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Spills - sp
ERP - e
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FIELD INVESTIGATION TEAM ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCES FACILITIES — ZONE I

NUS CORPORATION
SUPERFUND DIVISION

02-8810-59-SI
REV. NO. 0

FINAL DRAFT
SITE INSPECTION REPORT
CATTARAUGUS COUNTY LANDFILL
ISCHUA, NEW YORK

PREPARED UNDER
TECHNICAL DIRECTIVE DOCUMENT NOs. 02-8801-32 AND 02-8810-59
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

AUGUST 27, 1990

NUS CORPORATION
SUPERFUND DIVISION

ANTHONY F. CULMONE JR.
PROJECT MANAGER

JENNIFER O. LEAHY
SITE MANAGER

REVIEWED/APPROVED BY:

RONALD M. NAMAN
FIT OFFICE MANAGER

CONTENTS

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1	Site Summary
2	Site Inspection Narrative
3	Maps and Photographs
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SITE NAME:	Cattaraugus County Landfill (a.k.a. Farwell Sanitary Landfill)	**EPA ID NO.:**	NYD980531149
ADDRESS:	Highway 16 Ischua, Cattaraugus Co., New York 14745	**LATITUDE:**	42° 13' 10" N
		LONGITUDE:	078° 22' 53" W

1.0 SITE SUMMARY

The Cattaraugus County Landfill, alias Farwell Sanitary Landfill, is an inactive landfill located on Farwell Road in Ischua, Cattaraugus County, New York. It was operated by the county and is currently owned by the county. The landfill is located in a sparsely populated, rural area, approximately 1,000 feet east of Ischua Creek. A mixture of farmland and forested hills occupies the surrounding area. The landfill is separated into three areas, Phase I, II, and IIIA, covering approximately 16 acres of the 227-acre site. There is no history of any violations for accepting hazardous waste.

The Phase I and Phase II areas were operated from 1975 to 1985. Little information is available on the type and quantity of wastes contained in the Phase I and II areas; however, the landfill is known to have received various types of residential, commercial, and nonhazardous industrial wastes along with incinerator ash, sewage treatment sludge, and construction debris. The Phase I and II areas are unlined and were without leachate collection systems until 1986 when an existing system was installed. The Phase IIIA area was operated from January 1986 through December 31, 1987. The Phase IIIA area was designed and constructed with a 2-foot -thick soil liner and leachate collection system.

Cattaraugus County was issued an Order of Consent by the New York State Department of Environmental Conservation (NYSDEC) in August 1984 to bring the landfill into compliance with State regulations. Previous violations cited by the NYSDEC included leachate breaking out and entering surface water, waste uncovered and protruding, excessive slope, pooling and ponding of water, and inadequate cover of vegetation. The county closed the landfill on December 31, 1987. A groundwater monitoring system has been installed as part of the closure activities. An intermediate cover (minimum 1 foot) is in place, with most areas having 2 to 3 feet of cover. At the time of the NUS Corp. Region 2 FIT site inspection, conducted on February 25, 1988, contractors were installing tanks for the leachate collection system.

If any hazardous substances were disposed of in the unlined Phase I and Phase II areas, groundwater contamination is of primary concern. The Phase IIIA area is only of secondary concern, as it has a liner and leachate collection system, unlike the Phase I and Phase II areas. Approximately 700 people living within 3 miles of the site have private wells for drinking water with no alternate source available. Although a minimum 1-foot cover is in place over the entire landfill, there is a potential for direct contact from leachate outbreaks. Ischua Creek, adjacent to the eastern border of the site, is used soley for recreational and fishing purposes within 3 miles downstream of the site.

NUS Corp. Region 2 FIT conducted a site inspection on February 25, 1988, to determine if hazardous wastes were present and migrating from the site. Five groundwater samples were collected to determine whether any hazardous wastes were migrating off site through the groundwater route. An aqueous sample was also collected from a manhole located south of the Phase I and II landfill. Sample results indicate the presence of volatile and semivolatile organic compounds, heavy metals, and a pesticide.

Ref. Nos. 1, 2, 3, 4, 6, 9

2.0 SITE INSPECTION NARRATIVE

2.1 EXISTING ANALYTICAL DATA

Malcolm Pirnie, Inc. collected six groundwater samples from monitoring wells surrounding the landfill on July 16 and July 30, 1987. The parameters tested for are listed in Table 1. Quality assurance and quality control (QA/QC) measures taken to ensure the reliability of the data included the following: sending one unidentified trip blank with the first set of samples collected on July 16, 1987, and sending one unidentified duplicate sample with the second set of samples collected on July 30, 1987.

