plant; however, unauthorized and uncontrolled access is possible on the unfenced area on three sides of the landfill (Figure V-2).

During the Phase II investigation, metals were detected in the groundwater, surface water and leachate samples, and PAHs were detected in a sediment sample. The site is in the Murder Creek watershed. The surface water and groundwater immediately downgradient of the site are not used as drinking water sources. Murder Creek is classified as NY State Class C surface water suitable for fishing, fish propagation and primary and secondary contact recreation. Due to the presence of contamination in the surface water, groundwater and sediment, a moderately high HRS score has been calculated. Although a relatively small number (about 2000) of potential receptors are in the area, they are close to the site.



SITE LOCATION: 78° 30' 14" W. Longitude
43° 00' 27" N. Latitude

SOURCE: U.S.G.S. 7.5 QUADRANGLE WOLCOTTSVILLE, NEW YORK AND AKRON, NEW YORK (1980)

QUADRANGLE LOCATION

SCALE: 1" = 2,000'

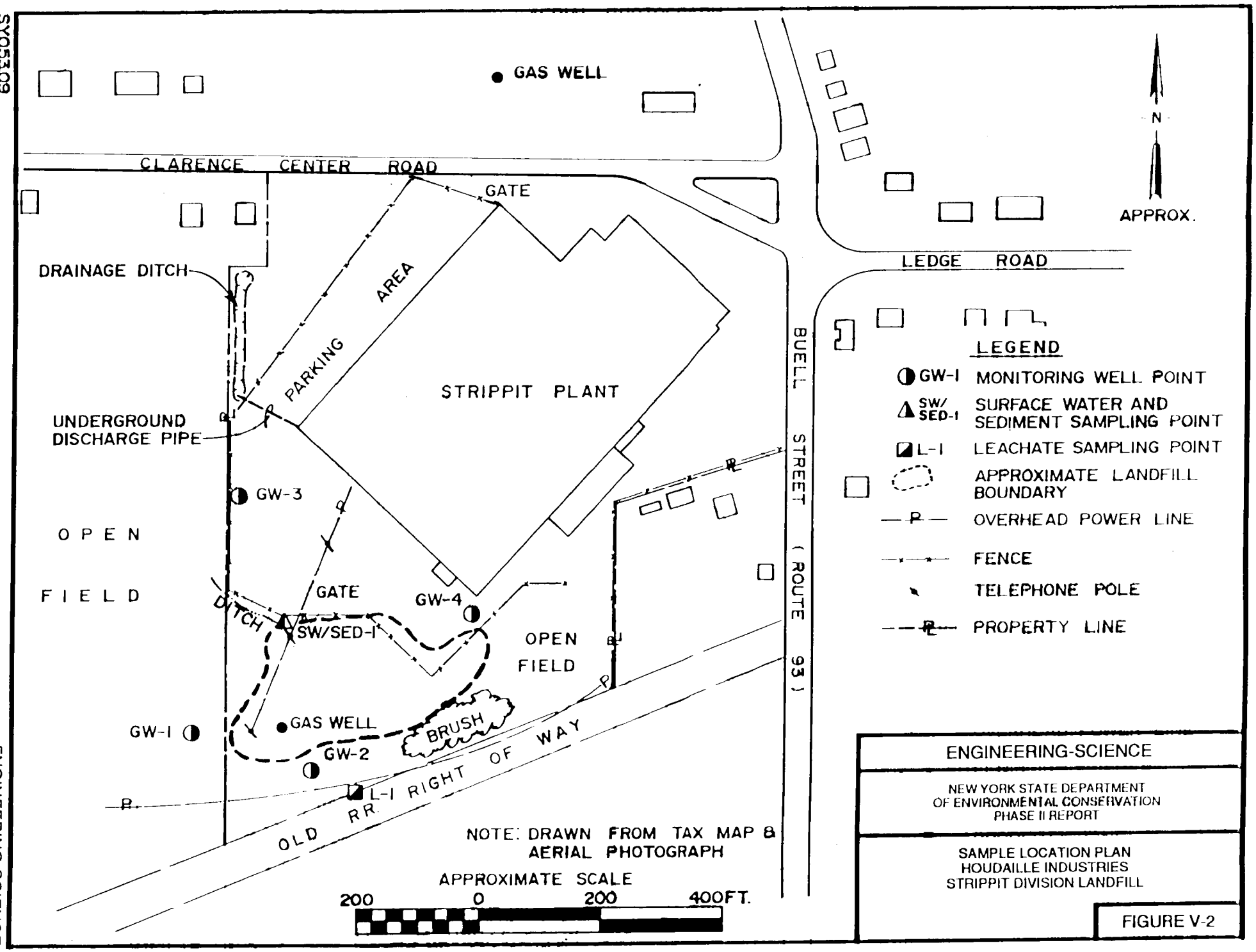
2,000 0 2,000 FEET

ENGINEERING-SCIENCE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT

SITE LOCATION MAP
HOUDAILLE INDUSTRIES
STRIPPIT DIVISION LANDFILL

FIGURE V-1


SY053109
GAS WELL
CLARENCE CENTER ROAD
GATE
DRAINAGE DITCH
PARKING AREA
STRIPPIT PLANT
UNDERGROUND DISCHARGE PIPE
GW-3
OPEN FIELD
GATE
GW-4
DITCH
SW/SED-1
OPEN FIELD
GW-1
GAS WELL
BRUSH
GW-2
L-1
OLD RR RIGHT OF WAY
BUELL STREET (ROUTE 93)
LEDGE ROAD
N
APPROX.
LEGEND
GW-1 MONITORING WELL POINT
SW/SED-1 SURFACE WATER AND SEDIMENT SAMPLING POINT
L-1 LEACHATE SAMPLING POINT
APPROXIMATE LANDFILL BOUNDARY
OVERHEAD POWER LINE
FENCE
TELEPHONE POLE
PROPERTY LINE
NOTE: DRAWN FROM TAX MAP & AERIAL PHOTOGRAPH
APPROXIMATE SCALE
200 0 200 400FT.
ENGINEERING-SCIENCE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PHASE II REPORT
SAMPLE LOCATION PLAN HOUDAILLE INDUSTRIES STRIPPIT DIVISION LANDFILL
FIGURE V-2
ENGINEERING-SCIENCE

Facility name: Houdaille Industries-Strippit Division

Location: 12975 Clarence Center Road, Erie County, Akron, NY

EPA Region: II

Person(s) in charge of the facility: Ken Bartha Engineer
Houdaille Industries-Strippit Division
12975 Clarence Center Road
Akron, New York

Name of Reviewer: George H. Moreau Date: September 13, 1990

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.)

The site is a landfill of scrap metal, heat treatment sludges, ash and refuse. About two acres behind the Strippit Plant at 12975 Clarence Center Road. Solvents generated at the plant were used as starter fluid to burn solid waste.

Scores: Sm = 39.16 (Sgw = 67.35 Ssw = 7.38 Sa = 0)

Sfe = 0

Sdc = 25.00

HRS COVER SHEET

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	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	1	3	
Physical State	0 1 2 (3)	1	3	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	4	8	
Total Waste Characteristics Score			22	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1	30	40	
Total Targets Score			39	49	
6 If line 1 is 45, multiply 1 X 4 X 5 If line 1 is 0, multiply 2 X 3 X 4 X 5			38610	57,330	
7 Divide line 6 by 57,330 and multiply by 100		Sgw =	67.35		

GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	4.1
If observed release is given a score of 45, proceed to line 4 If observed release is given a score of 0, proceed to line 2					
2 Route Characteristics					
Facility Slope and Intervening Terrain	(0) 1 2 3	1	0	3	4.2
1-Yr., 24-Hr. Rainfall	0 1 (2) 3	1	2	3	
Distance to Nearest Surface Water	0 1 (2) 3	2	4	6	
Physical State	0 1 2 (3)	1	3	3	
Total Route Characteristics Score			9	15	
3 Containment	0 1 2 (3)	1	3	3	4.3
4 Waste Characteristics					
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	4.4
Hazardous Waste Quantity	0 1 2 3 (4) 5 6 7 8	1	4	8	
Total Waste Characteristics Score			22	26	
5 Targets					
Surface Water Use	0 1 (2) 3	3	6	9	4.5
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			4752	64,350	
7 Divide line 6 by 64,350 and multiply by 100		Ssw =	7.38		

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: May 25, 1990 Houdaille Industries-Strippit Plant

Sampling Protocol: Photovac Tip II

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

2 Waste Characteristics					
Reactivity and Incompatibility	(0) 1 2 3	1	0	3	5.2
Toxicity	(0) 1 2 3	3	0	9	
Hazardous Waste Quantity	(0) 1 2 3 4 5 6 7 8	1	0	8	
Total Waste Characteristics Score			0	20	
3 Targets					
Population Within 4-Mile Radius	0 9 12 (15) 18 21 24 27 30	1	15	30	5.3
Distance to Sensitive Environment	0 (1) 2 3	2	2	6	
Land Use Quantity	0 1 2 (3)	1	3	3	
Total Targets Score			20	39	
4 Multiply 1 X 2 X 3			0	35,100	

5 Divide line 4 by 35,100 and multiply by 100 Sa = 0

AIR ROUTE WORK SHEET

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 Route Characteristics Score		0	20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 (3) 4 5	1	3	5	
Distance to Nearest Building	0 1 (2) 3	1	2	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	3	5	
Buildings Within 2-Mile Radius	0 1 2 (3) 4 5	1	3	5	
	Total Targets Score		14	24	
4 If line 1 is 45, multiply 1 X 2 X 3			0	1,440	
5 Divide line 4 by 1,440 and multiply by 100		Sfe =	0		

FIRE AND EXPLOSION WORK SHEET

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 Population Within a 1-Mile Radius	0 1 (2) 3 4 5	4	8	20	8.5
Distance to a Critical Habitat	(0) 1 2 3	4	0	12	
	Total Targets Score		8	32	
6 If line 1 is 45, multiply 1 X 4 X 5 If line 1 is 0, multiply 2 X 3 X 4 X 5			0	21,600	
7 Divide line 6 by 21,600 and multiply by 100		Sdc =	25.00		

3 0 3 2

DIRECT CONTACT WORK SHEET

	S	S^2
Groundwater Route Score (Sgw)	67.35	4536.02
Surface Water Route Score (Ssw)	7.38	54.46
Air Route Score (Sa)	0	0
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		4590.48
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		67.75
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = Sm =$		39.16

WORKSHEET FOR COMPUTING Sm

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 an should be 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: Houdaille Industries-Strippit Division*

LOCATION: 12975 Clarence Center Road, Erie County, Akron, New York

*Note: The Strippit Company is no longer owned by Houdaille Industries. The current owner is IDEX.

GROUND WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum): Score: 45

Rationale for attributing the contaminants to the facility:

Downgradient groundwater sample GW-4 had a manganese concentration over 9 times the concentrations in the two upgradient wells.

***

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern Score: 3

Name/description of aquifer(s) of concern:

Glaciolacustrine, sandy-silt unit

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

A depth of 29 feet was measured in monitoring well GW-3 on June 7, 1990 (ES, 1990b).

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

Approximately 15 feet (ES, 1989).

Net Precipitation Score: 2

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

Mean annual precipitation 32 inches (USDOC, 1983)

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

Mean annual lake evaporation is 27 inches (USDOC 1983).

Net precipitation (subtract the above figures):

5 inches (USDOC, 1983)

Permeability of Unsaturated Zone Score: 1

Soil type in unsaturated zone:

Lima loam - gravelly silt loam (USDA, 1986)

Permeability associated with soil type:

10^{-5} to 10^{-7} cm/sec (Freeze and Cherry, 1979)

Physical State — Score: 3

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

Solids - heat treatment sludge

Liquids - coolants, cutting, oils, solvents, paints.

(NYSDEC, 1978; NYSDEC, 1983)

***

3. CONTAINMENT

Containment — Score: 3

Method(s) of waste or leachate containment evaluated:

Unlined landfill. Drums stored in an unlined surface area without impoundment or diversion structures (ES, 1989).

Method with highest score:

Unlined landfill; no diversion structures

4. WASTE CHARACTERISTICS

Toxicity and Persistence — Score: 18

Compound(s) evaluated:

Manganese (Sax, 1984; USEPA, 1984)

Toxicity = 3 Persistence = 3

Compound with highest score:

Manganese

Hazardous Waste Quantity — Score: 4

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):

57 tons heat treatment sludge (228 drums)

400 drums of coolant (NYSDEC, 1978; NYSDEC, 1983)

Basis of estimating and/or computing waste quantity:

Water-soluble coolant: 20,000 gals = 400 drums

Heat treatment sludge: 3 tons x 19 yrs = 57 tons = 228 drums

(NYSDEC, 1978; NYSDEC, 1983) Amount of wastes disposed/incinerated on-site is not conclusively stated in the documentation; assume at least one year's volume of coolant was disposed on-site.

***

5. TARGETS

Groundwater Use — Score: 3

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

Drinking water with no alternate source available.

Distance to Nearest Well — Score: 4

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

A private residence south of the site (ES, 1989).

Distance to above well or building:

Approximately 2,000 feet (ES, 1989).

Population Served by Groundwater Wells Within a 3-Mile Radius — Score: 3

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

Community water supply well for Quarry Hill Estates located 2.5 miles southeast- serves population of 400 people (NYSDOH, 1982). Additional 424 homes (1611 residents) have residential wells within three miles of the site on the west side of Murder Creek (Rodgers, 1990; USGS 1980) Murder Creek is considered an aquifer discontinuity for HRS scoring purposes.

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):

None within 3 mile radius

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

400 people in Quarry Hill Estates (NYSDOH, 1982); 1611 residents elsewhere (Rodgers, 1990) total of 2011. — **Matrix Score = 30**

SURFACE WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum): Score: 0

Only one surface water sample was collected downgradient from the landfill. No background samples are available to compare results, therefore release of contaminants cannot be documented.

Rationale for attributing the contaminants to the facility:

Not applicable, no background sample.

***

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain — Score: 0

Average slope of facility in percent:

Approximately 2 percent (USGS, 1980)

Name/description of nearest downslope surface water:

Murder Creek - 0.7 miles. Murder Creek is classified by NYSDEC as a Class C surface water and is designed as suitable for fishing and fish propagation and for primary and secondary contact recreation (NYSDEC, 1985) (USGS, 1980).

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

Less than 3 percent (USGS, 1980)

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

No (USGS, 1980; ES, 1989)

Is the facility completely surrounded by areas of higher elevation?

No (USGS, 1980)

1-Year 24-Hour Rainfall in Inches — Score: 2

2.1 inches (USDOC, 1983)

Distance to Nearest Downslope Surface Water — Score: 2

Murder Creek approximately 0.7 miles north of site (USGS, 1980).

Physical State of Waste — Score: 3

Solids - heat treatment sludge

Liquids - Water-soluble coolants, cutting oils, solvents, paints (NYSDEC, 1978; NYSDEC, 1983).

***

3. CONTAINMENT

Containment — Score: 3

Method(s) of waste or leachate containment evaluated:

Unlined landfill, drums, stored in unlined surface area without impoundment or diversion structures (ES, 1989).

Method with highest score:

Unlined landfill, no diversion structures.

***

4. WASTE CHARACTERISTICS

Toxicity and Persistence — Score: 18

Compound(s) evaluated

Manganese

Compound with highest score:

Manganese (EPA, 1984)

Hazardous Waste Quantity — Score: 4

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):

57 tons heat treatment sludge (228 drums)

400 drums water-soluble coolants (NYSDEC, 1978; NYSDEC, 1983)

Basis of estimating and/or computing waste quantity:

Water-soluble coolant: 20,000 gals/yr = 400 drums

Heat treatment sludge: 3 tons/yr x 19 years = 57 tons (=228 drums)

(NYSDEC, 1978; NYSDEC, 1983) Assume one year's volume of coolant was disposed on-site.

***

5. TARGETS

Surface Water Use — Score: 2

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

Murder Creek is a Class C surface water and is designated as suitable for fishing and fish propagation and for primary and secondary contact recreation (NYSDEC, 1985).

Is there tidal influence?

Not applicable

Distance to a Sensitive Environment — Score: 1

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

Not applicable

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

Approximately 0.5 miles south of site (NYSDEC, 1976)

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

None within 1 mile of the site (NYSDEC, 1989)

Population Served by Surface Water — Score: 0

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:

No identified municipal surface water intakes (NYSDOH, 1982).

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

There are no identified municipal surface intakes within 3 miles or 1 mile downstream of site (NYSDOH, 1982).

Total population served:

None. There are no water supply intakes within 3 miles or 1 mile downstream of the site (NYSDOH, 1982).

Name/description of nearest of above water bodies:

Not applicable

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

Not applicable

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected: Score: 0

Readings above background were not detected during routine on-site monitoring for volatile organic vapors with a photoionization vapor detector (ES, 1990b).

Date and location of detection of contaminants:

Not applicable

Methods used to detect the contaminants:

Not applicable

Rationale for attributing the contaminants to the site:

Not applicable

***

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility Score: 0

Most reactive compound:

None identified with potential to impact the air pathway.

Most incompatible pair of compounds:

None identified with the potential to impact the air pathway.

Toxicity Score: 0

Most toxic compound:

None identified with the potential to impact the air pathway.

Hazardous Waste Quantity Score: 0

Total quantity of hazardous waste:

None identified with the potential to impact the air pathway.

Basis of estimating and/or computing waste quantity:

***

3. TARGETS

Population Within 4-Mile Radius Score: 15

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**

743 within 1 mile radius (USDOC, 1982)

Distance to a Sensitive Environment — Score: 1

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

Not applicable

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

Approximately 0.5 miles (NYSDEC, 1976).

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

None within 1 mile of the site (NYSDEC, 1989).

Land Use — Score: 3

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

0.2 miles (ES, 1989; USGS, 1980).

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

None within 2 mile radius (USGS, 1980).

Distance to residential area, if 2 miles or less:

0.4 miles (USGS, 1980)

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

The site is located on land classified as 25 to 75 percent prime farm land. (USDA, 1979).

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

Within a 2 mile radius, land is classified as more than 75 percent prime farm land. (USDA, 1979).

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

No historic or landmark sites are within the view of the site (USDOI, 1988).

FIRE AND EXPLOSION

1. CONTAINMENT

Hazardous substances present: Score: 1

No flammable and/or explosive substances are known to be present in a form which would pose a fire or explosion threat.

Type of containment, if applicable:

Not applicable

***

2. WASTE CHARACTERISTICS

Direct Evidence Score: 0

Type of instrument and measurements:

None (ES, 1989)

Ignitability Score: 0

Compound used:

No ignitable compounds are known to be present on-site, with the potential to pose a fire or explosion threat.

Reactivity Score: 0

Most reactive compound:

No reactive compounds are known to be present on-site.

Incompatibility

Most incompatible pair of compounds:

None identified on-site

Hazardous Waste Quantity Score: 0

Total quantity of hazardous substances at the facility:

None identified which pose a fire or explosion threat.

Basis of estimating and/or computing waste quantity:

***

3. TARGETS

Distance to Nearest Population Score: 3

Residential area is located 0.4 miles from the site (USGS 1980).

Distance to Nearest Building — Score: 2

Approximately 200 feet to the plant building (ES, 1989; USGS 1980).

Distance to Sensitive Environment — Score: 0

Distance to wetlands:

Approximately 0.5 miles south of the site (NYSDEC, 1976).

Distance to critical habitat:

None within 1 miles (NYSDEC, 1989).

Land Use — Score: 3

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

0.2 miles (USGS, 1980).

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

None within a 2 mile radius (USGS, 1980).

Distance to residential area, if 2 miles or less:

0.4 miles (USGS, 1980)

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

The site is located on land classified as 25-75 percent prime farmland (USDA, 1979)

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

Within a 2 mile radius, land is classified as more than 75 percent prime farmland (USDA, 1979).

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

No historic or landmark sites are within the view of the site (USDOI, 1988).

Population Within 2-Mile Radius — Score: 3

2,971 people (USDOC, 1982).

Buildings Within 2-Mile Radius — Score: 3

781 buildings; assume 3.8 people per house.

DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident: Score: 0

No reported incidents (ES Record Search 1989-1990).

***

2. ACCESSIBILITY

Describe type of barrier(s): Score: 3

No continuous barriers are present around facility to prevent unauthorized access (ES, 1989).

***

3. CONTAINMENT

Type of containment, if applicable: Score 15

Sediments containing PAHs are present in a ditch (ES, 1990a).

***

4. WASTE CHARACTERISTICS

Toxicity Score: 3

Compounds evaluated:

Phenanthrene in SED-1 (ES, 1990a).

Compound with highest score:

Phenanthrene (Sax,1984).

5. TARGETS

Population within one-mile radius Score: 2

743 people (USDOC, 1982).

Distance to critical habitat (of endangered species) Score: 0

There are no Federally designated critical habitats of endangered species within one mile of the site (NYSDEC, 1989).

EPA	Potential Hazardous Waste Site Site Inspection Report Part 1 - Site Location and Inspection Information	I. Identification 01 State 02 Site Number NY DO39115621

II. Site Name and Location

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No. or Specific Location Identifier
Houdaille Industries-Strippit Division	12975 Clarence Center Road

03 City	04 State	05 Zip Code	06 County	07 County Code	08
Akron	New York	14001	Erie	029	32 Dist CONG

09 Coordinates
Latitude ° Longitude
43 00' 45". 078° 31 00".

10 Type of Ownership (Check one)
__XA. Private __ B. Federal _____C. State_____D. County
__ E. Municipal __ F. Other_____ __ G. Unknown

III. Inspection Information

01 Date of Inspection	02 Site Status	03 Years of Operation	
8/8/89	__ Active	1940s / 1975	__ Unknown
Month/Day/Year	X Inactive	Beginning Year / Ending Year	

04 Agency Performing Inspection (Check all that apply)

A. EPA (Name of Firm) B. EPA Contractor C. Municipal D. Municipal Contractor (Name of Firm)
__ E. State__x F. State Contractor _Engineering-Science_ (Name of Firm) G. Other _____ (Specify)

05 Chief Inspector	06 Title	07 Organization	08 Telephone No.
K. Leonard	Geologist	Engineering-Science	315-451-9560

09 Other Inspectors	10 Title	11 Organization	12 Telephone No.
M. Schumacher	Staff Geologist	Engineering-Science	315-451-9560

13 Site Representatives Interviewed	14 Title	15 Address	16 Telephone No.
Ken Bartha	Engineer	12975 Clarence Center Road Akron, NY 14001	716-542-4511

17 Access Gained By (Check One)	18 Time of Inspection	19 Weather Conditions
__X Permission __ Warrant	10:00 am	Partly cloudy, wind and cool (60's)

IV. Information Available From

01 Contact	02 OF (Agency/Organization)	03 Telephone No.
Carl Hoffman	NYSDEC, Albany, NY	518 457-9538

04 Person Responsible For Site Inspection Form	05 Agency	06 Organization	07 Telephone No.	08 Date
K. Leonard		Engineering-Science	315 451-9560	8/8/89 Month/Day/Year

EPA	Potential Hazardous Waste Site Site Inspection Report Part 2 - Waste Information	I. Identification 01 State 02 Site Number NY D039115621

II. Waste States, Quantities, and Characteristics

01 Physical States (Check all that apply)

- _x_ A. Solid
- ___ B. Powder, Fines
- _x_ C. Sludge
- ___ D. Other _____ (Specify)
- ___ E. Slurry
- _x_ F. Liquid
- ___ G. Gas

02 Waste Quantity At Site (Measures of waste quantities must be independent)

- Tons _____
- Cubic Yards ____
- No. of Drums 25+

03 Waste Characteristics (Check all that apply)

- _x_ A. Toxic
- ___ 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	3 tons/yr		heat treatment sludge
OLW	Oily Waste	20,000 gal/yr		cutting oils, solvents, & paint, water-soluble
SOL	Solvents	20,000 gal/yr		coolants
PSD	Pesticides			
OCC	Other Organic Chemicals			
IOC	Inorganic Chemicals			
ACD	Acids			
BAS	Bases			
MES	Heavy Metals		Unknown	spent cartridges, scrap lead, steel

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

V. Feedstocks (See Appendix For CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Number

VI. Sources of Information (Cite Specific References, e.g., state files, sample analysis reports)

NYSDEC Site Investigation December 15, 1981
Erie County Department of Environment and Planning, December 1984
Phase I Investigation - Reference #17
Engineering-Science Site Inspection August 8, 1989.

EPA	Potential Hazardous Waste Site Site Inspection Report Part 3 - Description of Hazardous Conditions and Incidents	I. Identification 01 State 02 Site Number NY D039115621

II. Hazardous Conditions and Incidents

01 _x_ A. Groundwater Contamination — 02 __ Observed (Date: _____) — x Potential — __ Alleged

03 Population Potentially Affected: 2011

04 Narrative Description

Potential for groundwater contamination exists from contaminated soils on site (NYSDEC Site Investigation 12/15/81). Community water supply well for Quarry Hill Estates located 2.5 miles southeast - 400 people (NYS Atlas of Community Water System Sources, 1982). Also private drinking wells estimated to be 1611 people (Campbell, 1985).

01 _x_ B. Surface Water Contamination — 02 __ Observed (Date: _____) — x Potential — __ Alleged

03 Population Potentially Affected: Unknown

04 Narrative Description

Potential for surface water contamination exists from contaminated soils on site (NYSDEC Site Investigation, 12/15/81).

01 __ C. Contamination of Air — 02 __ Observed (Date: _____) — __ Potential — __ Alleged

03 Population Potentially Affected: _____

04 Narrative Description

No PID readings were observed in breathing zone during on-site air monitoring for Phase II activities.

01 __ D. Fire/Explosive Conditions — 02 __ Observed (Date: _____) — x Potential — __ Alleged

03 Population Potentially Affected: Unknown

04 Narrative Description

There is no evidence from recent site investigations to indicate the potential for fire or explosion on-site (ES Phase II Site Investigations, 1989-1990).

01 _x_ E. Direct Contact — 02 __ Observed (Date: _____) — x Potential — __ Alleged

03 Population Potentially Affected: Unknown

04 Narrative Description

The disposal site is located immediately southwest of the plant fenced-in area. The site is not fenced in and is easily accessible to foot traffic through tall weeds. Tire tracks from three-wheeled ATV vehicles have been found on the site. (Erie County Department of Environment and Planning, December 1984).

01 _x_ F. Contamination of Soil — 02 _x_ Observed (Date: 12/15/81) — __ Potential — _x_ Alleged

03 Population Potentially Affected: Unknown

04 Narrative Description

Soil anaysis indicated elevated concentrations of As, Cd,Cr, Cu, Pb, Hg, Ni, Se, Zn, and halogenated organics (NYSDEC Site Investigation, December 15, 1981). Phase II investigation detected PAHs in ditch sediment.

01 _x_ G. Drinking Water Contamination — 02 __ Observed (Date: _____) — x Potential — __ Alleged

03 Population Potentially Affected: 2011

04 Narrative Description

Community water supply well for Quarry Hill Estates located 2.5 miles southeast - 400 people (NYS Atlas of Community Water System Sources, 1982). Also private drinking wells estimated to be 1611 people (Campbell, 1985).

01 __ H. Worker Exposure/Injury — 02 __ Observed (Date: _____) — __ Potential — __ Alleged

03 Population Potentially Affected: _____

04 Narrative Description

There are no known incidences in which contact with a hazardous waste at the Houdaille Industries - Strippit Division dump area has caused injury, illness, or death to humans or domestic or wild animals (Kociea, Erie County Health Department, 1989).

01 __ I. Population Exposure/Injury — 02 __ Observed (Date: _____) — __ Potential — __ Alleged

03 Population Potentially Affected: _____

04 Narrative Description

There are no known incidences in which contact with a hazardous waste at the Houdaille Industries - Strippit Division dump area has caused injury, illness, or death to humans or domestic or wild animals (Kociea, Erie County Health Department, 1989).

EPA	Potential Hazardous Waste Site Site Inspection Report Part 3 - Description of Hazardous Conditions and Incidents	I. Identification 01 State 02 Site Number NY D039115621

II. Hazardous Conditions and Incidents (Continued)

01 __ J. Damage to Flora | 02 __ Observed (Date: _____) | x Potential | __ Alleged
03 Population Potentially Affected: _____ | 04 Narrative Description: No stressed vegetation was observed on site during recent drilling activities (ES Phase II Investigation, 1990).

01 __ K. Damage to Fauna | 02 __ Observed (Date: _____) | x Potential | __ Alleged
03 Population Potentially Affected: _____ | 04 Narrative Description: Unknown

01 __ L. Contamination of Food Chain | 02 __ Observed (Date: _____) | x Potential | __ Alleged
04 Narrative Description: Unknown

01 x M. Unstable Containment of Wastes (Spills/Runoff/Standing Liquids/Leading drums) | 02 __ Observed (Date: _____) | x Potential | __ Alleged
03 Population Potentially Affected: Unknown | 04 Narrative Description: Facility representatives stated that they observed leachate on the site however none was found during the site investigation (NYSDEC Site Investigation, December 15, 1981). Leachate observed discharging into drainage ditch south of fill area (Old RR grade) during recent drilling activities (ES Phase II Investigation, 1989).

01 __ N. Damage to Offsite Property | 02 __ Observed (Date: _____) | __ Potential | __ Alleged
04 Narrative Description: Unknown, None observed or reported.

01 __ O. Contamination of Sewers, Storm Drains, WWTPs | 02 __ Observed (Date: _____) | __ Potential | __ Alleged
04 Narrative Description: Unknown

01 __ P. Illegal/Unauthorized Dumping | 02 __ Observed (Date: _____) | __ Potential | __ Alleged
04 Narrative Description: Unknown

05 Description of Any Other Known, Potential or Alleged Hazards

Unknown

III. Total Population Potentially Affected: Approximately 500 groundwater users

IV. Comments

Strippit Division of Houdaille Industries and its predecessors used the site to dispose of cutting oils, solvents, paint, water-soluble coolants and heat treatment sludge from 1955-1975. During the 1940's and early 1950's Buffalo Arms Corp. used the site to dispose of spent cartirdges, scrap lead and steel (Erie County Department Environment & Planning, December 1984).

V. Sources of Information (Cite specific references, e.g., state files, sample analysis, reports)

NYSDEC Site Investigation December 15, 1981
Erie County Department of Environment and Planning December 1984.

E P A	Potential Hazardous Waste Site Site Inspection Report Part 4 - Permit And Descriptive Information	I. Identification 01 State 02 Site Number NY D039115621

II. Permit Information

01 Type of Permit Issued (Check all that apply)	02 Permit Number	03 Date Issued	04 Expiration Date	05 Comments
__ A. NPDES				
__ B. UIC				
__ C. Air				
__ D. RCRA				
__ E. RCRA Interim Status				
__ F. SPCC Plan				
__ G. State (Specify)				
__ H. Local (Specify)				
__ I. Other (Specify)				
_x_ 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	__		_x_ A. Incineration	_x_ A. Buildings on Site
__ B. Piles	____	____	__ B. Underground Injection	
_x_ C. Drums, above ground	25+	55-gal	__ C. Chemical/Physical	
__ D. Tank, above ground	-		__ D. Biological	
_x_ E. Tank, below ground	4,000	gallon	__ E. Waste Oil Processing	
_x_ F. Landfill	40,000	gal/yr	__ F. Solvent Recovery	06 Area of Site
__ G. Landfarm	____	____	__ G. Other Recycling/Recovery	2 (Acres)
__ H. Open Dump	____	____	__ H. Other _____ (Specify)	
__ I. Other _____ (Specify)	____	____		

07 Comments

Site is highly vegetated by tall weeds and shrubs, some stained ground around empty tanks on SE corner of buidling. Some waste protruding through gravelly silt cover.

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.

There is small berm on the south of the landfill. No other type of containment observed. No liner in landfill. Glacial till unit(s) (approximately 36 to 52 feet thick) may act as a barrier to downward migration of contaminants (ES Boring Logs, 1990).

V. Accessibility

01 Waste Easily Accessible: __ Yes _x_ No

02 Comments

Most of the landfill is not fenced. However access is difficult through tall weeds and shrubs.

VI. Sources of Information (Cite specific references, e.g., state files, sample analysis, reports)

Engineering-Science Site Inspection August 8, 1989

Engineering-Science Drilling/Monitoring Well Installations, 1990.

EPA	Potential Hazardous Waste Site Site Inspection Report Part 5 - Water, Demographic, and Environmental Data	I. Identification 01 State 02 Site Number NY D039115621

II. Drinking Water Supply

01 Type of Drinking Water Supply (Check as applicable)

	Surface	Well	Endangered		Affected	Monitored
Community	A. x	B. __	A. __	B. __	C. __	A. 13 (NUS 1987) (Mi.)
Non-Community	C. __	D. x	D. __	E. __	F. __	B. .4 (Mi.)

(private residences, ES D&M Site Visit 1985)

III. Groundwater

01 Groundwater Use In Vicinity (Check One)

__ A. Only Source For Drinking | x B. Drinking (Other Sources Available) Commercial, Industrial Irrigation (No other water sources available) | __ C. Commercial, Industrial Irrigation (Limited other sources available) | __ D. Not Used, Unusable

02 Population Served by Groundwater estimated 500+

03 Distance to nearest drinking water well 0.4 mi (ES,D&M Site Visit 1985

04 Depth to Groundwater	05 Direction of Groundwater Flow	06 Depth to Aquifer of Concern	07 Potential Yield of Aquifer	08 Sole Source Aquifer
2-4 (perched groundwater) (ft)	NW	40-60 (ft)	Unknown (gpd)	__ Yes x No

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

One water supply well in Quarry Hill Estates serving a population of approximately 400 people to the southwest. Possibly several private wells serving less than 100 people (Phase I Investigation Ref #1) (New York State Atlas of Community Water System Sources 1982).

10 Recharge Area
__ Yes Comments Unknown
__ No

11 Discharge Area
__ Yes Comments Unknown
__ No

IV. Surface Water

01 Surface Water Use (Check One)

x A. Reservoir, Recreation Drinking Water Source | __ B. Irrigation, Economically Important Resources | __ C. Commercial, Industrial | __ D. Not Currently Used

02 Affected/Potentially Affected Bodies of Water	Affected	Distance To Site
Name: Murder Creek	____	.7 (mi)

V. Demographic and Property Information

01 Total Population Within (USDOC, 1982)

One (1) Mile of Site	Two (2) Miles of Site	Three (3) Miles of Site
A. ~743	B. ~2,971	C. ~4,036
No. of Persons	No. of Persons	No. of Persons

02 Distance To Nearest Population
~0.1 (residences, plant building) (mi.)

03 Number of Buildings Within Two (2) Miles of Site
18,180 (ES Phase I Investigation, 1986)

04 Distance to Nearest Off-Site Building
~0.1 (private residences (ES Phase I Invest. 1986) (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)

Rural community, moderately populated. Private residences sparsely distributed near site on Clarence Center and Buell Roads (ES Site Visits, 1989-1990).

EPA	Potential Hazardous Waste Site Site Inspection Report Part 5 - Water, Demographic, and Environmental Data	I. Identification 01 State 02 Site Number NY D039115621

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)

__ A. Impermeable (less than 10^{-6} cm/sec) x 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
110-112 (ft)	Unknown (ft)	6.5-8.5

06 Net Precipitation	07 One Year 24-Hour Rainfall	08 Slope Site Slope	Direction of Site Slope	Terrain Average Slope
5 (in)	2.1 (in)	<3 %	NE	<3 %

09 Flood Potential

Site is in 100 year floodplain

10

__ Site is on Barrier Island, Coastal High Hazard Area, Riverine Floodway

11 Distance to Wetlands (5 acre minimum)

Estuarine

A. ____ (mi)

Other

B. 0.5 (mi)

12 Distance to Critical Habitat (of endangered species)

>1 (mi)

Endangered Species: _____

13 Land Use In Vicinity

Distance To:

Commercial/Industrial Land	Residential Areas: National State Parks, Forests or Wildlife Reserves	Agricultural Lands: Prime Ag Land	Agricultural Lands: Ag
A. 0.2 (mi.)	B. 0.1 (mi.)	C. 1-2 (mi.)	D. < 1 (mi.)

14 Description of Site In Relation To Surrounding Topography

The area to the south and west of the site is farmland. To the east and the northeast is a park and the village of Akron lies directly to the north of the plant. (Erie County Department of Environment and Planning, December 1984).

VII. Sources of Information (Cite specific references, e.g., state files, sample analysis, reports)

Phase I investigation, Reference 1
NYS Atlas of Community Water System Sources, 1982, NYS Department of Health
Groundwater Resources of the Erie-Niagara Basin, NY, State of NY Conservation Department Water Resources Commission, 1968.
NYSDOT Freshwater Wetlands Map, 1974
USDA Soil Conservation Service: Prime Farmland of New York, 1979 Map

EPA	Potential Hazardous Waste Site Site Inspection Report Part 6 - Sample And Field Information	I. Identification 01 State 02 Site Number NY D039115621

II. Samples Taken

Sample Type	01 Number of Samples Taken	02 Samples Sent To	03 Estimated Date Results Available
Groundwater	4	Versar Inc	7/90
Surface Water	1	Versar, Inc.	7/90
Waste			
Air			
Runoff			
Spill			
Soil/Sediment	1	Versar, Inc.	7/90
Vegetation			
Other Leachate	1	Versar, Inc.	7/90

III. Field Measurements Taken

01 Type	02 Comments
PID	Readings around empty drums stored near the outer edges of landfill area 1ppm above background.

IV. Photographs And Maps

01 Type x Ground Aerial

02 In Custody of Engineering-Science
(Name of Organization or Individual)

03 Maps

02 Location of Maps

x Yes Files at ES

No

V. Other Field Data Collected (Provide Narrative Description)

Photographic log of leachate observed south of fill area entering drainage ditch (formerly old RR grade) (ES Files).

VI. Sources of Information (Cite specific references, e.g., state files, sample analysis, reports)

Engineering-Science Site Inspection August 8, 1989.

EPA	Potential Hazardous Waste Site Site Inspection Report Part 7 - Owner Information	I. Identification 01 State: NY 02 Site Number: D309115621

II. CURRENT OWNER(s)

01 Name	02 D+B Number	03 Street Address (P.O. Box, RFD #, etc)	04 SIC Code	05 City	06 State	07 Zip Code
IDEX Corp		630 Dundee Rd S 400		Northbrook	IL	60062

PARENT COMPANY (If Applicable)

08 Name	09 D+B Number	10 Street Address (P.O. Box, RFD #, etc)	11 SIC Code	12 City	13 State	14 Zip Code

III. PREVIOUS OWNER(s) (List most recent first)

01 Name	02 D+B Number	03 Street Address (P.O. Box, RFD #, etc)	04 SIC Code	05 City	06 State	07 Zip Code
Houdaille-Strippit Division		12975 Clarence Road		Akron	NY	14001
Buffalo Arms Corp		12975 Clarence Road		Akron	NY	14001

IV. REALTY OWNER(s) (if applicable list most recent first)

08 Name	09 D+B Number	10 Street Address (P.O. Box, RFD #, etc)	11 SIC Code	12 City	13 State	14 Zip Code
Houdaille Industries						

V. Sources of Information (Cite specific references, e.g., state files, sample analyses, reports)

E P A	Potential Hazardous Waste Site Site Inspection Report Part 8 - Operator Information	I. Identification 01 State 02 Site Number NY D039115621

II. CURRENT Operator (Provide if different from Owner)

01 Name
Site is inactive.

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc)

04 SIC Code

05 City

06 State

07 Zip Code

08 Years of Operation

09 Name of Owner

OPERATOR'S PARENT COMPANY

10 Name

11 D+B Number

12 Street Address (P.O. Box, RFD #, etc)

13 SIC Code

14 City

15 State

16 Zip Code

III. PREVIOUS OPERATOR(s)

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc)

04 SIC Code

05 City

06 State

07 Zip Code

08 Years of Operation

09 Name of Owner During This Period

PREVIOUS OPERATORS' PARENT COMPANIES (If Applicable)

10 Name

11 D+B Number

12 Street Address (P.O. Box, RFD #, etc)

13 SIC Code

14 City

15 State

16 Zip Code

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc)

04 SIC Code

05 City

06 State

07 Zip Code

08 Years of Operation

09 Name of Owner During This Period

10 Name

11 D+B Number

12 Street Address (P.O. Box, RFD #, etc)

13 SIC Code

14 City

15 State

16 Zip Code

01 Name

02 D+B Number

03 Street Address (P.O. Box, RFD #, etc)

04 SIC Code

05 City

06 State

07 Zip Code

08 Years of Operation

09 Name of Owner During This Period

10 Name

11 D+B Number

12 Street Address (P.O. Box, RFD #, etc)

13 SIC Code

14 City

15 State

16 Zip Code

IV. Sources of Information (Cite specific references, e.g., state files, sample analysis, report(s))

EPA	Potential Hazardous Waste Site Site Inspection Report Part 9 - Generator/Transporter Information	I. Identification 01 State 02 Site Number Ny D039115621

II. On-Site Generator

01 Name		02 D+B Number
Houdaille-Strippit Division		
03 Street Address (P.O. Box, RFD #, etc)		04 SIC Code
12975 Clarence Road		
05 City	06 State	07 Zip Code
Akron	NY	14001

III. Off-Site Generator(s)

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

IV. Transporter(s)

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

V. Sources of Information (Cite specific references, e.g., state files, sample analysis, reports)

E P A	Potential Hazardous Waste Site Site Inspection Report Part 10 - Past Response Activities	I. Identification 01 State 02 Site Number NY D039115621

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 Repacked 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 Site 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 Treatment 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

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

E P A	Potential Hazardous Waste Site Site Inspection Report Part 10 - Past Response Activities	I. Identification 01 State 02 Site Number

II. Past Response Activities (Continued)

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 __ 3. Other Remedial Activities 02 Date _____ 03 Agency _____
04 Description

III. Sources of Information (Cite specific references, e.g., state files, sample analysis, reports)

E P A	Potential Hazardous Waste Site Site Inspection Report Part 11 - Enforcement Information	I. Identification 01 State 02 Site Number NY D039115621

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)

HRS REFERENCES

1. ES, 1990a. Phase II Report Houdaille Industries - Strippit Division, Table IV-6; Table I-5.
2. ES, 1990b. Phase II Report Houdaille Industries - Strippit Division, Table IV-3.
3. ES, 1989. Site Inspection Report, EPA Form 2070-13, 8/8/89.
4. USDOC, 1983. US Department of Commerce, Climatic Atlas of the United States.
5. USDA, 1986. Soil Survey of Erie County, New York, United States, Department of Agriculture, Soil Conservation Service.
6. Freeze, 1979. Freeze, R. A., and Cherry, J.A., Groundwater 1985.
7. NYSDEC, 1978. Interagency Task Force on Hazardous Wastes Report.
8. NYSDEC, 1983. Inactive Hazardous Waste Disposal Site Report, Site 915053.
9. Sax, 1984, N.I., Dangerous Properties of Industrial Materials Sixth Edition, 1984.
10. EPA, 1984. Uncontrolled Hazardous Waste Site Ranking System: A Users Manual (HW-10). United States Environmental Protection Agency.
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12. Rodgers, 1990. Telephone conversation with Bill Rodgers, Town of Newstead, Highway Department, December 6, 1990.
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14. NYSDEC, 1985, New York State Department of Environmental Conservation, Water Quality Regulations, Surface Water and Groundwater Classifications and Standards, 6NYCRR. Copy of stream classification maps not provided.
15. NYSDEC, 1976. New York State Freshwater Wetlands Map, Erie County Map 5 of 31.
16. NYSDEC, 1989. New York Natural Heritage Program of Rare Plants, Animals, and Natural Communities. Letter from B. Buffington dated August 31, 1989. Copy of cover letter provided. No data presented, since there are no endangered species within specified distance of site.
17. USDOC, 1982. 1980 Census of Population, Volume 1.
18. USDA, 1979. US Department of Agriculture, Soil Conservation Service, Prime Farmland of New York.
19. USDOI, 1988. US Department of the Interior, National Park Service.
20. ECDEP, 1984. Erie County Department of Environmental Protection, 19 Strippit-Diarco Division, Houdaille Industries, Akron, New York, Site 915053, December 1984.
21. USEPA, 1980. US Environmental Protection Agency, Potential Hazardous Waste Site Identification and Preliminary Assessment, 4/15/80.

22. Bartha, 1987. Personal Interview of Mr. Ken Bartha, Engineer For Houdaille Industries by R. Steele, ES, 1/20/87.

23. Bartha, 1985. Personal Interview of Mr. Ken Bartha Engineer for Houdaille Industries by R. Steele and J. Batts, 3/27/85.

24. NUS, 1987. NUS Corporaiton, Final Draft Site Inspection Report, Houdaille Industries, Akron, NY, for the USEPA, January 19, 1989.

25. ES, 1986. Engineering-Science Phase I Investigation, Houdaille-Industries - Strippit Division, For NYSDEC, January 1986.

26. Nahya, 1990. Richard Nahya, New York State Geological Survey, Oil and Gas Geologist Personal communication with William Lilley, ES, July 23, 1990.

27. NYSDEC, 1982. Site Assessment Report-Houdaille Industries-Strippit Division (Reference taken from Phase I Report).

* Some of these are general references used in the text of this report.

REFERENCE 1

TABLE I-5
HOUDAILLE-STRIPPIT
SEDIMENT RESULTS
TCL ORGANIC COMPOUNDS (UG/KG)
TCL SEMIVOLATILE ORGANIC COMPOUNDS (UG/KG)

ANALYTE	SED-1
METHYLENE CHLORIDE	4 J
ACETONE	13 J
TOTAL XYLENES	6 J
DIETHYLPHTHALATE	6,700
PHENANTHRENE	1,600
DI-N-BUTYLPHTHALATE	630 J
FLUORANTHENE	2,400
PYRENE	1,800
BENZO(A)ANTHRACENE	1,000
BIS(2-ETHYLHEXYL)PHTHALATE	1,200 X
BENZO(B)FLUORANTHENE	1,600
BENZO(K)FLUORANTHENE	2,300
BENZO(A)PYRENE	970
INDENO(1,2,3-CD)PYRENE	720 J
BENZO(G,H,I)PERYLENE	580 J

Footnote and qualifier list on Table I-7

TABLE IV-6
HOUDAILLE - STRIPPIT
GROUNDWATER RESULTS
TCL ORGANIC COMPOUNDS (UG/L) / TAL METALS (UG/L)

ANALYTE	(3) NYS STANDARD GROUNDWATER (UG/L)	GW-1	GW-2	GW-3	GW-4	GW-5
METHYLENE CHLORIDE	5 b	3 BJR	6 BR	6 BR	–	–
ACETONE	50 b	11	35	–	–	–
CHLOROFORM	100 bc	–	3 J	–	–	–
2-BUTANONE	50 b	–	11	–	–	–
TOLUENE	5 b	3 J	3 J	–	–	–
ALUMINUM	NS	513	838	1,770	5,680	5,370
ANTIMONY	3 c	44.3 B	48.0 B	40.9 B	35.7 B	25.7 B
ARSENIC	25 a	–	–	–	3.0 SN	–
BARIUM	1,000 a	191 B	1,120	121 B	221	206
CALCIUM	NS	93,500	268,000	55,000	265,000	239,000
CHROMIUM (total)	50 b	–	–	–	10.7	9.3 B
COPPER	<200 c	–	5.4 B	–	4.8 B	4.1 B
IRON	300 b*	465	462	3,360	14,000	12,900
LEAD	25 a	9.1	1.9 B	4.3 B	12.6	13.7
MAGNESIUM	35,000 c	8,760	789 B	30,000	47,100	40,500
MANGANESE	300 b*	34.3	12.0 B	153	326	281
NICKEL	700 f	12.4 B	–	10.9 B	–	8.2 B
POTASSIUM	NS	303,000	96,800	3,300 B	59,800	59,500
SODIUM	<20,000 c	161,000	229,000	38,000	40,100	37,900
VANADIUM	NS	13.2 B	6.7 B	6.0 B	15.6 B	14.7 B
ZINC	<300 c	–	–	19.8 B	42.0	36.9

Note: GW-5 is a duplicate of GW-4.

REFFERENCE 2

TABLE IV-3

WATER LEVEL DATA
HOUDAILLE INDUSTRIES-STRIPPIT DIVISION SITE

Well Identification	Ground Surface Elevation (feet)*	Top PVC Well Pipe Elevation (feet)*	Well Screen Interval Elevation (feet)*	Date: 5/22/90		Date: 6/7/90	
				Water Level Depth (feet)**	Water Level Elevation (feet)*	Water Level Depth (feet)**	Water Level Elevation (feet)*
GW-1	750.00	752.63	700.00 - 695.00	38.10	714.53	38.14	714.49
GW-2	760.80	762.78	700.80 - 690.80	-***	-***	40.20	722.58
GW-3	738.71	740.81	698.71 - 688.71	31.0	709.81	30.91	709.90
GW-4	748.90	750.82	708.90 - 698.90	35.65	715.17	35.15	715.67

* Feet above mean sea level

** Water level depth from top of PVC well pipe in feet

*** Well not yet developed

REFFERENCE 3

EPA	Potential Hazardous Waste Site Site Inspection Report Part 1 - Site Location and Inspection Information	I. Identification 01 State 02 Site Number NY DO39115621

II. Site Name and Location

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No. or Specific Location Identifier
Houdaille Industries-Strippit Division	12975 Clarence Center Road

03 City	04 State	05 Zip Code	06 County	07 County Code	08
Akron	New York	14001	Erie	029	32 Dist CONG

09 Coordinates
Latitude 43 00' 45" Longitude 78 31 00"

10 Type of Ownership (Check one)
__XA. Private __ B. Federal _____C. State_____D. County
__ E. Municipal __ F. Other_____ __ G. Unknown

III. Inspection Information

01 Date of Inspection	02 Site Status	03 Years of Operation	
8/8/89 Month/Day/Year	__ Active X Inactive	1940s / 1975 Beginning Year / Ending Year	__ Unknown

04 Agency Performing Inspection (Check all that apply)

A. EPA (Name of Firm) B. EPA Contractor C. Municipal D. Municipal Contractor (Name of Firm)
__ E. State __x F. State Contractor _Engineering-Science_ (Name of Firm) G. Other _____ (Specify)

05 Chief Inspector	06 Title	07 Organization	08 Telephone No.
K. Leonard	Geologist	Engineering-Science	315-451-9560
09 Other Inspectors	**10 Title**	**11 Organization**	**12 Telephone No.**
M. Schumacher	Staff Geologist	Engineering-Science	315-451-9560

13 Site Representatives Interviewed	14 Title	15 Address	16 Telephone No.
Ken Bartha	Engineer	12975 Clarence Center Road Akron, NY 14001	716-542-4511

17 Access Gained By (Check One)	18 Time of Inspection	19 Weather Conditions
__x Permission __ Warrant	10:00 am	Partly cloudy, wind and cool (60's)

IV. Information Available From

01 Contact	02 OF (Agency/Organization)	03 Telephone No.
Carl Hoffman	NYSDEC, Albany, NY	518 457-9538

04 Person Responsible For Site Inspection Form	05 Agency	06 Organization	07 Telephone No.	08 Date
K. Leonard		Engineering-Science	315 451-9560	8/8/89 Month/Day/Year

EPA	Potential Hazardous Waste Site Site Inspection Report **Part 5** - Water, Demographic, and Environmental Data	I. Identification 01 State 02 Site Number NY D039115621

II. Drinking Water Supply

01 Type of Drinking Water Supply (Check as applicable)

	Surface	Well
Community	A. x	B. __
Non-Community	C. __	D. x

02 Status

Endangered		Affected	
A. __	B. __	C. __	
D. __	E. __	F. __	

03 Distance To Site

Monitored
A. 13 (NUS 1987) (Mi.)
B. .4 (Mi.)
(private residences, ES D&M Site Visit 1985

III. Groundwater

01 Groundwater Use In Vicinity (Check One)

__ A. Only Source For Drinking

x B. Drinking (Other Sources Available) Commercial, Industrial Irrigation (No other water sources available)

__ C. Commercial, Industrial Irrigation (Limited other sources available)

__ D. Not Used, Unusable

02 Population Served by Groundwater estimated 500+

03 Distance to nearest drinking water well 0.4 mi (ES,D&M Visit 1985

04 Depth to Groundwater	05 Direction of Groundwater Flow	06 Depth to Aquifer of Concern	07 Potential Yield of Aquifer	08 Sole Source Aquifer
2-4 (perched groundwater) (ft)	NW	40-60 (ft)	Unknown (gpd)	__ Yes x No

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

One water supply well in Quarry Hill Estates serving a population of approximately 400 people to the southwest. Possibly several private wells serving less than 100 people (Phase I Investigation Ref #1) (New York State Atlas of Community Water System Sourc 1982).

10 Recharge Area
__ Yes Comments Unknown
__ No

11 Discharge Area
__ Yes Comments Unknown
__ No

IV. Surface Water

01 Surface Water Use (Check One)

x A. Reservoir, Recreation Drinking Water Source

__ B. Irrigation, Economically Important Resources

__ C. Commercial, Industrial

__ D. Not Currently Used

02 Affected/Potentially Affected Bodies of Water

Name:	Affected	Distance To Site
Murder Creek	____	.7 (mi)

V. Demographic and Property Information

01 Total Population Within (USDOC, 1982)

One (1) Mile of Site	Two (2) Miles of Site	Three (3) Miles of Site
A. ~743	B. ~2,971	C. ~4,036
No. of Persons	No. of Persons	No. of Persons

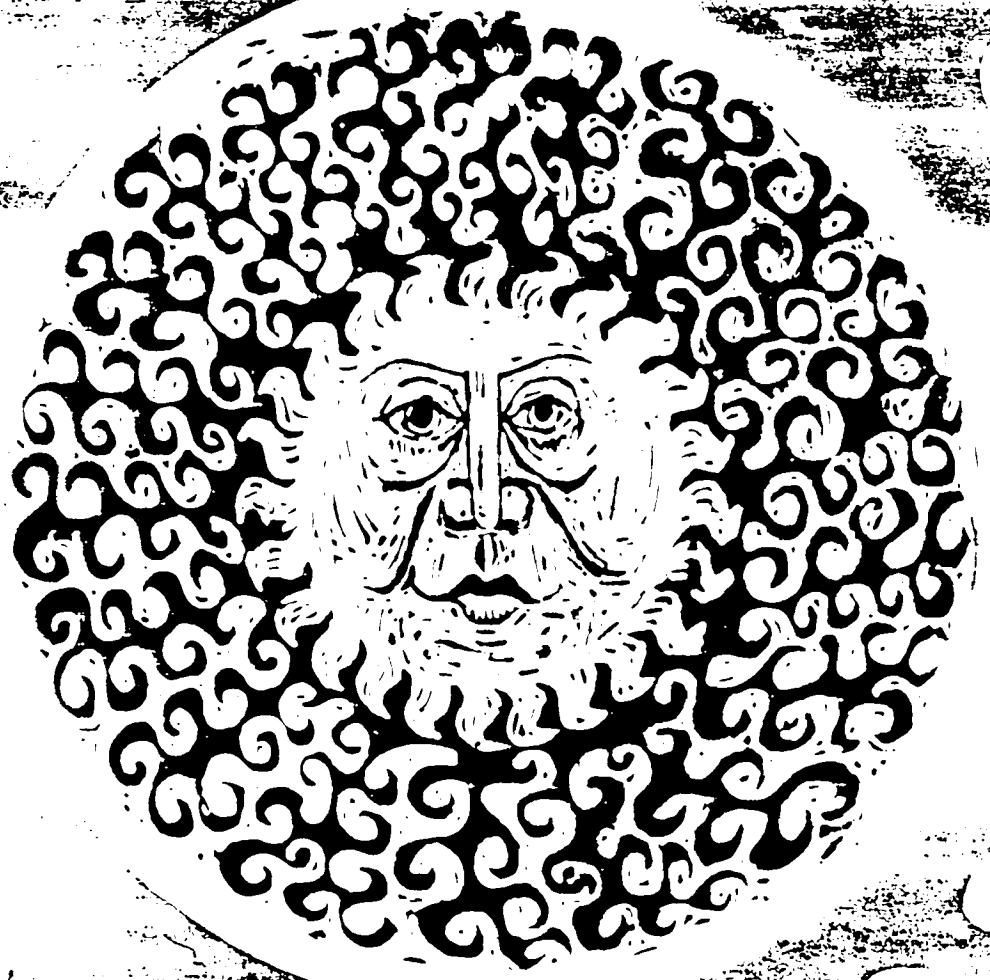
02 Distance To Nearest Population
~0.1 (residences, plant building) (mi.)

03 Number of Buildings Within Two (2) Miles of Site
18,180 (ES Phase I Investigation, 1986)

04 Distance to Nearest Off-Site Building
~0.1 (private residences (ES Phase I Invest, 1986) (mi)

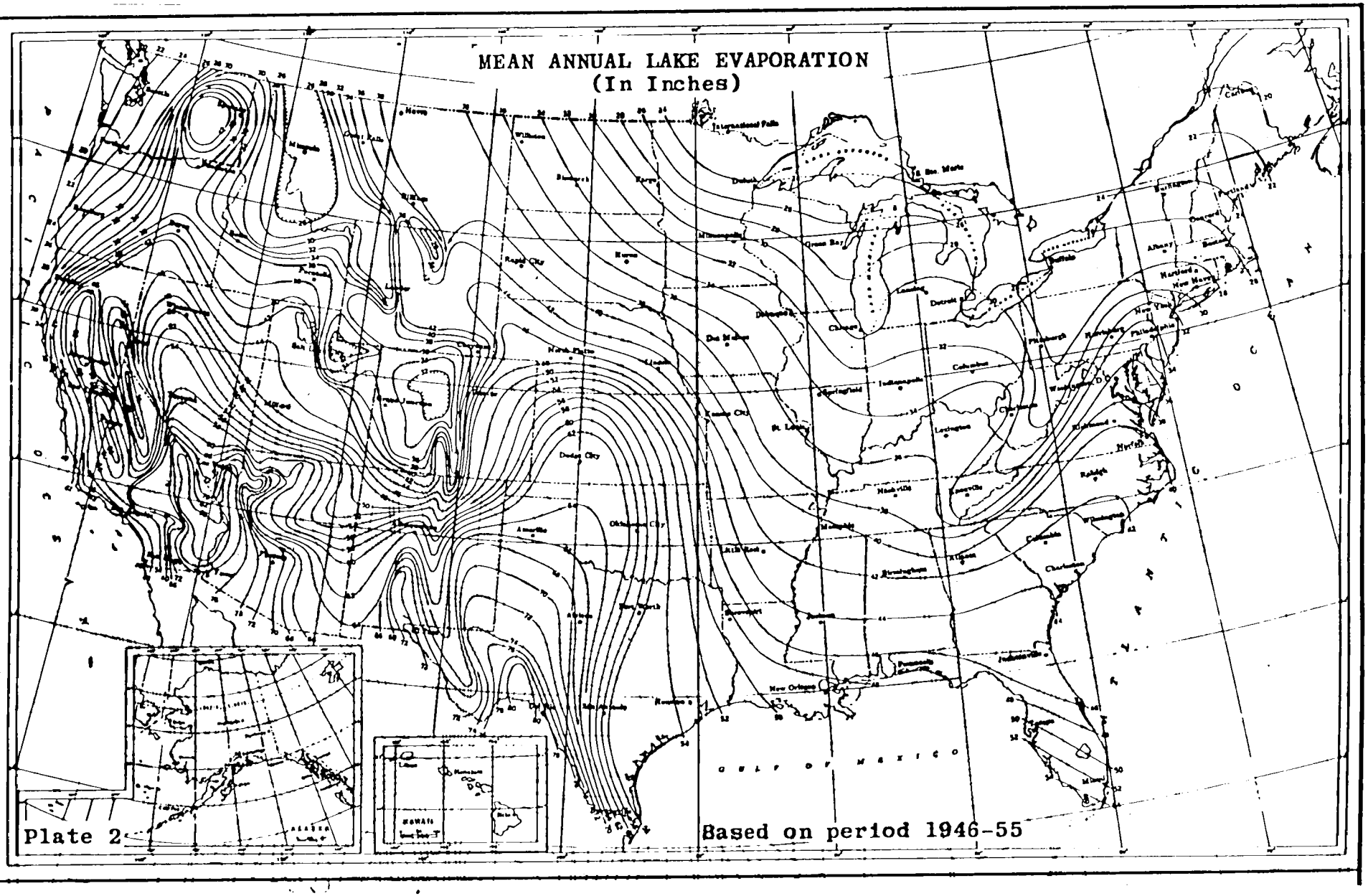
05 Population Within Vicinity of Site (Provide narrative description of nature of population within vicinity of site, e.g., rural, village densely populated urban area)

REFFERENCE 4

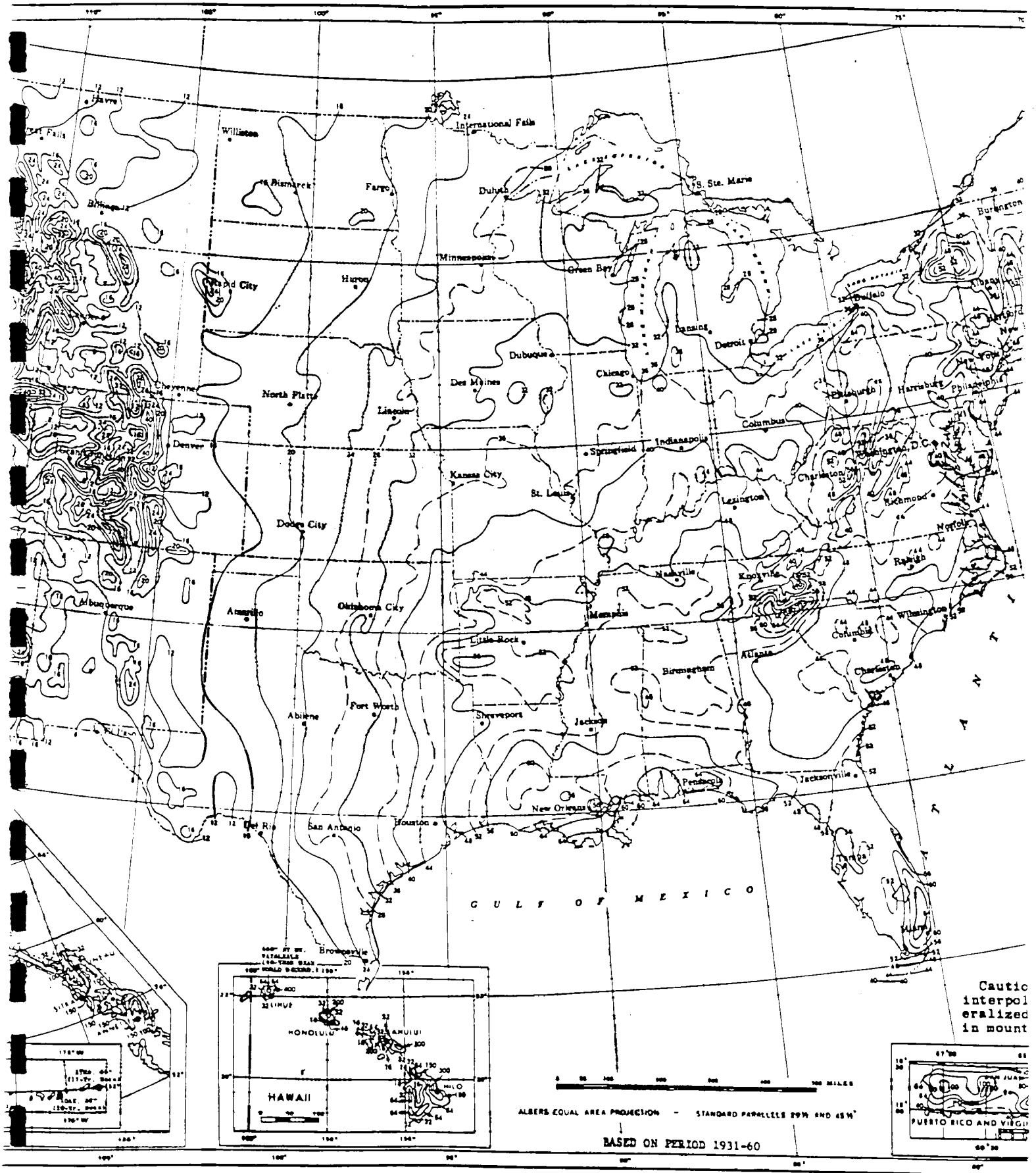


CLIMATIC ATLAS OF THE UNITED STATES

Science Services Administration . Environmental Data Serv


MEAN ANNUAL LAKE EVAPORATION
(In Inches)
GULF OF MEXICO
Plate 2
Based on period 1946-55

NORMAL ANNUAL TOTAL PRECIPITATION (Inches)



Caution
interpol
eralized
in mount

REFFERENCE 5

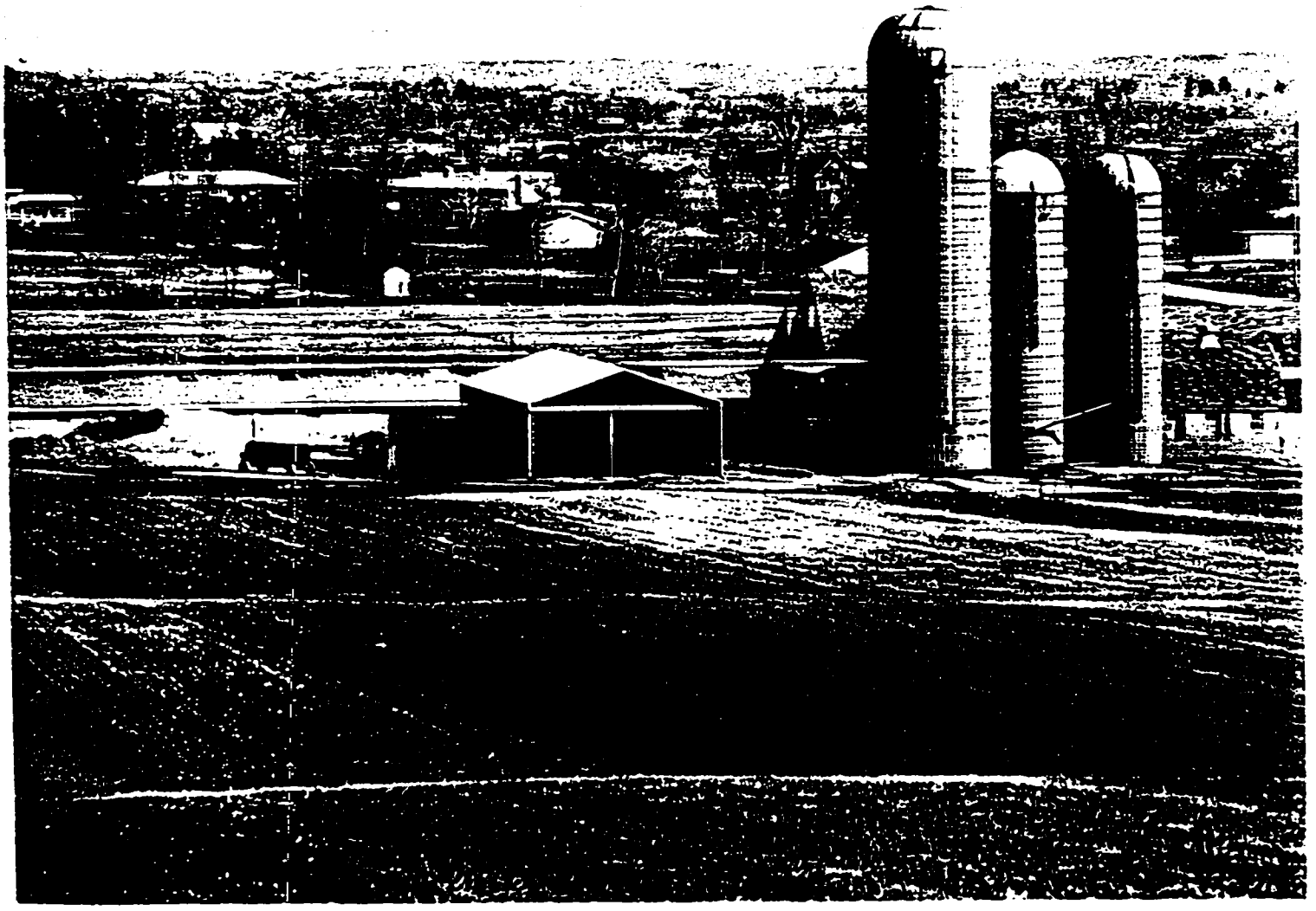
United States
Department of
Agriculture

Soil
Conservation
Service

In Cooperation with
the Cornell University
Agricultural
Experiment Station

Soil Survey of Erie County, New York

RWY



using cover crops, tilling on the contour, stripcropping, and frequently including grasses and legumes in the cropping system help maintain good tilth, improve the organic matter content, and help control erosion.

This soil is suited to pasture and hay. Reseeding, applying fertilizer and lime, and harvesting hay crops can be somewhat difficult because of the moderately steep slopes. Overgrazing is a major concern of pasture management because it can cause the loss of the pasture seeding and increase the erosion hazard. Grazing when the soil is wet early in the spring can cause soil compaction and trampling of forage plants. Proper stocking, rotation of pastures, yearly mowing, and deferment of grazing when the soil is wet help maintain high quality pasture.

The potential of this soil for wood crops is fair to good. The use of planting and harvesting equipment is somewhat limited by slope. Seedling mortality and uprooting of trees during windstorms are usually not problems. Although erosion is usually not a hazard in wooded areas, placing logging trails across the slope minimizes trail gullying. However, if logging trails are incised too deep, there is a serious hazard of mass soil slumps or slides because of the unstable silty substratum.

The moderately steep slopes, unstable silty substratum, slow or very slow permeability in the fragipan, and high potential frost heave are very serious limitations for most urban uses of this Langford soil. Interceptor drains that divert runoff and seepage minimize the wetness around buildings. Because slopes are steep and the silty substratum is poor support for foundations, there are few good building sites on this soil. Excavating foot slopes or undercutting side slopes can cause hazardous slides because the substratum is silty and unstable. The fragipan is somewhat difficult to excavate. Some places are good sites for the development of woodland wildlife habitat.

This Langford soil is in capability subclass IVe.

LmA—Lima loam, 0 to 3 percent slopes. This nearly level soil is deep and moderately well drained. It formed in calcareous glacial till. This soil is in slightly convex areas on glacial till plains in the northern part of the county. Areas of this soil are usually broad and irregular in shape. They range from 3 to 200 acres, but areas of 5 to 75 acres are most common.

Typically, this soil has a surface layer of very dark grayish brown loam about 9 inches thick. The subsurface layer is mottled, light brownish gray loam about 2 inches thick. The subsoil is mottled, brown silt loam about 15 inches thick. The substratum to a depth of 60 inches or more is mottled, brown gravelly silt loam.

Included with this soil in mapping are small intermingled areas of the Honeoye, Kendaia, and Appleton soils. The Honeoye soils are similar to this Lima soil but are slightly better drained and are on convex knolls. The somewhat poorly drained Kendaia and Appleton soils are in a few slight depressions and areas that accumulate runoff. The Kendaia soils do not have the clay accumulation in the subsoil that is in the Lima soil. Also included are significant areas of soil that is better drained than the Lima soil and has a dark surface layer. Areas of included soils range from 1/4 acre to 3 acres.

In the spring this Lima soil has a perched seasonal high water table in the lower part of the subsoil. Permeability is moderate in the surface layer and subsoil and very slow or slow beneath. The available water capacity is moderate to high, and runoff is slow to medium. Gravel makes up 5 to 15 percent of the surface layer. Bedrock is at a depth of more than 5 feet. The surface layer and subsoil range from medium acid to mildly alkaline.

This soil is suited to farming but has some limitations for many urban uses. Most of the acreage is farmed, and some areas are in urban uses.

This Lima soil is suited to cultivated crops. Occasional surface stones can be slightly bothersome for some tillage operations and in cultivating some crops. Removing occasional cobblestones and stones is a common yearly practice in intensively cultivated areas. Drainage of included wet spots makes the use of many fields more efficient, but drains are difficult to install in this nearly flat soil. Temporary wetness can slightly delay normal tillage operations in the spring. Keeping tillage to a minimum, using cover crops, incorporating crop residues into the soil, plowing at the proper soil moisture level, and rotating crops improve tilth and help maintain the organic matter content.

The soil is also well suited to pasture and hay. Overgrazing can lead to restricted plant growth and to the eventual loss of the seeding. Proper stocking, rotation of pastures, yearly mowing, and deferment of grazing when the soil is wet are the chief management needs. Liming requirements are generally low on this soil.

The potential of this soil for wood crops is good, but only a small acreage is wooded. Machine planting of tree seedlings is practical on large areas of this soil. Erosion hazard, equipment limitations, seedling mortality, and windthrow hazard are generally not problems.

The slow or very slow permeability in the substratum, temporary seasonal wetness, and moderate risk of frost damage are some limitations for urban uses of this soil. If the soil is used for septic tank absorption fields, specially designed systems may be needed to overcome the very slow permeability. Drains around foundations of dwellings minimize the problem of temporary wetness in the spring. Proper grading and landscaping of building sites allow for proper runoff and surface drainage around structures and dwellings. Some areas are good sites for recreational uses, particularly uses requiring a nearly level site.

REFFERENCE 6

Reference 6

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

(1984)

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

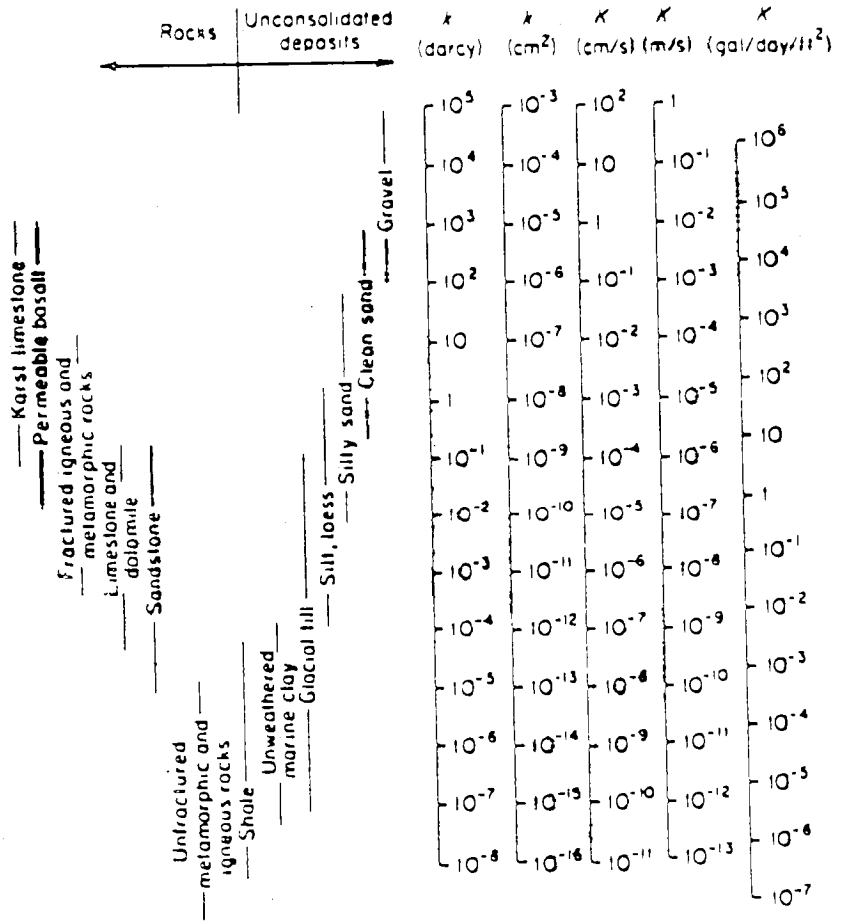


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm^2	ft^2	darcy	m/s	ft/s	U.S. gal/day/ft^2
cm^2	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft^2	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^{3}
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/ft^2	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 ft^2, multiply k in cm^2 by 1.08×10^{-3}.

REFFERENCE 7

(NYSDEC, 1978)
REF-7

INTERAGENCY TASK FORCE ON HAZARDOUS WASTES
M.P.O. Box 56[illegible]
Niagara Falls, New York 14302
(716) 285-3057

I. General Information

1. Company Name: STRIPPIT, Division of Houdaille Ind., Inc.

Mailing Address: 12975 Clarence Center Rd., Akron, New York [illegible]
Street / City / State / Zip

Present Plant Location: [✓] Same as Above

Street / City / State / Zip

2. If Subsidiary or Division, Name of Parent Company: Houdaille Industries, Inc.

3. Person Responsible for Present Plant Operations: Mr. Kenneth L. Slawson
Name

President — 542-4[illegible]
Title — Telephone

4. Person Answering this Questionnaire: Kenneth Bartha
Name

Method's Engineer — 741-3772
Title — Telephone

II. Company History

1. Date Company Founded: December 16, 1925

Date and State of Incorporation: December 16, 1925 — New York

Date Company Began Operations in Erie or Niagara County: December 16, 1925

2. Other Company Names since 1930 (specify time periods):
Buffalo Alarm Clock Casting Co. — 1925-35
Wales Strippit Corporation — 1935-56
Strippit Corporation — 1956-Present

3. Other Plant Locations in Erie or Niagara County since 1930 (specify locations and time periods):
Niagara Street, Buffalo, N.Y. — 1935-42
North Tonawanda, New York — 1942-56

4. Names of Companies Acquired which have Operated Plants in Erie or Niagara County since 1930 (specify name of company, date of acquisition, location of plant, and periods of operation).
Houdaille Electronics
[illegible] Main Street, Clarence, N.Y. — 1956-Present

(NYSDEC, 1978)

III. Company Personnel

1. Identify all plant managers from 1930 to present. Indicate years of service in that position, last known address and telephone number.

2. Identify all plant purchasing agents from 1930 to present. Indicate years of service in that position, last known address and telephone number.

3. Identify all plant personnel with supervisory responsibility for treatment or disposal of industrial wastes from 1930 to present. Indicate years of service, last known address and telephone number.

IV. Industrial Waste Production, Treatment and Disposal

1. Processes Used at Plant (1930-1975)

	Dates
a. Heat Treat Tool Steels	a. 1956 - 1975
b. Coolants & Cutting Oils for Machining	b. 1956 - 1975
c. Degreasing Parts	c. 1956 - 1975
d. Boiler Treatment Solutions	d. 1956 - 1975
e. Painting of Machines & Parts	e. 1956 - 1975

2. Products (1930-1975)

a. Heat Treat Sludge	a. 1956 - 1975
b. Cutting Oil Compounds and Cutting Coolants Water Soluble	b. 1956 - 1975
c. Chlorinated Solvents	c. 1956 - 1975
d. Alkaline Cleaners	d. 1956 - 1975
e. Paint Thinners	e. 1956 - 1975

3. On Site Waste Treatment (1930-1975)

a. Incinerate all combustibles	a. 1956 - 1975
b. Buried all non-combustibles on refuse disposal site.	b. 1956 - 1975
c. Diluted alkaline cleaners and disposed of in sanitary sewer.	c. 1956 - 1974
d. Coolant dumped on refuse disposal site.	d. 1956 - 1975
e. Oil compounds collected in holding tank.	e. 1968 - 1975

b. List all Waste Haulers since 1930 including Your Company

Name: Strippit, Division of Houdaille Industries, Inc.

Address: 12975 Clarence Center Road (Street) Akron, New York (City, State)

Telephone: 542-4511

Name: Buffalo Waste Oil Service

Address: 76 Robinson Street, (Street) North Tonawanda, New York (City, State)

Telephone: 693-0861

(NYSDEC, 1978)

5. Identify all Treatment or Disposal Sites in Erie or Niagara County used since 1970 (use separate sheet for each site).

a. Name of Site: Lancaster Sanitary Landfill

b. Location: Lancaster, New York

c. Owner or Operator: Mr. Thomas Shipston

d. Time Period Site was Used: _____

e. Describe Waste Types Treated or Disposed at this Site	Physical State	Total Quantity	Type of Container, If Any
(1) Garbage	Solid	450 cu.yds (1 Year)	Bulk Compactor
(2) Heat Treat Sludge	Solid	3 ton/yr.	55 gal. drums
(3) Coolant	Liquid	20,000 Gals. (1 Year)	Bulk
(4)			
(5)			

f. Wastes Were [X] land disposed [ ] incinerated [ ] reclaimed [ ] treated [ ] other (specify) _____

g. Names of waste haulers including your company transporting such wastes to this site, if a disposal site.

Strippit (See address on Page 1) 542-4511
Name Telephone

Rural Sanitation
Name

5040 Hillcrest Drive Clarence New York
Street City State

Time Periods such Hauler Transported to this Site 1975 - 1979

Niagara Sanitation
Name Telephone

252 Woodward Avenue, Kenmore, New York
Street City State

Time Periods such Hauler Transported to this Site 1975 - 1979

h. List Names and Addresses of other Companies using this Site, if a disposal site.

NONE
Name of Company

Street City State

Time Periods such Other Company Used this Site _____

REFFERENCE 8

(47-15-11 (10/83)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF SOLID AND HAZARDOUS WASTE

INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

PRIORITY CODE: 3 SITE CODE: 915053

NAME OF SITE: Houdaille Ind. Strippit Division REGION: 9

STREET ADDRESS: 12975 Clarance Road

TOWN/CITY: Akron COUNTY: Erie

NAME OF CURRENT OWNER OF SITE: Houdailles Industries - Strippet Div.

ADDRESS OF CURRENT OWNER OF SITE: Buell & Clarence Rds, Akron, NY 14001

TYPE OF SITE: OPEN DUMP [X] STRUCTURE [ ] LAGOON [ ]
LANDFILL [ ] TREATMENT POND [ ]

ESTIMATED SIZE: 2 ACRES

SITE DESCRIPTION:

Strippit Division of Houdaille Industries and its predecessors used this site to dispose cutting oils, solvents, paint, coolants and heat treatment sludge during the period 1955-1975. In 1981, DEC took soil and ground water samples. The soil samples indicated moderate to high concentration of lead, zinc and halogenated organics. The water samples indicated moderate to high concentration of arsenic. The disposal site has been covered. A gas well has been drilled through the site.

HAZARDOUS WASTE DISPOSED: CONFIRMED [ ] SUSPECTED [X]

TYPE AND QUANTITY OF HAZARDOUS WASTES DISPOSED:

TYPE	QUANTITY (POUNDS, TONS, DRUMS, GALLONS)
Cutting oils, solvents, paints	20,000 gallons/yr
Heat treatment sludge	3 tons/yr
Coolant	20,000 gallons/yr

TIME PERIOD SITE WAS USED FOR HAZARDOUS WASTE DISPOSAL:

_____, 19 55 TO _____, 19 75

OWNER(S) DURING PERIOD OF USE: Houadille Ind. - Strippit Div.

SITE OPERATOR DURING PERIOD OF USE: Houadille Ind. - Strippit Div.

ADDRESS OF SITE OPERATOR: Buell & Clarence Rd., Akron, NY 14001

ANALYTICAL DATA AVAILABLE: AIR ☐ SURFACE WATER ☐ GROUNDWATER ☒
SOIL ☒ SEDIMENT ☐ NONE ☐

CONTRAVENTION OF STANDARDS: GROUNDWATER ☐ DRINKING WATER ☐
SURFACE WATER ☐ AIR ☐

SOIL TYPE: Moderately drained lime soil

DEPTH TO GROUNDWATER TABLE: Not known

LEGAL ACTION: TYPE: None STATE ☐ FEDERAL ☐
STATUS: IN PROGRESS ☐ COMPLETED ☐
REMEDIAL ACTION: PROPOSED ☐ UNDER DESIGN ☐
IN PROGRESS ☐ COMPLETED ☐
NATURE OF ACTION: None

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

From the available data, there is an indication of environmental problems at this site. More investigations are required to make full assessment of the potential environmental problems.