Pertinent results are as follows:

- Concentrations of total volatile organics in two downgradient wells (9Dand 10D) were approximately 14 times greater than the upgradient concentrations.
- Concentrations of total volatile organics in another downgradient well (11D) were approximately 29 times greater than concentrations in the upgradient well (13D).
- Concentrations of 1,1-dichloroethylene detected in downgradient wells were significantly higher than the groundwater quality standard, with a maximum concentration of 6.4 ug/L.
- The upgradient groundwater sample (well 13D) showed no apparent contamination with volatile organics. All parameters were below laboratory detection limits and/or groundwater quality standards.

Ref. No. 2, pp. 4-1 - 4-4

2.2 WASTE SOURCE DESCRIPTION

The landfill is divided into three disposal areas. The Phase IIIA area, covering approximately 3 acres, lies to the west of the Phase I and II areas, which cover approximately 13 acres. The Phase I and II areas were operated from 1975 to 1985. Little is known about wastes deposited here. Wastes known to have been disposed of in these areas include residential, commercial, and nonhazardous industrial wastes along with incinerator (resource recovery) ash, sewage treatment sludge, and construction debris. The Phase I and II areas are of primary concern because they are unlined. They were

TABLE 1

EXISTING ANALYTICAL DATA, GROUNDWATER ANALYTICAL PARAMETERS

PARAMETER

A complete Priority Pollutant Analysis (1)

Boron

Total Kjeldahl Nitrogen (TKN)

Ammonia

Nitrate

Biochemical Oxygen Demand (BOD)

Chemical Oxygen Demand (COD)

Total Organic Carbon (TOC)

Total Dissolved Solids (TDS)

Sulfate

Aluminum

Chromium (Hexavalent)

Sodium

Detergent (MBAS)

Calcium

Alkalinity

Total Hardness

Chloride

Iron

Manganese

Specific Conductivity

pH

Turbidity

(1) Listed in the Federal Register, Volume 45, No. 98, Monday, May 9, 1980, pages 33573-33579, including Metals, Cyanide, Total Phenols, Volatile Compounds, Acid/Base Neutral Compounds, Pesticides and Polychlorinated Biphenyls (PCBs).

operated without a leachate collection system until 1986, when the existing system was installed. The Phase IIIA area, in operation from January 1986 through December 31, 1987, was designed and constructed with a 2-foot-thick double clay liner and leachate collection system.

A leachate collection system is in place encompassing all three landfill areas. The system is effective in capturing leachate generated in the lined Phase IIIA area and at the periphery of the Phase I and II areas; however, the lack of a liner in the Phase I and Phase II areas facilitates migration of leachate through the bottom of the landfill. One leachate sample was collected by NUS FIT 2 during the site inspection conducted on February 25, 1988. The sample was collected from a manhole located south of the Phase I and II landfill. Results of this sample indicated the presence of volatile and inorganic compounds.

Ref. Nos. 1, 2

2.3 GROUNDWATER ROUTE

Analysis of the groundwater samples collected on July 16 and July 30, 1987, by Malcolm Pirnie, Inc. indicated a documented release of volatile organic compounds as well as inorganic compounds to groundwater as described in Section 2.1.

Samples collected by NUS Corp. Region 2 FIT support Malcolm Pirnie's report of a release of contaminants to groundwater. Volatile organic compounds were detected at elevated levels in the downgradient wells as compared to samples collected from monitoring well MW5A, an upgradient well. Pertinent results are as follows:

- Chloroethane was found in groundwater samples NYM9-GW6 and NYM9-GW4 at concentrations of 42 ug/l and 21 ug/l, respectively. The upgradient well sample, NYM9-GW1, had no detection of chloroethane.

- Concentrations of 1,1-dichloroethane in groundwater samples NYM9-GW2 through NYM9-GW6, which were collected from downgradient wells, ranged from approximately 9 to 200 ug/l. 1,1-dichloroethane was not detected in the upgradient well sample, NYM9-GW1.

- 1,1,1-trichloroethane was detected in groundwater samples NYM9-GW4 and NYM9-GW6 at concentrations of 21 ug/l and 61 ug/l, respectively. It was not detected in sample NYM9-GW1, the upgradient sample.

Certain inorganic compounds were also found in elevated concentrations in some of the downgradient monitoring wells as compared to the upgradient well NW5A. Specifically:

- Concentrations of barium in downgradient samples NYM9-GW2 through NYM9-GW5 range from 501 to 6,940 ug/l. Barium was found to be present below Contact Required Detection Limits (CRDL) in the upgradient sample.

- Chromium was detected in downgradient samples NYM9-GW5 and NYM9-GW6 at concentrations of 12 and 554 ug/l, respectively. Chromium was not detected in the upgradient sample.

- Cobalt was found in samples NYM9-GW5 and NYM9-GW3 at concentrations of 365 and 100 ug/l, respectively. Cobalt was found to be present below the CRDL in the upgradient sample.

- Concentrations of lead were found in downgradient samples NYM9-GW4, NYM9-GW5, and NYM9-GW6 in concentrations ranging from 9.7 to 591 ug/l. Lead was detected at a concentration of 8.4 ug/l in the upgradient sample.