ASSESSMENT OF HEALTH PROBLEMS:

INSUFFICIENT INFORMATION

PERSON(S) COMPLETING THIS FORM:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NAME Abul Barkat
TITLE Sr. Sanitary Engr.
NAME Peter Buechi
TITLE Assoc. Sanitary Engr.
DATE: Nov. 10, 1983

NEW YORK STATE DEPARTMENT OF HEALTH

NAME R. Tramontano
TITLE Bur. Tox. Subst. Assess.
NAME
TITLE
DATE: 12/83

REFFERENCE 9

Dangerous Properties of Industrial Materials

Sixth Edition

N. Irving Sax

ivn-mus LD50:32 mg/kg	CSLNX* NX#07576
unk-mus LDLo:8 mg/kg	AIPTAK 3,77,1897
unk-dog LDLo:6500 ug/kg	AIPTAK 3,77,1897
scu-rbt LDLo:6 mg/kg	CRSBAW 96,202,27
unk-rbt LDLo:6500 ug/kg	AIPTAK 3,77,1897
unk-pgn LDLo:80 mg/kg	AIPTAK 3,77,1897
scu-frg LDLo:95 mg/kg	AIPTAK 3,77,1897

Occupational Exposure to Nitriles recm std: Air: TWA 8 mg/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH orl, ipr, ivn. See also nitriles. An eye irr. A combustible material.

To Fight Fire: Water, fog, spray, foam.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and CN^-.

Incomp: Self-explodes; bases.

MALTOSE

CAS RN: 69794 NIOSH #: OO 5250000
mf: $C_{12}H_{22}O_{11}$; mw: 342.31

Colorless needles; d: 1.540 @ 17°; mp: decomp; very sol in water; very slightly sol in cold alc; insol in ether.

SYNS:

4-(ALPHA-D-GLUCOPYRANOSIDO)-ALPHA-GLUCOPYRANOSE	MALTOBIOSE
4-(ALPHA-D-GLUCOSIDO)-D-GLUCOSE	D-MALTOSE
	MALT SUGAR
	ALPHA-MALT SUGAR

TOXICITY DATA: 3 CODEN:
scu-mus TDLo:1750 mg/kg/50W-C:ETA GANNA2 48,556,57

Reported in EPA TSCA Inventory, 1980.

THR: An exper ETA.

Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

MALVIDOL

NIOSH #: LK 9840000
mf: $C_{17}H_{15}O_7$; mw: 331.32

SYN: 3',5'-DIMETHOXY-3,4',5,7-TETRAHYDROXYFLAVYLIUM ACID ANION

TOXICITY DATA: 3-2 CODEN:

ipr-rat LD50:2350 mg/kg	CHTPBA 2,33,67
ivn-rat LD50:240 mg/kg	CHTPBA 2,33,67
ipr-mus LD50:4110 mg/kg	CHTPBA 2,33,67
ivn-mus LD50:840 mg/kg	CHTPBA 2,33,67

THR: HIGH ivn. MOD ipr, ivn.

Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

MANDELIC ACID

CAS RN: 90642 NIOSH #: OO 6300000
mf: $C_8H_8O_3$; mw: 152.16

Large white crystals or powder, faint odor. bp: decomp. d: 1.30, mp: 117°-119°. Sol in water, alc and ether. Darkens and decomp on prolonged exposure to light.

SYNS:

AMYGDALIC ACID	PARAMANDELIC ACID
AMYGDALINIC ACID	PHENYLGLYCOLIC ACID
ALPHA-HYDROXY-ALPHA-TOLUIC ACID	PHENYLHYDROXYACETIC ACID
ALPHA-HYDROXYPHENYLACETIC ACID	RACEMIC MANDELIC ACID

TOXICITY DATA: 3-2 CODEN:

orl-rat LDLo:3000 mg/kg	AIPTAK 64,79,40
ims-rat LD50:300 mg/kg	EMSUA8 4,223,46
orl-rbt LDLo:2000 mg/kg	AIPTAK 64,79,40

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ims and MOD oral. Continued absorption can cause kidney irr. Used medicinally. Ingestion of large doses causes nausea, diarrhea and possibly kidney damage.

MANDELIC ACID NITRILE

CAS RN: 532285 NIOSH #: OO 8400000
mf: C_8H_7NO; mw: 133.16

Yellow viscous liquid. mp: −10°; bp: 170° decomp; d: 1.124.

SYNS:

AMYGDALONITRILE	NITRIL KYSELINY MANDLOVE (CZECH)
BENZALDEHYDE CYANOHYDRIN	
BENZALDEHYDKYANHYDRIN (CZECH)	

TOXICITY DATA: 3 CODEN:

eye-rbt 250 ug/24H SEV	28ZPAK -,161,72
mmo-sat 225 nmol/plate	SCIEAS 198,625,77
mma-sat 225 nmol/plate	SCIEAS 198,625,77
scu-mus LDLo:23 mg/kg	AIPTAK 12,447,04
orl-rat LD50:116 mg/kg	28ZPAK -,161,72
ivn-mus LD50:5600 ug/kg	CSLNX* NX#07767
scu-rbt LDLo:6 mg/kg	AIPTAK 5,161,1899
scu-frg LDLo:600 ug/kg	AIPTAK 5,161,1899

Reported in EPA TSCA Inventory, 1980.

THR: MUT data. An eye irr. HIGH scu, orl, ivn. See also nitriles.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and CN^-.

beta-MANDELOYLOXY-beta-PHENYLETHYL DIMETHYLAMINE

CAS RN: 67465387 NIOSH #: OO 7395000
mf: $C_{18}H_{21}NO_3$; mw: 299.40

TOXICITY DATA: 3-2 CODEN:

scu-mus LDLo:808 mg/kg	AIPTAK 47,96,34
ivn-rbt LDLo:30 mg/kg	AIPTAK 47,96,34

THR: HIGH ivn; MOD scu.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

MANGANESE

CAS RN: 7439965 NIOSH #: OO 9275000
af: Mn; aw: 54.94

Reddish-grey or silvery, brittle, metallic element. mp: 1260°, bp: 1900°, d: 7.20, vap. press: 1 mm @ 1292°.

SYNS:
COLLOIDAL MANGANESE | MANGAN (POLISH)

TOXICITY DATA: 3 CODEN:
ihl-man TCLo:2300 ug/m3 AIHAAP 27,454,66
mrc-smc 8 mmol/L/18H MUREAV 42,343,77
ims-rat TDLo:400 mg/kg/1Y-I:ETA NCIUS* PH 43-64-886,SEPT,71

TLV: Air: 5 mg(Mn)/m3 (dust) DTLVS* 4,250,80. *Toxicology Review:* TRBMAV 33(1),85,75; ACLSCP 4, 487,74; ADTEAS 5,51,72; FOREAE 7,313,42; KOTTAM 11(11),1300,75; 85DHAX Mn,1,73; PEXTAR 12,102,69. OSHA Standard: Air: CL 5 mg/m3 (SCP-A) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 2 S5, VOL 5 173#. Reported in EPA TSCA Inventory, 1980.

Human Tox: Occurs by inhal of the dust or fumes. Symptoms: languor, sleepiness, weakness, emotional disturbances, spastic gait, paralysis.

THR: MUT data. An exper ETA. See also manganese compounds.

Fire Hazard: Mod, in the form of dust or powder, when exposed to flame.

Spontaneous Heating: No.

Explosion Hazard: Mod, in the form of dust, when exposed to flame. See also powdered metals. Violent reaction with (Al + air), Cl_2, F_2, H_2O_2, HNO_3, NO_2, P, SO_2.

Disaster Hazard: Mod dangerous; will react with water or steam to produce hydrogen; can react with oxidizing materials.

To Fight Fire: Special dry chemical.

For further information see Vol. 1, No. 2 of *DPIM Report.*

MANGANESE ACETATE

CAS RN: 638380 NIOSH #: AI 5770000
mf: $C_4H_6O_4 \cdot Mn$; mw: 173.04

Pale red crystals, very sol in water and alc.

SYNS:
ACETIC ACID MANGANESE(II) SALT (2:1) | MANGANESE DIACETATE
DIACETYLMANGANESE | MANGANOUS ACETATE
MANGANESE(2+) ACETATE | OCTAN MANGANATY (CZECH)
MANGANESE(II) ACETATE

TOXICITY DATA: 2 CODEN:
orl-rat LD50:2940 mg/kg MarIV# 29MAR77

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: MOD orl. See also manganese.

Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

MANGANESE ACETATE TETRAHYDRATE

CAS RN: 6156-78-1 NIOSH #: AI 5775000
mf: $C_4H_6O_4 \cdot Mn \cdot 4H_2O$; mw: 245.12

Pale red, transparent monoclinic crystals. d: 1.59. Sol in water.

SYNS:
MANGANESE DIACETATE TETRAHYDRATE | MANGANOUS ACETATE TETRAHYDRATE

TOXICITY DATA: 2 CODEN:
orl-rat LD50:3730 mg/kg AIHAAP 30,470,69

THR: MOD orl. See also manganese compounds.

Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

MANGANESE ACETYLACETONATE

CAS RN: 14024589 NIOSH #: OO 9350000
mf: $C_{10}H_{14}O_4Mn$; mw: 253.18

SYN: MANGANOUS ACETYLACETONATE

TOXICITY DATA: 3 CODEN:
ims-rat TDLo:1200 mg/kg/26W-I:NEO JNCIAM 60,1171,78
ims-rat TD:1350 mg/kg/21W-I:ETA NCIUS* PH 43-64-886,SEPT,71

Reported in EPA TSCA Inventory, 1980.

THR: An exper NEO, ETA.

Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

MANGANESE (II)-o-BENZYL BENZOATE COMPOUND WITH NICOTINE TRIHYDRATE

CAS RN: 64092-22-4 NIOSH #: OO 9288500
mf: $C_{48}H_{46}MnN_4O_8 \cdot 3H_2O$; mw: 883.98

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:300 mg/kg NCNSA6 5,22,53
ipr-rat LDLo:300 mg/kg NCNSA6 5,22,53

THR: HIGH orl, ipr. See also nicotine, manganese compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

MANGANESE(II) CHLORIDE (1:2)

CAS RN: 7773015 NIOSH #: OO 9625000
mf: Cl_2Mn; mw: 125.84

Cubic, deliquesc, pink crystals. mp: 650°, bp: 1190°, d: 2.977 @ 25°.

SYNS:
MANGANESE DICHLORIDE | MANGANOUS CHLORIDE

TOXICITY DATA: 3 CODEN:
mmo-esc 400 mg/L ABBIA4 76,78,58
cyt-mus:mmr 1 mmol/L/48H MUREAV 67,221,79
otr-ham:emb 130 umol/L CNREA8 39,193,79
dnd-ham:emb 130 umol/L CNREA8 39,193,79
msc-ham:lng 1 mmol/L MUREAV 68,259,79
mmo-omi 24000 ppm APMBAY 6,45,58
dnd-omi 4 mmol/L SCIEAS 198,513,77
dnd-mam:lym 5 mmol/L SCIEAS 198,513,77
orl-mus LD50:1715 mg/kg TOLED5 7,221,81
ipr-mus TDLo:2080 mg/kg/26W-I:CARC FEPRA7 23,393,64
scu-mus TDLo:2080 mg/kg/26W-I:CARC FEPRA7 23,393,64
ims-rat LD50:700 mg/kg RPTOAN 38,221,75
ipr-mus LD50:121 mg/kg AEPPAE 244,17,62

SYNS:
ISOAMYL PHENYLAMINOACETATE HYDROCHLORIDE
ISOPENTYL-2-PHENYLGLYCINATE HYDROCHLORIDE
3-METHYLBUTYL ALPHA-AMINOBENZENEACETATE HYDROCHLORIDE (±)-
PHENYLAMINOACETIC ACID ISOAMYL ESTER HYDROCHLORIDE
d,l-2-PHENYLGLYCINISOAMYLESTERHYDROCHLORID (GERMAN)

TOXICITY DATA: 3-2
orl-mus LD50:2600 mg/kg
ipr-mus LD50:415 mg/kg
ivn-mus LD50:77 mg/kg

CODEN:
PHARAT 33,749,78
PHARAT 30,765,75
PHARAT 33,749,78

THR: HIGH ipr, ivn; MOD orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and NO_x.

PHENANTHRA-ACENAPHTHENE

CAS RN: 7258915
NIOSH #: QI 9400000
mf: $C_{24}H_{16}$; mw: 304.40

SYN: 4,5-DIHYDRO-NAPHTHA(1,2-K)ACEPHENANTHRYLENE

TOXICITY DATA: 3
skn-mus TDLo:1250 mg/kg/52W-I:ETA

CODEN:
PRLBA4 117,318,35

THR: An exper ETA via skn in mus.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PHENANTHRENE

CAS RN: 85018
NIOSH #: SF 7175000
mf: $C_{14}H_{10}$; mw: 178.24

Solid or monoclinic crystals. mp: 100°, bp: 339°, d: 1.179 @ 25°, vap. press: 1 mm @ 118.3°, vap. d: 6.14. Insol in water; sol in CS_2 benzene, hot alcohol; very sol in ether.

SYN: PHENANTHREN (GERMAN)

TOXICITY DATA: 3
dnd-sal:spr 3 gm/L
dnd-sal:tes 5 ug/1H-C
dnd-ham:kdy 5 mg/L
mma-sat 100 ug/plate
dnd-ham:fbr 5 mg/L/24H
cyt-ham:lng 40 mg/L/27H
sce-ham-ipr 900 mg/kg/24H
sce-ham:fbr 10 umol/L
skn-mus TDLo:71 mg/kg:NEO
skn-mus TD:22 gm/kg/10W-I:ETA
orl-mus LD50:700 mg/kg
ivn-mus LD50:56 mg/kg

CODEN:
BIPMAA 5,477,67
BIJOAK 110,159,68
BCPCA6 20,1297,71
APSXAS 17,189,80
BCPCA6 20,1297,71
MUREAV 66,277,79
MUREAV 66,65,79
JNCIAM 58,1635,77
JNCIAM 50,1717,73
BJCAAI 10,363,56
HYSAAV 29,19,64
CSLNX* NX#00190

"NIOSH Manual of Analytical Methods" VOL 1 206. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: MUT data. An exper NEO, ETA. HIGH ivn. MOD orl. A hmn skn photosensitizer. A slight fire hazard.
To Fight Fire: water, foam, CO_2, dry chemical.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PHENANTHRENE-3,4-DIHYDRODIOL

NIOSH #: SF 7353[illegible]
mf: $C_{14}H_{12}O_2$; mw: 212.26

SYNS:
3,4-DIHYDROMORPHOL
3,4-DIHYDRO-3,4-PHENANTHRENEDIOL

TOXICITY DATA: 3
skn-mus TDLo:85 mg/kg:ETA

CODEN:
CNREA8 39,4069,79

THR: An exper ETA.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PHENANTHRENE EPOXIDE

NIOSH #: SF 7704500
mf: $C_{14}H_8O$; mw: 192.22

TOXICITY DATA:
otr-ham:emb 5 mg/L

CODEN:
CNREA8 32,1391,72

THR: MUT data.

9,10-PHENANTHRENE OXIDE

CAS RN: 585080
NIOSH #: SF 7352000
mf: $C_{14}H_{10}O$; mw: 194.24

Colorless needles; mp: 152°-153°; very slightly sol in water; very sol in alc, ether.

SYNS:
9,10-EPOXY-9,10-DIHYDROPHENANTHRENE
PHENANTHRENE-9,10-EPOXIDE
1A,9B-DIHYDROPHENANTHRO-(9,10-B)OXIRENE,(9CI)

TOXICITY DATA: 3
mma-sat 100 ug/plate
skn-mus TDLo:40 mg/kg:ETA

CODEN:
MUREAV 66,337,79
JNCIAM 39,1217,67

THR: MUT data. An exper ETA.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PHENANTHRENEQUINONE

CAS RN: 84117
NIOSH #: SF 7875000
mf: $C_{14}H_8O_2$; mw: 208.22

Orange needles; d: 1.405 @ 4°; mp: 206.5°-207.5°; bp: > 300° subl; very slightly sol in water; sol in hot alc, benzene; slightly sol in ether.

SYNS:
9,10-PHENANTHRAQUINONE
9,10-PHENANTHRENEDIONE
9,10-PHENANTHRENEQUINONE

TOXICITY DATA: 3
skn-mus TDLo:800 mg/kg/29W-C:ETA
ipr-mus LDLo:165 mg/kg

CODEN:
PIATA8 16,309,40
HBTXAC 5,110,59

Reported in EPA TSCA Inventory, 1980.
THR: An exper ETA. HIGH acute ipr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

REFFERENCE 10

Gary Christopher

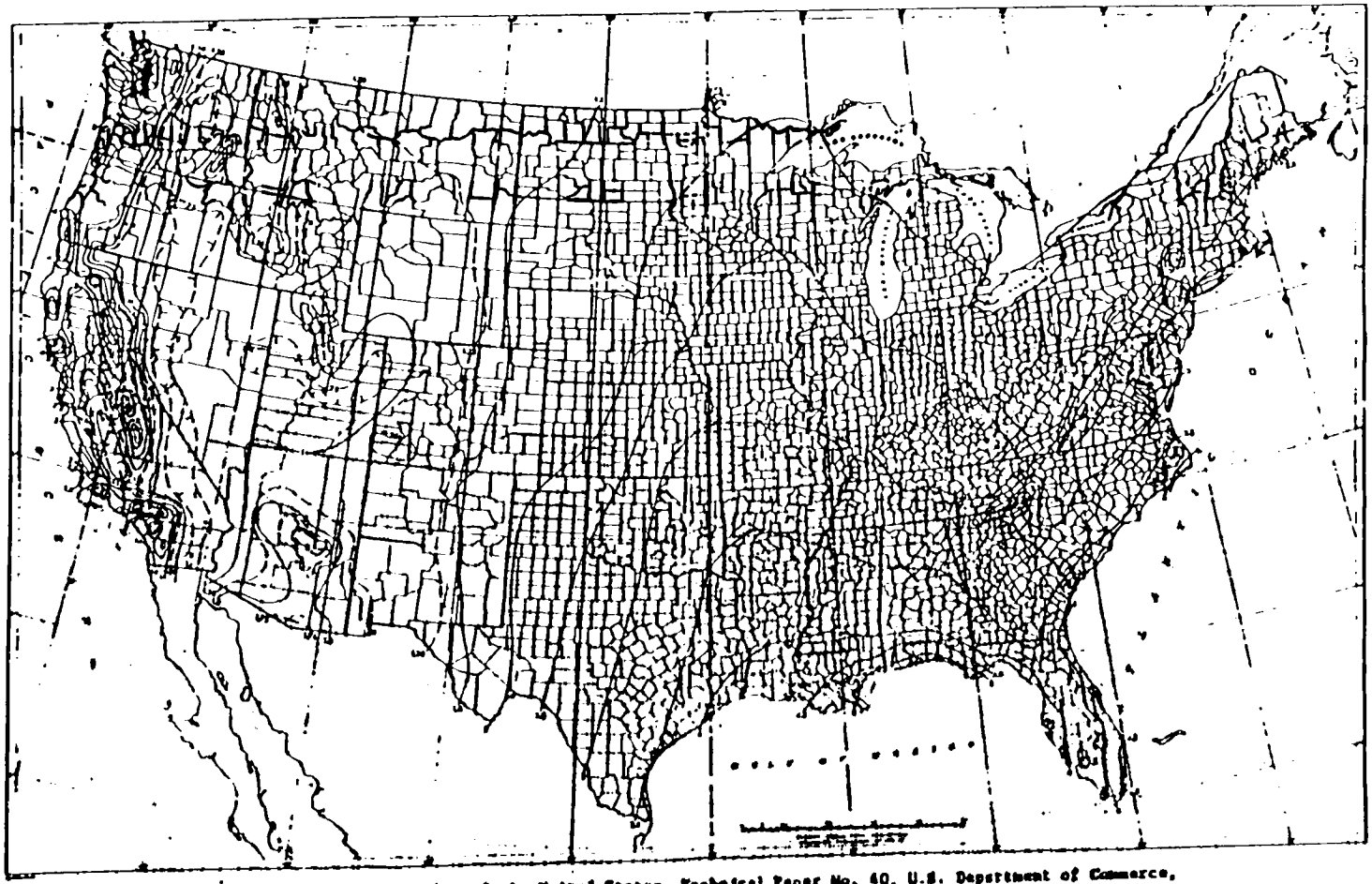
Uncontrolled Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

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

United States
Environmental Protection
Agency

1984



Source: Rainfall Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce, U.S. Government Printing Office, Washington, D.C., 1963.

FIGURE 8
1-YEAR 24-HOUR RAINFALL
(INCHES)

TABLE I

EPA Hazard Ranking System Waste Characteristics Values
(Toxicity/Persistence Matrix)

Chemical/Compound	Ground Water and Surface Water Pathway Values	Air Pathway Values
Acenapthene	9	3
Acetaldehyde	6	6
Acetic Acid	6	6
Acetone	6	6
2-Acetylaminoflourene	18	9
Aldrin	18	9
Ammonia	9	9
Aniline	12	9
Anthracene	15	9
Arsenic	18	9
Arsenic Acid	18	9
Arsenic Trioxide	18	9
Asbestos	15	9
Barium	18	9
Benzene	12	9
Benzidine	18	9
Benzoapyrene	18	9
Benzopyrene, NOS	18	9
Beryllium & Compounds NOS	18	9
Beryllium Dust, NOS	18	9
Bis (2-Chloroethyl) Ether	15	9
Bis (2-Ethylhexyl Phthalate	12	3
Bromodichloromethane	15	6
Bromoform	15	6
Bromomethane	15	9
Cadmium	18	9
Carbon Tetrachloride	18	9
Chlordane	18	9
Chlorobenzene	12	6
Chloroform	18	6
3-Chlorophenol	12	6
4-Chlorophenol	15	9
2-Chlorophenol	12	6
Chromium	18	9
Chromium, Hexavalent (Cr^{+6})	18	9

Table I (cont.)

Chemical/Compound	Ground Water and Surface Water Pathway Values	Air Pathway Values
Chromium, Trivalent (Cr^{+3})	15	6
Copper & Compounds, NOS	18	9
Creosote	15	6
Cresols	9	6
4-Cresol	12	9
Cupric chloride	18	9
Cyanides (soluble salts), NOS	12	9
Cyclohexane	12	6
DDE	18	9
DDT	18	9
Diaminotoluene	18	6
Dibromochloromethane	15	6
1, 2-Dibromo, 3-chloropropane	18	9
Di-N-Butyl-Phthalate	18	6
1, 4-Dichlorobenzene	15	6
Dichlorobenzene, NOS	18	6
1, 1-Dichloroethane	12	6
1, 2-Dichloroethane	12	9
1, 1-Dichloroethene	15	9
1, 2-cis-Dichloro-ethylene	12	3
1, 2-trans-Dichloro-ethylene	12	3
Dichloroethylene, NOS	12	3
2, 4-Dichlorophenol	18	6
2, 4-Dichlorophenoxyacetic Acid	18	9
Dicyclopentadiene	18	9
Dieldrin	18	9
2, 4-Dinitrotoluene	15	9
Dioxin	18	9
Endosulfan	18	9
Endrin	18	9
Ethylbenzene	9	6
Ethylene Dibromide	18	9
Ethylene Glycol	9	6
Ethyl Ether	15	3
Ethylmethacrylate	12	6

Table I (cont.)

Chemical/Compound	Ground Water and Surface Water Pathway Values	Air Pathway Values
Fluorine	18	9
Formaldehyde	9	9
Formic Acid	9	6
Heptachlor	18	9
Hexachlorobenzene	15	6
Hexachlorobutadiene	18	9
Hexachlorocyclohexane, NOS	18	9
Hexachlorocyclopentadiene	18	9
Hydrochloric Acid	9	6
Hydrogen Sulfide	18	9
Indene	12	6
Iron & Compounds, NOS	18	9
Isophorone	12	6
Isopropyl Ether	9	3
Kelthane	15	6
Kepone	18	9
Lead	18	9
Lindane	18	9
Magnesium & Compounds, NOS	15	6
Manganese & Compounds, NOS	18	9
Mercury	18	9
Mercury Chloride	18	9
Methoxychlor	15	6
4, 4-Methylene-Bis-(2-Chloroaniline)	18	9
Methylene Chloride	12	6
Methyl Ethyl Ketone	6	6
Methyl Isobutyl Ketone	12	6
4-Methyl-2-Nitroaniline	12	9
Methyl Parathion	9	9
2-Methylpyridine	12	6
Mirex	18	9

Table I (cont.)

Chemical/Compound	Ground Water and Surface Water Pathway Values	Air Pathway Values
Naphthalene	9	6
Nickel & Compounds, NOS	18	9
Nitric Acid	9	9
Nitroaniline, NOS	18	9
Nitrogen Compounds, NOS	12	0
Nitroguanidine	12	9
Nitrophenol, NOS	15	9
m-Nitrophenol	15	
o-Nitrophenol	12	
p-Nitrophenol	15	
Nitrosodiphenylamine	12	6
Parathion	9	9
Pentachlorophenol (PCP)	18	9
Pesticides, NOS	18	9
Phenanthrene	15	9
Phenol	12	9
Phosgene	9	9
Polybrominated Biphenyl (PBB), NOS	18	9
Polychlorinated Biphenyls (PCB), NOS	18	9
Potassium Chromate	18	9
Radium & Compounds, NOS	18	9
Radon & Compounds, NOS	15	9
RDX (Cyclonite)	15	
2, 4-D, Salts & Esters	18	9
Selenium	15	9
Sevin (Carbaryl)	18	9
Sodium Cyanide	12	9
Styrene	9	6
Sulfate	9	0
Sulfuric Acid	9	9
2, 4, 5-T	18	9
1, 1, 2, 2-Tetrachloroethane	18	9
Tetrachloroethane, NOS	18	9
1, 1, 2, 2-Tetrachloroethene	12	6

Table I (cont.)

Chemical/Compound	Ground Water and Surface Water Pathway Values	Air Pathway Values
Tetraethyl Lead	18	9
Tetrahydrofuran	15	6
Thorium & Compounds, NOS	18	9
Toluene	9	6
TNT	12	
Toxaphene	18	9
Tribromomethane	18	9
1, 2, 4-Trichlorobenzene	15	6
1, 3, 5-Trichlorobenzene	15	6
1, 1, 1-Trichloroethane	12	6
1, 1, 2-Trichloroethane	15	6
Trichloroethane, NOS	15	6
Trichloroethene TCE	12	6
1, 1, 1-Trichloropropane	12	6
1, 1, 2-Trichloropropane	12	6
1, 2, 2-Trichloropropane	12	6
1, 2, 3-Trichloropropane	15	9
Uranium & Compounds, NOS	18	9
Varsol	12	6
Vinyl Chloride	15	9
Xylene	9	6
Zinc & Compounds, NOS	18	9
Zinc Cyanide	18	9

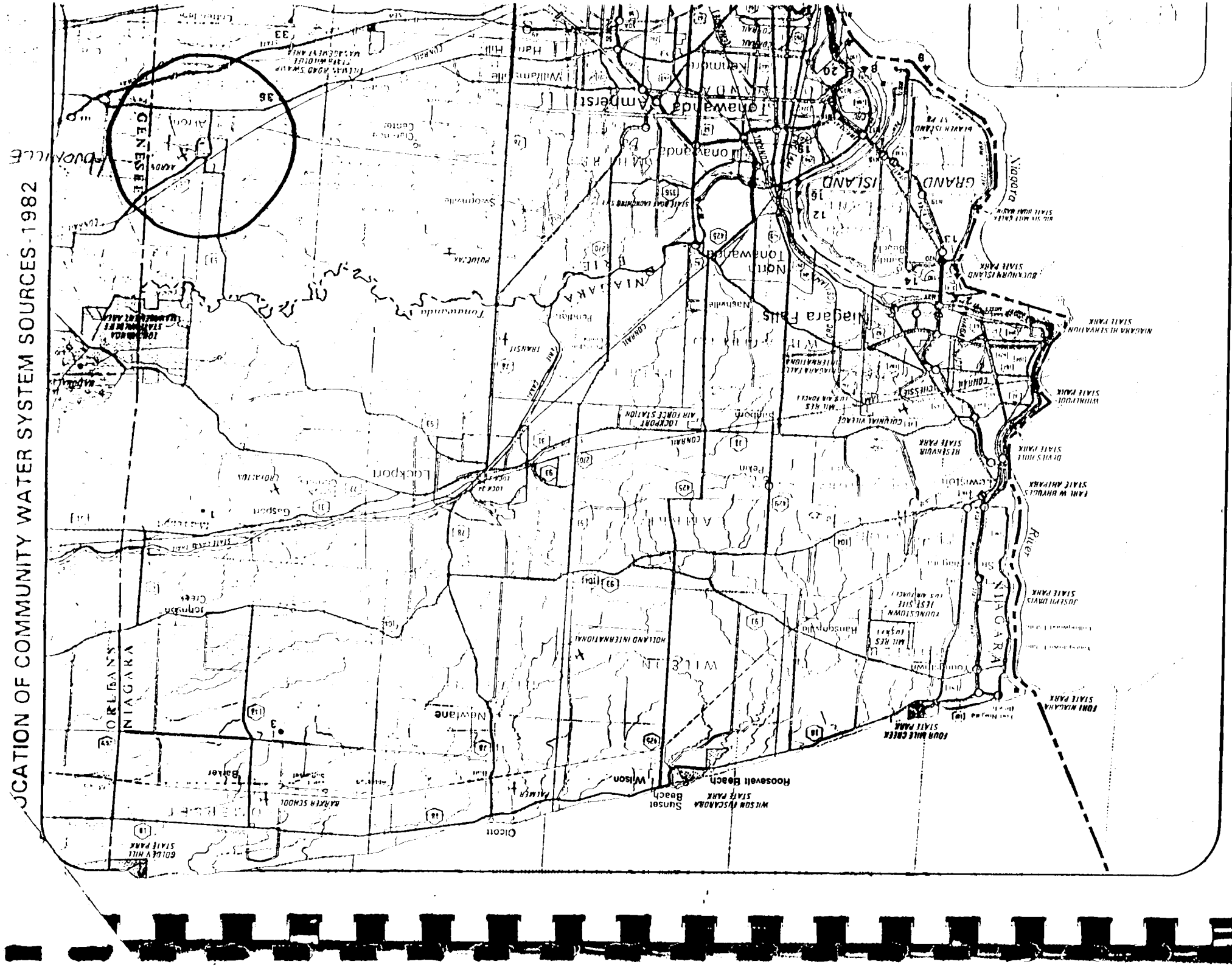
REFFERENCE 11

New York State Atlas of Community Water System Sources 1982

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

ERIE COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
Municipal Community			
	Akron Village (See No 1 Wyoming Co, Page 10)	3640	
1	Alden Village	3460	Wells
2	Angola Village	8500	Lake Erie
3	Buffalo City Division of Water	357870	Lake Erie
4	Caffee Water Company	210	Wells
5	Collins Water District #3	704	Wells
6	Collins Water Districts #1 and #2	1384	Wells
7	Erie County Water Authority (Sturgeon Point Intake)	375000	Lake Erie
8	Erie County Water Authority (Van DeWater Intake)	NA	Niagara River - East Branch
9	Grand Island Water District #2	9390	Niagara River
10	Holland Water District	1670	Wells
11	Lawtons Water Company	138	Wells
12	Lockport City (Niagara Co)		Niagara River - East Branch
13	Niagara County Water District (Niagara Co)		Niagara River - West Branch
14	Niagara Falls City (Niagara Co)		Niagara River - West Branch
15	North Collins Village	1500	Wells
16	North Tonawanda City (Niagara Co)		Niagara River - West Branch
17	Orchard Park Village	3671	Pipe Creek Reservoir
18	Springville Village	4169	Wells
19	Tonawanda City	18538	Niagara River - East Branch
20	Tonawanda Water District #1	91269	Niagara River
21	Wanakah Water Company	10750	Lake Erie
Non-Municipal Community			
22	Aurora Mobile Park	125	Wells
23	Bush Gardens Mobile Home Park	270	Wells
24	Circle B Trailer Court	50	Wells
25	Circle Court Mobile Park	125	Wells
26	Creekside Mobile Home Park	120	Wells
27	Donnelly's Mobile Home Court	99	Wells
28	Gowanda State Hospital	NA	Clear Lake
29	Hillside Estates	160	Wells
30	Hunters Creek Mobile Home Park	150	Wells
31	Knox Apartments	NA	Wells
32	Maple Grove Trailer Court	72	Wells
33	Millgrove Mobile Park	100	Wells
34	Perkins Trailer Park	75	Wells
35	Quarry Hill Estates	400	Wells
36	Springville Mobile Park	114	Wells
37	Springwood Mobile Village	132	Wells
38	Taylors Grove Trailer Park	39	Wells
39	Valley View Mobile Court	42	Wells
40	Villager Apartments	NA	Wells


LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982
GENESEE
ORLEANS
NIAGARA
Lockport
Niagara Falls
Tonawanda
Amherst
GRAND ISLAND
Newfane
Wilson
Olcott
Hoosevelt Beach
Sunset Beach
FOUR MILE CREEK STATE PARK
FORT NIAGARA STATE PARK
JOSEPH DAVIS STATE PARK
WHIRLPOOL STATE PARK
DEVIL'S HOLE STATE PARK
FARM W BRUCE'S STATE ANTIPARK
NIAGARA RIVER
NIAGARA
Youngstown
Lewiston
Hanscom Park
Gasport
Barker
Medina
Albion
Holley
Clarendon
Brockport
Pittsford
Fairport
Penfield
Webster
Irondequoit
Greece
Chili
Riga
Churchville
Scottsville
Mumford
Caledonia
Avon
Geneseo
Dansville
Nunda
Portageville
Wellsville
Canaseraga
Hornell
Bath
Corning
Elmira
Ithaca
Cortland
Binghamton
Oneonta
Cooperstown
Utica
Rome
Oneida
Syracuse
Auburn
Fulton
Oswego
Watertown
Massena
Ogdensburg
Potsdam
Canton
Malone
Plattsburgh
Saranac Lake
Tupper Lake
Lake Placid
Ticonderoga
Whitehall
Glens Falls
Saratoga Springs
Schenectady
Albany
Troy
Hudson
Kinderhook
Catskill
Kingston
Poughkeepsie
Newburgh
Middletown
Monticello
Liberty
Hancock
Delhi
Stamford
Oneonta
Cobleskill
Schoharie
Amsterdam
Gloversville
Johnstown
Little Falls
Herkimer
Ilion
Frankfort
Rome
Oneida
Canastota
Manlius
Fayetteville
Syracuse
Baldwinsville
Phoenix
Oswego
Pulaski
Sandy Creek
Adams
Watertown
Carthage
Lowville
Boonville
Old Forge
Inlet
Speculator
Northville
Gloversville
Johnstown
Amsterdam
Schenectady
Troy
Albany
Rensselaer
Hudson
Catskill
Kingston
Poughkeepsie
Newburgh
Middletown
Port Jervis
Monticello
Liberty
Hancock
Delhi
Stamford
Oneonta
Cobleskill
Schoharie
Amsterdam
Gloversville
Johnstown
Little Falls
Herkimer
Ilion
Frankfort
Rome
Oneida
Canastota
Manlius
Fayetteville
Syracuse
Baldwinsville
Phoenix
Oswego
Pulaski
Sandy Creek
Adams
Watertown
Carthage
Lowville
Boonville
Old Forge
Inlet
Speculator
Northville

REFFERENCE 12

ES ENGINEERING-SCIENCE COMPANIES

MEMORANDUM TO FILE

JOB NO. SY 05308

FILE DESIGNATION

DATE 12/6/90 TIME 10:00 a.m.

PHONE CALL FROM Chris Torell PHONE NO. 451 9560

PHONE CALL TO Bill Rodgers (Town of Newstead Highway Dept.), PHONE NO. 716-542-5412

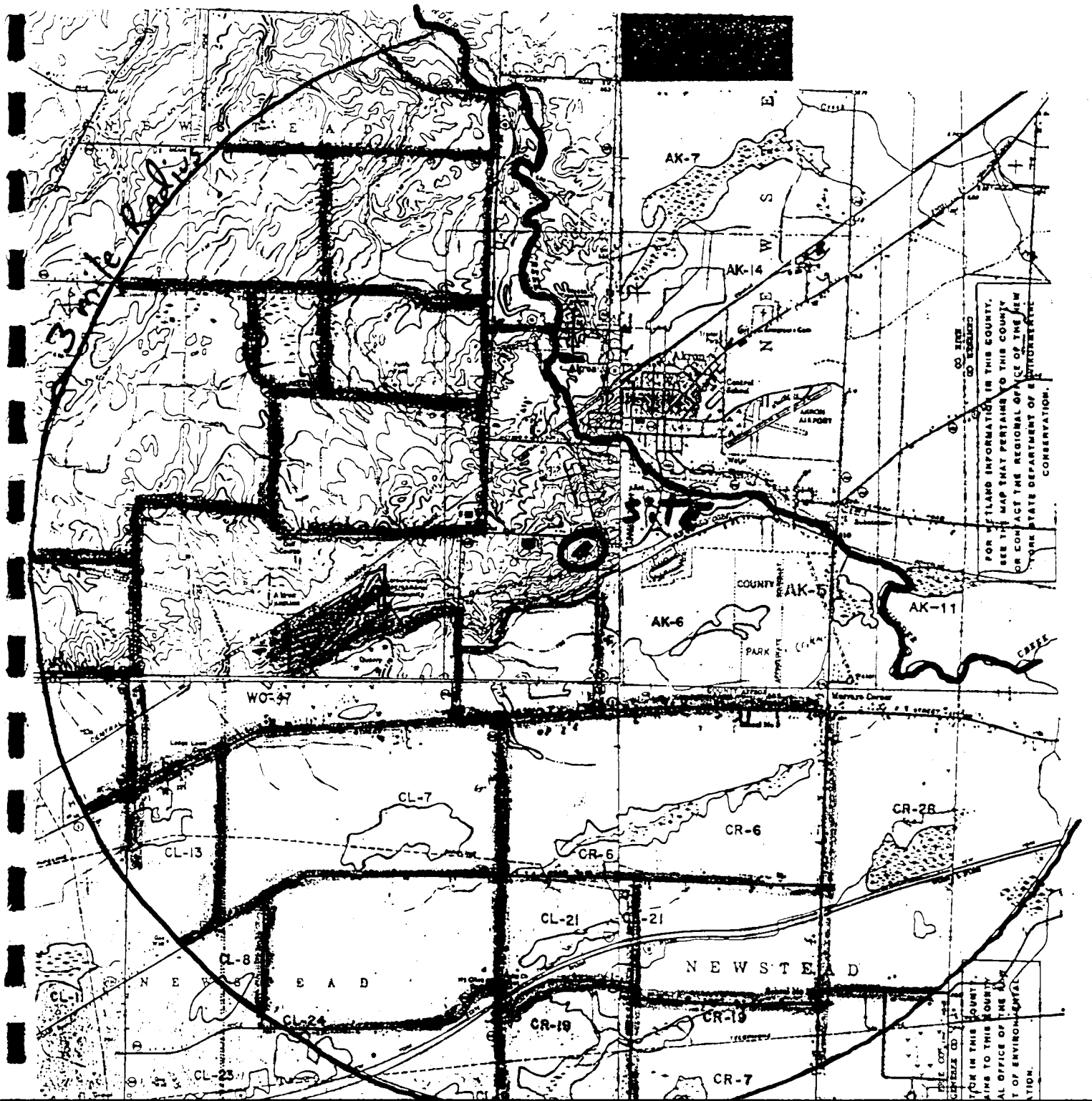
CONFERENCE WITH

PLACE

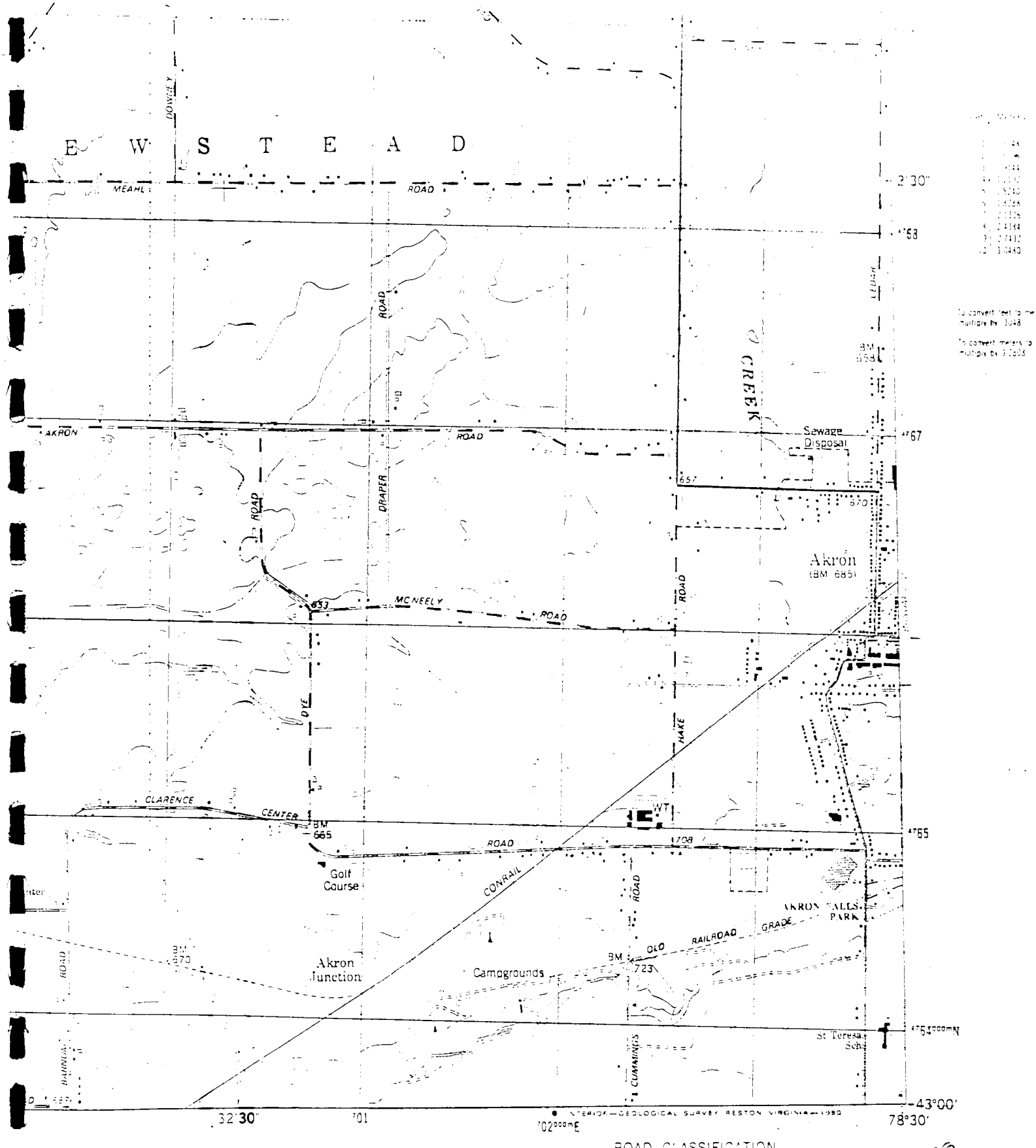
SUBJECT Obtained information on public water and private well distribution around Akron, NY.

Murder Creek (aquifer discontinuity)

- Areas having residential wells



REFFERENCE 13



ROAD CLASSIFICATION

Primary highway, hard surface

Secondary highway, hard surface

Light-duty road, hard or improved surface

Unimproved road

Interstate Route U. S. Route State Route

(CORFU) 5359 IV NW

WOLCOTTSVILLE, N. Y.

SE4 LOCKPORT 15' QUADRANGLE

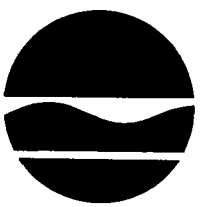
N4300—W7830/7.5

REFFERENCE 14

WATER QUALITY REGULATIONS

SURFACE WATER AND GROUNDWATER CLASSIFICATIONS AND STANDARDS

New York State
Codes, Rules and Regulations
Title 6, Chapter X
Parts 700-705



New York State Department of Environmental Conservation

701.19 Classes and standards for fresh surface waters. The following items and specifications shall be the standards applicable to all New York fresh waters which are assigned the classification of AA, A, B, C or D, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Fresh Surface Waters

Items	*Specifications*
1. Turbidity.	No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.
2. Color.	None from man-made sources that will be detrimental to anticipated best usage of waters.
3. Suspended, colloidal or settleable solids.	None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.
4. Oil and floating substances.	No residue attributable to sewage, industrial wastes or other wastes nor visible oil film nor globules of grease.
5. Taste and odor-producing substances, toxic wastes and deleterious substances.	None in amounts that will be injurious to fishlife or which in any manner shall adversely affect the flavor, color or odor thereof, or impair the waters for any best usage as determined for the specific water which are assigned to each class.
6. Thermal discharges.	(See Part 704 of this Title.)

CLASS "AA"

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "AA" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 50 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 240 for 100 ml of sample.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "A"

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "A" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 5,000 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 20,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "B"

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

Quality Standards for Class "B" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "C"

Best usage of waters. The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose.

Quality Standards for Class "C" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.

3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "D"

Best usage of waters. The waters are suitable for fishing. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support fish propagation.

Conditions related to best usage of waters. The waters must be suitable for fish survival.

Quality Standards for Class "D" Waters

Items	*Specifications*
1. pH	Shall be between 6.0 and 9.5.
2. Dissolved oxygen.	Shall not be less than 3 milligrams per liter at any time.
3. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Historical Note

Sec. added by renum. and amd. 701.4, filed July 3, 1985; amd. filed Sept. 20, 1985 eff. 30 days after filing.

701.20 Classes and standards for saline surface waters. The following items and specifications shall be the standards applicable to all New York saline surface waters which are assigned the classification of SA, SB, SC or SD, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Saline Surface Waters

Items	*Specifications*
1. Garbage, cinders, ashes, oils, sludge or other refuse.	None in any waters of the marine district as defined by Environmental Conservation Law (§ 17-0105)
2. pH	The normal range shall not be extended by more than one-tenth (0.1) pH unit.
3. Turbidity.	No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.
4. Color.	None from man-made sources that will be detrimental to anticipated best usage of waters.
5. Suspended, colloidal or settleable solids.	None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.
6. Oil and floating substances.	No residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease.
7. Thermal discharges.	(See Part 704 of this Title.)

CLASS "SA"

Best usage of waters. The waters shall be suitable for shellfishing for market purposes and primary and secondary contact recreation.

Quality Standards for Class "SA" Waters

Items	*Specifications*
1. Coliform.	The median MPN value in any series of samples representative of waters in the shellfish-growing area shall not be in excess of 70 per 100 ml.
2. Dissolved oxygen.	Shall not be less than 5.0 mg/l at any time.
3. Toxic wastes and deleterious substances.	None in amounts that will interfere with use for primary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for their specific waters which are assigned to this class.

CLASS "SB"

Best usage of waters. The waters shall be suitable for primary and secondary contact recreation and any other use except for the taking of shellfish for market purposes.

Quality Standards for Class "SB" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. Dissolved oxygen.	Shall not be less than 5.0 mg/l at any time.
3. Toxic wastes and deleterious substances.	None in amounts that will interfere with use for primary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS "SC"

Best usage of waters. The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose.

Quality Standards for Class "SC" Waters

Items	*Specifications*
1. Coliform.	The monthly medial coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. Dissolved oxygen.	Shall not be less than 5.0 mg/l at any time

3. Toxic wastes and deleterious substances.	None in amounts that will interfere with use for secondary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS "SD"

Best usage of waters. All waters not primarily for recreational purposes, shellfish culture or the development of fishlife, and because of natural or man-made conditions cannot meet the requirements of these uses.

Quality Standards for Class "SD" Waters

Items	*Specifications*
1. Dissolved oxygen.	Shall not be less than 3.0 mg/l at any time.
2. Toxic wastes and deleterious substances.	None alone or in combination with other substances or wastes in sufficient amounts to prevent survival of fishlife, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

Historical Note
Sec. added by renum. 701.5, filed July 3, 1985, amd. filed Sept. 20, 1985 eff. 30 days after filing.

PART 702

SPECIAL CLASSIFICATIONS AND STANDARDS

(Statutory authority: Environmental Conservation Law, §§ 3-0301[2][m], 15-0313, 17-0301)

Historical Note
Part repealed, new filed: April 28, 1972; Feb. 25, 1974 eff. 30 days after filing.

Section 702.1 Class A – Special (International boundary waters).

(GREAT LAKES WATER QUALITY AGREEMENT OF 1972)

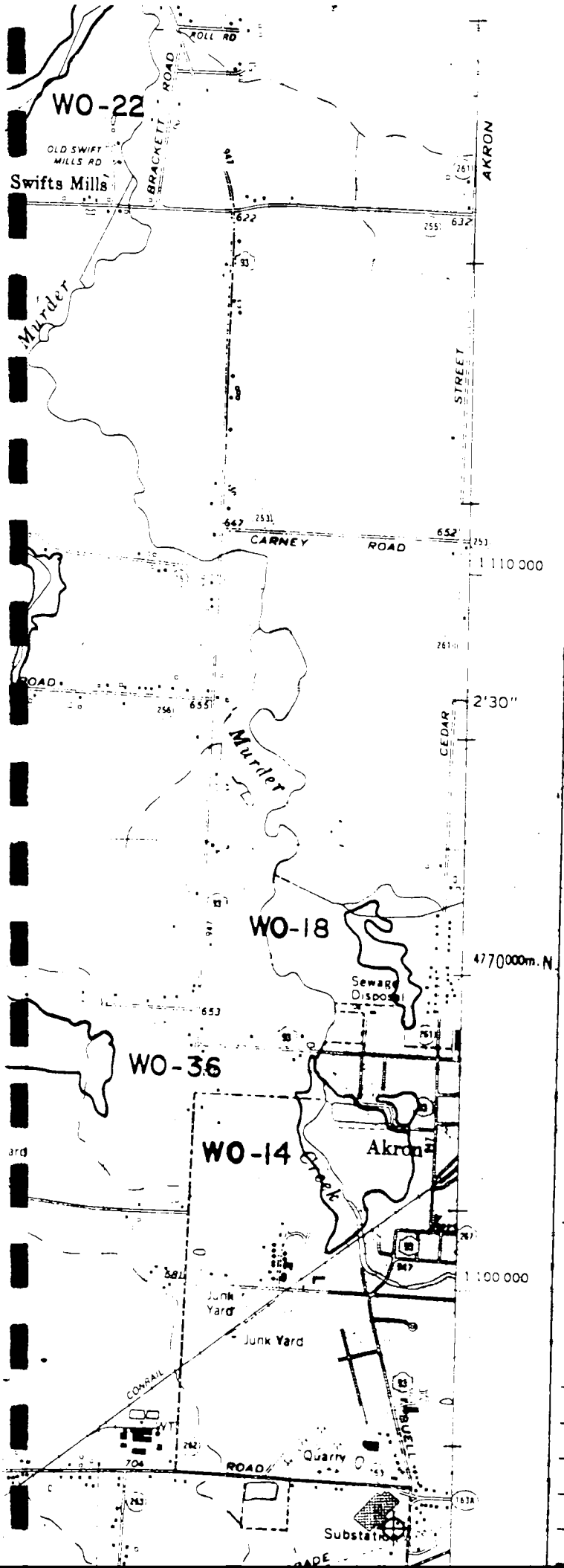
Best usage of waters. Source of water supply for drinking, culinary or food processing purposes, primary contact recreation and any other usages.

Conditions related to best usage. The waters, if subjected to approved treatment, equal to coagulation, sedimentation, filtration and disinfection with additional treatment, if necessary, to reduce naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class A – Special Waters (International Boundary Waters)

Items	*Specifications*
1. Coliform.	The geometric mean of not less than five samples taken over not more than a 30-day period should not exceed 1,000 per 100 ml total coliform nor 200 per 100 ml fecal coliform.
2. Dissolved oxygen.	In the rivers and upper waters of the lakes not less than 6.0 mg/l at any time. In hypolimnetic waters, it should be not less than necessary for the support of fishlife, particularly cold water species.

REFFERENCE 15



New York State Freshwater Wetlands Map

Erie County

Map 5 of 31

This map was promulgated, pursuant to Article 24 of the Environmental Conservation Law (The Freshwater Wetlands Act) on [redacted] by the Commissioner of New York State Department of Environmental Conservation.

LEGEND:

- Approximate wetland boundary
- Upland inclusion
- AA-00 Wetland identification code

NOTES:

This map indicates the approximate location of the actual boundaries of wetlands regulated according to the Freshwater Wetlands Act.

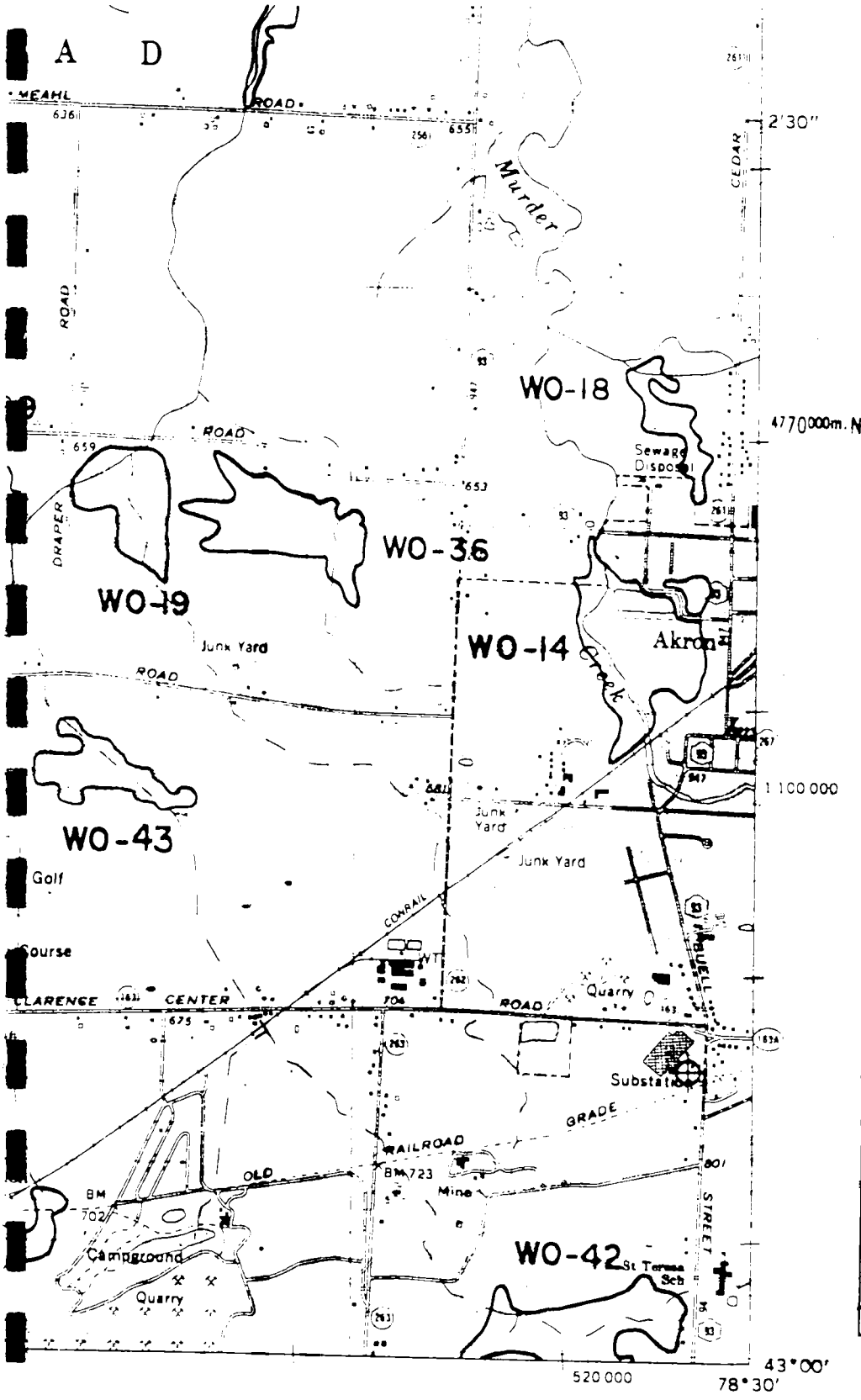
Map information other than the wetland boundaries was prepared by the New York State Department of Transportation and the United States Geological Survey. The locational information provided on the map is for reference only. Marsh symbols do not necessarily indicate the location of a regulated wetland.

Adjacent areas of the regulated wetlands are those areas within 100 feet of the boundary of the wetland. These areas are subject to regulation pursuant to the Freshwater Wetlands Act but are not delineated on this map. An adjacent area may be extended by special order of the Commissioner of the New York State Department of Environmental Conservation or the local regulatory authority.

Copies of Freshwater Wetlands Maps are available from the regional offices of the Department of Environmental Conservation. Maps are available for inspection at these offices and local government clerk's offices.

REVISIONS

Date	Wetland #	Description of change



boundary

U Upland inclusion

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REVISIONS

Date	Wetland #	Description of change

BOUNDARIES:

State
County
Town or City
Incorporated Village
Federal-Aid Urban Area

ROADS:

Touring Route markers:
Interstate
U. S.
State

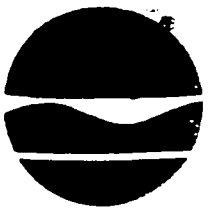
State Highway number and limit

Divided highways and streets:
Wide mall
Narrow mall or barrier

Undivided highways and streets:
4 or more lanes

REFFERENCE 16

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



Thomas C. Jorling
Commissioner

August 31, 1989

Randy W. Youngman
Engineering - Science, Inc.
290 Elwood Davis Road
Liverpool, New York 13088

Dear Mr. Youngman:

We have reviewed the Significant Habitat Unit and the NY Natural Heritage Program files with respect to your request for information concerning Phase II investigations of potentially hazardous waste disposal sites in New York State.

Enclosed you will find computer printouts covering the areas you requested to be reviewed by our staff. The information contained in this report is confidential and may not be released to the public without permission from the Significant Habitat Unit.

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

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

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

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

Sincerely,

Burrell Buffington

Burrell Buffington
Significant Habitat Unit

Encs.
cc: Regions

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

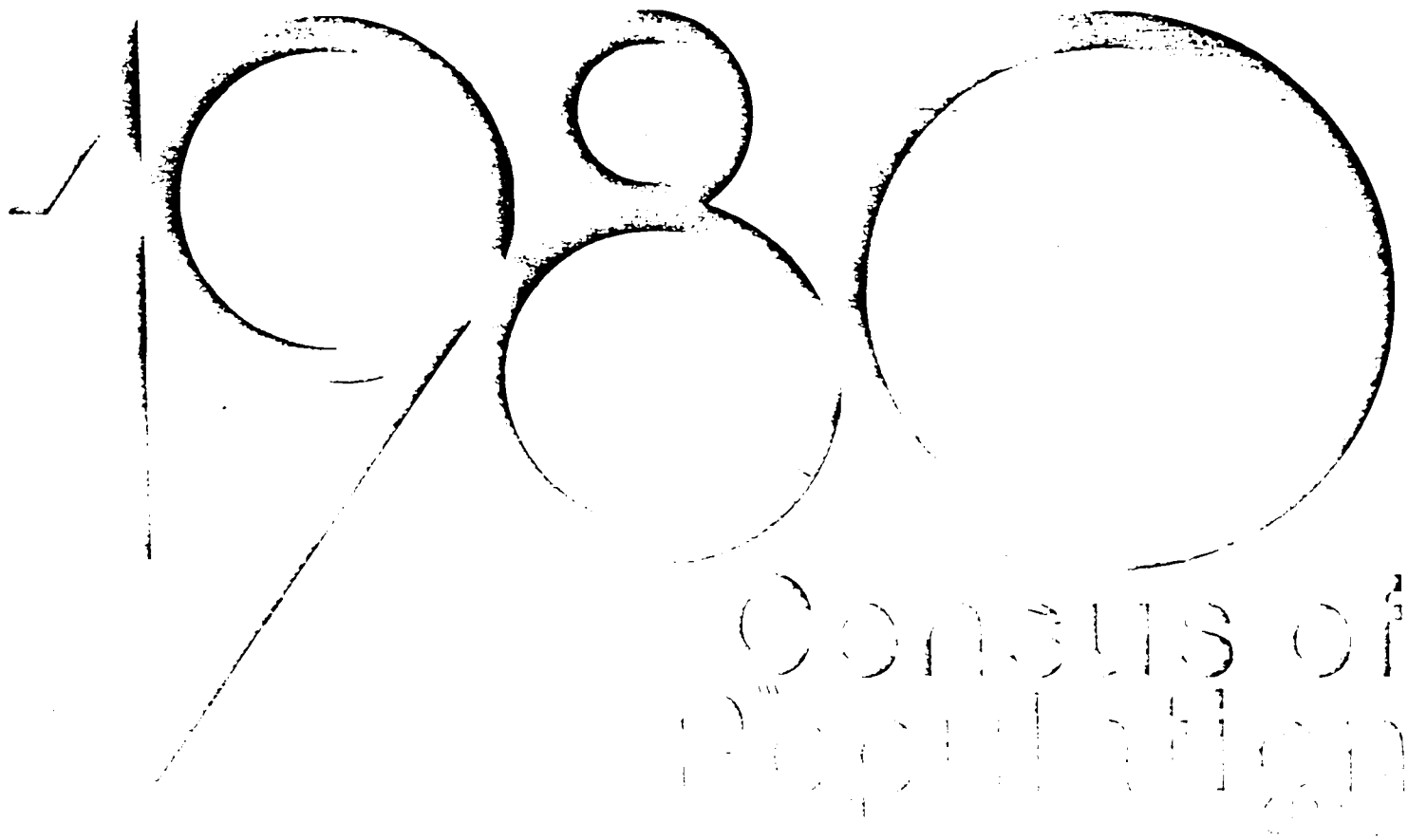
REFFERENCE 17

PC80-1-A34
N.Y.

CHARACTERISTICS OF THE POPULATION

Number of Inhabitants

NEW YORK



1980 Census of Population

VOLUME 1
CHARACTERISTICS OF THE POPULATION

CHAPTER A

Number of Inhabitants

PART 34

NEW YORK

PC80-1-A34

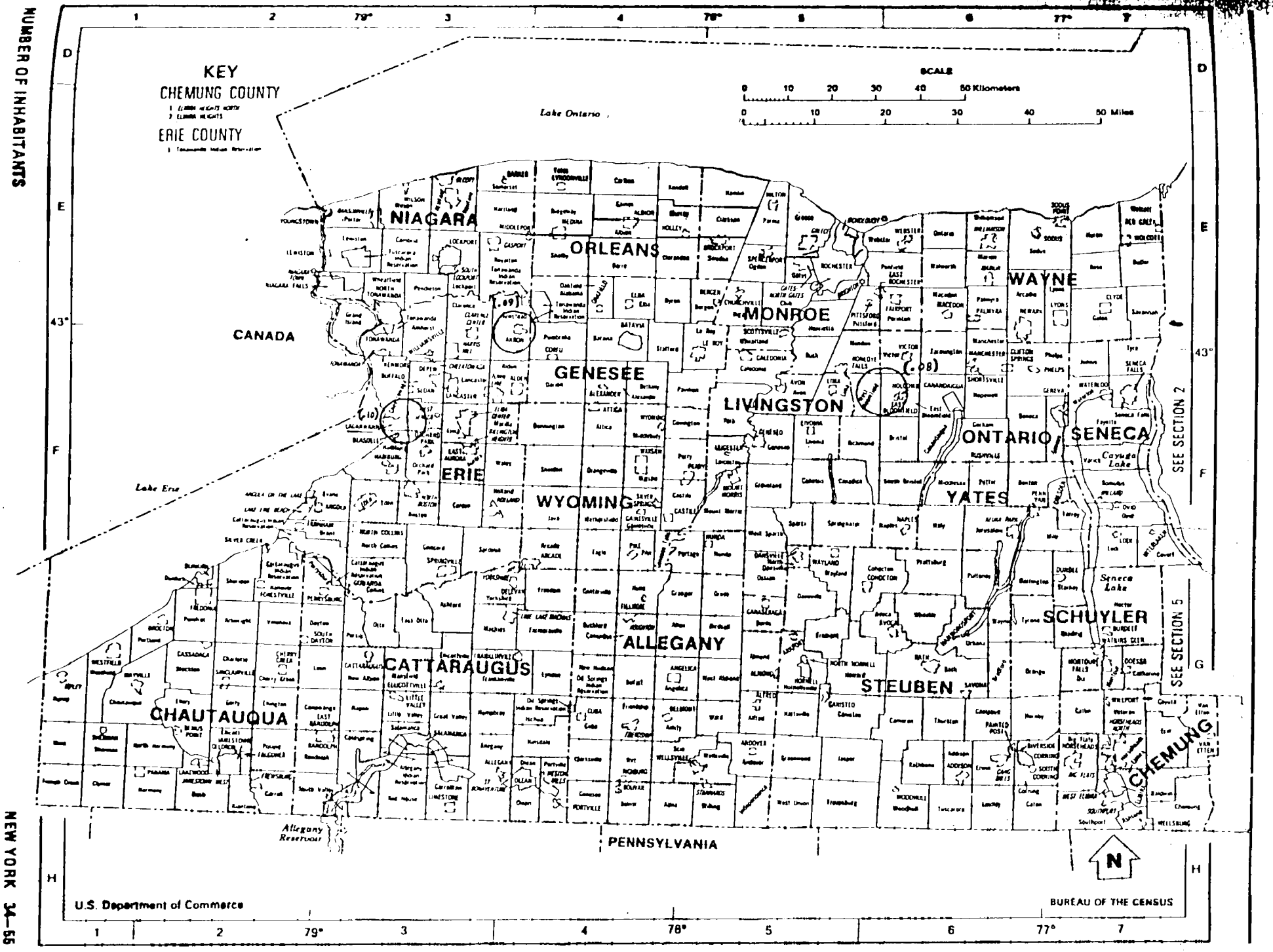
Issued February 1982

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

BUREAU OF THE CENSUS
Bruce Chapman,
Director

Data Index

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



NUMBER OF INHABITANTS

NEW YORK 34—55

Table 4. Population of County Subdivisions: 1960 to 1980—Con.

[Total population of a place in two or more county subdivisions appears in table 5. Counts relate to county subdivisions and places as defined at each census. F... symbols, see introduction]

County Subdivisions	1980	1970	1960
Cortland County—Con			
Virgil town	2 053	1 692	1 420
Willet town	747	621	535
Delaware County[1]	46 824	44 718	43 540
Andes town	1 312	1 193	1 274
Andes village	372	353	399
Bovina town	562	506	594
Colchester town	1 848	1 665	1 920
Davenport town	1 971	1 617	1 261
Delhi town	5 295	4 617	3 398
Delhi village	3 374	3 017	2 307
Deposit town	1 810	1 656	1 560
Deposit village (pt.)	88[illegible]	947	838
Franklin town	2 431	2 202	2 133
Franklin village	440	552	525
Hamden town	1 276	1 169	1 106
Hancock town	3 497	3 604	3 907
Hancock village	1 526	1 688	1 830
Harpersfield town	1 495	1 423	1 193
Stamford village (pt.)	499	521	428
Kortright town	1 250	1 236	1 073
Masonville town	1 156	1 140	1 030
Meredith town	1 374	1 129	1 112
Middletown town	3 555	3 466	3 310
Fleischmanns village	346	434	450
Margaretville village	755	816	833
Roxbury town	2 291	2 252	2 238
Sidney town	6 856	6 984	7 110
Sidney village[11]	4 861	4 789	5 157
Stamford town	2 038	2 072	2 103
Hobart village	473	531	585
Stamford village (pt.)	741	765	738
Tompkins town	968	905	1 463
Walton town	5 839	5 882	5 753
Walton village	3 329	3 744	3 855
Dutchess County	245 055	222 295	176 008
Amenia town	6 299	7 842	7 546
Amenia (CDP)	1 183	1 157	...
Dover Plains (CDP) (pt.)	511	...	...
Beacon city	12 937	13 255	13 922
Beekman town	7 139	5 701	3 326
Clinton town	3 394	2 604	1 639
Dover town	7 261	8 475	8 776
Dover Plains (CDP) (pt.)	1 183	...	...
East Fishkill town	18 091	11 092	4 778
Hillside Lake (CDP)	1 382	...	...
Hopewell Junction (CDP)	1 754	2 055	...
Sproutville (CDP)	2 303	1 871	...
Fishkill town	15 506	11 935	7 083
Brinckerhoff (CDP)	3 030	2 094	...
Brockway (CDP)	1 301	...	...
Fishkill village	1 555	913	1 033
Glenham (CDP)	2 832	2 720	...
Hyde Park town	20 768	16 910	12 681
Fairview (CDP) (pt.)	1 930	2 077	...
Haviland (CDP)	3 578	3 447	...
Hyde Park (CDP)	2 550	2 805	1 979
La Grange town	12 375	10 902	6 079
Red Oaks Mill (CDP) (pt.)	2 287	1 310	...
Milan town	1 668	1 322	944
North East town	2 877	2 730	2 489
Millerton village	1 013	1 042	1 027
Pawling town	5 795	4 764	3 938
Pawling village	1 996	1 914	1 734
Pine Plains town	2 199	1 792	1 608
Pine Plains (CDP)	1 303	...	...
Pleasant Valley town	6 892	6 021	4 046
Pleasant Valley (CDP)	1 255	1 372	...
Poughkeepsie city	29 757	32 029	38 330
Poughkeepsie town	39 549	41 087	32 164
Arlington (CDP)	11 305	11 203	8 317
Cottam Hill (CDP)	1 380	...	...
Crown Heights (CDP)	3 225	3 292	...
Fairview (CDP) (pt.)	3 922	6 440	8 626
Hills (CDP)	2 591	2 750	...
Red Oaks Mill (CDP) (pt.)	2 949	2 609	...
Rochdale (CDP)	1 825	1 849	1 800
Spackenkill (CDP)	4 848	2 725	...
Wappingers Falls village (pt.)	955	1 126	1 035
Wappingers Falls North (CDP)	1 799	...	...
Red Hook town	8 351	7 548	6 023
Red Hook village	1 692	1 680	1 719
Tivoli village	711	739	732
Rhinebeck town	7 062	5 658	4 612
Rhinebeck village	2 542	2 336	2 093
Stanford town	3 319	2 479	1 614
Union Vale town	2 658	1 702	1 138
Wappinger town	26 776	22 040	9 577
Myers Corner (CDP)	5 180	2 826	...
New Hackensack (CDP)	1 532	1 111	...
Wappingers Falls village (pt.)	4 155	4 481	3 412
Wappingers Falls East (CDP)	1 818	2 017	...
Washington town	4 387	4 407	3 695
Dover Plains (CDP) (pt.)	59	...	...
Millbrook village	1 343	1 735	1 717

County Subdivisions	1980	1970
Erie County[11]	1 015 472	1 113 491
Alden town	10 093	9 787
Alden village	2 488	2 651
Town Line (CDP) (pt.)	2 720	2 240
Amherst town	108 706	93 929
Williamsville village (pt.)[12]	6 017	6 878
Aurora town	13 872	14 426
Billington Heights (CDP) (pt.)	740	746
East Aurora village[12]	6 803	7 033
Boston town	7 687	7 158
North Boston (CDP)	2 743	1 635
Brant town	2 437	2 672
Farnham village	404	546
Buffalo city	357 870	462 768
Cattaraugus Indian Reservation	1 628	1 107
Cheektowaga town	109 442	113 844
Cheektowaga (CDP)	92 145	...
Depew village (pt.)[12]	12 768	14 392
Sloan village	4 529	5 216
Williamsville village (pt.)[12]	-	...
Clarence town	18 146	18 168
Clarence Center (CDP)	1 300	1 332
Harris Hill (CDP)	5 087	...
Colden town	3 128	3 020
Collins town	5 037	6 400
Gowanda village (pt.)	849	1 012
Concord town	8 171	7 573
Springville village	4 285	4 350
Eden town	7 327	7 644
Eden (CDP)	3 000	2 962
Elma town	10 574	10 011
Billington Heights (CDP) (pt.)	1 042	532
Elma Center (CDP)	2 459	2 784
Evans town	17 961	14 570
Angola village	2 292	2 676
Angola on the Lake (CDP)	1 907	1 573
Lake Erie Beach (CDP)	4 625	3 467
Grand Island town	16 770	13 977
Hamburg town	53 270	47 644
Blasdell village	3 288	3 910
Hamburg village[12]	10 582	10 215
Holland town	3 446	3 140
Holland (CDP)	1 347	...
Lackawanna city	22 701	28 657
Lancaster town	30 144	30 634
Depew village (pt.)	7 051	7 766
Lancaster village	13 056	13 365
Town Line (CDP) (pt.)	197	194
Marilla town	4 861	3 25[illegible]
Newstead town	7 231	6 32[illegible]
Akron village[2]	2 971	2 86[illegible]
North Collins town	3 791	4 09[illegible]
North Collins village	1 496	1 67[illegible]
Orchard Park town	24 359	19 97[illegible]
Orchard Park village[12]	3 671	3 73[illegible]
Sardinia town	2 792	2 50[illegible]
Tonawanda city	18 693	21 89[illegible]
Tonawanda Indian Reservation	12	1[illegible]
Tonawanda town	91 269	107 28[illegible]
Kenmore village	18 474	20 98[illegible]
Tonawanda (CDP)	72 795	...
Wales town	2 844	2 61[illegible]
West Seneca town	51 210	48 40[illegible]
West Seneca (CDP)	51 210	...
Essex County[11]	36 176	34 6[illegible]
Chesterfield town	2 398	2 0[illegible]
Keeseville village (pt.)	970	9[illegible]
Crown Point town	1 837	1 8[illegible]
Elizabethtown town	1 267	1 2[illegible]
Elizabethtown village	659	6[illegible]
Essex town	880	8[illegible]
Jay town	2 221	2 1[illegible]
Keene town	919	[illegible]
Lewis town	922	[illegible]
Minerva town	781	7[illegible]
Moriah town	5 139	5 [illegible]
Mineville-Witherbee (CDP)	1 925	1 [illegible]
Port Henry village	1 450	1 [illegible]
Newcomb town	681	[illegible]
North Elba town	6 597	5[illegible]
Lake Placid village	2 490	2[illegible]
Saranac Lake village (pt.)[11]	1 288	1[illegible]
North Hudson town	179	[illegible]
St Armand town	1 064	[illegible]
Bloomingdale village	608	[illegible]
Saranac Lake village (pt.)	174	[illegible]
Schroon town	1 606	1[illegible]
Ticonderoga town	5 436	5[illegible]
Ticonderoga village[11]	2 938	3[illegible]
Westport town	1 439	1[illegible]
Westport village	613	[illegible]
Willsboro town	1 759	1[illegible]
Wilmington town	1 051	[illegible]
Franklin County[11]	44 929	43 [illegible]
Altamont town	6 318	6[illegible]
Tupper Lake village[11]	4 478	[illegible]
Bangor town	1 960	1[illegible]

See footnotes at end of table.

Ref. Census DATA 1990

Site: Houdaille (09) Erie/Genesee County

3 mile: includes Akron village and portions of surrounding Newstead Town. Not including portion in Genesee Co.

	Total Pop.	% in area	actual
Akron	2,971	100	2,971
Newstead Town	7231		
-Akron pop	= 4260	25	1065
Total			4036

2 mile: includes Approximately All of Akron Village

Akron	2,971	100	2,971
total			2,971

1 mile includes approximately 25% of the village of Akron:

Akron	2,971	25%	743
total			743

REFFERENCE 18

30′ 15′ 79° 45′ 30′ 15′ 78° 45′ 30′ 15′

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

N

PRIME FARMLAND OF NEW YORK

INTERPRETATIONS DERIVED FROM GENERAL SOIL MAP COMPILED BY CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION
CONSTRUCTED 1977 BY CARTOGRAPHIC DIVISION, SOIL CONSERVATION SERVICE, U.S. DEPARTMENT OF AGRICULTURE

AUGUST 1979

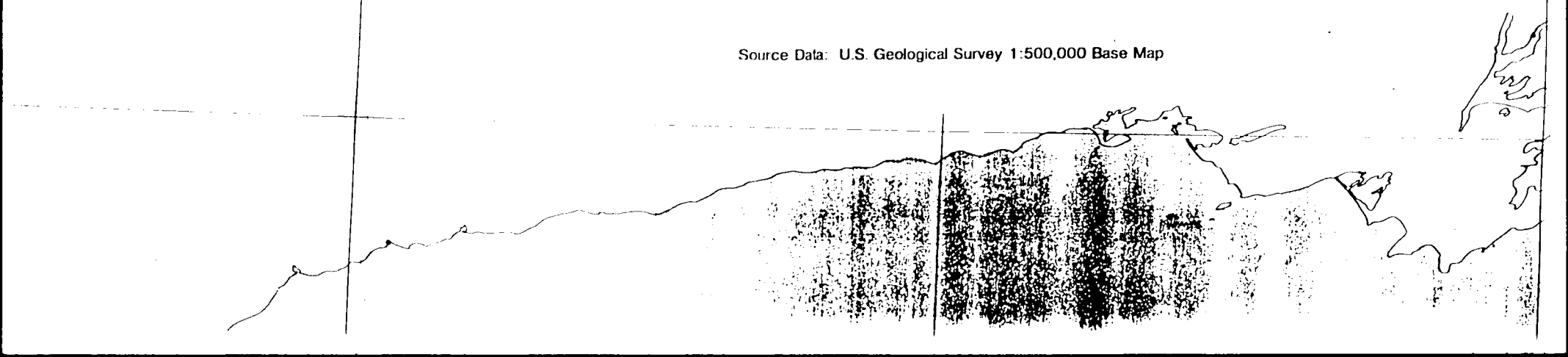
Scale 1: 750,000

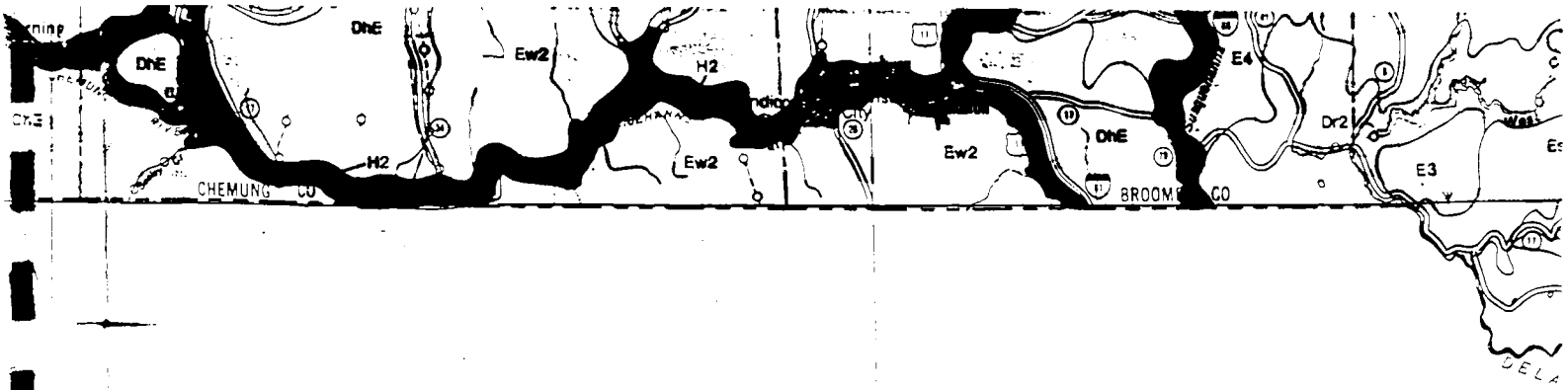
1 Inch Equals Approximately 12 Miles

10 0 10 20 30 40 Miles

10 0 10 20 30 40 50 Kilometers

Source Data: U.S. Geological Survey 1:500,000 Base Map





LEGEND

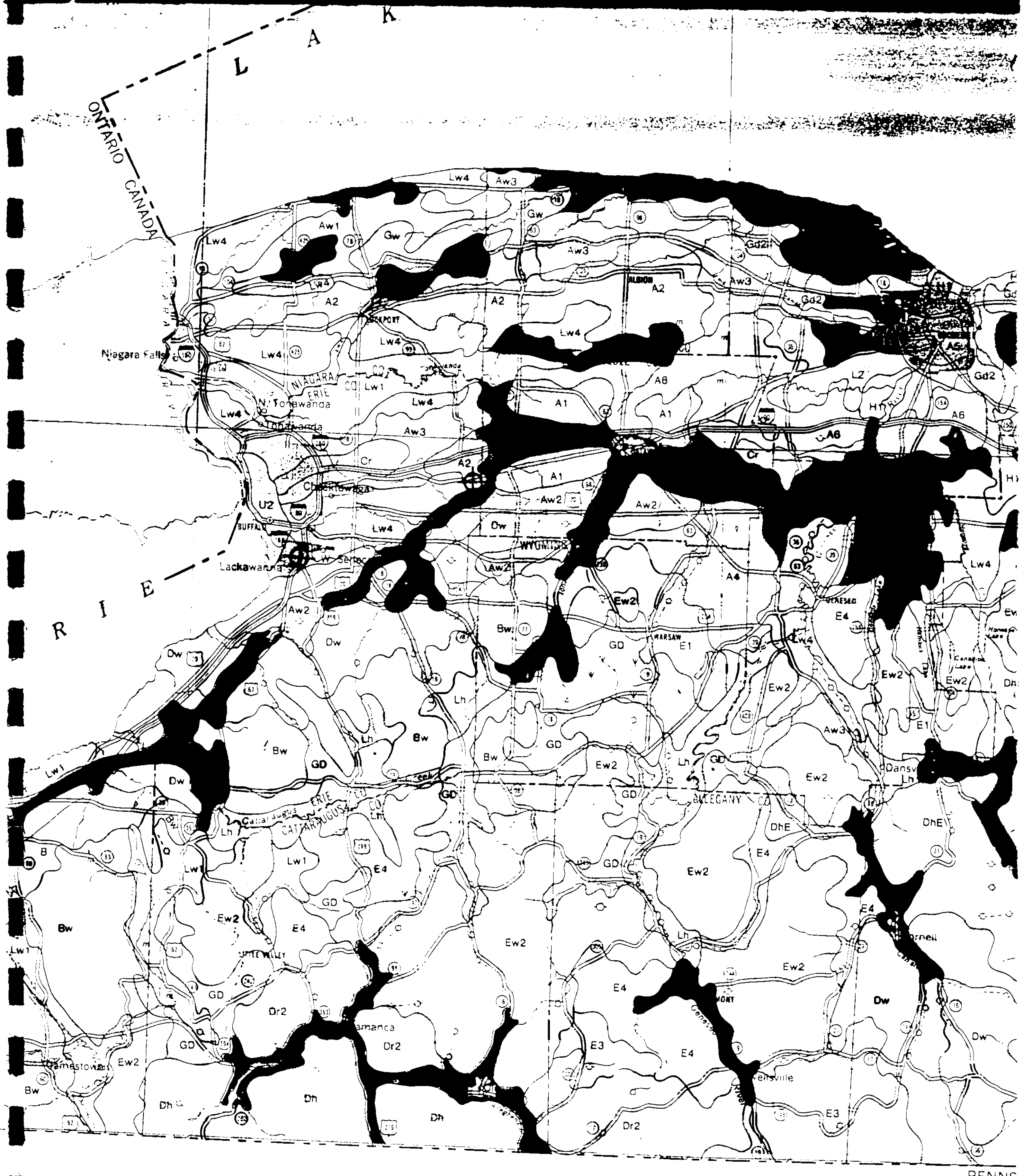
Prime Farmland Defined By USDA - SCS

- MORE THAN 75 PERCENT PRIME FARMLAND
- 25 PERCENT TO 75 PERCENT PRIME FARMLAND
- LESS THAN 25 PERCENT PRIME FARMLAND
- URBAN AREAS

SPOT SYMBOLS

- s — Very stony soils
- y — Wet soils
- m — Organic soils
- Sandy soils
- v — Rock outcrops
- Soils in outwash or alluvium
- Gravelly soils
- ---- Soils on glacial lake beaches