Analytical results of all volatile and inorganic compounds can be found in Section 4.0.

The downgradient wells (MW-10S, MW-10D, MW-11S) are screened in glacial till, while MW-11D is screened in glaciofluvial sand and gravel. The shallow wells (MW-10S and MW-11S) are screened at a depth of 35 to 45 feet. The deep wells (MW-10D and MW-11D) are screened at a depth of 87 to 92 feet. It cannot be determined what material the upgradient well MW-5A is screened in. The depth of the well is 59 feet.

The unconsolidated glacial sediments overlying bedrock comprise the aquifer of concern in the area. These deposits, in order of abundance, include glacial till, glaciofluvial sands and gravels, and glaciolacustrine sorted silts. The glacial till consists of an unconsolidated mixture of medium to very dense silt and subangular gravel with small percentage of sand, clay, rock fragments, and cobbles. Permeability associated with these types of glacial strata is approximately 10^{-5} to 10^{-7} cm/sec. Monitoring wells installed by Malcolm Pirnie indicate that the unconsolidated overburden is at least 130 feet thick. Well logs do not indicate the presence of any confining layers in the glacial sediments. The underlying bedrock formations consist of late Devonian gray shale with interbedded siltstone from the Chautauquan series, Arkwright Group. The formations include the Chadakoin, which is underlain by the Canadaway.

There is evidence of a perched water table beneath the eastern edge of the Phase I and II areas. There is a deep saturated groundwater zone that is attributed to regional groundwater conditions. There is also a shallower zone of saturation that is only penetrated by the downgradient wells. This perched zone is a localized phenomenon, and is not penetrated by the upgradient well.

Depth to groundwater in the shallow, downgradient wells is approximately 26.5 feet. The depth to groundwater in the deep wells, which is indicative of depth to the regional groundwater table, is approximately 36 feet at the eastern edge of the Phase I and II areas. The general direction of groundwater flow across the site is to the east and southeast toward Ischua Creek. The regional trend for groundwater flow is to the south toward the City of Olean following Ischua and Olean Creeks.

Groundwater is the only source of drinking water within a 3-mile radius of the site; there is no alternative municipal water source available. All of the private residences within a 3-mile radius have private wells as their drinking water source. These wells are generally 60 to 70 feet deep, and are screened in the glacial sediments. The nearest well is located at the farm adjacent to the site, approximately 0.25 mile to the south. A population of approximately 700 people is potentially affected through their drinking water. The net annual precipitation is approximately 13 inches.

The Phase I and II areas were operated without a liner in place, and leachate from any hazardous substance could have migrated through the unconsolidated glacial sediments and entered the groundwater.

Ref. Nos. 1, 2, 3, 4, 7, 8, 9, 10

2.4 SURFACE WATER ROUTE

One sample was collected from a manhole south of the Phase I &II landfill during the NUS Corp. Region 2 FIT site inspection conducted on February 25, 1988. The manhole contained an aqueous material collected by the leachate collection system. Analyses results of this sample indicated the presence of volatile and inorganic compounds. These results are described in more detail in Section 4.0. There is no record in the background files of any surface water sampling having been conducted.

Prior to the installation of the leachate collection system, it was reported that leachate outbreaks were entering surface waters. There has been no report of such an outbreak since the collection system was installed.

The Phase I and II areas are elevated above the surrounding terrain, and the Phase IIIA area is in a depression. The nearest downslope surface water is Ischua Creek, which has been given a class "C" classification by NYSDEC and is suitable for fishing and recreation. The creek is located approximately 1,000 feet east of the eastern edge of the Phase I and II areas. The eastern side of the Phase I and II areas have a slope of approximately 20 percent with an intervening terrain of 6 percent. However, there is no viable migratory pathway connecting the landfill to Ischua Creek. The landfill is surrounded by a leachate collection system. Conrail owns a narrow strip of land between the landfill and Ischua Creek. Its railroad track is on an elevated berm between the landfill and the creek, which prevents runoff from the landfill from directly entering the creek.

Ischua Creek is the only significant surface water present within 3 miles downstream of the site. There are no intakes for either drinking water or irrigation for a distance of 3 miles downstream from the landfill. The only known uses for the creek are fishing and other recreational purposes. Freshwater wetlands exist for approximately 0.75 mile from the probable point of entry along the migration pathway downstream of the site. There is no critical habitat of a federally listed endangered species within 1 mile of the site. The 1-year, 24-hour rainfall for the area is approximately 2.25 inches. Because of the minimum 1-foot cover in place, the collection system surrounding the Phase I and II areas, and the lack of a migratory channel connecting the site to Ischua Creek, the present potential for contaminants migrating through the surface water route is minimal, but such migration was reported to have occurred in the past.