77° 45′ 30′ 15′ 76° 45′ 30′ 15′


L A K
ONTARIO
CANADA
R I E
Niagara Falls
N. Tonawanda
Tonawanda
Cheektowaga
BUFFALO
Lackawanna
ALBION
WARSAW
GENESEO
ERIE
CATTARAUGUS
ALLEGANY
Jamestown
PENNS
Lw4
Aw3
Aw1
Gw
A2
Gd2
A1
A6
Cr
Aw2
Dw
U2
A4
Ew2
Bw
E1
GD
Lh
E4
Lw1
DhE
Dr2
Dh
E3

REFFERENCE 19

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
TRANSMITTAL STATEMENT

..
. reply
refer to)
413

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

Date 6 June 1988

To:

Engineering Science
290 Elwood Davis
Liverpool, NY 13088

Attn: William Bradford

☐ We are enclosing:

☐ We are sending under separate cover:

NUMBER	ITEM	DESCRIPTION
1	Printout	

COMMENTS

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

NAME AND TITLE	SIGNATURE
Christine Peleszak Andrews	

14-16 Market St
Reference No. 84002376

Wappingers Falls Historic District — Listed 09/20/84
(Wappingers Falls MRA)
Roughly bounded by South Ave., Elm, Main, Park, Walker, Market, and McKinley Sts.
Reference No. 84002380

Washington

Lynfeld — Listed 03/19/87
South Rd.
Reference No. 87000474

Erie County

Buffalo

17--21 Emerson Place Row — Listed 03/19/86
(Masten Neighborhood Rows TR)
17--21 Emerson Pl.
Reference No. 86000689

33--61 Emerson Place Row — Listed 03/19/86
(Masten Neighborhood Rows TR)
33--61 Emerson Pl.
Reference No. 86000691

Albright-Knox Art Gallery — Listed 05/27/71
(Albright Art Gallery)
1285 Elmwood Ave., in Delaware Park
Reference No. 71000538

Allentown Historic District — Listed 04/21/80
Off NY 384
Reference No. 80002605

Berkeley Apartments — Listed 10/15/87
(Graystone Hotel)
24 Johnson Park
Reference No. 87001852

Blessed Trinity Roman Catholic Church Buildings — Listed 08/03/79
317 LeRoy Ave
Reference No. 79001579

Buffalo Gas Light Company Works — Listed 09/01/76
(Jackson Plant;National Fuel Gas Company)
249 W. Genesee St.
Reference No. 76001215

Buffalo Main Light — Listed 07/19/84
(U.S. Coast Guard Lighthouses and Light Stations on the Great Lakes TR)
Buffalo River
Reference No. 84002383

Buffalo North Breakwater South End Light — Listed 08/04/83
(U.S. Coast Guard Lighthouses and Light Stations on the Great Lakes TR)
Buffalo Harbor
Reference No. 83001689

State Asylum for the Insane — Listed 06/24/86
(Lunatic Asylum;Buffalo Psychiatric Center)
Forest Ave.
Reference No. 86003557

Hospital — Listed 01/18/73
Asylum)
Ave.
73001186

Historical Society — Listed 04/23/80
County Historical Society Building Na
Landmark;The New York State Building, Pan-Am Expo)
Jam Ct.
Reference No. 80002606

City Hall — Listed 05/24/76
County Hall)
Main St

	Reference No. 83001673	
	St. Andrew's Evangelical Lutheran Church Complex (Deliverance Temple of God & Christ) Sherman and Peckham Sts. Reference No. 83001674	Listed 09/08/83
	St. Paul's Cathedral 139 Pearl St. Reference No. 87002600	Listed 12/23/87
	Theodore Roosevelt Inaugural National Historic Site (Wilcox,Ansley,House) 641 Delaware Ave. Reference No. 66000516	Listed 11/02/66
	U.S. Post Office (Federal Office Building) 121 Ellicott St. Reference No. 72000839	Listed 03/16/72
	USS THE SULLIVANS (destroyer) (DD-537) 1 Naval Cove Pk. Reference No. 86000085	Listed 01/14/86
	West Village Historic District Roughly bounded by S. Elmwood Ave., Chippewa, Georgia, Prospect, Carolina and Tracy Sts. Reference No. 80002610	Listed 05/06/80
	Woodlawn Avenue Row [Masten Neighborhood Rows TR] 75--81 Woodlawn Ave. Reference No. 86000690	Listed 03/19/86
	Young Men's Christian Association Central Building 45 W. Mohawk St. Reference No. 83001676	Listed 09/08/83
Cheektowaga		
	Chapel Of Our Lady Help Of Christians (Maria Hilf Chapel) 4125 Union Rd. Reference No. 78001851	Listed 12/14/78
Clarence Center		
	Eshelman, J., and Company Store (The Square Deal Store) 6000 Goodrich Rd. Reference No. 82003356	Listed 05/06/82
East Aurora		
	Fillmore, Millard, House 24 Shearer Ave. Reference No. 74001235	Listed 05/30/74
	Roycroft Campus (Roycroft Campus National Historic Landmark) Main and W. Grove Sts. Reference No. 74001273	Listed 11/08/74
Hamburg Vicinity		
	Kleis Site (NYSDHP Unique Site No. A089-15-0013;U.S. 224,Edn 1-3) Address Restricted Reference No. 79001330	Listed 04/20/79
Irving		
	Thomas Indian School (Thomas Asylum of Orphan and Destitute Indian Children) NY 438 on Cattaraugus Reservation Reference No. 73001183	Listed 01/25/73
Kenmore		
	Eberhardt Mansion 2746 Delaware Ave. Reference No. 83001671	Listed 09/08/83
North Collins Vicinity		
	Gamel Hexadecagon Barn	Listed

[Central Plan Dairy Barns of New York TR]	09/29/84
Shirley Rd.	
Reference No. 84002386	
Orchard Park	
Johnson-Jolls Complex	Listed
(Dr. Willard B. Jolls House)	05/06/80
S-4287 S. Buffalo St.	
Reference No. 80002611	
Rhinebeck	
Salisbury Turnpike Bridge	Listed
[Rhinebeck Town MRA]	07/09/87
Old Turnpike Rd.	
Reference No. 87001100	
West Seneca	
Eaton Site	Listed
(NYSDHP Unique Site no. A-029-25-0003,Buffalo E,Buf 2-4 , & U.B. 221)	04/03/79
Address Restricted	
Reference No. 79001581	
Williamsville	
Williamsville Water Mill Complex	Listed
56 and 60 Spring St.	09/22/83
Reference No. 83001675	
Essex County	
Adirondack State Forest Preserve	
Adirondack Forest Preserve	Listed
NE New York State	10/15/66
Reference No. 66000891	
Crown Point	
Fort St. Frederic	Listed
Jct. of NY 8 and 9N	10/15/66
Reference No. 66000517	
Fort Crown Point	Listed
(Fort Amherst;Fort St. Frederic)	11/24/68
Crown Point Reservation, SW of Lake Champlain Bridge and NY 8	
Reference No. 68000033	
Elizabethtown	
Hand-Hale Historic District	Listed
River and Maple Sts.	03/05/79
Reference No. 79001582	
Essex Vicinity	
Church of the Nazarene	Listed
(Boquet Chapel)	06/19/73
W of Essex on NY 22	
Reference No. 73001189	
Octagonal Schoolhouse	Listed
On Rte. 22 in Bouquet	01/17/73
Reference No. 73001190	
Essex and Vicinity	
Essex Village Historic District	Listed
Town of Essex and surroundings on W bank of Lake Champlain	05/28/75
Reference No. 75001187	
Ironville	
Ironville Historic District	Listed
Area surrounding Ironville including Furnace St. and Penfield Pond	12/27/74
Reference No. 74001237	
Keeseville	
Dougle-Span Metal Pratt Truss Bridge	Listed
[Keeseville Village MRA]	05/20/83
AuSable St	
Reference No. 83001665	
Keeseville Historic District	Listed

Reference No. 76001216	
Delaware Avenue Historic District	Listed
W side of Delaware Ave. between North and Bryant Sts.	01/17/74
Reference No. 74001232	
Dorsheimer, William, House	Listed
(Percival G. Bixby & Co.,Building)	11/21/80
434 Delaware Ave.	
Reference No. 80002607	
Durham Memorial A.M.E. Zion Church	Listed
(St. Luke's A.M.E. Zion Church)	09/15/83
174 E. Eagle St.	
Reference No. 83001670	
Fosdick-Masten Park High School	Listed
Masten Ave. and E. North St.	06/30/83
Reference No. 83001672	
Lafayette High School	Listed
370 Lafayette Ave.	12/03/80
Reference No. 80002608	
Laurel and Michigan Avenues Row	Listed
[Masten Neighborhood Rows TR]	03/19/86
1335--1345 Michigan Ave.	
Reference No. 86000688	
Macedonia Baptist Church	Listed
(Michigan Street Baptist Church)	02/12/74
511 Michigan Ave.	
Reference No. 74001233	
Martin, D. D., House Complex	Listed
(George Barton House;Gardener's Cottage;See Also:Martin , Darwin D., House)	12/30/75
[Olmstead Parks and Parkways TR (AD)]	
123 Jewett Pkwy.	
Reference No. 75001185	
Martin, Darwin D., House	Listed
(Martin, Darwin D., House National Historic Landmark;See Also:Martin House Complex)	02/24/86
125 Jewett Pkwy.	
Reference No. 86000160	
New York Central Terminal	Listed
(Buffalo Central Terminal)	09/07/84
495 Paderewski Dr.	
Reference No. 84002389	
Parkside East Historic District	Listed
(See Also:Martin House Complex)	10/17/86
[Olmsted Parks and Parkways TR]	
Roughly bounded by Parkside Ave., Amherst St., Colvin Ave., NY Central RR tracks, Main St., and Humboldt Ave.	
Reference No. 86002817	
Parkside West Historic District	Listed
[Olmsted Parks and Parkways TR]	12/10/86
Roughly bounded by Amherst St., Nottingham Terr., Middlesex Rd., and Delaware Ave.	
Reference No. 86003372	
Pierce Arrow Factory Complex	Listed
Elmwood and Great Arrow Aves.	10/01/74
Reference No. 74001234	
Prudential Building	Listed
(Guaranty Building)	03/20/73
Church and Pearl Sts.	
Reference No. 73001187	
Shea's Buffalo Theater	Listed
(The Buffalo Theater)	05/06/75
646 Main St.	
Reference No. 75001186	
South Buffalo North Side Light	Listed

REFFERENCE 20

STRIPPIT-DIARCO DIVISION

HOUDAILLE INDUSTRIES

AKRON, NEW YORK

SITE # 915053

Prepared by:

Erie County Department of
Environment and Planning

December 1984

BACKGROUND

The plant was operated by the Buffalo Arms Company during the 40's and early 50's. The Srippit Corporation purchased the plant in 1956 and used the disposal site until about 1975.

Strippit personnel reported that the Buffalo Arms Company used the site to dispose of spent cartridges, scrap lead and steel.

Prior inspection reports and ECDEP files indicate that the Strippit Corporation disposed of steel and iron fines, carbon dust, paint solids and heat treating sludge at this site.

After 1975, the site was inactive except for some clay cover over the site during a plant expansion period.

LOCATION

The plant is located at 12975 Clarence Center Road in the Town of Newstead. The disposal site is located immediately southwest of the plant fenced-in area. The disposal area is not fenced in and is accessible to foot traffic. The site is approximately 200 ft. square.

AERIAL PHOTOGRAPHY

Available photos show the site was still active in 1972. Photos prior to 1972 were not available at the time this report was prepared.

FIELD INSPECTION

Most of the disposal area has a clay cover and is overgrown with grass, shrubs and some small trees. The section nearest the plant is clay covered and has sparse vegetation. The company is storing some metal shelves and ladders in this area. Tire tracks across the site indicate that a three wheeled ATV had recently been driven in the area.

ENVIRONMENTAL DATA

Soil is silty and clayey with pH greater than 6.5. Composition is 30% to 50% sand with slow permeability.

Bedrock is jointed shale at a depth greater than 4 feet.

Water - The natural water table is perched 2 feet to 4 feet below the surface.

The area has a municipal water supply system to the east, west and north. The area immediately south of the disposal area would be served by individual wells. The slope of the land is toward the north. Natural drainage ditches on company property flow to the north and eventually empty into Murder Creek.

LAND USE

The area to the south and west is farmland. To the east and northeast is a park. The village of Akron lies directly north of the plant.

SAMPLING

On December 15, 1981 the NYSDEC collected five soil samples and three water samples on Strippit Corporation property. The analysis report on these samples and a map showing sampling sites is attached.

SAMPLING RESULTS

Sample analyses indicate high levels of arsenic, chromium, lead and chlorinated inorganics in one or more of the soil samples. High arsenic levels are also found in all three water samples.

The sample data does not show any analysis for barium. However, barium salts were a major component of the heat treating sludge that was disposed of at this site.

CONCLUSION

Groundwater effects are not known. Further test borings, samples should be taken to obtain additional groundwater quality data and properly classify the site. The site also needs to be delineated by the sampling program. The owner should be contacted to perform an acceptable testing program and site remediation.

TABLE 1

HOUDAILLES INDUSTRIES - STRIPPIT DIVISION

Soil Analyses

COMPOUND	UNITS	#1	#2	#3	#4	#5
Antimony	ug/g dry	10	< 40	< 5	< 7	< 6
Arsenic	ug/g dry	5.5	190	2.4	14	8.2
Beryllium	ug/g dry	< 0.3	< 2	< 0.3	< 0.4	< 0.3
Cadmium	ug/g dry	0.39	< 9	< 0.1	0.44	1.2
Chromium	ug/g dry	11	18	5.7	8.8	31
Copper	ug/g dry	14	40	36	15	59
Lead	ug/g dry	19	140	21	19	100
Mercury	ug/g dry	< 0.3	< 2	< 0.2	< 0.3	0.68
Nickel	ug/g dry	15	35	12	23	29
Selenium	ug/g dry	< 0.6	< 3	0.35	< 0.2	0.7
Silver	ug/g dry	< 0.3	< 2	< 0.3	< 0.4	< 0.3
Thallium	ug/g dry	< 3	< 20	< 3	< 4	< 3
Zinc	ug/g dry	110	360	21	91	1,000
Dry Weight	%	88	16	66	82	41
Halogenated Organic Scan	ug/g dry as Cl2, Lindane Std.	< 0.5	< 0.5	9.5	< 0.5	26

SAMPLES COLLECTED BY NYSDEC 12/15/81

SURFACE
Water Analyses

TABLE 2

COMPOUND	UNITS	SAMPLE LOCATIONS - Station # #2	#3	#5
Antimony	mg/l	< 0.2	< 0.2	< 0.2
Arsenic	ug/l	42	23	24
Beryllium	mg/l	< 0.01	< 0.01	< 0.01
Cadmium	mg/l	< 0.005	< 0.005	< 0.005
Chromium	mg/l	< 0.005	< 0.005	< 0.005
Copper	mg/l	< 0.006	< 0.006	< 0.006
Lead	mg/l	< 0.04	< 0.04	< 0.04
Mercury	ug/l	< 3	< 3	< 3
Nickel	mg/l	< 0.02	0.07	< 0.02
Selenium	ug/l	8.9	10	< 5
Silver	mg/l	< 0.01	< 0.01	< 0.01
Thallium	mg/l	< 0.1	< 0.1	< 0.1
Zinc	mg/l	0.039	0.063	0.167
Halogenated Organic Scan	ug/l as Cl_2 Lindane Std.	< 0.3	< 0.3	< 0.3

SAMPLES COLLECTED BY NYSDEC 12/15/81

FIGURE 1

IPPIT DIV. – HOUDAILLE IND.

-15-81 LOCATION OF SAMPLE POINTS IN TABLES 1 & 2

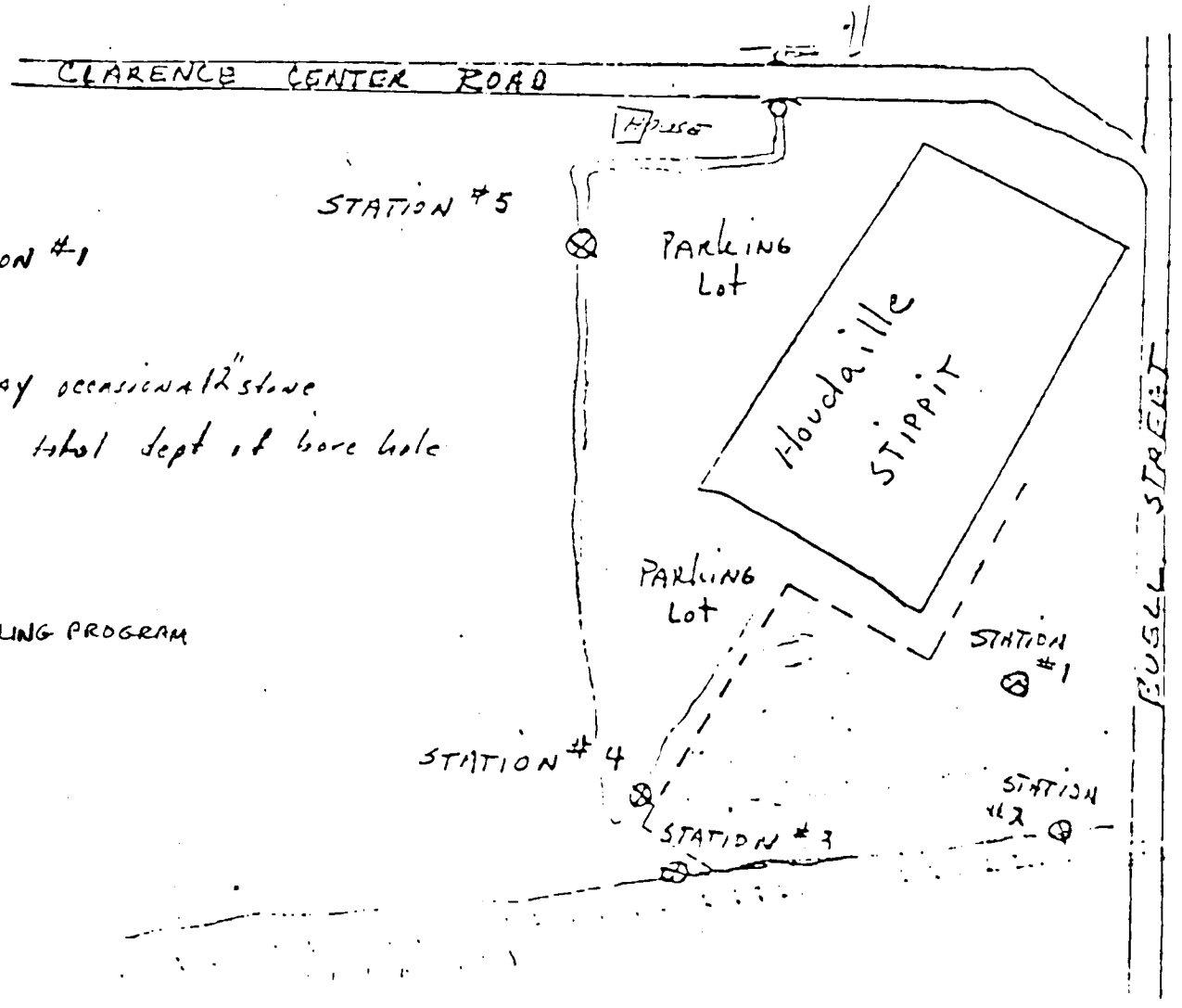
ON # 1 – soil sample in cut field east side of filled AREA

TION # 2 – WATER & Silt sample from ditch parrelleling Rail Road bed along south side of landfill – off south east Co.

ATION # 3 – WATER & Silt sample from ditch parrelleling Rail Road bed along south side of landfill – off South west Co. of filled area

TION #4 – Soil sample in south east Co. of parking lot

STION #5 – WATER & Silt sample from ditch draining North side of fill AREA AND parking lot



Hole #1 STATION #1

9" Top soil

4'3" silty Clay occasional 12" stone

5' obstruction total dept of bore hole

NYSDEC SAMPLING PROGRAM

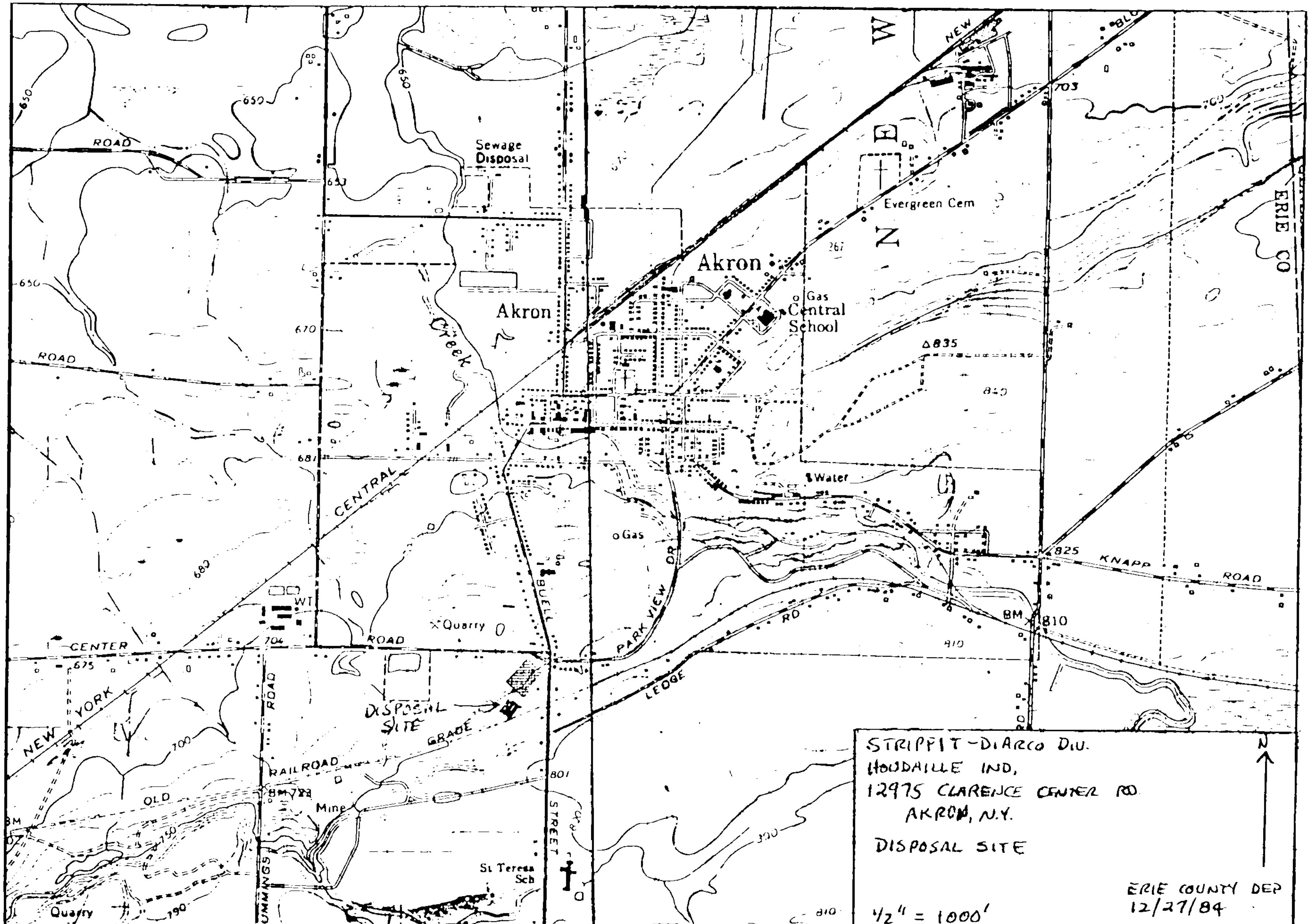
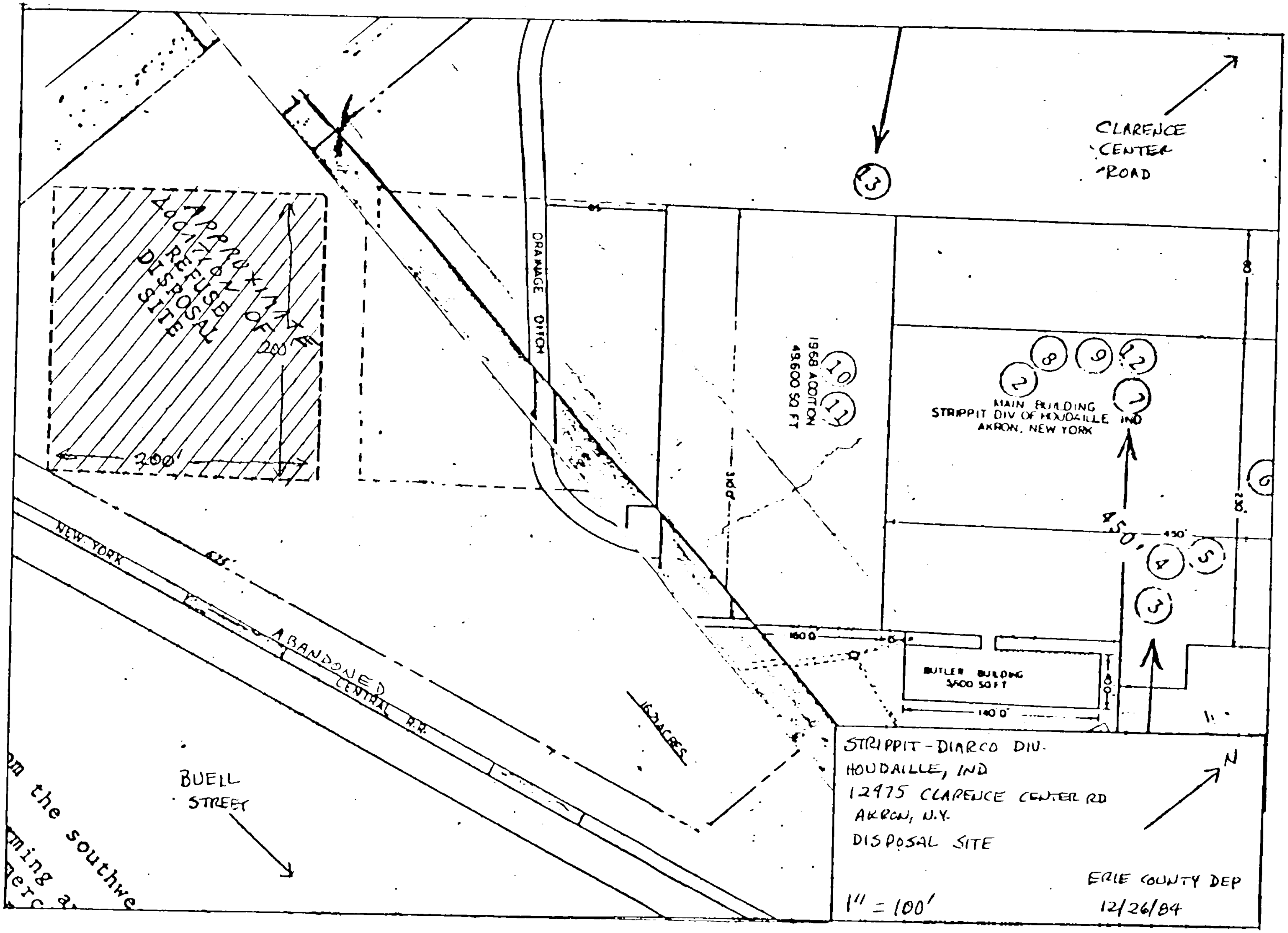

STRIPPIT-DiARCO DIV.
HOUDAILLE IND.
12975 CLARENCE CENTER RD
AKRON, N.Y.
DISPOSAL SITE
1/2" = 1000'
ERIE COUNTY DEP
12/27/84
N
DISPOSAL SITE
Akron
Akron
Central School
Evergreen Cem
Sewage Disposal
Creek
Water
Gas
Quarry
Mine
St Teresa Sch
KNAPP ROAD
LEDGE RD
PARK VIEW DR
BUELL
STREET
CENTER ROAD
NEW YORK CENTRAL
RAILROAD GRADE
OLD
ERIE CO

FIGURE 2



CLARENCE CENTER ROAD
13
APPROXIMATE LOCATION OF REFUSE DISPOSAL SITE
200'
DRAINAGE DITCH
1968 ADDITION 43600 SQ FT
10
11
2
8
9
12
7
MAIN BUILDING
STRIPPIT DIV OF HOUDAILLE IND
AKRON, NEW YORK
6
450'
4
5
3
BUTLER BUILDING
3600 SQ FT
140'
180'
NEW YORK ABANDONED CENTRAL R.R.
16.2 ACRES
BUELL STREET
STRIPPIT - DIARCO DIV.
HOUDAILLE, IND
12975 CLARENCE CENTER RD
AKRON, N.Y.
DISPOSAL SITE
N
ERIE COUNTY DEP
12/26/84
1" = 100'

FIGURE 3

REFFERENCE 21

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

EPA

REGION: 2 | SITE NUMBER (To be assigned by HQ): NY000003570

USEF 1980

REF-15

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II (*Preliminary Assessment*). File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (*EN-335*); 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME: HOUDAILLES INDUST.

B. STREET (*or other identifier*): 1295 CLARENCE CTR. RD.

C. CITY: AKRON

D. STATE: NY

E. ZIP CODE: 14001

F. COUNTY NAME: ERIE

G. OWNER/OPERATOR (*If known*)

1. NAME: HOUDAILLES IND.

2. TELEPHONE NUMBER:

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☑ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION: STRIPPIT DIV. SOLID WASTE DISPOSAL SITE USED 1957 TO 1975 FOR DISPOSAL OF ABOUT 216 DRUMS OF HEAT TREATMENT SLUDGE

J. HOW IDENTIFIED (*I.e., citizen's complaints, OSHA citations, etc.*): NYS DEC

K. DATE IDENTIFIED (*mo., day, & yr.*): 4/15/80

L. PRINCIPAL STATE CONTACT

1. NAME: PETER BUECHI

2. TELEPHONE NUMBER: 716-842-5826

II. PRELIMINARY ASSESSMENT (*complete this section last*)

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☑ 3. LOW ☐ 4. NONE ☐ 5. UNKNOWN

B. RECOMMENDATION

☐ 1. NO ACTION NEEDED (*no hazard*)

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☑ 4. SITE INSPECTION NEEDED (*low priority*)

C. PREPARER INFORMATION

1. NAME: KARL MANGELS

2. TELEPHONE NUMBER: 264-1573

3. DATE (*mo., day, & yr.*): 11-16-81

III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE (*Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if intermittently.*)

☑ 2. INACTIVE (*Those sites which no longer receive wastes.*)

☐ 3. OTHER (*specify*): _____ (*Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.*)

B. IS GENERATOR ON SITE?

☐ 1. NO ☑ 2. YES (*specify generator's four-digit SIC Code*):

C. AREA OF SITE (*In acres*): UNKNOWN

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES

1. LATITUDE (*deg.—min.—sec.*):

2. LONGITUDE (*deg.—min.—sec.*):

E. ARE THERE BUILDINGS ON THE SITE?

☐ 1. NO ☑ 2. YES (*specify*): PLANT

(USEPA, 1980)

Continued From Front

IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

	X	A. TRANSPORTER	X	B. STORER	X	C. TREATER	X	D. DISPOSER
		1. RAIL		1. PILE		1. FILTRATION	X	1. LANDFILL
		2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
		3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
		4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
		5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS. TREATMENT		5. MIDNIGHT DUMPING
		6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
						7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
						8. SOLVENT RECOVERY		8. OTHER (specify):
						9. OTHER (specify):		

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

V. WASTE RELATED INFORMATION

A. WASTE TYPE

☐ 1. UNKNOWN ☐ 2. LIQUID ☑ 3. SOLID ☑ 4. SLUDGE ☐ 5. GAS

B. WASTE CHARACTERISTICS

☐ 1. UNKNOWN ☐ 2. CORROSIVE ☐ 3. IGNITABLE ☐ 4. RADIOACTIVE ☐ 5. HIGHLY VOLATILE
☑ 6. TOXIC ☐ 7. REACTIVE ☐ 8. INERT ☐ 9. FLAMMABLE

☐ 10. OTHER (specify):

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT 12	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT ?
UNIT OF MEASURE Drums	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
X (1) PAINT, PIGMENTS	X (1) OILY WASTES	X (1) HALOGENATED SOLVENTS	X (1) ACIDS	X (1) FLYASH	X (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER (specify):	(2) NON-HALOGNTD SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER (specify):	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	X (4) MUNICIPAL
(5) OTHER (specify): HEAT TREATMENT SLUDGE (~216 Drums) PROCESS USED $BaCl_2$ NA NO_3 SALTS			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER (specify):
			(6) CYANIDE	(6) OTHER (specify):	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER (specify)		

Continue On Page 3

(USEPA, 1980

From Page 2

V. WASTE RELATED INFORMATION (continued)

SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (place in descending order of hazard).

HEAT TREATMENT SLUDGE FROM STRIPPIT DIV

SPENT CARTRIDGES, LEAD AND STEEL FROM BUFFALO ARMS COMPANY FORMER OWNER

ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

DUMP SITE IS CLOSED AND GRADED

VI. HAZARD DESCRIPTION

TYPE OF HAZARD	B. POTENTIAL HAZARD (mark 'X')	C. ALLEGED INCIDENT (mark 'X')	D. DATE OF INCIDENT (mo., day, yr.)	E. REMARKS
ZARD				
HEALTH				
ORKER Y/EXPOSURE				
ORKER INJURY				
AMINATION ATER SUPPLY	X			
ONTAMINATION FOOD CHAIN				
TAMINATION GROUND WATER	X			
ONTAMINATION SURFACE WATER				
CE TO FLORA/FAUNA				
K KILL				
CONTAMINATION OF AIR				
OTICEABLE ODORS				
CONTAMINATION OF SOIL	X			
PROPERTY DAMAGE				
FIRE OR EXPLOSION	X			
18. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
SEWER, STORM DRAIN PROBLEMS				
20. EROSION PROBLEMS				
INADEQUATE SECURITY				
0. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
2. OTHER (specify):				

Continue On Reverse

REFFERENCE 22

INTERVIEW FORM

INTERVIEWEE/CODE Mr Kenneth Bartha 1

TITLE - POSITION Engineering

ADDRESS 12975 Clarence Center Road

CITY Akron STATE NY ZIP 14001

PHONE (716) 542-4511 RESIDENCE PERIOD _____ TO _____

LOCATION Telephone interview INTERVIEWER S A Steele

DATE/TIME 1/20/87 1

SUBJECT: site ownership

REMARKS: The inactive disposal site was owned by the Buffalo Arms Corporation during the 1940's and 1950's. The site was reportedly used for the disposal of lead and scraps from the manufacturing of machine guns. In 1956, Strippit, Division of Houdaille purchased the plant site and has owned the site to date. Houdaille used the site for waste disposal of heat treat sludge, ~~cutting~~ cutting oils, coolants, and solvents was used to burn plant refuse.
Houdaille, when located on Niagara Street in Buffalo, had several different company names including: Buffalo Alarm Clock Casing Co (1925-35) Wales Strippit Corp (1935-1956) Strippit Corporation 1956 - present). While under these names, the company had no involvement with the disposal site. (prior to 1956)

I AGREE WITH THE ABOVE SUMMARY OF THE INTERVIEW:

SIGNATURE:

COMMENTS:

REFFERENCE 23

INTERVIEW FORM

INTERVIEWEE/CODE Mr. Ken Bartha /

TITLE - POSITION engineer

ADDRESS 12975 Clarence Rd.

CITY Akron STATE NY ZIP 14001

PHONE (716) 542-4511 RESIDENCE PERIOD ____ TO ____

LOCATION Akron, NY INTERVIEWER R. Steele / ~~J. Pitt~~

DATE/TIME 3/27/85 /

SUBJECT: Houdaille Landfill

REMARKS: Mr. Bartha stated that the disposal site was active from 1956 to 1975. Wastes disposed at the site included cutting oils, coolants, solvents, heat treatment sludge and refuse. Combustible materials were burned and the resulting ash and non-combustibles were left on site. In 1979 the site was covered with approximately 16 cm of clean excavated fill. Heavy metals found in soil samples adjacent to the site are attributed to the previous owner. Mr. Bartha was contacted on 4/8/85 regarding the chemical constituents of coolants disposed on the site. He did not know the constituents but indicated that the company manufacturing the fluid is no longer in the business.

I AGREE WITH THE ABOVE SUMMARY OF THE INTERVIEW:

SIGNATURE:

COMMENTS:

REFFERENCE 24

NUS CORPORATION
A Halliburton Company

Mr Walia

915053

FINAL DRAFT
HAZARD RANKING SYSTEM REPORT
HOUDAILLE INDUSTRIES
AKRON, NEW YORK

FIELD INVESTIGATION TEAM ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCES FACILITIES — ZONE I

NUS CORPORATION
SUPERFUND DIVISION

NUS CORPORATION

02-3704-12-HR
Rev. No. 0

POTENTIAL HAZARDOUS WASTE SITE
HAZARD RANKING SYSTEM REPORT
EXECUTIVE SUMMARY

Houdaille Industries
Site Name

NYD039115621
EPA Site ID Number

12975 Clarence Center Road
Akron, New York
Address

02-8704-12
TDD Number

SITE DESCRIPTION

Houdaille Industries, which produces metal working machinery, was owned by Buffalo Arms from 1925 to 1935, by Wales Strippit Corporation from 1935 to 1956, and by Houdaille Industries Strippit Division from 1956 to the present.

Houdaille is located in a rural area approximately three-quarters of a mile due south of the village of Akron, Erie County, New York. From 1956 to 1979, approximately 20,000 gallons per year of cutting oils, coolants, and degreasing solvents; 3 tons per year of heat treatment sludge; and 450 cubic yards per year of refuse were disposed of in a 2-acre landfill immediately behind the plant. In 1979, the disposal area was covered with approximately 5 feet of clean fill during a plant expansion.

Since 1979 waste products have been disposed of off site; however, the potential for environmental contamination existed prior to that time. In 1981 the NYSDEC conducted a Hazardous Waste Investigation, during which significant concentrations of arsenic, lead, zinc, chromium, and halogenated organics were detected in soil samples collected outside the landfill. The site is not completely fenced, thus presenting distinct potential for unauthorized access.

Groundwater is used for drinking by approximately 700 residents within a 3-mile radius of the site. The major cause of concern is that the chemicals at the site could reach the groundwater and thereby contaminate this drinking water supply.

A total of nine environmental samples were collected during a site inspection conducted by NUS Corp. Region 2 FIT on 05/20/87. These consisted of two groundwater via tap water, one surface water, one sediment, and five soil samples. Di-n-butyl phthalate, fluoranthene, benzo(a)anthracene, benzo(k)fluoranthene, Arocior 1254, and numerous other compounds were detected in the soil and sediment samples.

HAZARD RANKING SCORE: S_M = 26.57, (S_{gw} = 45.53, S_{sw} 6.29, S_a=0.00)
S_{FE} = Not Scored
S_{DC} = 37.50

Prepared by: Joseph Bryan Gebler
of NUS Corporation

Date: 12/30/88

02-8704-12-SR
REV. NO. 0

FINAL DRAFT
SITE INSPECTION REPORT
HOUDAILLE INDUSTRIES
AKRON, NEW YORK

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8704-12
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JANUARY 19, 1989

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

EDWARD L. LEONARD
PROJECT MANAGER

JOSEPH BRYAN GEBLER
SITE MANAGER

REVIEWED/APPROVED BY:

RONALD M. NAMAN
FIT OFFICE MANAGER

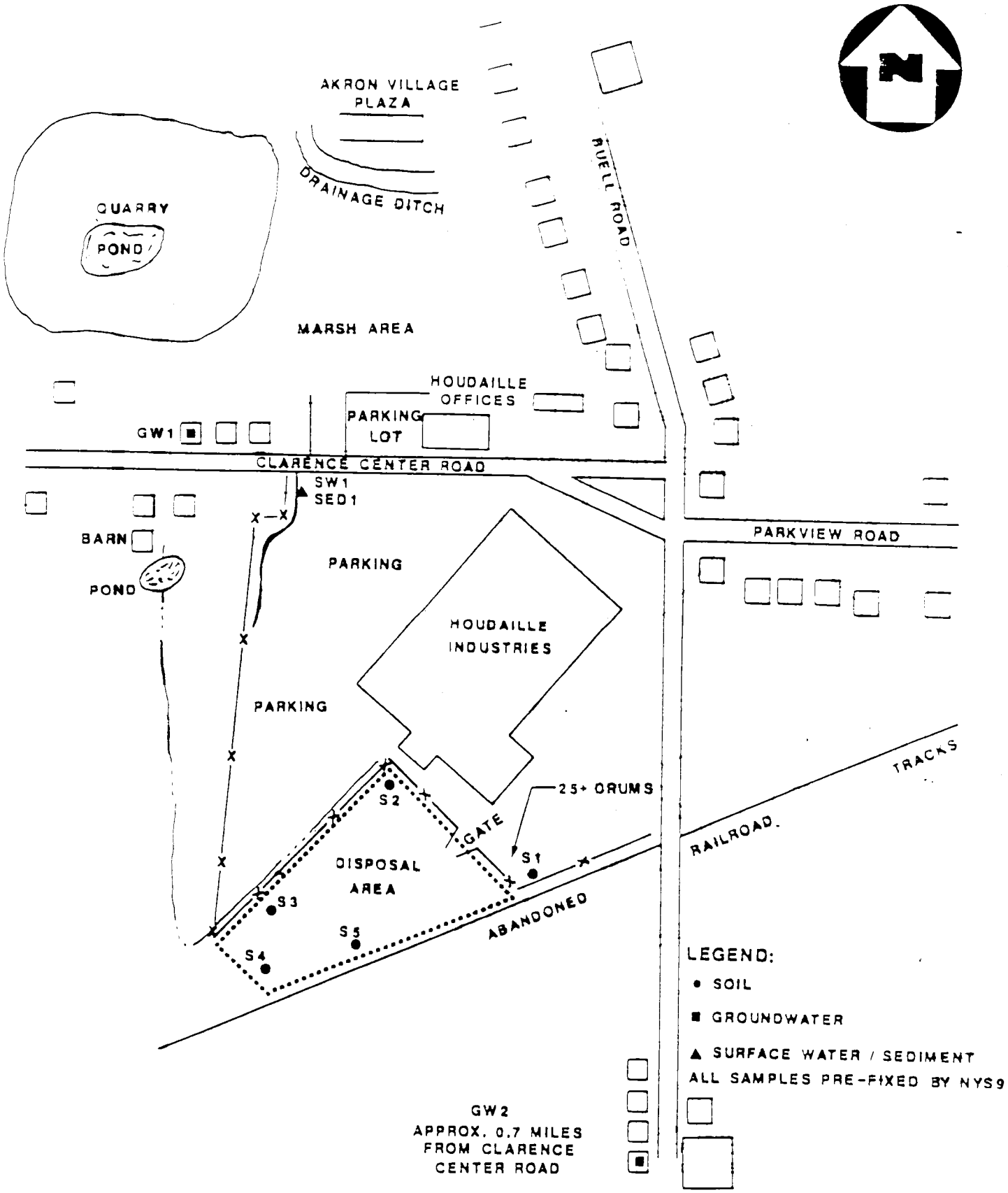


FIGURE 2

SAMPLE LOCATION MAP
HOUDAILLE INDUSTRIES, AKRON, N.Y.