Ref. Nos. 1, 2, 3, 4, 5, 7, 8, 9, 11

2.5 AIR ROUTE

No readings above background were detected in the ambient air on the organic vapor analyzer flame ionization detector (OVA) and HNu photoionization detector prior to disturbance of the waste source during the NUS Corp. Region 2 FIT site reconnaissance on February 11, 1988 or the site inspection on February 25, 1988. There is a potential for the release of contaminants to the atmosphere as particulates may become airborne during dry and dusty conditions since areas of the landfill are inadequately covered with vegetation.

Ref. Nos. 1, 2

2.6 ACTUAL HAZARDOUS CONDITIONS

A NYSDEC memorandum dated August 22, 1984 described several violations of 6 NYCRR Section 360.8 including leachate entering surface water, waste uncovered and protruding, excessive slope, pooling

and ponding of water, rough and uneven area, windblown paper and litter, and inadequate cover vegetation. None of these problems were in evidence during the NUS FIT 2 site inspection conducted on February 25, 1988.

Ref. Nos. 1, 2, 6

No other actual hazardous conditions pertaining to human or environmental contamination have been documented. Specifically:

- Contamination has not been documented either in organisms in a food chain leading to humans or in organisms directly consumed by humans.
- There have been no documented observed incidents of direct physical contact with hazardous substances at the facility involving a human being (not including occupational exposure) or a domestic animal.
- There have been no documented incidents of damage to flora (e.g., stressed vegetation) or to fauna (e.g., fish kill) that can be attributed to the hazardous material at the facility.

Ref. Nos. 1, 2, 6

3.0 MAPS AND PHOTOS

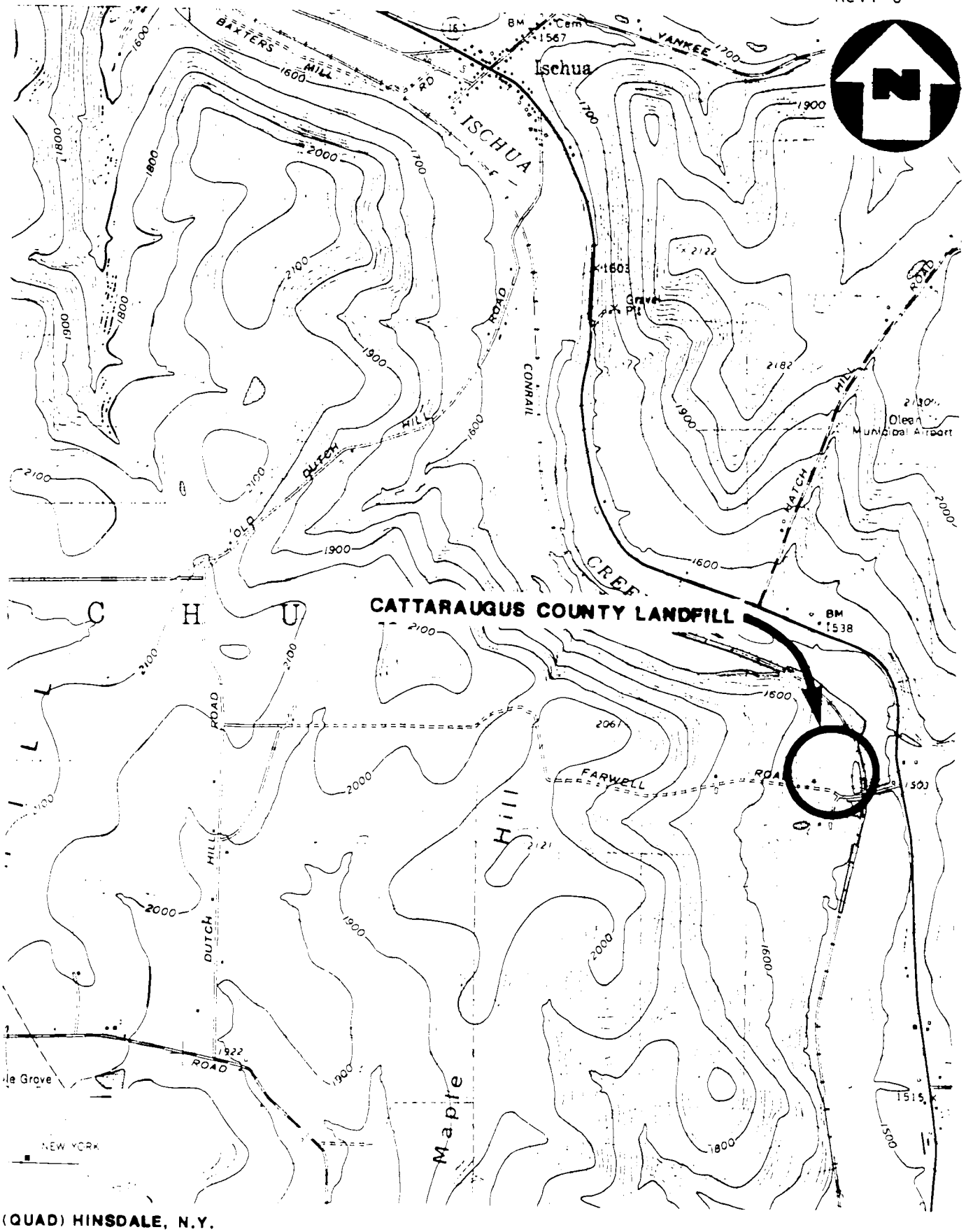
CATTARAUGUS COUNTY LANDFILL

ISCHUA, NEW YORK

Figure 1: Site Location Map

Figure 2: Sample Location Map

Exhibit A: Photograph Log



(QUAD) HINSDALE, N.Y.

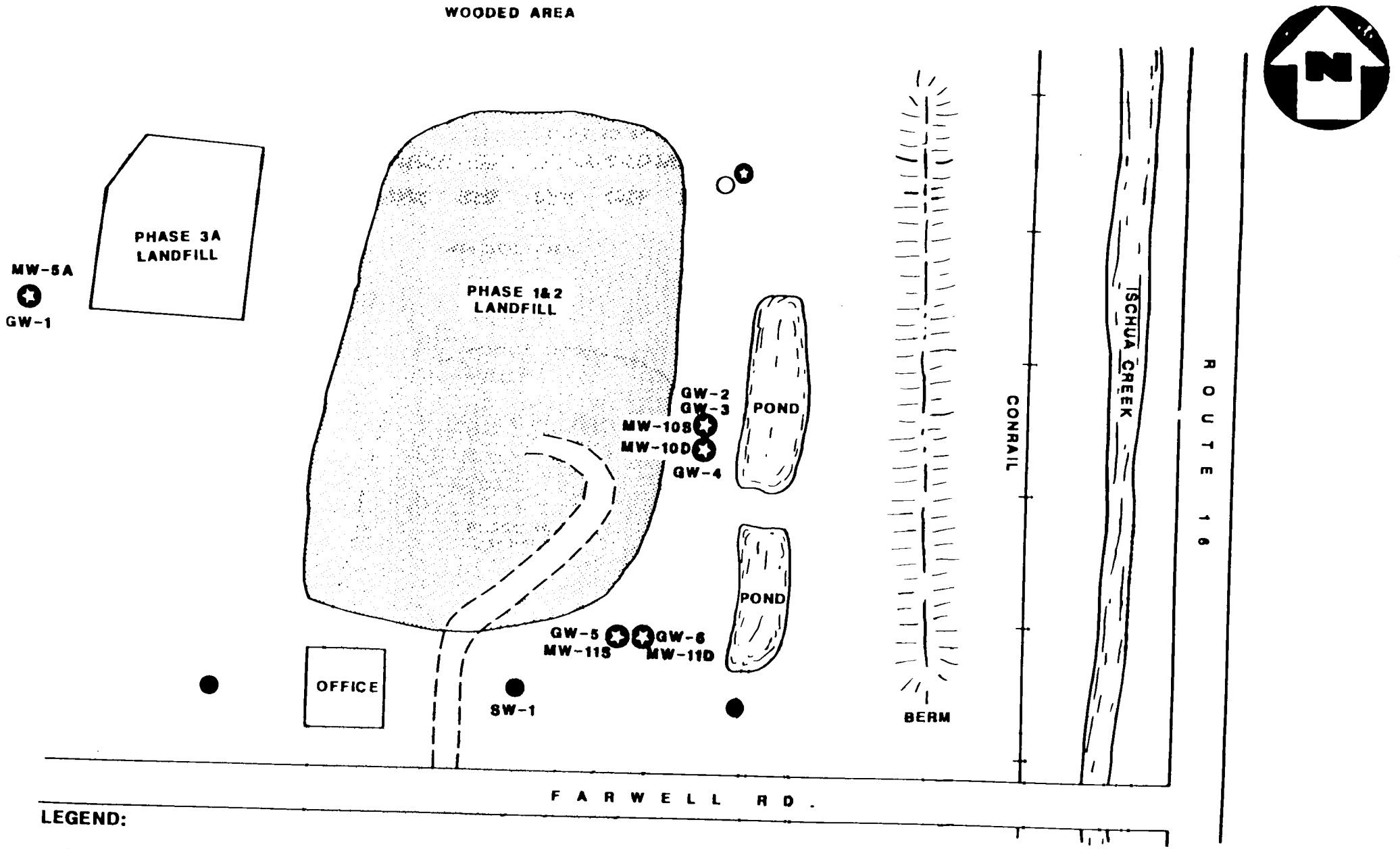
FIGURE 1

SITE LOCATION MAP

CATTARAUGUS COUNTY LANDFILL, ISCHUA, N.Y.