NOT TO SCALE

NUS CORPORATION

ORGANICS DATA
NAME: FERRAILLE INDUSTRIES
SAMPLING DATE: 5/-0/87
CASE NUMBER: 7[illegible]

VOLATILES

SAMPLE NUMBER	NYS9-S1	NYS9-S2	NYS9-S3	NYS9-S4	NYS9-S5	NYS9-GW1	NYS9-GW2	NYS9-SW1	NYS9-SED1	NYS9-IA1
LAB REPORT NUMBER	BJ 868	BJ 869	BJ 870	BJ 871	BJ 882	BJ 872	BJ 873	BJ 875	BJ 878	BJ 881
MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER	SOIL	WATER
UNITS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L	UG/L	UG/KG	UG/L
Chloromethane										
Bromomethane										
Vinyl Chloride										
Chloroethane										
Methylene Chloride	9	143	5	26	J	58	52	66	12	
Acetone		0				0	0		0	0
Carbon Disulfide										
1,1 Dichloroethene										
1,1-Dichloroethane										
trans 1,2 Dichloroethene										
Chloroform										
1,2-Dichloroethane								38		
2-Butanone										
1,1,1-Trichloroethane										
Carbon Tetrachloride						0		33		
Vinyl Acetate										
Bromodichloromethane										
1,1,2,2-Tetrachloroethane								6		
1,2 Dichloropropane										
trans 1,3-Dichloropropene										
Trichloroethene					J					
Dibromochloromethane										
1,1,2-Trichloroethane										
Benzene										
cis-1,3-Dichloropropene										
2 Chloroethylvinylether										
Bromoform										
2 Hexanone										
4 Methyl-2 Pentanone										
Tetrachloroethene					J					
Toluene		J		7	J	J	J	J	9	
Chlorobenzene										
Ethylbenzene										
Styrene										
Total Xylenes										

NOTES TO ORGANICS DATA:

Blank space = compound analyzed for but not detected
Q = analysis did not pass EPA QA/QC requirements
J = compound present below specified detection limits, value is an estimate
B = compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
NR = analysis not required

ANALYTICAL DATA
NAME : FOURDRINIER INDUSTRIES
SAMPLING DATE : 5/20/87
CASE NUMBER: 7312

SEMI VOLATILES

SAMPLE NUMBER	NYS9-S1	NYS9-S2	NYS9-S3	NYS9-S4	NYS9-S5	NYS9-GW1	NYS9-GW2	NYS9-SW1	NYS9-SED1	NYS9-BL1
TRAFFIC REPORT NUMBER	**BJ868**	**BJ 869**	**BJ 870**	**BJ 871**	**BJ 882**	**BJ 872**	**BJ 873**	**BJ 875**	**BJ 878**	**BJ 881**
MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER	SOIL	WATER
UNITS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L	UG/L	UG/KG	UG/L
Phenol										
Bis(2-Chloroethyl)Ether										
2-Chlorophenol										
1,3-Dichlorobenzene										
1,4-Dichlorobenzene										
benzyl Alcohol										
1,2-Dichlorobenzene										
2-Methylphenol										
Bis(2-Chloroisopropyl)Ether										
4-Methylphenol										
N-Nitroso-Di-n-Propylamine										
Hexachloroethane										
Nitrobenzene										
Isophorone										
2-Nitrophenol										
2,4-Dimethylphenol										
Benzoic Acid										
Bis(2-Chloroethoxy)Methane										
2,4-Dichlorophenol										
1,2,4-Trichlorobenzene										
Naphthalene					961					
4-Chloroaniline										
Hexachlorobutadiene										
4-Chloro-3-Methylphenol										
2-Methylnaphthalene					1396					
Hexachlorocyclopentadiene										
2,4,6-Trichlorophenol										
2,4,5-Trichlorophenol										
2-Chloronaphthalene										
2-Nitroaniline										
Dimethyl Phthalate										
Acenaphthylene									J	
3-Nitroaniline										
Acenaphthene		596							J	
2,4-Dinitrophenol										
4-Nitrophenol										
Dibenzofuran										
2,4-Dinitrotoluene										
2,6-Dinitrotoluene										
Diethylphthalate										
4-Chlorophenylphenyl ether										
Fluorene	J	694							J	
4-Nitroaniline										
4,6-Dinitro-2-Methylphenol										
N-Nitrosodiphenylamine										
4-Bromophenylphenyl ether										
Hexachlorobenzene										
Pentachlorophenol										
Phenanthrene	2630	8158			871				1653	
Anthracene	475	1185							J	

ANALYTICAL DATA
NAME: WOODBRIDGE INDUSTRIES
SAMPLING DATE: 5/20/87
CASE NUMBER: 7312

SEMI-VOLATILES												
SAMPLE NUMBER	NYS9-S1	NYS9-S2	NYS9-S3	NYS9-S4	NYS9-S5	NYS9-GW 1	NYS9-GW 2	NYS9-SW 1	NYS9-SED1	NYS9-BL 1		
TRAFFIC REPORT NUMBER	BJ868	BJ 869	BJ 870	BJ 871	BJ 882	BJ 872	BJ 873	BJ 875	BJ 878	BJ 881		
MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER	SOIL	WATER		
UNITS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L	UG/L	UG/KG	UG/L		
Di-n-Butylphthalate		3310		J								
Fluoranthene	3549	9491			944				2980			
Pyrene	2748	6818			754				1645			
Butylbenzylphthalate					0				0			
3,3' Dichlorobenzidine												
Benzo(a)Anthracene		3475			535				1023			
bis(2-Ethylhexyl)Phthalate	0	0		0	0		J		0			
Chrysene	1277	2978			592				989			
Di-n-Octyl Phthalate		0		0	0				0			
Benzo(b)Fluoranthene	855				890				1514			
Benzo(k)Fluoranthene		4072										
Benzo(a)Pyrene	946	2326			1890				876			
Indeno(1,2,3-cd)Pyrene	749	1519			/				868			
Dibenzo(a,h)Anthracene		358							J			
Benzo(ghi)Perylene	747	1542							800			

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
0 - analysis did not pass EPA QA/QC requirements
J - compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
NR - analysis not required

ANALYTICAL DATA
NAME: HOUDAILLE INDUSTRIES
SAMPLING DATE: 5/20/87
CASE NUMBER: 7312

PESTICIDES/PCBs

SAMPLE NUMBER	NYS9-S1	NYS9-S2	NYS9-S3	NYS9-S4	NYS9-S5	NYS9-GW 1	NYS9-GW 2	NYS9-SW 1	NYS9-SED1	NYS9-BL 1
TRAFFIC REPORT NUMBER	BJ868	BJ 869	BJ 870	BJ 871	BJ 882	BJ 872	BJ 873	BJ 875	BJ 878	BJ 881
MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER	SOIL	WATER
UNITS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L	UG/L	UG/KG	UG/L
Alpha-BHC										
Beta-BHC										
Delta-BHC										
Gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor Epoxide										
Endosulfan I										
Dieldrin										
4,4'-DDE										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
Endrin Aldehyde										
4,4'-DDT										
Methoxychlor										
Endrin Ketone										
Chlordane										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254			244.0	2770						
Aroclor-1260										

NOTES TO ORGANICS DATA:

Blank space = compound analyzed for but not detected
U = analysis did not pass EPA QA/QC requirements
J = compound present below specified detection limits, value is an estimate
B = compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
NA = analysis not required

ANALYTICAL DATA
NAME: FOURBELLE INDUSTRIES
SAMPLING DATE: 5/20/87
CASE NUMBER: 7312

INORGANICS

SAMPLE NUMBER	NYS9-S1	NYS9-S2	NYS9-S3	NYS9-S4	NYS9-S5	NYS9 GW 1	NYS9 GW 2	NYS9-SW	NYS9-SED	NYS9-B
TRAFFIC REPORT NUMBER	MBK418	MBK419	MBK420	MBK421	MBK422	MBK423	MBK424	MBK426	MBK429	MBK432
MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER	SOIL	WATER
UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	UG/L	UG/L	UG/L	MG/KG	UG/L
Aluminum	4680E	3670E	7140E	8100E	3920E	(42)	(180)	356	6940	
Antimony							173			
Arsenic		(2.3)	5.4E	3.6E	28E				(5.5)	
Barium	136	2940	1050	863	300			(96)	1380	
Beryllium										
Cadmium							18			
Calcium	85900	59400	92700	27100	17000	399000	(415)	20400	224000	(1061)
Chromium	0	0	0	0	0		35		0	
Cobalt		(5.2)		(6.2)	(6.1)		(27)			
Copper	52F	25E	16E	405E	31E		30	(24)	127E	
Iron	32900	17200	11900	44600	24700	5550		481	12100	(63)
Lead	51	85	27	60	35		(4)		192	
Magnesium	20100E	15864E	6720E	12300E	1790E	57300		6240	14200E	
Manganese	470	920	410	575	418	0		0	480	57
Mercury						0	0	0		0
Nickel	19E	19E		45E	19E		46			
Potassium	(1020)	2590	(1020)	1840	(553)	(1730)	(1000)	(370)	(1300)	
Selenium										
Silver				2.4E			44			
Sodium		(205)	(125)	(504)	(257)	8600		13200		
Thallium				0.22						
Vanadium	(3.8)	18	(11)	24	(14)		(34)			
Zinc	136	394	98	259	42				946	

NOTES TO INORGANICS DATA:
Blank space - compound analyzed for but not detected
0 - analysis did not pass EPA QA/QC requirements
() - compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample and indicates possible/probable blank contamination
E - value estimated due to laboratory interference
NR - analysis not required

REFFERENCE 25

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

PHASE I INVESTIGATIONS

HOUDAILLE INDUSTRIES STRIPPIT DIVISION

NYS SITE NUMBER 915053

TOWN OF AKRON

ERIE COUNTY

NEW YORK STATE

Prepared For

DIVISION OF SOLID AND HAZARDOUS WASTE
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY, NEW YORK 12233-0001

Prepared By

ENGINEERING-SCIENCE
290 ELWOOD DAVIS ROAD
LIVERPOOL, NEW YORK 13088

In Association With

DAMES & MOORE
2996 BELGIUM ROAD
BALDWINSVILLE, NEW YORK 13027

DATE OF SUBMITTAL: JANUARY, 1986

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. The Erie County region is covered by lake sediments, the most recent being from Lake Warren (a larger predecessor to Lake Ontario and Lake Erie). 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 ground water movement. However, fine-grained, water-lain sediments, such as silts and clays, frequently contain horizontal laminations and sand seams. These internal features facilitate lateral ground water movement through otherwise low permeability materials.

Site Hydrogeology

The site is located near the base of the Onondaga Escarpment. Bedrock beneath the site is expected to be Akron Dolomite, possibly occuring at a depth of 35 ft. This rock unit may be jointed and fractured and may form a bedrock aquifer.

REFFERENCE 26

ES ENGINEERING-SCIENCE COMPANIES

MEMORANDUM TO FILE

JOB NO. 57053.09.00

FILE DESIGNATION Houdaille St...

DATE 7/23 TIME 1:30

PHONE CALL FROM Bill Lilley, ES PHONE NO. 315-451-9560

PHONE CALL TO Richard Nahya NYSGS PHONE NO. 518-474-5816

CONFERENCE WITH

PLACE

SUBJECT Gas wells onsite API 30-029-13152 & 31029-13312

13312 - 110' depth Bedrock

13152 - 120' depth Bedrock

SIGNED

REFFERENCE 27

(NYSDEC, 1982)

REF-20

NAME OF LANDFILL: Houdailles Industries - Strippit Division

LOCATION: 12975 Clarence Road, Akron, Erie County

CURRENT OWNER: Houdaille Industries - Strippit Division

HISTORY

This was was used prior to 1955 to 1975 by the Strippit Division of Houdaille Industries and Buffalo Arms. The following has been deposited: cutting oils, solvents, paint (20,000 gal/yr); heat treatment sludge (3 ton/yr); and coolants (20,000 gal/yr). The site is approximately 2 acres in size.

INVESTIGATION

An invsstigation was conducted at this site on December 15, 1981 by Messrs. Tygert, Christoffel, and Wozniak. Samples were taken from five locations. The first location was in a field behind the plant. A hole was augered to a depth of 5 feet and a soil sample was obtained from the soil on the drill bit. The second and third locations were from a drainage ditch along the south side of the landfill. Silt and water samples were obtained at both sites. The fourth location was in the southwest corner of a parking lot behind the plant. A soil sample was taken there. The fifth location was from a drainage ditch on the western edge of the plant property. Water and silt were taken from this station.

Site sketch showing the sampling locations is attached.

SOILS AND GEOLOGICAL INFORMATION

This site is located on an Ontario-Hilton soil association. It is an association of well and moderately well drained, medium textured, medium to high lime soils developed in glacial till. The dominant series are the well drained Ontario (35%) the moderately well drained Hilton (25%) the somewhat poorly drained Appleton (10%) and the poorly drained Lyons (10%).

The site is located on an Akron-Doldstone formation. The beds vary from a few inches to over a foot in thickness. In texture, the rock is fine grained but vuggy and roughweathering. The approximate depth to bedrock in this vicinity is 35 feet.

SAMPLE ANALYSES

The soil and water samples were analyzed for heavy metals and halogenated organics. The results of the analyses are attached.

The soil sample for Station #2 contained high concentrations of arsenic, lead and zinc. For Station #5, the sample contained high concentrations lead, zinc and halogenated organics. All three water samples contained moderate amounts of arsenic and detectable amounts of zinc.

(NYSDEC, 1982)

DISCUSSION OF RESULTS

Facility representatives stated that they observed leachate in the area of Station #4. No leachate was observed at this station during this inspection. The disposal of water contaminated with paint would account for the high concentration of lead in the soil sample at Station #2. There was a high concentration of arsenic in the soil sample at Station #2, and moderate concentrations in all three water samples. According to documents submitted by the facility to the interagency task force, arsenic is not used in any of their processes. It is possible that it was deposited by the previous owner - Buffalo Arms.

The company drilled a gas well through the landfill area. They stated that no problem was encountered either in the drilling or the bulldozing of this site.

This site is above the 100 year flood level. It has been classified as code "A" meaning further field inspection, preliminary hydrogeological information and/or additional information on chemicals present is needed.

RECOMMENDATION

It is possible that this landfill could contaminate groundwater in the area. Therefore, it is recommended that the site be covered with clay and graded to discourage leachate generation.

WHAT ABOUT — FURTHER [illegible]
[illegible] IF GROUNDWATER IS
CONTAMINATED? [illegible]?

(NYSDEC, 1982)

HOUDAILLES INDUSTRIES - STRIPPIT DIVISION (origenzi RECRA reports attached)

Soil Analyses

COMPOUND	UNITS	#1	#2	#3	#4	#5
Antimony	ug/g dry	10	<40	<5	<7	<6
Arsenic	ug/g dry	5.5	190	2.4	.14	8.2
Beryllium	ug/g dry	<0.3	< 2	< 0.3	< 0.4	< 0.3
Cadmium	ug/g dry	0.39	< 9	< 0.1	0.44	1.2
Chromium	ug/g dry	11	18	5.7	8.8	31
Copper	ug/g dry	14	40	36	15	59
Lead	ug/g dry	19	140	21	19	100
Mercury	ug/g dry	<0.3	< 2	<0.2	<0.3	0.68
Nickel	ug/g dry	15	35	12	23	29
Selenium	ug/g dry	<0.6	< 3	0.35	<0.2	0.7
Silver	ug/g dry	<0.3	< 2	<0.3	<0.4	<0.3
Thallium	ug/g dry	< 3	< 20	< 3	< 4	< 3
Zinc	ug/g dry	110	360	21	91	1,000
Dry Weight	%	88	16	66	82	41
Halogenated Organic Scan	ug/g dry as Cl2, Lindane Std.	<0.5	<0.5	9.5	<0.5	26

915053

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATIONS

Volume II - Appendices

Houdaille-Industries-Strippit Division
Village of Akron

Site No. 915053
Erie County

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

By:

ENGINEERING-SCIENCE

VOLUME II - APPENDICES

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

PHASE II INVESTIGATIONS - HOUDAILLE INDUSTRIES STRIPPIT DIVISION NYS SITE NUMBER 915053 ERIE COUNTY, NEW YORK

Prepared For:

DIVISION OF HAZARDOUS WASTE REMEDIATION
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY, NEW YORK 12233-0001

Prepared By:

ENGINEERING-SCIENCE, INC.
290 ELWOOD DAVIS ROAD
LIVERPOOL, NEW YORK 13088

MARCH 1991

APPENDIX A

PHASE II FIELD PROCEDURES

APPENDIX A

PHASE II FIELD PROCEDURES

These procedures have been utilized by Engineering-Science, Inc. field teams during the Phase II field investigations. These procedures are taken from the NYSDEC-approved "Quality Assurance Project Plan for the Phase II Engineering Investigations and Evaluations at Inactive Hazardous Waste Disposal Sites", dated October 1989.

DRILLING

The drilling procedures utilized were taken from *"Guidelines for Exploratory Boring, Monitoring Wells Installation, and Documentation of these Activities"*, as promulgated by NYSDEC. These procedures, contained in project Work Plan and Quality Assurance Plan, were modified in the field with NYSDEC approval in response to site- specific conditions.

All downhole drilling equipment and tools were steam-cleaned prior to beginning each well boring. The downhole equipment and tools were placed on wooden pallets or sheets of plastic to limit cross-contamination. Drilling was accomplished with a Mobile B-61 truck-mounted drilling rig.

Unconsolidated and poorly consolidated soil and rock materials were drilled with 6 5/8-inch diameter hollow-stem augers. Above the water table, samples were collected at intervals of five feet, and below the water table, samples were taken continuously. Samples were visually classified in terms of moisture content, color, texture, density and structure. The soil samples were screened with a Photovac Tip-II to detect the presence of volatile organic compounds. The soil cuttings were also monitored with the Photovac. The soil materials were left on the landfill site because no readings in excess of 5 (ppm) above background were recorded.

MONITORING WELL INSTALLATION

All wells were constructed with two-inch PVC riser pipe and 0.010-inch slotted screen. Depending on the location, well screens were 5 or 10 feet in length. All well materials were steam-cleaned prior to insertion in the borehole.

PVC well materials were set in place through the hollow-stem augers, and quartz sand was backfilled to approximately two feet above the top of the screen. A two-foot bentonite pellet or bentonite slurry seal was placed above the sand. A cement/bentonite grout was then placed with a tremie pipe from the top of the bentonite pellets to ground surface. A vented PVC cap was placed on the well pipe, and the well was secured with a locking, four-inch inside diameter (ID) steel protective casing. Once the well installation was complete, the well materials were allowed to set-up for at least 24 hours prior to developing each well.

WELL DEVELOPMENT

Each well was developed by removing water from the well until the water was less than 50 nephelometric turbidity units (NTUs), or was visually free of sediment. Wells were developed by hand bailing for a period of at least five hours per well or until the 50 NTU goal for turbidity was realized. Decontaminated Teflon bailers with dedicated polyethylene ropes were used to develop all four wells.

SAMPLING PROGRAM

The sampling program at the Strippit site consisted of groundwater, surface water, leachate, sediment, and subsurface soil sampling. Samples were collected in accordance with the Quality Assurance Project Plan. In addition to the media sampled, two types of blanks were collected. A trip blank consisting of organic-free water was prepared by the laboratory and accompanied the sample bottle shipment. This blank provided a measure of the impact of the bottle preparation procedures and shipment on the samples. The trip blanks were analyzed for volatile organic compounds.

Wash blanks were also collected by pouring organic-free water provided by the laboratory over the sampling equipment as a check of the field decontamination procedures. The wash blanks were assigned non-existent sample location designations and were analyzed for TCL compounds and TAL metals.

The sampling equipment was decontaminated by successively rinsing with Alconox detergent, potable water, methanol, and distilled water prior to sampling at each location. After collection of the water samples, field tests were performed on an additional sample to determine pH, temperature, and specific conductivity. Field sampling records are presented in Appendix D.

Groundwater Sampling

The static water level in the well was recorded from the top of the PVC casing prior to purging the well. Wells were purged by removing at least three well volumes of water with a polyethylene bailer prior to filling the bottles. Sample bottles were supplied by Versar, Inc. Dedicated polyethylene bailers with polyproplyene rope were used to bail the wells and collect the samples.

Surface Water Sampling

A single surface water sample was collected by dipping a decontaminated glass beaker beneath the water surface, and pouring the sample into sample bottles supplied by Versar, Inc.

Sediment Sampling

A single sediment sample was collected with a decontaminated stainless steel trowel. Sediment was deposited directly into sample bottles. Sample bottles were supplied by Versar, Inc.

Subsurface Soil Sampling

The subsurface soil samples were collected with a decontaminated stainless steel split spoon sampler during drilling of the monitoring well borings. Due to the amount of sample necessary for analysis and the low sample recoveries, several split spoon samples had to be composited to collect enough sample for the full TCL and TAL analyses.

Leachate Sampling

A single leachate sample was collected with a decontaminated glass beaker from beneath the liquid surface and pouring the sample into sample bottles supplied by Versar, Inc.

AIR QUALITY MONITORING

Air quality monitoring for volatile organic compounds with a Photovac Tip-II photoionization meter was implemented during the drilling and well installations, and sampling events. Monitoring was performed as a health and safety measure. The meter was calibrated daily before use with a commercially-prepared 100 ppm isobutylene standard gas. Air quality in the breathing zone was determined by holding the intake of the instrument at head height for 30 seconds and recording the reading. During drilling, the split-spoon soil samples were held within several inches of the intake to test for organic vapors emanating from the soil samples. The air in the completed well was monitored by placing the intake over the well opening and removing the PVC cap. The intake was then placed into the well opening and readings were recorded in the field book.

APPENDIX B

GEOPHYSICAL SURVEY METHODS AND RESULTS

HOUDAILLE INDUSTRIES - STRIPPIT DIVISION

GEOPHYSICAL SURVEY METHODS AND RESULTS

NYSDEC PHASE II INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES
SITE ID NO. 915033

HOUDAILLE INDUSTRIES - STRIPPIT DIVISION

GEOPHYSICAL SURVEY METHODS AND RESULTS

GEOPHYSICAL SURVEY METHODOLOGY

A geophysical investigation was conducted by ES at the Houdaille Industries - Strippit Division Landfill site in the Village of Akron, Erie County, New York. The investigation was part of the Phase II (Fourth Round) investigations and evaluations which were conducted for the New York State Department of Environmental Conservation (NYSDEC) at inactive hazardous waste disposal sites. This geophysical survey was completed prior to installation of groundwater monitoring wells at the site. The purpose of the survey was to determine whether conductive contaminant plumes were present, to identify the existence of buried metallic waste, and to optimize the placement of monitoring wells within identified conductive contaminant plumes.

Electromagnetic Survey

Measurements of the near-surface terrain conductivity were obtained at the Houdaille Industries site by using the Electromagnetic (EM) mapping techniques. Terrain conductivity anomalies mapped in the subsurface may indicate the presence of contaminant plumes, buried drums, and/or other buried metallic objects.

The EM survey was conducted with a Geonics EM31-D Terrain Conductivity Meter. The EM31-D consists of a control unit and transmitter and receiver coils and operates by inducing circular eddy current loops into the surrounding subsurface materials. The magnitude of any one of the current loops is directly

proportional to the terrain conductivity in the vicinity of that loop. The current flowing through each loop then generates a magnetic field which is proportional to the value of the current flowing within the loop. A portion of the magnetic field from each loop is intercepted by the receiver coil of the EM31-D unit and results in an output voltage which is linearly related to the terrain conductivity of the subsurface materials.

Contour maps produced from the data reflect patterns of apparent ground conductivity. Conductivity patterns result from the cumulative electrical properties of a horizontally layered earth. Under this condition the conductivity values obtained with the EM31-D unit are proportionally weighted for the contribution of near-surface materials. The weighting balances the contribution of conductivity as it varies with depth. In the vertical dipole configuration used during the survey, the weighting is such that the ground below a depth of 2 meters yields 59% of the response, the ground below 3 meters yields 47%, and the ground below 6 meters 29%, etc., assuming that the conductivity is uniform with depth (Geonics Limited, 1984).

SITE-SPECIFIC METHODS AND RESULTS

A survey grid with 50 foot centers was established across the site and around its perimeter. EM measurements were taken along each survey line at 25 foot intervals. During the survey, the EM31-D unit yielded an effective depth of penetration of approximately 6 meters (19.5 feet) (Geonics Limited, 1984).

Electromagnetic Survey Results

The findings of this study are based on the interpretation of the data which were obtained from indirect geophysical investigative techniques. The interpretations are therefore preliminary and subject to verification by direct methods. Terrain conductivity readings, expressed in millimhos per meter were recorded along survey lines which traversed the site and site perimeter (Figure 1). Prior to beginning the survey, the EM31-D unit was calibrated in an area which was isolated from the site and free of interferences (overhead power lines, buried conduits and metal objects). Terrain conductivity readings were then taken across a designated off-site area to establish background values of conductivity for the survey area. During the survey, EM readings were collected on 25 foot grid spacings. When anomalous values were noted, additional readings were acquired in the vicinity. Table 1 presents the raw field data acquired during the survey. Figure 2 presents a contour map of the data. The interpretations of the data presented below are based on the apparent ground conductivity patterns and the magnitude of their deviation from the background readings in the area.

The EM survey at the Houdaille Industries Landfill indicates the following:

1. Background readings of terrain conductivity ranged from 3 to 12 mmhos/m. Values of terrain conductivity ranged from 0 to 75 mmhos/m over the survey area. Values of terrain conductivity dropped to background range as the survey moved off the known landfill area. The edge of the fill area was interpreted as being located approximately along areas where values of terrain conductivity dropped below 15 mmhos/m (Table 1 and Figure 2). This data coincides approximately with the known landfill boundaries.

2. Four high (up to 70 mmhos/m) conductivity anomalies were identified on-site (Figure 2). These anomalies are interpreted as being (1) produced by surface interferences (metal fencing and posts) which are located immediately adjacent to the survey point, or (2) due to the presence of randomly buried metallic waste in the fill.

3. No high conductivity anomalies or patterns, corresponding to the presence of buried drums or to the presence of a conductive plume were identified on-site.

Recommendations

The following recommendations are made based on the EM data and are to be implemented prior to the initiation of the drilling program:

- Based on the results of the geophysical survey, the monitoring well locations indicated in the work plan were deemed sufficient for monitoring groundwater flow at the site, therefore, repositioning of wells is not recommended.

REFERENCES

1. Geonics, 1984 (Revised). Operating Manual for EM31-D Non-Contacting Terrain Conductivity Meter. Geonics, Limited, Mississauga, Ontario, Canada.

LEGEND

- TREES
- APPROXIMATE LANDFILL BOUNDARY
- OVERHEAD POWER LINE
- FENCE
- TELEPHONE POLE
- PROPERTY LINE
- REFERENCE HUB
- EM-31 GRID SURVEY LIMITS
- BASELINE HUB

PARKING AREA

STRIPPIT PLANT

PARKING AREA

STREET (ROUTE 93)

BUELL

APPROX.

N

GATE

OPEN FIELD

(200,0)

LANDFILL

OPEN FIELD

GAS WELL

BRUSH

GRID BASELINE ORIENTATION = S 61° W

RIGHT OF WAY

RR.

OLD

NOTE: DRAWN FROM TAX MAP & AERIAL PHOTOGRAPH

APPROXIMATE SCALE

100' 100 0 100 200 FT.

ENGINEERING-SCIENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PHASE II REPORT

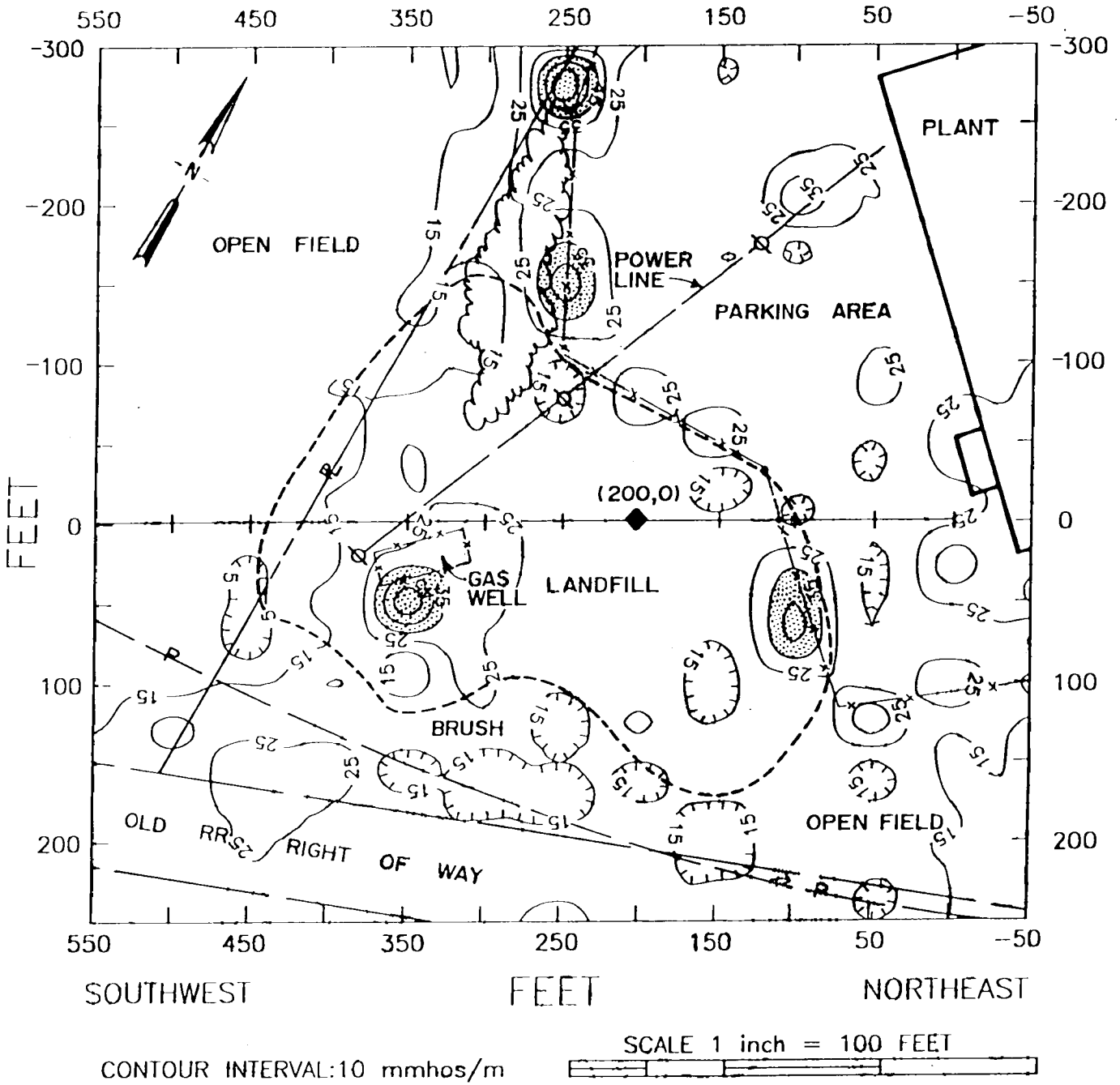
HOUDAILLE INDUSTRIES STRIPPIT DIVISION LANDFILL

FIGURE 1

SY053.09

SY053.09

HOUDAILLE INDUSTRIES LANDFILL / TERRAIN CONDUCTIVITY DATA



LEGEND

- TREES
- APPROXIMATE LANDFILL BOUNDARY
- OVERHEAD POWER LINE
- FENCE
- TELEPHONE POLE
- REFERENCE HUB
- PROPERTY LINE
- HIGH CONDUCTIVITY ANOMALIES
- ISOCONDUCTIVITY CONTOUR LINE (25)

ENGINEERING-SCIENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PHASE II REPORT

HOUDAILLE INDUSTRIES STRIPPIT DIVISION LANDFILL

FIGURE 2

TABLE 1

HOUDAILLE INDUSTRIES LANDFILL TERRAIN CONDUCTIVITY DATA

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
-50	50	36
-50	75	14
-50	100	27
-50	125	14
-50	150	12
-50	175	15
-50	200	14
0	-50	29
0	0	23
0	25	40
0	50	27
0	75	17
0	100	33

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
0	125	19
0	150	13
0	175	15
0	200	15
0	225	15
0	250	15
50	-100	26
50	-75	26
50	-50	15
50	-25	15
50	0	16
50	25	14
50	50	14
50	75	15
50	100	20

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
50	125	41
50	150	15
50	175	15
50	200	20
50	225	15
50	250	15
100	-200	42
100	-175	14
100	-150	21
100	-100	19
100	-75	17
100	-50	16
100	-25	17
100	0	14
100	25	32

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
100	50	45
100	75	45
100	100	20
100	125	18
100	150	18
100	175	20
100	200	20
100	225	15
100	250	20
150	-300	16
150	-275	15
150	-250	21
150	-225	18
150	-200	16
150	-175	24

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
150	-150	23
150	-125	17
150	-100	19
150	-50	35
150	-25	6
150	0	20
150	25	19
150	50	18
150	75	15
150	100	9
150	125	15
150	150	16
150	175	15
150	200	5
150	225	15

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
150	250	15
200	-300	24
200	-275	18
200	-250	17
200	-225	16
200	-200	16
200	-175	16
200	-150	16
200	-125	24
200	-75	32
200	-50	19
200	-25	22
200	0	22
200	25	18
200	50	19

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
200	75	23
200	100	17
200	125	27
200	150	15
200	175	15
200	200	20
200	225	20
200	250	15
250	-300	28
250	-275	75
250	-250	38
250	-225	23
250	-200	24
250	-175	36
250	-150	50

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
250	-125	33
250	-100	14
250	-75	12
250	-50	19
250	-25	24
250	0	22
250	25	21
250	50	18
250	75	15
250	100	16
250	125	12
250	150	15
250	175	10
250	200	20
250	225	18

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
250	250	12
300	-300	14
300	-275	14
300	-250	16
300	-225	22
300	-200	23
300	-175	19
300	-150	12
300	-125	12
300	-100	14
300	-75	18
300	-50	17
300	-25	22
300	0	28
300	25	35

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
300	75	25
300	100	27
300	125	22
300	150	12
300	175	12
300	200	18
350	-300	12
350	-275	12
350	-250	12
350	-225	12
350	-200	13
350	-175	14
350	-150	15
350	-125	15
350	-100	12

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
350	-75	17
350	-50	25
350	-25	25
350	0	23
350	50	62
350	75	21
350	100	9
350	125	25
350	150	10
350	175	18
400	-300	13
400	-275	13
400	-250	12
400	-225	11
400	-200	11

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
400	-175	12
400	-150	12
400	-125	13
400	-100	14
400	-75	14
400	-50	6
400	-25	14
400	0	14
400	25	13
400	50	17
400	75	15
400	100	25
400	125	17
400	150	35
450	-300	13

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
450	-275	12
450	-250	12
450	-225	12
450	-200	12
450	-175	11
450	-150	11
450	-125	11
450	-100	11
450	-75	12
450	-50	13
450	-25	13
450	0	13
450	25	3
450	50	3
450	75	0

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
450	100	15
450	125	18
450	150	35
500	-200	11
500	-175	11
500	-150	10
500	-125	11
500	-100	12
500	-75	11
500	-50	11
500	-25	12
500	0	13
500	25	13
500	50	13
500	100	10

TABLE 1, CONTINUED

X Coordinate (Feet)	Y Coordinate (Feet)	EM-31 Data (mmhos/m)
500	125	28
500	150	21
550	-150	11
550	-125	10
550	-100	10
550	-75	10
550	-50	10
550	-25	10
550	0	12
550	25	11
550	50	15
500	75	10
500	100	11

APPENDIX C

APPENDIX C

GEOLOGIC DATA

- Grain Size Analyses
- Boring Logs With Well Schematics and Well Installation Details

R&R
INTERNATIONAL, INC.