SCALE: 1"=2000'

NUS CORPORATION



LEGEND:

- MONITORING WELL
- MANHOLE

ALL SAMPLES PRECEDED BY NYM9

SAMPLE LOCATION MAP
CATTARAUGUS COUNTY LANDFILL,
ISCHUA, N.Y.

(NOT TO SCALE)

FIGURE 2

NUS CORPORATION

C2-8810-59-SI
Rev. No. 0

EXHIBIT A

PHOTOGRAPH LOG

CATTARAUGUS COUNTY LANDFILL
ISCHUA, NEW YORK
FEBRUARY 25, 1988

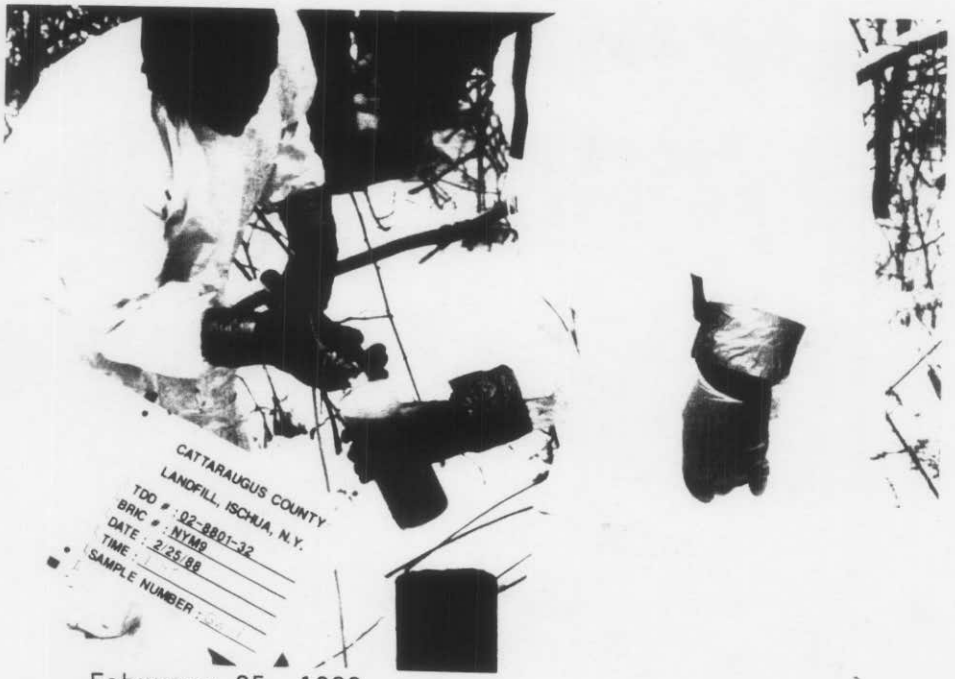
CATTARAUGUS COUNTY LANDFILL
ISCHUA, NEW YORK
FEBRUARY 25, 1988

PHOTOGRAPH INDEX

ALL PHOTOGRAPHS TAKEN BY PETER MORTON

Photo Number	Description	Time
1P-1	Randy Rice and Ken Bogdan collecting sample GW-1.	1140
1P-3	Randy Rice and Ken Bogdan collecting sample GW-2.	1405
1P-4	Randy Rice and Ken Bogdan collecting sample GW-4.	1425
1P-5	View looking north at Phase I and II area.	1455
1P-6	Ken Bogdan collecting aqueous leachate sample SW-1.	1625
1P-7	Randy Rice and Ken Bogdan collecting sample GW-5.	1705
1P-8	View of landfill sign looking south along Route 16.	1720
1P-9	View looking west from Route 16 along Farwell Road. Landfill is on the right after the bridge.	1720
1P-10	Randy Rice and Ken Bogdan collecting sample GW-6.	1735
1P-11	View looking south at farm adjacent to site.	1740
1P-12	View looking west from Phase I and II areas at Phase IIIA area.	

CATTARAUGUS COUNTY LANDFILL, ISCHUA, NEW YORK



1P-1

February 25, 1988
Randy Rice and Ken Bogdan collecting sample GW-1.

1140

1P-3

February 25, 1988
Randy Rice and Ken Bogdan collecting sample GW-2.

1405

CATTARAUGUS COUNTY LANDFILL, ISCHUA, NEW YORK

1P-4 February 25, 1988 1425
Randy Rice and Ken Bogdan collecting sample GW-4.

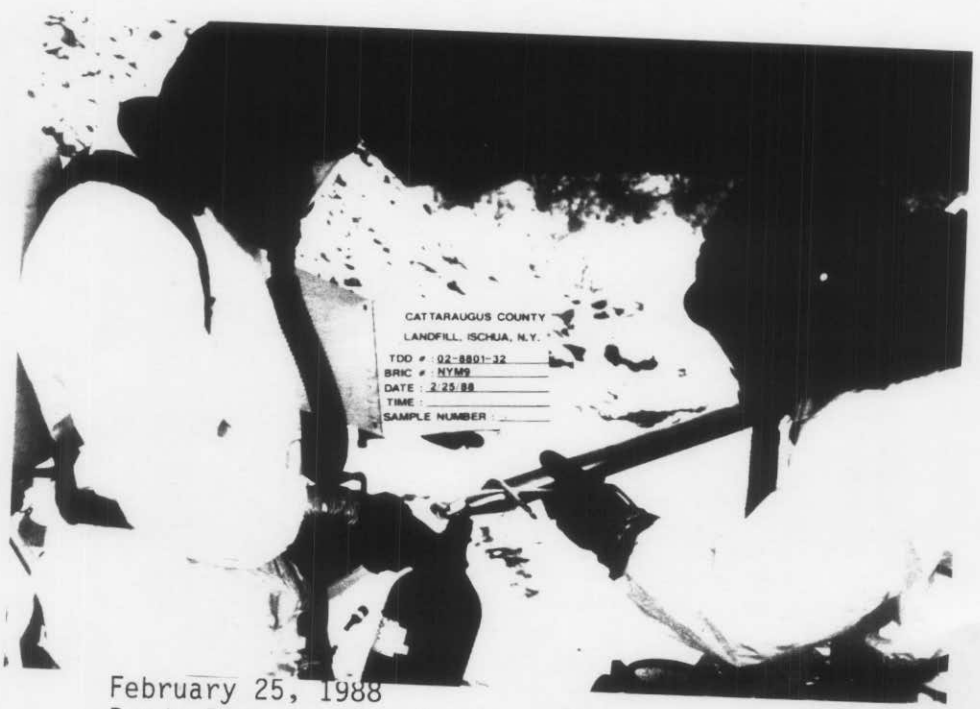
1P-5 February 25, 1988 1455
View looking north at Phase I and II area.

CATTARAUGUS COUNTY LANDFILL, ISCHUA, NEW YORK

1P-6

February 25, 1988
Ken Bogdan collecting aqueous leachate sample SW-1.

1625



1P-7

February 25, 1988
Randy Rice and Ken Bogdan collecting sample GW-5.

1705

CATTARAUGUS COUNTY LANDFILL, ISCHUA, NEW YORK

1P-8 February 25, 1990 1720
View of landfill sign looking south along Route 16.

1P-9 February 25, 1990 1720
View looking west from Route 16 along Farwell Road.
Landfill is on the right after the bridge.

CATTARAUGUS COUNTY LANDFILL, ISCHUA, NEW YORK

1P-10 February 25, 1988 1735
Randy Rice and Ken Bogdan collecting sample GW-6.

1P-11 February 25, 1988 1740
View looking south at farm adjacent to site.

CATTARAUGUS COUNTY LANDFILL, ISCHUA, NEW YORK

1P-12 February 25, 1988 1740
View looking west from Phase I and II areas at Phase IIIA area.

4.0 SITE INSPECTION SAMPLE RESULTS

NUS Corp. Region 2 FIT collected six groundwater samples from monitoring wells surrounding the landfill on February 25, 1988. The U.S. Environmental Protection Agency (EPA) Contract Laboratory Program was utilized for sample analysis. The results are included as Reference No. 9. Sample locations are shown on Figure 2 in Section 3.0. Analysis of groundwater samples indicated that concentrations of volatile organic compounds in the downgradient wells were many times higher than those in the upgradient well. Inorganic contaminants attributable to the site were also detected in the downgradient well samples. An aqueous sample taken from a manhole indicated concentrations of volatile, semivolatile, and inorganic compounds. The following table summarizes the pertinent analytical results:

TABLE 2: ANALYTICAL RESULTS FOR CATTARAUGUS COUNTY LANDFILL

Volatiles

	SAMPLE NUMBERS*						
Substance	GW-1	GW2	GW-3	GW-4	GW-5	GW-6	SW-1
Benzene				J			
Chlorobenzene							J
Chloroethane				21		42	
1,1-Dichloroethene				J		5	
1,1-Dichloroethane		60	60E	170E	9E	200	15
1,2-Dichloroethane						J	
1,2-Dichloropropane					J		
Trans-1,1-Dichloro-ethene (total)				23	J	29	66
Ethylbenzene							J
2-Butanone							530E
Tetrachloroethane							J
1,1,1-Trichloroethane				21		61	
Trichloroethene				5	J	25	22
4-methyl-2-pentanone							27
2-Hexanone							12
Toluene							20
Vinyl Chloride				J		J	
Xylenes (total)							8

Notes: Concentrations are in micrograms per liter (ug/L)
J = Estimated value with substance present below contract required quantitation limit but above instrument detection limit.
E = Estimated Value
Blank Space = Compound analyzed for but not detected