PROJECT: HOUDAILLE STRIPPIT - SYO-53.09 PROJECT NUMBER: 900306

MOISTURE (ASTM D-2216-80) AND GRADATION (ASTM D-422-63) ANALYSIS

BORING NUMBER	DEPTH (FT.)	MOISTURE PERCENT	Gradation (% Retained on Standard Sieve) #4	#10	#40	#100	#200	SILT AND CLAY (%)
GW-1	10.0	6.2	7.1	6.0	10.1	13.6	13.4	49.8
GW-1	40.0	13.1	2.0	2.5	3.7	4.6	5.8	81.4
GW-1	52.0	15.3	0.0	0.1	0.6	3.8	21.9	73.6

Contractor: RDC
Driller: Steve Kahn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" HSA

GROUNDWATER OBSERVATIONS

Water Level	38.1' T.O.C.		38.14'
Time	910		844
Date	5/22		6/7

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houghville
PROJECT NO. SY053.04.60

Weather: Sunny, 50°

Date/Time Start 5/17/90 3:45 pm

Date Time Finish 5/21/90 4:30 pm

BORING NO. GW-1
Sheet 1 of 3

Location approx 200' W. of geophysics reference hub in open field to the west of the landfill area

Plot Plan
See sample location map FIGURE III-1

Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
				55			
0		0-2'	30	5	0		Protective casing with lock 2.5' stick-up
				8	dark silty soil with organic debris, wet		0'
				5			
				6	3'		
0		5-7'	65	20			
				34	brown fine-med sand with a trace of silt and a little fine to coarse gravel, moist to dry		
				51			
				74	(upper Sandy till)		
0		10-11.5'	60	40			
				61			
				100			
0		15-16.5'	65	15			
				25			
				24			

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 0-3' ⇒ Soil
3→18' ⇒ Sandy till

ENGINEERING-SCIENCE DRILLING RECORD

Contractor: RDC
Driller: Steve Kahn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" HSA

BORING NO. GW-1
Sheet 2 of 3

PROJECT NAME Holzville
PROJECT NO. SY053.09.00

Location approx. 200' W. of geophysics ref. hub in open field W. of landfill area

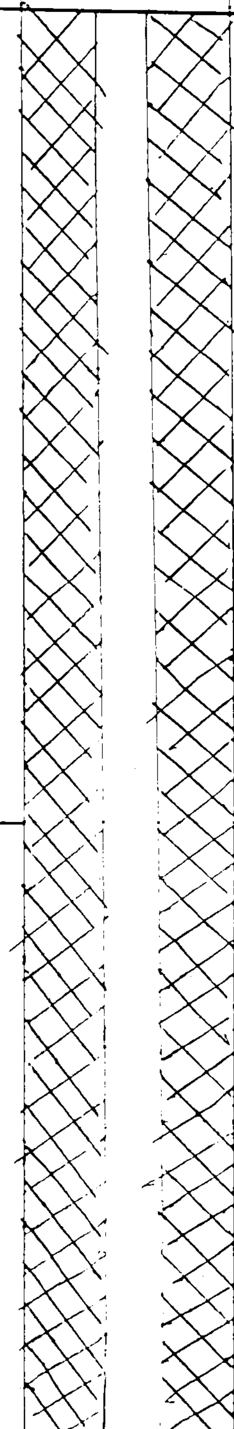
Plot Plan

GROUNDWATER OBSERVATIONS			
Water Level			
Time			
Date			

Weather: Sunny, 50°
Date/Time Start 5/17/90 3:45 pm
Date Time Finish 5/21/90 4:30 pm

Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
0		20-22'	65	65	↓
				39	
				33	
				43	(upper sandy till)
0		25-27'	5	22	↓
				31	
				51	
				63	30'
0		30-32'	40	25	brown very fine sand and silt with a little clay and fine to medium gravel - moist
				32	
				44	
				76	
0		35-37'	50	14	(lower silty till)
				72	
				35	
				60	

WELL SCHEMATIC | COMMENTS



STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 18-30' ⇒ Sandy till
30-39' ⇒ Silty till

Contractor: LDC
Driller: Steve Kahn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" HSA

GROUNDWATER OBSERVATIONS

Water Level			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houlton
PROJECT NO. 5Y053.04.00

Weather: Sunny 50°

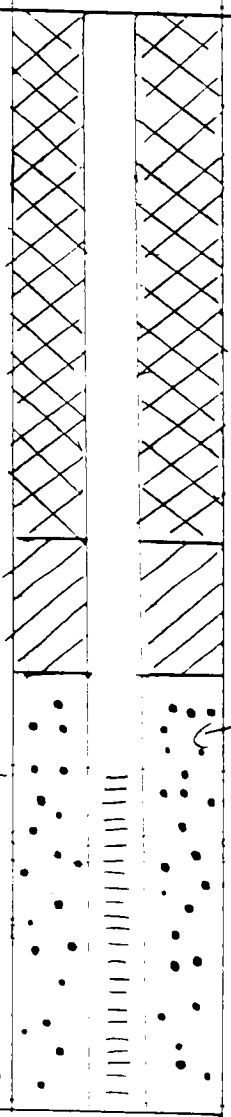
Date/Time Start 5/17/90 3:45 pm

Date Time Finish 5/21/90 4:30 pm

BORING NO. GW-1
Sheet 3 of 3
Location approx 200' W. of geophysical ref. hole in open field west of the baseball area
Plot Plan

Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
0		40-42'	90	13	(lower silty till)
				23	
				27	
				35	
0		45-47'	75	15	
				31	
				45	
				50	
0		49-50	2	19	
				17	
				80	
				105	
					50'
0		50-52'	60	71	fine brown sand and silt
				38	saturated
				47	
				51	
0		52-54'	95	15	
				32	
				39	
				100	
					55'
					55' well bottom

WELL SCHEMATIC



COMMENTS

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 39 - 50' ⇒ silty till
50 - 55' ⇒ fine brown sand and silt

61

WELL INSTALLATION CHECKLIST
PHASE II INVESTIGATIONS

Site Name: Houdaille Strippit Date: 5-21-90

Job Number: 5Y053.09 00 By: D. Nickerson

Boring Number: GW-1

****

Depth of Hole: 55' Comments

Diameter of Hole: 11"

ALL MATERIALS INSPECTED PRIOR TO INSTALLATION?
Yes X No ____

SCREEN
Material: prepacked PVC 2" ID inside 4" ID Sch. 40
Slot Size: 0.01"
Length: 5'
Threaded: Yes X No ____

RISER PIPE
Material: PVC 2" ID Sch. 40
Total Length of Well - Screen Length = 53' (includes 3' stick-up)
Threaded: Yes X No ____

END CAP
Material: PVC
Threaded: Yes X No ____

ALL JOINTS TEFLON TAPED: Yes ____ No X

TOTAL LENGTH OF WELL CASING (Includes screen and stick-up.) 55'

SAND PACK
Type/Size: #4 Q Rok Around prepacked screen
Amount (Calculated): 200 lb
Amount (Actual): 200 lb
Installed with Tremie: Yes ____ No X

BENTONITE SEAL(S):
Type/Size: pellets 3/8"
Amount (Calculated): 100 lb
Amount (Actual): 100 lb
Installed with Tremie: Yes ____ No X
Secondary Seal(s) Used: Yes ____ No X
Explain: ____

WELL INSTALLATION CHECKLIST
PHASE II INVESTIGATIONS

GROUT/CEMENT

Mixture (#Cement/#Bentonite): 94 lbs cement / 3 lbs bentonite

Mixture (Gal. water/#dry mix): 7 gal water / 97 lb dry mix

Amount (calculated): 130 gal

Amount (actual): 130 gal

Installed with TREMIE: Yes ___ No X

LOCKING PROTECTIVE CASING INSTALLED: Yes X No ___

Locked immediately after installation: Yes X No ___

Grout sloped at surface to allow run-off: Yes X No ___

Drain hole drilled prior to development: Yes X No ___

Stick-up: 2.63'

ANY FOREIGN OBJECTS LOST IN THE WELL: Yes ___ No X

If yes:

(1) What was lost:

(2) Depth:

(3) Stage of well installation:

(4) Was object retrieved: Yes ___ No ___

(All or part/how):

WELL CAPPED: Yes X No ___

WELL IDENTIFIED: Yes X No ___

DISPOSAL OF CUTTINGS:

Left in pile: ___

Spread out: ___ (Hnu reading: ___ ppm)

Containerized: ___

Other: Containerized and moved to landfill

DISPOSAL OF FLUIDS:

Run off on ground surface: X

Containerized: ___

Other: ___

D. Richman

Engineering-Science Representative

5-16-90

Contractor: RDC
Driller: Steve Kuhn
Inspector: D Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 3/4" HSA

GROUNDWATER OBSERVATIONS

Water Level	29.5' T.O.C.		40.2'
Time	900		834
Date	5/29		6/7

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille
PROJECT NO. 3U053.09.00
Weather: Cloudy 52°
Date/Time Start 5/23/90 8:45 am
Date Time Finish 5/25/90 10:40 am

BORING NO. GW-2
Sheet 1 of 4
Location landfill area approx. 100' SE of SE fence around gas well just beyond berm to the South of the gaswell
Plot Plan See sample location map FIGURE III-1

Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
						← protective casing with lock; 2' stick-up; 0'	
10		2-2'	0	2	0 brown sandy soil with organic debris (cuttings) moist		
				1			
				1			
				1	3		
					brown, med. sand and gravel fill with some dark black silt, moist		
0		5-7'	40	7			
				6			
				5			
				5	8		
					fine - very fine brown sand with some fine to med. gravel, moist (till)		
0		10-11'	30	25			
				100			
0		15-17'	95	24			
				54			
				57			
				55			

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 0-2' ⇒ Soil / fill
3-18' ⇒ Sandy fill

Contractor: ROC
Driller: Steve Kohn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 3/8" HSA

GROUNDWATER OBSERVATIONS

Water Level			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Haydaille
PROJECT NO. 51053.07.00
Weather: Cloudy 32°
Date/Time Start 5/23/90 8:45 am
Date Time Finish 5/25/90 10:60 am

BORING NO. GW-2
Sheet 2 of 4
Location landfill area approx 100' SE of SE fence around gas well just beyond fence to the South
Plot Plan of the gas well

Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
0		20-22'	95	11			
				16			
				16			
				36			
0		25-27'	65	18			
				38			
				52			
				54			
4.7		30-32'	65	13			
				21			
				27			
				36			
0		35-37'	95	7			
				13			
				14			
				14			

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 18-39' ⇒ Sandy fill

Contractor: RDC
Driller: Steve Kuhn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" HSA

GROUNDWATER OBSERVATIONS

Water Level			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille
PROJECT NO. 5403.09.00

Weather: Cloudy 52°
Date/Time Start 5/25/90 8:45 am
Date Time Finish 5/25/90 10:45 am

BORING NO. GW-2
Sheet 3 of 4
Location

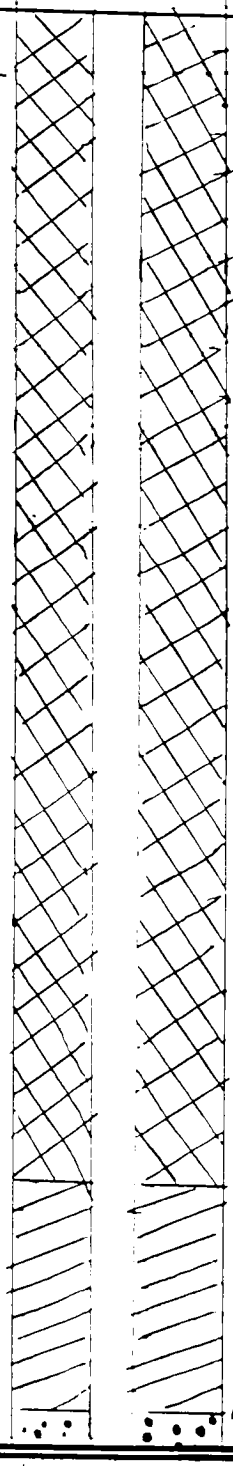
Plot Plan

Recovery / Reading	Sample No.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
					↓ 40
0		40-41'	70	6	
				29	
				14	
				21	
0		45-47'	0	8	
				13	
				14	
				30	
0		50-52'	50	14	
				25	
				25	
				29	
0		53-55'	50	14	
				11	
				17	
				21	
0		55-57'	65	6	
				13	
				18	
				22	
0		58-60'	65	9	
				16	
				18	
				22	

Brown silt and fine gravel with a little v. fine sand and trace of clay, moist (lower fill)

↓ 60'

WELL SCHEMATIC



COMMENTS

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 40 - 60 ⇒ silty fill

Contractor: KDC
Driller: Steve Sahn
Inspector: C. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" HSA

GROUNDWATER OBSERVATIONS

Water Level			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille
PROJECT NO. SY053.09.02

Weather: Cloudy 520
Date/Time Start 5/23/90 8 45 am
Date Time Finish 5/25/90 10:40 am

BORING NO. GW-2
Sheet 4 of 4
Location

Plot Plan

Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
0		60-62'	70	7	very fine to medium brown Sand and silt, Saturated		Sand pack
				15			
				17			
				15			
0		63-65'	65	10			10' Screen 60-70'
				14			
				16			
				16			
0		68-70'	70	24			
				35			
				57			
				79			
					70' well bottom		

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 60-70' => brown fine Sand and Silt

61

WELL INSTALLATION CHECKLIST
PHASE II INVESTIGATIONS

Site Name: Houdaille Str... Date: 5/29/90

Job Number: 5405309.00 By: WD Lilley

Boring Number: GW - 2

****

Comments

Depth of Hole: 70'

Diameter of Hole: 11"

ALL MATERIALS INSPECTED PRIOR TO INSTALLATION?
Yes X No ____

SCREEN
Material: 2" ID SCH 40 PVC
Slot Size: 0.01"
Length: 10
Threaded: Yes X No ____

RISER PIPE
Material: 2" PVC SCH 40
Total Length of Well - Screen Length = 60
Threaded: Yes X No ____

END CAP
Material: 2" PVC
Threaded: Yes X No ____

ALL JOINTS TEFLON TAPED: Yes ____ No X

TOTAL LENGTH OF WELL CASING (Includes screen and stick-up.)

SAND PACK
Type/Size: #4 Ron
Amount (Calculated): 500#
Amount (Actual): 300#
Installed with Tremie: Yes ____ No X

BENTONITE SEAL(S):
Type/Size: Bentonite
Amount (Calculated): 50#
Amount (Actual): 50#
Installed with Tremie: Yes X No ____
Secondary Seal(s) Used: Yes ____ No X
Explain: ____

WELL INSTALLATION CHECKLIST
PHASE II INVESTIGATIONS

GROUT/CEMENT

Mixture (#Cement/#Bentonite): 94 # cement / 3 # bentonite

Mixture (Gal. water/#dry mix): 7 gal H_2O / 97 # dry mix

Amount (calculated): 120 gal

Amount (actual): 120 gal

Installed with TREMIE: Yes X No ____

LOCKING PROTECTIVE CASING INSTALLED: Yes X No ____

Locked immediately after installation: Yes X No ____

Grout sloped at surface to allow run-off: Yes X No ____

Drain hole drilled prior to development: Yes X No ____

Stick-up: 2'

ANY FOREIGN OBJECTS LOST IN THE WELL: Yes ____ No X

If yes:

(1) What was lost:

(2) Depth:

(3) Stage of well installation:

(4) Was object retrieved: Yes ____ No ____

(All or part/how):

WELL CAPPED: Yes X No ____

WELL IDENTIFIED: Yes X No ____

DISPOSAL OF CUTTINGS:

Left in pile: X

Spread out: ____ (Hnu reading: ____ ppm)

Containerized: ____

Other: ____

DISPOSAL OF FLUIDS:

Run off on ground surface: X

Containerized: ____

Other: ____

M D Kelley

Engineering-Science Representative

5/25/90

Contractor: Rochester Drilling
Driller: Steve Kahn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" ID HSA

GROUNDWATER OBSERVATIONS

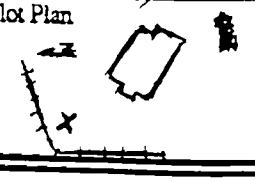
Water Level	30.9' from TOC	31' T.O.C.
Time	8 30	1115
Date	5-15	5-22

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille Stripit
PROJECT NO. SYA53.09.00

Weather: Cool, windy, 50° cloudy
Date/Time Start 5-11-90 0830
Date Time Finish 5-14-90 1500

BORING NO. GW-3
Sheet 1 of 3
Location Approx 175' NW of NW corner of building (rear-fence)
Plot Plan



Photovac Reading	Sample ID	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
							Protective casing with lock 2' stick up
0		0-2'	5	8		0'	
				9	brown, silty soil with organic matter and pebbles/cobbles		
				9			
				4		3'	
4		5-7'	60	13			
				13	Olive greenish brown to brown densely packed fine sand and silt with some fine gravel, moist (till)		
				28			
				32			
0		10-11'	40	50			
				105			
0		15-16'	50	40			
				105			

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 0-4' Soil / packing bit fill
4-18' = silty till, moist

Contractor: Rochester Drilling
Driller: Steve Kalan
Inspector: D Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" ID HSA

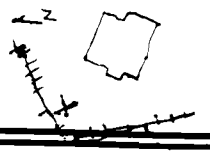
GROUNDWATER OBSERVATIONS

Water Level	30.91		
Time	8:07		
Date	6/7		

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille Stripper
PROJECT NO. 5426.09 00
Weather: cool cloudy windy 50°
Date/Time Start 5-11-90 8 30
Date Time Finish 5-14-90 1500

BORING NO. GW-3
Sheet 2 of 3
Location approx 175' NW of NW corner of building (near trees)
Plot Plan



Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
					20'		
0		20-21.5'	50	47			
				53			
				106			
					brown, v. fine sand and silt with some fine gravel and trace angular pebbles, compact, dry (till)		Cement/ bentonite mix
0		25-26.5'	50	38			
				64			
				100			
2.5		30-32'	0	15			
				17			
				25			
				44			
					35'		
11.2		35-36.5'	30	25			35.7' bentonite seal
				70	V. fine sand and silt some medium gravel, dry		
				100			37.7'

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 1' - 20' ⇒ silty till, moist
20 - 39 ⇒ silty till, dry

Contractor: Rochester Drilling
Driller: Steve Kahn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" ID HSA

GROUNDWATER OBSERVATIONS

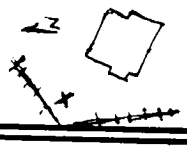
Water Level			
Time			
Date			

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille Strippit
PROJECT NO. 5405 3.09.00

Weather: Cool Cloudy, windy 50°
Date/Time Start 5-11-90 08.30
Date Time Finish 5-14-90 1500

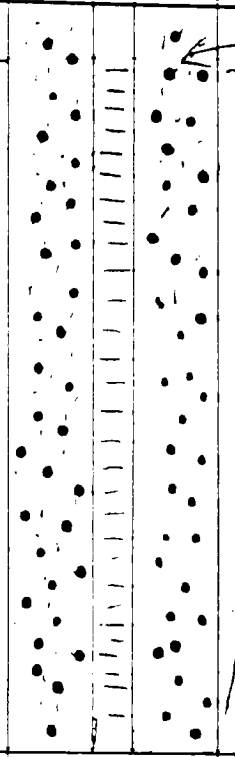
BORING NO. GW-3
Sheet 3 of 3
Location approx 175' NW of NW corner of building (near tree)
Plot Plan



Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
					40'
0		40-42'	65	8	brown fine sand, trace silt
				15	
				14	saturated
				25	
0		42-45'	65	23	
				20	
				25	
				35	
3.5		45-47'	70	13	
				23	
				23	
				31	
0		48-50'	90	20	
				28	
				36	
				100	50'

50' well bottom

WELL SCHEMATIC



COMMENTS

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 14-40' = silty fill (dry)
40-50' = brown fine sand, trace silt

WELL INSTALLATION CHECKLIST
PHASE II INVESTIGATIONS

61

Site Name: Houdaille Stroppit Date: 5-14-90
Job Number: SY053.09.00 By: D. Nickerson
Boring Number: GW-3

****

Depth of Hole: 50'

Diameter of Hole: 11"

Comments

ALL MATERIALS INSPECTED PRIOR TO INSTALLATION?
Yes X No ____

SCREEN
Material: PVC sch 40 2" ID
Slot Size: 0.01"
Length: 10'
Threaded: Yes X No ____

RISER PIPE
Material: PVC sch 40 2" ID
Total Length of Well - Screen Length = 42' (includes 2' stick up)
Threaded: Yes X No ____

END CAP
Material: PVC
Threaded: Yes X No ____

ALL JOINTS TEFLON TAPED: Yes ____ No X

TOTAL LENGTH OF WELL CASING (Includes screen and stick-up.)
52'

SAND PACK
Type/Size: #4 Q Rock
Amount (Calculated): 400 lb
Amount (Actual): 400 lb
Installed with Tremie: Yes ____ No X

BENTONITE SEAL(S):
Type/Size: pellets 3/8 Size
Amount (Calculated): 100 lbs
Amount (Actual): 100 lbs
Installed with Tremie: Yes ____ No X
Secondary Seal(s) Used: Yes ____ No X
Explain: ____

g-2

WELL INSTALLATION CHECKLIST
PHASE II INVESTIGATIONS

GROUT/CEMENT

Mixture (#Cement/#Bentonite): 94 lb cement / 3lb bentonite

Mixture (Gal. water/#dry mix): 7 gal H_2O / 97 lb. dry mix

Amount (calculated): 30 gal

Amount (actual): 30 gal

Installed with TREMIE: Yes X No ____

LOCKING PROTECTIVE CASING INSTALLED: Yes X No ____

Locked immediately after installation: Yes X No ____

Grout sloped at surface to allow run-off: Yes X No ____

Drain hole drilled prior to development: Yes X No ____

Stick-up: 2.1'

ANY FOREIGN OBJECTS LOST IN THE WELL: Yes ____ No X

If yes:

(1) What was lost:

(2) Depth:

(3) Stage of well installation:

(4) Was object retrieved: Yes ____ No ____

(All or part/how):

WELL CAPPED: Yes X No ____

WELL IDENTIFIED: Yes X No ____

DISPOSAL OF CUTTINGS:

Left in pile: ____

Spread out: ____ (Hnu reading: ____ ppm)

Containerized: ____

Other: Moved to landfill area

DISPOSAL OF FLUIDS:

Run off on ground surface: ✓

Containerized: ____

Other: ____

David A. Nickerson

Engineering-Science Representative

5-14-90

Contractor: KDC
Driller: Steve Kahn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" HSA

GROUNDWATER OBSERVATIONS

Water Level	35.65'	T.O.C (pvc) 35.15'	
Time	11 15		9:15
Date	5-22		6/7

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille
PROJECT NO. SY053.09.00

Weather: Rain 65°
Date/Time Start 5/15/90 9 15 am
Date Time Finish 5/16/90 1 00 pm

BORING NO. GW-4
Sheet 1 of 3
Location Approx 60' SE of SE corner of Stripat building

Plot Plan
See sample location map FIGURE III-1

Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
				55			protective casing with lock 2' stick up
0		0-2'	Auger Cuttings		brown sandy and silty soil with organic debris and some medium gravel, moist		
20.8	SS-1	5-7'	60	20	brown fine - v. fine sand, little silt, some fine gravel (moist) (upper till)		
				33			
				44			
				51			
8.2	SS-1	10-12'	35	20			
				30			
				46			
				56			
12	SS-1	15-17'	70	10			
				14			
				16			
				20			

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 0-3' Soil
3-18' → Sandy Till

Contractor: ROC
Driller: Steve Kuba
Inspector: O. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" HSA

GROUNDWATER OBSERVATIONS

Water Level	35.65'	T.O.C. (PVC)	
Time	1115		
Date	5-22		

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille
PROJECT NO. 5X053.09.02

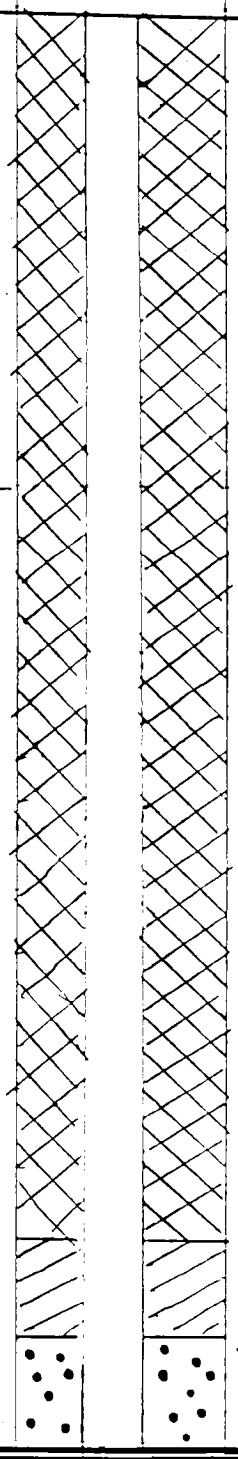
Weather: Rain 65°
Date/Time Start 5/15/90 915 am
Date Time Finish 5/16/90 100 pm

BORING NO. GW-4
Sheet 2 of 3
Location Approx. 60' SE of SE corner of Striper building

Plot Plan

Photovac Reading	Sample No.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
15.5	SS-1	20-22'	70	8	
				10	
				14	
				22	
7.3		25-26.5'	65	12	brown fine to v. fine sand and silt with some fine gravel and trace of clay, moist (lower fill)
				11	
				15	
4.2		30-32'	65	9	
				15	
				26	
				24	
0		35-37'	20	18	
				20	
				23	
				23	

WELL SCHEMATIC



COMMENTS

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 12 - 25' => SANDY fill
25 - 34' => SILTY fill

Contractor: RDC
Driller: Steve Kahn
Inspector: D. Nickerson
Rig Type: Mobile B-61
Drilling Method: 6 5/8" HSA

GROUNDWATER OBSERVATIONS

Water Level	35.65'	T.O.C	
Time	1115		
Date	5-22		

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Houdaille
PROJECT NO. 54057.09.00

Weather: rain 65°

Date/Time Start 5/15/90 9:15 am

Date Time Finish 5/16/90 1:00 pm

BORING NO. GW-4
Sheet 3 of 3
Location approx 60' SE of SE corner of Stroppit building

Plot Plan

Photovac Reading	Sample I.D.	Sample Depth	% Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	COMMENTS
							Sand pack
0		40-42'	95	9			
				11			
				13			
				33			
					fine brown sand and silt, saturated		
0		43-45'	95	12			
				16			
				20			
				24			
0		45-47'	65	10			10' Screen 40-50'
				13			
				16	fine brown sand, wet interm ixed with layers of silt and fine gravel (till)		
				20			
0		48-50'	65	12			
				24			
				30			
				29			
					50' well bottom		

STANDARD PENETRATION TEST
SS = SPLIT SPOON A = AUGER CUTTINGS C = CORED

SUMMARY 39-42' ⇒ Silty Till
42-45' ⇒ fine brown Sand and Silt 45-50 ⇒ interm ixed layers of fine brown wet sand & silt and till

WELL INSTALLATION CHECKLIST
PHASE II INVESTIGATIONS

61

Site Name: Houdaille Straight Date: 5-16-90

Job Number: SY053.09.00 By: D. Nickerson

Boring Number: GW-4

****

Depth of Hole: 50' Comments

Diameter of Hole: 11"

ALL MATERIALS INSPECTED PRIOR TO INSTALLATION?
Yes X No ____

SCREEN
Material: 2" ID SCH 40 PVC
Slot Size: 0.01"
Length: 10'
Threaded: Yes X No ____

RISER PIPE
Material: PVC sch 40
Total Length of Well - Screen Length = 42' (includes 2' stick up)
Threaded: Yes X No ____

END CAP
Material: PVC
Threaded: Yes X No ____

ALL JOINTS TEFLON TAPED: Yes ____ No X

TOTAL LENGTH OF WELL CASING (Includes screen and stick-up.)
52'

SAND PACK
Type/Size: #4 Q ROK
Amount (Calculated): 500 lbs
Amount (Actual): 500 lbs
Installed with Tremie: Yes ____ No X

BENTONITE SEAL(S):
Type/Size: 02 Pellets 3/4"
Amount (Calculated): 50 lbs
Amount (Actual): 50 lbs
Installed with Tremie: Yes ____ No X
Secondary Seal(s) Used: Yes ____ No X
Explain: ____

WELL INSTALLATION CHECKLIST
PHASE II INVESTIGATIONS

GROUT/CEMENT

Mixture (#Cement/#Bentonite): 94lb cement / 3 lb bentonite

Mixture (Gal. water/#dry mix): 7 gal water / 97 lb dry mix

Amount (calculated): 130 gal

Amount (actual): 130 gal

Installed with TREMIE: Yes ___ No X

LOCKING PROTECTIVE CASING INSTALLED: Yes X No ___

Locked immediately after installation: Yes X No ___

Grout sloped at surface to allow run-off: Yes X No ___

Drain hole drilled prior to development: Yes X No ___

Stick-up: 1.92'

ANY FOREIGN OBJECTS LOST IN THE WELL: Yes ___ No X

If yes:

(1) What was lost:

(2) Depth:

(3) Stage of well installation:

(4) Was object retrieved: Yes ___ No ___

(All or part/how):

WELL CAPPED: Yes X No ___

WELL IDENTIFIED: Yes X No ___

DISPOSAL OF CUTTINGS:

Left in pile: ___

Spread out: ✓ (Hnu reading: 0 ppm)

Containerized: ___

Other: ___

DISPOSAL OF FLUIDS:

Run off on ground surface: ✓

Containerized: ___

Other: ___

D. Anderson

Engineering-Science Representative

5-21-90

APPENDIX D

LABORATORY ANALYTICAL DATA

APPENDIX D

LABORATORY ANALYTICAL DATA

Subsurface Soil Results

Groundwater Results

Surface Water Results

Leachate Results

Sediment Results

Quality Control Sample Results and Field Sampling Records

Each group noted above is organized by sample number. Results are listed in the following order: Volatile organics, semivolatile organics, pesticides/PCBs, and metals. Data qualifiers can be found following this page.

Versar Inc

Data Qualifier Flags

J — For Target Compounds: This flag is used when mass spectral data indicates the presence of a compound but the result is less than the specified detection limit but still greater than zero.

For Non Target Compounds: This flag indicates that the concentration is an estimated value, assuming a 1 to 1 response with the internal standard.

B — This flag is used when the analyte is found in the blank as well as in the sample. It indicates possible/probable contamination and warns the data user to take appropriate action.

u — This flag states that the compound was analyzed for but was not detected. The number is the minimum attainable detection limit for the sample.

X or T — This flag states that the mass spectrum does not meet EPA CLP criteria for confirmation, but compound presence is strongly suspected.

E — This flag is used to indicate that the quantitation of the analyte is outside the linear calibration of the curve and that dilution was required in order to properly quantitate.

D — This flag is used to indicate the value for the target analyte was calculated from a dilution (see 'E' flag above).

Y — This flag is used when a matrix spike compound is also confirmed present in the unspiked sample.

Flags excerpted from and established by the US EPA Contract Lab Program (CLP) protocol.

Qualifier Cross Reference List
For Metals

Qualifier	Type	Brief Explaination
B	C	Reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL)
U	C	Reported value is less than the IDL
E	Q	Reported value is estimated because of the presence of interference. An explanatory note will appear on the cover page if the problem applies to all samples or on a specific Form I - IN if it is an isolated problem
M	Q	Duplicate injection precision not met
N	Q	Spiked sample recovery not within control limits
S	Q	The reported value was determined by the Method of Standard Additions (MSA)
W	Q	Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance. (See Exhibit E of SOW 7/87)
*	Q	Duplicate analysis (Relative Percent Difference) not within contol limits
+	Q	Correlation coefficient for the MSA is less than 0.995
Please note that entering "S", "W", or "+" is mutually exclusive. There are no combinations of these qualifiers in the same field for an analyte		
P	M	Analysis done by inductively coupled plasma (ICP)
A	M	Analysis done by flame atomic absorption (AA)
F	M	Analysis done by furnace AA
CV	M	Analysis done by manual cold vapor AA
AS	M	Analysis done by semi-automated spectrophotometric
NR	M	The analyte is not required to be analyzed
NA	M	Not applicable

Type: C - Concentration Qualifier; Q - QC Qualifier; M - Method Qualifier;

For more detailed descriptions of each of these qualifiers, please to refer to EPA's Contract Laboratory Program's Statement of Work, 7/87

SUBSURFACE SOIL RESULTS

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

ST-GW4-SS1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2741 SAS No.: _____ SDG No.: 1

Matrix: (soil/water) SOIL Lab Sample ID: 20994

Sample wt/vol: 5.0 (g/mL) G Lab File ID: U3707

Level: (low/med) LOW Date Received: 05/16/90

% Moisture: not dec. 8 Date Analyzed: 05/22/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene chloride	5	U
67-64-1	Acetone	8	J
75-15-0	Carbon disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon tetrachloride	5	U
108-05-4	Vinyl acetate	11	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total xylenes	5	U

10014

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

STGW4SS1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2741 SAS No.: _____ SDG No.: 1

Matrix: (soil/water) SOIL Lab Sample ID: 20993

Sample wt/vol: 30.0 (g/mL) G Lab File ID: T2852

Level: (low/med) LOW Date Received: 05/16/90

% Moisture: not dec. 8 dec. _____ Date Extracted: 05/25/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/04/90

GPC Cleanup: (Y/N) N pH: 7.60 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)Ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl Alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
39638-32-9	bis(2-Chloroisopropyl)Ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-Propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic Acid	1700	U
111-91-1	bis(2-Chloroethoxy)Methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-Methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

STGW4SS1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2741 SAS No.: _____ SDG No.: 1

Matrix: (soil/water) SOIL Lab Sample ID: 20993

Sample wt/vol: 30.0 (g/mL) G Lab File ID: T2852

Level: (low/med) LOW Date Received: 05/16/90

% Moisture: not dec. 8 dec. ____ Date Extracted: 05/25/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/04/90

GPC Cleanup: (Y/N) N pH: 7.60 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-10-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	720	U
56-55-3	Benzo(a)Anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)Phthalate	360	U
117-84-0	Di-n-Octyl Phthalate	360	U
205-99-2	Benzo(b)Fluoranthene	360	U
207-08-9	Benzo(k)Fluoranthene	360	U
50-32-8	Benzo(a)Pyrene	360	U
193-39-5	Indeno(1,2,3-cd)Pyrene	360	U
53-70-3	Dibenz(a,h)Anthracene	360	U
191-24-2	Benzo(g,h,i)Perylene	360	U

(1) - Cannot be separated from Diphenylamine

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

STGW4SS1

Lab Name: VERSAR, INC. Contract:

Lab Code: VERSAR Case No.: ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water) SOIL

Lab Sample ID: 20993

Sample wt/vol: 30.01 (g/ml) G

Lab File ID:

Level: (low/med) LOW

Date Received: 05/19/90

% Moisture: not dec. 8.5 dec.

Date Extracted: 05/25/90

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 06/04/90

GPC Cleanup: (Y/N) N pH: 7.63

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.4	U
319-85-7	beta-BHC	4.4	U
319-86-8	delta-BHC	4.4	U
58-89-9	gamma-BHC (Lindane)	4.4	U
76-44-8	Heptachlor	4.4	U
309-00-2	Aldrin	4.4	U
1024-57-3	Heptachlor Epoxide	4.4	U
959-98-8	Endosulfan I	4.4	U
60-57-1	Dieldrin	4.4	U
72-55-9	4,4'-DDE	8.7	U
72-20-8	Endrin	8.7	U
33213-65-9	Endosulfan II	8.7	U
72-54-8	4,4'-DDD	8.7	U
1031-07-8	Endosulfan Sulfate	8.7	U
50-29-3	4,4'-DDT	8.7	U
72-43-5	Methoxychlor	8.7	U
53494-70-5	Endrin Ketone	44	U
5103-71-9	alpha-Chlordane	8.7	U
5103-74-2	gamma-Chlordane	8.7	U
8001-35-2	Toxaphene	8.7	U
12674-11-2	Aroclor-1016	87	U
11104-28-2	Aroclor-1221	44	U
11141-16-5	Aroclor-1232	44	U
53469-21-9	Aroclor-1242	44	U
12672-29-6	Aroclor-1248	44	U
11097-69-1	Aroclor-1254	44	U
11096-82-5	Aroclor-1260	87	U

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.: ST-GW4-SS1

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2741____ Code: ENGIHOUD Batch: 1_____

Matrix : SOIL_____ Lab Sample ID: 20992____

Level (low/med): LOW_____ Date Received: 05/16/90_

% Solids: __91.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7670		*	P
7440-36-0	Antimony	5.0	U	N	P
7440-38-2	Arsenic	2.3			F
7440-39-3	Barium	54.8			P
7440-41-7	Beryllium	0.84	B		P
7440-43-9	Cadmium	1.1	U		P
7440-70-2	Calcium	98800		*	P
7440-47-3	Chromium	10.2		*	P
7440-48-4	Cobalt	3.9	B		P
7440-50-8	Copper	7.2			P
7439-89-6	Iron	11100		E*	P
7439-92-1	Lead	10.6		*	F
7439-95-4	Magnesium	49400		*	P
7439-96-5	Manganese	382		E	P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	8.9			P
7440-09-7	Potassium	2340			P
7782-49-2	Selenium	4.3	U	WN	F
7440-22-4	Silver	0.44	U		P
7440-23-5	Sodium	246	B		P
7440-28-0	Thallium	0.22	U	W	F
7440-62-2	Vanadium	16.1			P
7440-66-6	Zinc	61.7		EN*	P
	Cyanide	0.53	U	N	AS

Color Before: BROWN____ Clarity Before: _____ Texture: FINE__

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

GROUNDWATER RESULTS

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23538

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1878

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column: (pack/cap) CAP Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISGW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23538

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1878

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_GW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23530

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5499

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. _____ dec. _____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	48	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	48	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	48	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_GW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23530

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5499

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	48	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	48	U
100-02-7	4-Nitrophenol	48	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	48	U
534-52-1	4,6-Dinitro-2-methylphenol	48	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	48	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	19	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HIS_GW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23530

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5499

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	109-87-5	METHANE, DIMETHOXY-	7.87	11	J
2.	622-40-2	4-MORPHOLINEETHANOL	10.72	9.5	J
3.		UNKNOWN	16.22	200	J
4.		UNKNOWN	16.35	30	J
5.	2038-03-1	4-MORPHOLINEETHANAMINE	19.02	21	J
6.		UNKNOWN	19.80	180	J
7.		UNKNOWN	23.55	210	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW1

b Name: _____VERSAR, INC.___ Contract: _

Lab Code: VERSAR Case No.: ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: ___23522

Sample wt/vol: 1020 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: ___06/08/90

% Moisture: not dec. _____ dec. _____ Date Extracted: ___06/13/90

Extraction: (SepF/Cont/Sonc) ____CONT Date Analyzed: ___06/26/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: _1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.49	U
53494-70-5	Endrin Ketone	0.10	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	0.98	U
12674-11-2	Aroclor-1016	0.49	U
11104-28-2	Aroclor-1221	0.49	U
11141-16-5	Aroclor-1232	0.49	U
53469-21-9	Aroclor-1242	0.49	U
12672-29-6	Aroclor-1248	0.49	U
11097-69-1	Aroclor-1254	0.98	U
11096-82-5	Aroclor-1260	0.98	U

06/26/91

1

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.

HIS-GW-1

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874____ Code: ENGIHOUD Batch: 2_____

Matrix : WATER_____ Lab Sample ID: 23506____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	513			P
7440-36-0	Antimony	44.3	B		P
7440-38-2	Arsenic	3.0	U	WN	F
7440-39-3	Barium	191	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	93500			P
7440-47-3	Chromium	3.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	4.0	U		P
7439-89-6	Iron	465			P
7439-92-1	Lead	9.1			F
7439-95-4	Magnesium	8760			P
7439-96-5	Manganese	34.3			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	12.4	B		P
7440-09-7	Potassium	303000			P
7782-49-2	Selenium	15.0	U		F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	161000			P
7440-28-0	Thallium	3.0	U	WN	F
7440-62-2	Vanadium	13.2	B		P
7440-66-6	Zinc	2.0	U		P
	Cyanide	10	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_CYANIDE_LAB_SAMPLE_ID_NUMBER_IS_23514;_____

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW2

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23539

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1879

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column: (pack/cap) CAP Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISGW2

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23539

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1879

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. _____ Date Analyzed: 06/14/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 928-68-7	2-HEPANONE, 6-METHYL-	21.37	27	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_GW2

Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23531

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5500

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	12	
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	48	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	48	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	48	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_GW2

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23531

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5500

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	48	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	48	U
100-02-7	4-Nitrophenol	48	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	48	U
534-52-1	4,6-Dinitro-2-methylphenol	48	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	48	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	19	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HIS_GW2

Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23531

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5500

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

Number TICs found: 13 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	109-87-5	METHANE, DIMETHOXY-	7.88	5.7	J
2.	622-40-2	4-MORPHOLINEETHANOL	10.75	23	J
3.	112-34-5	ETHANOL, 2-(2-BUTOXYETHOXY)-	12.54	13	J
4.	74367-33-2	PROPANOIC ACID, 2-METHYL-	15.75	7.6	J
5.		UNKNOWN	16.27	180	J
6.		UNKNOWN	16.39	59	J
7.		UNKNOWN	17.97	17	J
8.		UNKNOWN	19.05	25	J
9.		UNKNOWN	19.84	240	J
10.		UNKNOWN	21.60	15	J
11.		UNKNOWN	23.60	300	J
12.		UNKNOWN	27.27	190	J
13.		UNKNOWN	31.32	9.5	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW2

b Name: _____VERSAR, INC.___ Contract: _

Lab Code: VERSAR Case No.: ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: ___23523

Sample wt/vol: 1050 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: ___06/08/90

% Moisture: not dec. _____ dec. _____ Date Extracted: ___06/13/90

Extraction: (SepF/Cont/Sonc) ____CONT Date Analyzed: ___06/26/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: _1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.48	U
53494-70-5	Endrin Ketone	0.10	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	0.95	U
12674-11-2	Aroclor-1016	0.48	U
11104-28-2	Aroclor-1221	0.48	U
11141-16-5	Aroclor-1232	0.48	U
53469-21-9	Aroclor-1242	0.48	U
12672-29-6	Aroclor-1248	0.48	U
11097-69-1	Aroclor-1254	0.95	U
11096-82-5	Aroclor-1260	0.95	U

06/25/90

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.

HIS-GW-2

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874____ Code: ENGIHOUD Batch: 2_____

Matrix : WATER_____ Lab Sample ID: 23507____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	838			P
7440-36-0	Antimony	48.0	B		P
7440-38-2	Arsenic	3.0	U	WN	F
7440-39-3	Barium	1120			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	268000			P
7440-47-3	Chromium	3.0	U		P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	5.4	B		P
7439-89-6	Iron	462			P
7439-92-1	Lead	1.9	B		F
7439-95-4	Magnesium	789	B		P
7439-96-5	Manganese	12.0	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	5.0	U		P
7440-09-7	Potassium	96800			P
7782-49-2	Selenium	3.0	U	W	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	229000			P
7440-28-0	Thallium	3.0	U	WN	F
7440-62-2	Vanadium	6.7	B		P
7440-66-6	Zinc	2.0	U		P
	Cyanide	10	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_CYANIDE_LAB_SAMPLE_ID_NUMBER_IS_23515;_____

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW3

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23540

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1880

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column: (pack/cap) CAP Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISGW3

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23540

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1880

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_GW3

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23532

Sample wt/vol: 890 (g/mL) ML Lab File ID: V5501

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	11	U
111-44-4	bis(2-Chloroethyl)ether	11	U
95-57-8	2-Chlorophenol	11	U
541-73-1	1,3-Dichlorobenzene	11	U
106-46-7	1,4-Dichlorobenzene	11	U
100-51-6	Benzyl alcohol	11	U
95-50-1	1,2-Dichlorobenzene	11	U
95-48-7	2-Methylphenol	11	U
108-60-1	bis(2-Chloroisopropyl)ether	11	U
106-44-5	4-Methylphenol	11	U
621-64-7	N-Nitroso-di-n-propylamine	11	U
67-72-1	Hexachloroethane	11	U
98-95-3	Nitrobenzene	11	U
78-59-1	Isophorone	11	U
88-75-5	2-Nitrophenol	11	U
105-67-9	2,4-Dimethylphenol	11	U
65-85-0	Benzoic Acid	56	U
111-91-1	bis(2-Chloroethoxy)methane	11	U
120-83-2	2,4-Dichlorophenol	11	U
120-82-1	1,2,4-Trichlorobenzene	11	U
91-20-3	Naphthalene	11	U
106-47-8	4-Chloroaniline	11	U
87-68-3	Hexachlorobutadiene	11	U
59-50-7	4-Chloro-3-methylphenol	11	U
91-57-6	2-Methylnaphthalene	11	U
77-47-4	Hexachlorocyclopentadiene	11	U
88-06-2	2,4,6-Trichlorophenol	11	U
95-95-4	2,4,5-Trichlorophenol	56	U
91-58-7	2-Chloronaphthalene	11	U
88-74-4	2-Nitroaniline	56	U
131-11-3	Dimethylphthalate	11	U
208-96-8	Acenaphthylene	11	U
606-20-2	2,6-Dinitrotoluene	11	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_GW3

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23532

Sample wt/vol: 890 (g/mL) ML Lab File ID: V5501

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	56	U
83-32-9	Acenaphthene	11	U
51-28-5	2,4-Dinitrophenol	56	U
100-02-7	4-Nitrophenol	56	U
132-64-9	Dibenzofuran	11	U
121-14-2	2,4-Dinitrotoluene	11	U
84-66-2	Diethylphthalate	11	U
7005-72-3	4-Chlorophenyl-phenylether	11	U
86-73-7	Fluorene	11	U
100-01-6	4-Nitroaniline	56	U
534-52-1	4,6-Dinitro-2-methylphenol	56	U
86-30-6	N-nitrosodiphenylamine (1)	11	U
101-55-3	4-Bromophenyl-phenylether	11	U
118-74-1	Hexachlorobenzene	11	U
87-86-5	Pentachlorophenol	56	U
85-01-8	Phenanthrene	11	U
120-12-7	Anthracene	11	U
84-74-2	Di-n-butylphthalate	11	U
206-44-0	Fluoranthene	11	U
129-00-0	Pyrene	11	U
85-68-7	Butylbenzylphthalate	11	U
91-94-1	3,3'-Dichlorobenzidine	22	U
56-55-3	Benzo(a)anthracene	11	U
218-01-9	Chrysene	11	U
117-81-7	bis(2-Ethylhexyl)phthalate	11	U
117-84-0	Di-n-octyl phthalate	11	U
205-99-2	Benzo(b)fluoranthene	11	U
207-08-9	Benzo(k)fluoranthene	11	U
50-32-8	Benzo(a)pyrene	11	U
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
53-70-3	Dibenz(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HIS_GW3

Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23532

Sample wt/vol: 890 (g/mL) ML Lab File ID: V5501

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW3

b Name:_____VERSAR, INC.___ Contract:_

Lab Code: VERSAR Case No.:ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water)WATER Lab Sample ID: ___23524

Sample wt/vol: 950 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: ___06/08/90

% Moisture: not dec._____ dec._____ Date Extracted:___06/13/90

Extraction: (SepF/Cont/Sonc) ____CONT Date Analyzed: ___06/25/90

GPC Cleanup: (Y/N)N pH:____ Dilution Factor: _1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_UG/L	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.11	U
72-55-9	4,4'-DDE	0.11	U
72-20-8	Endrin	0.11	U
33213-65-9	Endosulfan II	0.11	U
72-54-8	4,4'-DDD	0.11	U
1031-07-8	Endosulfan Sulfate	0.11	U
50-29-3	4,4'-DDT	0.11	U
72-43-5	Methoxychlor	0.53	U
53494-70-5	Endrin Ketone	0.11	U
5103-71-9	alpha-Chlordane	0.11	U
5103-74-2	gamma-Chlordane	0.11	U
8001-35-2	Toxaphene	1.1	U
12674-11-2	Aroclor-1016	0.53	U
11104-28-2	Aroclor-1221	0.53	U
11141-16-5	Aroclor-1232	0.53	U
53469-21-9	Aroclor-1242	0.53	U
12672-29-6	Aroclor-1248	0.53	U
11097-69-1	Aroclor-1254	1.1	U
11096-82-5	Aroclor-1260	1.1	U

C-1 06/26/90

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.: HIS-GW-3

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874____ Code: ENGIHOUD Batch: 2_____

Matrix : WATER_____ Lab Sample ID: 23508____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5_	Aluminum__	1770			P
7440-36-0_	Antimony__	40.9	B		P
7440-38-2_	Arsenic___	3.0	U	WN	F
7440-39-3_	Barium____	121	B		P
7440-41-7_	Beryllium_	1.0	U		P
7440-43-9_	Cadmium___	3.0	U		P
7440-70-2_	Calcium___	55000			P
7440-47-3_	Chromium__	3.0	U		P
7440-48-4_	Cobalt____	3.0	U		P
7440-50-8_	Copper____	4.0	U		P
7439-89-6_	Iron______	3360			P
7439-92-1_	Lead______	4.3	B		F
7439-95-4_	Magnesium_	30000			P
7439-96-5_	Manganese_	153			P
7439-97-6_	Mercury___	0.20	U		CV
7440-02-0_	Nickel____	10.9	B		P
7440-09-7_	Potassium_	3300	B		P
7782-49-2_	Selenium__	3.0	U		F
7440-22-4_	Silver____	4.0	U		P
7440-23-5_	Sodium____	38000			P
7440-28-0_	Thallium__	3.0	U	WN	F
7440-62-2_	Vanadium__	6.0	B		P
7440-66-6_	Zinc______	19.8	B		P
_____	Cyanide___	10	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_CYANIDE_LAB_SAMPLE_NUMBER_IS_23516;_____

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW4

Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23541

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1881

Level: (low/med) LOW Date Received: 06/08/90

Moisture: not dec. ____ Date Analyzed: 06/14/90

Column: (pack/cap) CAP Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISGW4

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23541

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1881

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_GW4

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23533

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5504

Level: (low/med) LOW Date Received: 06/08/90

Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	48	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	48	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	48	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_GW4

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23533

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5504

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. _____ dec. _____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	48	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	48	U
100-02-7	4-Nitrophenol	48	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	48	U
534-52-1	4,6-Dinitro-2-methylphenol	48	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	48	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	19	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HIS_GW4

Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23533

Sample wt/vol: 1050 (g/mL) ML Lab File ID: V5504

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	16.22	13	J
2.		UNKNOWN	23.59	25	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW4

b Name: VERSAR, INC. Contract:

Lab Code: VERSAR Case No.: ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 23525

Sample wt/vol: 1050 (g/ml) ML Lab File ID:

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. dec. Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/26/90

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.48	U
53494-70-5	Endrin Ketone	0.10	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	0.95	U
12674-11-2	Aroclor-1016	0.48	U
11104-28-2	Aroclor-1221	0.48	U
11141-16-5	Aroclor-1232	0.48	U
53469-21-9	Aroclor-1242	0.48	U
12672-29-6	Aroclor-1248	0.48	U
11097-69-1	Aroclor-1254	0.95	U
11096-82-5	Aroclor-1260	0.95	U

06/26/90

1

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.

HIS-GW-4

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874____ Code: ENGIHOUD Batch: 2_____

Matrix : WATER_____ Lab Sample ID: 23509____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5680			P
7440-36-0	Antimony	35.7	B		P
7440-38-2	Arsenic	3.0	U	SN	F
7440-39-3	Barium	221			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	265000			P
7440-47-3	Chromium	10.7			P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	4.8	B		P
7439-89-6	Iron	14000			P
7439-92-1	Lead	12.6			F
7439-95-4	Magnesium	47100			P
7439-96-5	Manganese	326			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	5.0	U		P
7440-09-7	Potassium	59800			P
7782-49-2	Selenium	3.0	U		F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	40100			P
7440-28-0	Thallium	3.0	U	WN	F
7440-62-2	Vanadium	15.6	B		P
7440-66-6	Zinc	42.0			P
	Cyanide	10	U		AS

Color Before: BROWN____ Clarity Before: CLOUDY Texture: _____

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_CYANIDE_LAB_SAMPLE_ID_NUMBER_IS_23517;_____

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW5

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23542

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1882

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column: (pack/cap) CAP Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISGW5

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23542

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1882

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS-GW5

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23534

Sample wt/vol: 1000 (g/mL) ML Lab File ID: T3085

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS-GW5

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23534

Sample wt/vol: 1000 (g/mL) ML Lab File ID: T3085

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HIS-GW5

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23534

Sample wt/vol: 1000 (g/mL) ML Lab File ID: T3085

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	3.97	36	BJ
2.		UNKNOWN	4.27	10	BJ
3.		UNKNOWN	14.37	10	J
4.		UNKNOWN	21.57	14	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISGW5

b Name: VERSAR, INC. Contract:

Lab Code: VERSAR Case No.: ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 23526

Sample wt/vol: 1050 (g/ml) ML Lab File ID:

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. dec. Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/26/90

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.48	U
53494-70-5	Endrin Ketone	0.10	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	0.95	U
12674-11-2	Aroclor-1016	0.48	U
11104-28-2	Aroclor-1221	0.48	U
11141-16-5	Aroclor-1232	0.48	U
53469-21-9	Aroclor-1242	0.48	U
12672-29-6	Aroclor-1248	0.48	U
11097-69-1	Aroclor-1254	0.95	U
11096-82-5	Aroclor-1260	0.95	U

CL 06/26/90

1

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.

HIS-GW-5

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874____ Code: ENGIHOUD Batch: 2_____

Matrix : WATER_____ Lab Sample ID: 23510____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5_	Aluminum__	5370			P
7440-36-0_	Antimony__	25.7	B		P
7440-38-2_	Arsenic___	3.0	U	N	F
7440-39-3_	Barium____	206			P
7440-41-7_	Beryllium_	1.0	U		P
7440-43-9_	Cadmium___	3.0	U		P
7440-70-2_	Calcium___	239000			P
7440-47-3_	Chromium__	9.3	B		P
7440-48-4_	Cobalt____	3.0	U		P
7440-50-8_	Copper____	4.1	B		P
7439-89-6_	Iron______	12900			P
7439-92-1_	Lead______	13.7			F
7439-95-4_	Magnesium_	40500			P
7439-96-5_	Manganese_	281			P
7439-97-6_	Mercury___	0.20	U		CV
7440-02-0_	Nickel____	8.2	B		P
7440-09-7_	Potassium_	59500			P
7782-49-2_	Selenium__	3.0	U	W	F
7440-22-4_	Silver____	4.0	U		P
7440-23-5_	Sodium____	37900			P
7440-28-0_	Thallium__	3.0	U	WN	F
7440-62-2_	Vanadium__	14.7	B		P
7440-66-6_	Zinc______	36.9			P
_____	Cyanide___	10	U		AS

Color Before: BROWN____ Clarity Before: CLOUDY Texture: _____

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_CYANIDE_LAB_SAMPLE_ID_NUMBER_IS_23518;_____

SURFACE WATER RESULTS

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISSW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23544

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1884

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column: (pack/cap) CAP Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISSW1

Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23544

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1884

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS-SW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23536

Sample wt/vol: 1050 (g/mL) ML Lab File ID: T3087

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	48	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	48	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	48	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS-SW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23536

Sample wt/vol: 1050 (g/mL) ML Lab File ID: T3087

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	48	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	48	U
100-02-7	4-Nitrophenol	48	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	48	U
534-52-1	4,6-Dinitro-2-methylphenol	48	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	48	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	19	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HIS-SW1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23536

Sample wt/vol: 1050 (g/mL) ML Lab File ID: T3087

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	3.97	23	BJ
2.		UNKNOWN	4.25	11	BJ

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISSW1

b Name: _____VERSAR, INC.___ Contract:_

Lab Code: VERSAR Case No.:ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water)WATER Lab Sample ID: ___23528

Sample wt/vol: 1050 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: ___06/08/90

% Moisture: not dec._____ dec._____ Date Extracted:___06/13/90

Extraction: (SepF/Cont/Sonc) ____CONT Date Analyzed: ___06/26/90

GPC Cleanup: (Y/N)N pH:____ Dilution Factor: _ 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_UG/L	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.48	U
53494-70-5	Endrin Ketone	0.10	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	0.95	U
12674-11-2	Aroclor-1016	0.48	U
11104-28-2	Aroclor-1221	0.48	U
11141-16-5	Aroclor-1232	0.48	U
53469-21-9	Aroclor-1242	0.48	U
12672-29-6	Aroclor-1248	0.48	U
11097-69-1	Aroclor-1254	0.95	U
11096-82-5	Aroclor-1260	0.95	U

CF 06/26/90

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.: HIS-SW-1

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874____ Code: ENGIHOUD Batch: 2_____

Matrix : WATER_____ Lab Sample ID: 23512____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20700			P
7440-36-0	Antimony	23.8	B		P
7440-38-2	Arsenic	3.0	U	N	F
7440-39-3	Barium	2920			P
7440-41-7	Beryllium	1.1	B		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	222000			P
7440-47-3	Chromium	31.3			P
7440-48-4	Cobalt	18.1	B		P
7440-50-8	Copper	45.8			P
7439-89-6	Iron	38300			P
7439-92-1	Lead	60.7			F
7439-95-4	Magnesium	73700			P
7439-96-5	Manganese	3310			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	56.5			P
7440-09-7	Potassium	40700			P
7782-49-2	Selenium	3.0	U		F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	70900			P
7440-28-0	Thallium	3.0	U	WN	F
7440-62-2	Vanadium	43.5	B		P
7440-66-6	Zinc	393			P
	Cyanide	10	U		AS

Color Before: BROWN____ Clarity Before: CLOUDY Texture: _____

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_CYANIDE_LAB_SAMPLE_ID_NUMBER_IS_23520;_____

LEACHATE RESULTS

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISL1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23543

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: U4058

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/15/90

Column: (pack/cap) PACK Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISL1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23543

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: U4058

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/15/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	108-95-2	PHENOL (ACN) (DOT)	26.54	24	BJ

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS-L1

L. Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23535

Sample wt/vol: 1050 (g/mL) ML Lab File ID: T3086

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	6	J
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	48	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	48	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	48	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS-L1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23535

Sample wt/vol: 1050 (g/mL) ML Lab File ID: T3086

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	48	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	48	U
100-02-7	4-Nitrophenol	48	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	48	U
534-52-1	4,6-Dinitro-2-methylphenol	48	U
86-30-6	N-nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	48	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	19	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: HIS-L1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23535

Sample wt/vol: 1050 (g/mL) ML Lab File ID: T3086

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

Number TICs found: 9 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	3.97	28	BJ
2.		UNKNOWN ORGANIC ACID	4.23	7.6	BJ
3.		UNKNOWN ORGANIC ACID	4.48	7.6	J
4.		UNKNOWN ORGANIC ACID	4.90	5.7	J
5.	930-68-7	2-CYCLOHEXEN-1-ONE	5.78	5.7	J
6.		UNKNOWN	9.67	7.6	J
7.		UNKNOWN SUBSTITUTED PHENOL	10.49	19	J
8.		UNKNOWN ORGANIC ACID	12.05	13	J
9.	501-52-0	BENZENEPROPANOIC ACID	13.59	9.5	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISL1

b Name: _____VERSAR, INC.___ Contract:_

Lab Code: VERSAR Case No.:ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water)WATER Lab Sample ID: ___23527

Sample wt/vol: 1030 (g/ml) ML Lab File ID: ____

Level: (low/med) LOW Date Received: ___06/08/90

% Moisture: not dec._____ dec._____ Date Extracted:___06/13/90

Extraction: (SepF/Cont/Sonc) ____CONT Date Analyzed: ___06/26/90

GPC Cleanup: (Y/N)N pH:____ Dilution Factor: _1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_UG/L	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan Sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.49	U
53494-70-5	Endrin Ketone	0.10	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	0.97	U
12674-11-2	Aroclor-1016	0.49	U
11104-28-2	Aroclor-1221	0.49	U
11141-16-5	Aroclor-1232	0.49	U
53469-21-9	Aroclor-1242	0.49	U
12672-29-6	Aroclor-1248	0.49	U
11097-69-1	Aroclor-1254	0.97	U
11096-82-5	Aroclor-1260	0.97	U

CL 06/26/90

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.
HIS-L-1

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874____ Code: ENGIHOUD Batch: 2_____

Matrix : WATER_____ Lab Sample ID: 23511____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14700			P
7440-36-0	Antimony	25.5	B		P
7440-38-2	Arsenic	71.0		N	F
7440-39-3	Barium	273			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	163000			P
7440-47-3	Chromium	10.2			P
7440-48-4	Cobalt	7.0	B		P
7440-50-8	Copper	23.5	B		P
7439-89-6	Iron	30200			P
7439-92-1	Lead	46.8			F
7439-95-4	Magnesium	49000			P
7439-96-5	Manganese	2820			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	18.1	B		P
7440-09-7	Potassium	5990			P
7782-49-2	Selenium	3.0	U		F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	6300			P
7440-28-0	Thallium	3.0	U	WN	F
7440-62-2	Vanadium	25.7	B		P
7440-66-6	Zinc	194			P
	Cyanide	10	U		AS

Color Before: BROWN____ Clarity Before: CLOUDY Texture: _____

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
_CYANIDE_LAB_SAMPLE_ID_NUMBER_IS_23519;_____

SEDIMENT RESULTS

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISSED1

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) SOIL Lab Sample ID: 23548

Sample wt/vol: 5.0 (g/mL) G Lab File ID: Y1906

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. 31 Date Analyzed: 06/15/90

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene chloride	4	J
67-64-1	Acetone	13	J
75-15-0	Carbon disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	14	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon tetrachloride	7	U
108-05-4	Vinyl acetate	14	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Total xylenes	6	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISSED1

Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) SOIL Lab Sample ID: 23548

Sample wt/vol: 5.0 (g/mL) G Lab File ID: Y1906

Level: (low/med) LOW Date Received: 06/08/90

Moisture: not dec. 31 Date Analyzed: 06/15/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_SED_1

La Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 02

Matrix: (soil/water) SOIL Lab Sample ID: 23548

Sample wt/vol: 30.0 (g/mL) G Lab File ID: T3098

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. 25 dec. ____ Date Extracted: 06/14/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/22/90

GPC Cleanup: (Y/N) Y pH: 7.80 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	930	U
111-44-4	bis(2-Chloroethyl)ether	930	U
95-57-8	2-Chlorophenol	930	U
541-73-1	1,3-Dichlorobenzene	930	U
106-46-7	1,4-Dichlorobenzene	930	U
100-51-6	Benzyl alcohol	930	U
95-50-1	1,2-Dichlorobenzene	930	U
95-48-7	2-Methylphenol	930	U
108-60-1	bis(2-Chloroisopropyl)ether	930	U
106-44-5	4-Methylphenol	930	U
621-64-7	N-Nitroso-di-n-propylamine	930	U
67-72-1	Hexachloroethane	930	U
98-95-3	Nitrobenzene	930	U
78-59-1	Isophorone	930	U
88-75-5	2-Nitrophenol	930	U
105-67-9	2,4-Dimethylphenol	930	U
65-85-0	Benzoic Acid	4500	U
111-91-1	bis(2-Chloroethoxy)methane	930	U
120-83-2	2,4-Dichlorophenol	930	U
120-82-1	1,2,4-Trichlorobenzene	930	U
91-20-3	Naphthalene	930	U
106-47-8	4-Chloroaniline	930	U
87-68-3	Hexachlorobutadiene	930	U
59-50-7	4-Chloro-3-methylphenol	930	U
91-57-6	2-Methylnaphthalene	930	U
77-47-4	Hexachlorocyclopentadiene	930	U
88-06-2	2,4,6-Trichlorophenol	930	U
95-95-4	2,4,5-Trichlorophenol	4500	U
91-58-7	2-Chloronaphthalene	930	U
88-74-4	2-Nitroaniline	4500	U
131-11-3	Dimethylphthalate	930	U
208-96-8	Acenaphthylene	930	U
606-20-2	2,6-Dinitrotoluene	930	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS_SED_1

La Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 02

Matrix: (soil/water) SOIL Lab Sample ID: 23548

Sample wt/vol: 30.0 (g/mL) G Lab File ID: T3098

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. 25 dec. ____ Date Extracted: 06/14/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/22/90

GPC Cleanup: (Y/N) Y pH: 7.80 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	4500	U
83-32-9	Acenaphthene	930	U
51-28-5	2,4-Dinitrophenol	4500	U
100-02-7	4-Nitrophenol	4500	U
132-64-9	Dibenzofuran	930	U
121-14-2	2,4-Dinitrotoluene	930	U
84-66-2	Diethylphthalate	6700	
7005-72-3	4-Chlorophenyl-phenylether	930	U
86-73-7	Fluorene	930	U
100-01-6	4-Nitroaniline	4500	U
534-52-1	4,6-Dinitro-2-methylphenol	4500	U
86-30-6	N-nitrosodiphenylamine (1)	930	U
101-55-3	4-Bromophenyl-phenylether	930	U
118-74-1	Hexachlorobenzene	930	U
87-86-5	Pentachlorophenol	4500	U
85-01-8	Phenanthrene	1600	
120-12-7	Anthracene	930	U
84-74-2	Di-n-butylphthalate	630	J
206-44-0	Fluoranthene	2400	
129-00-0	Pyrene	1800	
85-68-7	Butylbenzylphthalate	930	U
91-94-1	3,3'-Dichlorobenzidine	1900	U
56-55-3	Benzo(a)anthracene	1000	
218-01-9	Chrysene	1200	X
117-81-7	bis(2-Ethylhexyl)phthalate	930	U
117-84-0	Di-n-octyl phthalate	930	U
205-99-2	Benzo(b)fluoranthene	1600	
207-08-9	Benzo(k)fluoranthene	2300	
50-32-8	Benzo(a)pyrene	970	
193-39-5	Indeno(1,2,3-cd)pyrene	720	J
53-70-3	Dibenz(a,h)anthracene	930	U
191-24-2	Benzo(g,h,i)perylene	580	J

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: HIS_SED_1

La Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 02

Matrix: (soil/water) SOIL Lab Sample ID: 23548

Sample wt/vol: 30.0 (g/mL) G Lab File ID: T3098

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. 25 dec. ____ Date Extracted: 06/14/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/22/90

GPC Cleanup: (Y/N) Y pH: 7.80 Dilution Factor: 1.0

Number TICs found: 13 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	3.97	5800	BJ
2.		UNKNOWN	4.25	750	BJ
3.		UNKNOWN	5.70	5400	BJ
4.		UNKNOWN KETONE	6.12	1100	BJ
5.		UNKNOWN	6.98	3500	BJ
6.		UNKNOWN	8.15	2400	J
7.		UNK 2-BUTENEDIOIC ACID	17.02	110000	J
8.	141-03-7	BUTANEDIOIC ACID, DIBUTYL ES	17.27	930	J
9.		UNK 2-BUTENEDIOIC ACID	17.60	9500	J
10.		UNKNOWN	21.57	2100	J
11.		UNKNOWN	31.92	1900	BJ
12.		UNKNOWN HYDROCARBON	32.77	930	J
13.		UNK. POLYCYCLIC AROMATIC	32.97	750	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISSED1

Lab Name: VERSAR, INC. Contract:

Lab Code: VERSAR Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 23548

Sample wt/vol: 30 (g/ml) G Lab File ID:

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. 25 dec. Date Extracted: 06/14/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/27/90

GPC Cleanup: (Y/N) Y pH: 7.8 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	11	U
319-85-7	beta-BHC	11	U
319-86-8	delta-BHC	11	U
58-89-9	gamma-BHC (Lindane)	11	U
76-44-8	Heptachlor	11	U
309-00-2	Aldrin	11	U
1024-57-3	Heptachlor Epoxide	11	U
959-98-8	Endosulfan I	11	U
60-57-1	Dieldrin	21	U
72-55-9	4,4'-DDE	21	U
72-20-8	Endrin	21	U
33213-65-9	Endosulfan II	21	U
72-54-8	4,4'-DDD	21	U
1031-07-8	Endosulfan Sulfate	21	U
50-29-3	4,4'-DDT	21	U
72-43-5	Methoxychlor	110	U
53494-70-5	Endrin Ketone	21	U
5103-71-9	alpha-Chlordane	21	U
5103-74-2	gamma-Chlordane	21	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	110	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	110	U
53469-21-9	Aroclor-1242	110	U
12672-29-6	Aroclor-1248	110	U
11097-69-1	Aroclor-1254	210	U
11096-82-5	Aroclor-1260	210	U

tc
06/28/90

1

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.

HIS-SED-1

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874____ Code: ENGIHOUD Batch: 2_____

Matrix : SOIL_____ Lab Sample ID: 23547____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: __68.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4290			P
7440-36-0	Antimony	3.6	U	N	P
7440-38-2	Arsenic	1.7	B		F
7440-39-3	Barium	1140		N*	P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	16.2		N	P
7440-70-2	Calcium	76100			P
7440-47-3	Chromium	30.7		N*	P
7440-48-4	Cobalt	8.9	B		P
7440-50-8	Copper	39.6		N*	P
7439-89-6	Iron	23600		*	P
7439-92-1	Lead	23.3			F
7439-95-4	Magnesium	11800			P
7439-96-5	Manganese	1040			P
7439-97-6	Mercury	0.14	U		CV
7440-02-0	Nickel	19.5			P
7440-09-7	Potassium	858	B		P
7782-49-2	Selenium	0.87	U	W	F
7440-22-4	Silver	2.7		N	P
7440-23-5	Sodium	210	B	E	P
7440-28-0	Thallium	0.87	U	WN	F
7440-62-2	Vanadium	16.6			P
7440-66-6	Zinc	169		N	P
	Cyanide	0.70	U		AS

Color Before: BROWN____ Clarity Before: _____ Texture: FINE__

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN

Quality Control Sample Results And

Field Sampling Records

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP_BLK

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23546

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1877

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column: (pack/cap) CAP Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TRIP_BLK

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23546

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1877

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. _____ Date Analyzed: 06/14/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISWASH_BLK

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23545

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1885

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ Date Analyzed: 06/14/90

Column: (pack/cap) CAP Dilution Factor: 1.0

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HISWASH_BLK

Lab Name: VERSAR INC. Contract:

Lab Code: VERSAR Case No.: 2874 SAS No.: SDG No.: B2

Matrix: (soil/water) WATER Lab Sample ID: 23545

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: Y1885

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. Date Analyzed: 06/14/90

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS-WASHBLK

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23537

Sample wt/vol: 910 (g/mL) ML Lab File ID: T3088

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	11	U
111-44-4	bis(2-Chloroethyl)ether	11	U
95-57-8	2-Chlorophenol	11	U
541-73-1	1,3-Dichlorobenzene	11	U
106-46-7	1,4-Dichlorobenzene	11	U
100-51-6	Benzyl alcohol	11	U
95-50-1	1,2-Dichlorobenzene	11	U
95-48-7	2-Methylphenol	11	U
108-60-1	bis(2-Chloroisopropyl)ether	11	U
106-44-5	4-Methylphenol	11	U
621-64-7	N-Nitroso-di-n-propylamine	11	U
67-72-1	Hexachloroethane	11	U
98-95-3	Nitrobenzene	11	U
78-59-1	Isophorone	11	U
88-75-5	2-Nitrophenol	11	U
105-67-9	2,4-Dimethylphenol	11	U
65-85-0	Benzoic Acid	55	U
111-91-1	bis(2-Chloroethoxy)methane	11	U
120-83-2	2,4-Dichlorophenol	11	U
120-82-1	1,2,4-Trichlorobenzene	11	U
91-20-3	Naphthalene	11	U
106-47-8	4-Chloroaniline	11	U
87-68-3	Hexachlorobutadiene	11	U
59-50-7	4-Chloro-3-methylphenol	11	U
91-57-6	2-Methylnaphthalene	11	U
77-47-4	Hexachlorocyclopentadiene	11	U
88-06-2	2,4,6-Trichlorophenol	11	U
95-95-4	2,4,5-Trichlorophenol	55	U
91-58-7	2-Chloronaphthalene	11	U
88-74-4	2-Nitroaniline	55	U
131-11-3	Dimethylphthalate	11	U
208-96-8	Acenaphthylene	11	U
606-20-2	2,6-Dinitrotoluene	11	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HIS-WASHBLK

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23537

Sample wt/vol: 910 (g/mL) ML Lab File ID: T3088

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	55	U
83-32-9	Acenaphthene	11	U
51-28-5	2,4-Dinitrophenol	55	U
100-02-7	4-Nitrophenol	55	U
132-64-9	Dibenzofuran	11	U
121-14-2	2,4-Dinitrotoluene	11	U
84-66-2	Diethylphthalate	11	U
7005-72-3	4-Chlorophenyl-phenylether	11	U
86-73-7	Fluorene	11	U
100-01-6	4-Nitroaniline	55	U
534-52-1	4,6-Dinitro-2-methylphenol	55	U
86-30-6	N-nitrosodiphenylamine (1)	11	U
101-55-3	4-Bromophenyl-phenylether	11	U
118-74-1	Hexachlorobenzene	11	U
87-86-5	Pentachlorophenol	55	U
85-01-8	Phenanthrene	11	U
120-12-7	Anthracene	11	U
84-74-2	Di-n-butylphthalate	11	U
206-44-0	Fluoranthene	11	U
129-00-0	Pyrene	11	U
85-68-7	Butylbenzylphthalate	11	U
91-94-1	3,3'-Dichlorobenzidine	22	U
56-55-3	Benzo(a)anthracene	11	U
218-01-9	Chrysene	11	U
117-81-7	bis(2-Ethylhexyl)phthalate	11	U
117-84-0	Di-n-octyl phthalate	11	U
205-99-2	Benzo(b)fluoranthene	11	U
207-08-9	Benzo(k)fluoranthene	11	U
50-32-8	Benzo(a)pyrene	11	U
193-39-5	Indeno(1,2,3-cd)pyrene	11	U
53-70-3	Dibenz(a,h)anthracene	11	U
191-24-2	Benzo(g,h,i)perylene	11	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

HIS-WASHBLK

Lab Name: VERSAR INC. Contract: _____

Lab Code: VERSAR Case No.: 2874 SAS No.: _____ SDG No.: 2

Matrix: (soil/water) WATER Lab Sample ID: 23537

Sample wt/vol: 910 (g/mL) ML Lab File ID: T3088

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/21/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	3.97	24	BJ
2.		UNKNOWN	4.27	13	BJ

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

HISWASHBLK

b Name: VERSAR, INC. Contract:

Lab Code: VERSAR Case No.: ENGIHOUD SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 23529

Sample wt/vol: 910 (g/ml) ML Lab File ID:

Level: (low/med) LOW Date Received: 06/08/90

% Moisture: not dec. dec. Date Extracted: 06/13/90

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/26/90

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor Epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.11	U
72-55-9	4,4'-DDE	0.11	U
72-20-8	Endrin	0.11	U
33213-65-9	Endosulfan II	0.11	U
72-54-8	4,4'-DDD	0.11	U
1031-07-8	Endosulfan Sulfate	0.11	U
50-29-3	4,4'-DDT	0.11	U
72-43-5	Methoxychlor	0.55	U
53494-70-5	Endrin Ketone	0.11	U
5103-71-9	alpha-Chlordane	0.11	U
5103-74-2	gamma-Chlordane	0.11	U
8001-35-2	Toxaphene	1.1	U
12674-11-2	Aroclor-1016	0.55	U
11104-28-2	Aroclor-1221	0.55	U
11141-16-5	Aroclor-1232	0.55	U
53469-21-9	Aroclor-1242	0.55	U
12672-29-6	Aroclor-1248	0.55	U
11097-69-1	Aroclor-1254	1.1	U
11096-82-5	Aroclor-1260	1.1	U

CF 06/26/90

1

INORGANIC ANALYSES DATA SHEET

FIELD SAMPLE NO.

HIS-WASH BLANK

Client : ENGINEERING_SCIENCE_ Site: HOUDAILLE-STRIPPIT

Lab Name: VERSAR_INC. Control No.: 2874_____ Code: ENGIHOUD Batch: 2_____

Matrix : WATER_____ Lab Sample ID: 23513____

Level (low/med): LOW_____ Date Received: 06/08/90_

% Solids: ___0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5_	Aluminum__	27.9	B		P_
7440-36-0_	Antimony__	54.2	B		P_
7440-38-2_	Arsenic___	3.0	U	N	F_
7440-39-3_	Barium____	2.9	B		P_
7440-41-7_	Beryllium_	1.0	U		P_
7440-43-9_	Cadmium___	3.0	U		P_
7440-70-2_	Calcium___	248	B		P_
7440-47-3_	Chromium__	3.0	U		P_
7440-48-4_	Cobalt____	3.0	U		P_
7440-50-8_	Copper____	4.0	U		P_
7439-89-6_	Iron______	36.7	B		P_
7439-92-1_	Lead______	1.0	U		F_
7439-95-4_	Magnesium_	76.9	B		P_
7439-96-5_	Manganese_	3.4	B		P_
7439-97-6_	Mercury___	0.20	U		CV
7440-02-0_	Nickel____	5.0	U		P_
7440-09-7_	Potassium_	377	U		P_
7782-49-2_	Selenium__	3.0	U		F_
7440-22-4_	Silver____	4.0	U		P_
7440-23-5_	Sodium____	157	B		P_
7440-28-0_	Thallium__	3.0	U	N	F_
7440-62-2_	Vanadium__	3.0	U		P_
7440-66-6_	Zinc______	2.8	B		P_
_____	Cyanide___	10	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After : COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_CYANIDE_LAB_SAMPLE_ID_NUMBER_IS_23521;_____

FORM I - IN

FIGURE 6.3

FIELD SAMPLING RECORD

Site Houdaille I-d. Straight Site No. S4053.09 Date: 6,7,90
Well GW-1

Samplers: William Lilley of GS
Dave Seaklin of ES

Initial Static Water Level (from TOP of well casing) 38.14

Evacuation:

Using: Submersible ____ Centrifugal ____
Airlift ____ Positive Displacement ____
Bailed X ____ Times

Well Volume Calculation:
2" Casing: 38 ft. of water x .16 = 6.1 gals.
3" Casing: ____ ft. of water x .36 = ____ gals.
4" Casing: ____ ft. of water x .65 = ____ gals.

Depth to intake from TOP of protective well casing ____
Volume of water removed 18.2 ± Gals. (> 3 well volumes)

Sampling: Time 2:05 ___ a.m. X p.m.

Bailer Type: Stainless Steel ____
Teflon ____
From Pos. Dis. Pump Discharge Tube ____
Other polyethene Disposable ____

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - wash/Atmospheric. (circle one)			
Ground-water Sample	6	HLS-GW-1	TCL

Physical Appearance and Odor clear

Refrigerate: Date 6,7,90 Time 2:15 PM

Field Tests:
Temperature (C°/°F) —
pH 11.75
Spec. Conduc (umhos/cm) 2400 @ 25°C

Weather Sunny 70°

Comments

FIGURE 6.3

FIELD SAMPLING RECORD

Site Houdaille Ind. Strippit Site No. SY053.09 Date: 6/7/90

Well GW-2

Samplers: William Lilley of ES

Dave Jenkin of ES

Initial Static Water Level. . . . . 40.20'
(from top of well casing)

Evacuation:

Using: Submersible ____ Centrifugal ____
Airlift ____ Positive Displacement ____
Bailed X ____ Times

Well Volume Calculation:
2" Casing: 40 ft. of water x .16 = 6.4 gals.
3" Casing: ____ ft. of water x .36 = ____ gals.
4" Casing: ____ ft. of water x .65 = ____ gals.

Depth to intake from top of protective well casing ____

Volume of water removed ~~19.20~~ 4 Gals. (> 3 Well Volumes)

Sampling: Time 2:25 ____ a.m. X p.m.

Bailer Type: Stainless Steel ____
Teflon ____
From Pos. Dis. Pump Discharge Tube ____
Other Polyethylene Disposable ____

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - Wash/Atmospheric. .(circle one)			
Ground-water Sample	6	HIS GW-2	TCL

Physical Appearance and Odor clear to slightly cloudy, white

Refrigerate: Date 6/7/90 Time 2:35

Field Tests:

Temperature (C°/°F)	—	
pH	11.70	
Spec. Conduc (umhos/cm)	2750	umhos [illegible]

Weather Sunny 70°

Comments Well bailed dry after 24 bailers

FIGURE 6.3

FIELD SAMPLING RECORD

Site Houdiville Stippit   Site No. G4053.09   Date: 6,7,90
Well GW-3

Samplers: W D Lilley of ES
Dave Jenkins of ES

Initial Static Water Level. 26.91
(from top of well casing)

Evacuation:

Using: Submersible ____ Centrifugal ____
Airlift ____ Positive Displacement ____
Bailed X 24 Times

Well Volume Calculation:
2" Casing: 21 ft. of water x .16 = 3.4 gals.
3" Casing: ____ ft. of water x .36 = ____ gals.
4" Casing: ____ ft. of water x .65 = ____ gals.

Depth to intake from top of protective well casing ____
Volume of water removed 10.1 Gals. (> 3 well volumes)

Sampling: Time 11:30 X a.m. ____ p.m.

Bailer Type: Stainless Steel ____
Teflon ____
From Pos. Dis. Pump Discharge Tube ____
Other Polyethene Disposable

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - wash/Atmospheric. .(circle one)			
Ground-water Sample	17	HIS-GW-3	TCL

Physical Appearance and Odor cloudy white

Refrigerate: Date 6,7,90 Time 12:00 am

Field Tests:
Temperature (C°/°F) — Not working
pH 7.32
Spec. Conduc (umhos/cm) 750

Weather Sunny 70°

Comments MC/M3D

FIELD SAMPLING RECORD

Site Houbaille Ind Stripper Site No. SY053.09 Date: 6/7/90
Well GW-4

Samplers: William Lilley of ES
Dave Jenkins of ES

Initial Static Water Level (from top of well casing) ..... 35.15'

Evacuation:
Using: Submersible ____ Centrifugal ____
Airlift ____ Positive Displacement ____
Bailed X ____ Times

Well Volume Calculation:
2" Casing: 35 ft. of water x .16 = 5.6 gals.
3" Casing: ____ ft. of water x .36 = ____ gals.
4" Casing: ____ ft. of water x .65 = ____ gals.

Depth to intake from top of protective well casing ____
Volume of water removed 16.8 Gals. (> 3 well volumes)

Sampling: Time 2:45 ___ a.m. X p.m.

Bailer Type: Stainless Steel
Teflon
From Pos. Dis. Pump Discharge Tube
Other Polyethene Disposable

	No. of Bottles Filled	I.D. No.	Analyses
Trip Blank			
Field Blank - wash/Atmospheric. (circle one)			
Ground-water Sample	12	MLS-GW-4	TCL
		MLS GW-5	TCL

Physical Appearance and Odor clear

Refrigerate: Date 6/7/90 Time 3:05 pm

Field Tests:
Temperature (C°/°F) —
pH 11.48
Spec. Conduc (umhos/cm) 1450 umhos/cm

Weather

Comments

FIELD SURFACE SAMPLING RECORD

Site: Houdaille Ind. [illegible] Site No. 540S3 09 Date: 6/7/90

Samplers: William Lilley of ES

Dave [illegible] of

SAMPLING: H15-SW-1 Time 1:30 __ a.m. X p.m.

Sample Type: Surface water

Sampling Method: Glass Beaker

Depth of Sample: Surface

Description of Sampling Point:

Drainage Direction: west

Upstream From: Wet land

Downstream From: land Fill

Physical Appearance/Odor: Brown

Wildlife Observed: none

Sampling Description:

Suspended Matter: Yes

Color/Stain: Brown

Odor: none

Other:

Texture:

Analyze for: TCL

Refrigerated: Date: 6/7/90 Time __ a.m. 1:45 p.m.

Field Tests:

Temperature (C°/°F) —

pH 6.54

Conductivity 960

Weather Sunny/70°

[illegible]

Comments: Dug hole to collect sample

FIELD SURFACE SAMPLING RECORD

Site: Houdaille Ind Stripcoat   Site No. 540 53.09   Date: 6/7/90

Samplers: William Lilley of ES
Dave Jenkins of ES

SAMPLING: HIS-L-1   Time 1:05 ___ a.m. X p.m.

Sample Type: Leachate

Sampling Method: Glass Beaker

Depth of Sample: surface

Description of Sampling Point:

Drainage Direction: South

Upstream From: ditch

Downstream From: landfill

Physical Appearance/Odor: rusty red

Wildlife Observed: none

Sampling Description:

Suspended Matter: Yes

Color/Stain: rusty red

Odor: ~~None~~ Septic tank odor

Other:

Texture: —

Analyze for: TCL

Refrigerated: Date: 6/7/90 Time ___ a.m. 1:10 p.m.

Field Tests:

Temperature (C°/F°) ___ Weather Sunny 70°

pH 7.07

Conductivity 725 umohs

Comments: dug hole to collect sample

FIELD SURFACE SAMPLING RECORD

Site: Houlkille – Stripp... Site No. 34053.09 Date: 6/7/90

Samplers: W. D Lilley of ES
Dave Jenkin. of ES

HIS-SED-1

SAMPLING: Sediment by Fence Time 1:30 ___ a.m. X p.m.

Sample Type: Sediment HIS-SED-1

Sampling Method: Stainless Steel Trowel

Depth of Sample: Surface

Description of Sampling Point:

Drainage Direction: East

Upstream From: wet area

Downstream From: land Fill

Physical Appearance/Odor: Black & Brown silt, sand & Gravel in stream bed little water

Wildlife Observed: none

Sampling Description:

Suspended Matter: none

Color/Stain: Black

Odor: none

Other:

Texture: Silt, sand & Gravel

Analyze for: TCL

Refrigerated: Date: 6/6/90 Time ___ a.m. 135 p.m.

Field Tests:

Temperature (C°/°F) ______ Weather [illegible] 70°

pH ______

Conductivity ______

Comments:

[redacted] CHA[redacted]F C[redacted]OD[redacted]ECO[redacted]

PROJECT NO.	PROJECT NAME	INDUSTRIAL HYGIENE SAMPLE	Y / N
SY053,	Houdaille Industries-Strippitt		

SAMPLERS: (Signature) [signatures] (Printed) W. D. LILLEY, E.N. JENKINS

100009

FIELD SAMPLE NUMBER	DATE 1990	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOA	Pest/PCB	BNA	METALS	CYANIDE				REMARKS
HIS-GW-3	7 Jun	11:30		X	GW-3	14	X	X	X	X	X				MS-MSD
HIS-WASH	7 Jun	11:05		X	WASH BLANK	6	X	X	X	X	X				
HIS-L-1	7 Jun	13:05		X	Leachate @ ditch	6	X	X	X	X	X				
HIS-SW-1	7 Jun	13:30		X	Surface Water	6	X	X	X	X	X				
HIS-GW-1	7 Jun	14:05		X	GW-1	6	X	X	X	X	X				
HIS-GW-2	7 Jun	14:25		X	GW-2	6	X	X	X	X	X				
HIS-GW-4	7 Jun	14:45		X	GW-4	6	X	X	X	X	X				
HIS-GW-5	7 Jun	15:00		X	GW-5	6	X	X	X	X	X				
HIS-SED-1	7 Jun	13:30		X	Sediment @ SW-1	6	X	X	X	X	X				MS-MSD
TRIP BLANK	7 Jun	—		X	TRIP BLANK	2	X								

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
W D Lilley (Printed)	6/7 15:25	Fed Ex (Printed)	(Printed)		(Printed)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
(Printed)		J. L. Morrison (Printed)	6/8/90 0900	Three VOA aliquots received for HIS GW-1 [illegible] GW-2 but [illegible] A GW-2 aliquots.

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Fi-ld Files (pink).

Versar INC

CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT NAME
5Y053.09.00	Houdaille-Strippit NYSDEC 4th round

SAMPLERS: (Signature) David G. Nickerson (Printed) David A. Nickerson

FIELD SAMPLE NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	PARAMETERS: VOA	BNA, PEST	Metals, CN						REMARKS
	5/15	1600	X		STRIP-GW-4-SS1	3	X	X	X						- Soil samples
	5/15	1600	X		STRIP-GW-4-SS1 (MS/MSD)	3	X	X	X						- PID readings to 2000 ppm in borehole from which samples were taken

INDUSTRIAL HYGIENE SAMPLE: Y / N

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
David G. Nickerson (Printed) David A. Nickerson	5/15 1830	FEDERAL EXPRESS Aircort Bldg 10 Conway St (Printed)	(Printed)		(Printed)
Relinquished by: (Signature) (Printed)	**Date / Time**	**Received for Laboratory by:** (Signature) Ann Murphy (Printed)	**Date / Time** 5/16/90 0900	**Remarks**	

Distribution: Original Plus One Accompanies Shipment (white and yellow) ...