* All samples preceded by NYM9

TABLE 2: ANALYTICAL RESULTS FOR CATTARUGAS COUNTY LANDFILL

(Cont'd)

Inorganics

	Sample Numbers*						
Substance	GW-1*	GW2	GW-3	GW-4	GW-5	GW-6	SW-1
Barium	J	1,580	2,410	501	6,940	J	888
Berryllium		J	J		17		
Cadmium				7.9			5.2
Chromium				12	554		63
Cobalt	J	J	100		365	J	J
Copper	J			J	1,060	J	71
Iron	88,600			12,400	1,241,000	2,810	167,000
Lead	8.4			13	591	9.7	36
Manganese	761			1,870	23,000	1,200	9,520
Mercury					0.57		
Nickel					748		50
Vanadium	J			J	615		J
Zinc	37			58	3,150	36	1,940

Notes:

Concentrations are in micrograms per liter (ug/l)

J = Estimated value with substance present below contract required quantitation limit but above instrument detection limit.

Blank Space = Compound analyzed for but not detected

* All samples preceded by NYM9

Ref. Nos. 1, 8, 9

Semivolatile compounds were detected in surface water sample NYM9-SW1 and groundwater sample NYM9-GW4. Bis(2-chloroisopropyl)ether was detected in sample NYM9-SW1 at a concentration of 99 ug/L. Diethylphthalate was detected at estimated concentration of 10 ug/L in sample NYM9-SW1. This compound was also present in groundwater sample NYM9-GW4, below the Instrument Detection Limit (IDL) and above the Contract Required Detection Limit (CRDL).

The only pesticide detected was in groundwater sample NYM9-GW1. The pesticide gamma-BHC (Lindane) was detected at a concentration of 0.09 ug/L in the upgradient sample NYM9-GW1.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The Cattaraugus County Landfill is an inactive 227-acre site on Farwell Road in Ischua, New York. The landfill was owned and operated by the County from 1975 through 1987. The landfill is separated into three disposal areas totaling approximately 16 acres. The landfill was permitted to receive residential, municipal, and industrial wastes along with incinerator ash, sewage treatment sludge, and construction debris. There is no record of the landfill accepting hazardous waste. The Phase I and Phase II areas cover approximately 13 acres. These areas are unlined and did not have a leachate collection system until 1986. The Phase III A area covers the remaining 3 acres. When the county closed the landfill, it was required by the New York State Department of Conservation (NYSDEC) to install a groundwater monitoring system in accordance with 6 NYCRR, Part 360 as part of closure activities.

On July 16 and July 30, 1987, Malcolm Pirnie, Inc., as part of a field investigation to comply with requirements of NYCRR, Part 360, collected six groundwater samples from monitoring wells surrounding the landfill. Analyses of the groundwater samples indicated a documented release from the landfill of volatile and inorganic compounds to the groundwater.

On February 25, 1988, NUS Corporation Region 2 FIT collected groundwater samples from five wells surrounding the landfill. Analyses of the groundwater samples indicate a documented release of volatile, semivolatile, and inorganic compounds to the groundwater which are attributable to the site. Additionally, an aqueous sample taken from a manhole indicated concentrations of volatile and semivolatile organic compounds, and heavy metals. Groundwater is the only source of drinking water within a 3-mile radius of the site with no alternative water supply source available. **A LISTING SITE INSPECTION** is recommended based on the following observations:

- Industrial wastes with incinerator ash, sewage treatment sludge, and construction debris were accepted by the landfill and disposed of in the unlined Phase I and II areas.
- Analytical results from the Malcolm Pirnie, Inc. sampling and NUS Corporation sampling indicate a release of volatile and inorganic compounds to the groundwater downgradient of the site.
- Groundwater is the only source of drinking water with approximately 700 people potentially affected.
- Reports of leachate outbreaks to surface water prior to the installation of a collection system indicate a potential for surface water contamination.

5.0 CONCLUSIONS AND RECOMMENDATIONS (Cont'd)

It is recommended that soil samples be collected in the vicinity of the landfill to document contaminants attributable to the site. Additionally, tap water samples from nearby residences and surface water samples from Ischua Creek should be collected.

6.0 REFERENCES

1. Field Notebook No. 0166, Cattaraugus County Landfill, TDD No. 02-8801-32, Site Inspection, NUS Corporation Region 2 FIT, Edison, New Jersey, February 25, 1988.

2. Groundwater Monitoring System Installation, Farwell Landfill, Project No. 595-05-1, Preliminary Draft, Malcolm Pirnie, Inc., September 1987.

3. Three Mile Vicinity Map based on U.S. Department of the Interior, Geological Survey Topographic Maps, 7.5 minute series, Quadrangles of "Hinsdale, NY," 1961, photorevised 1979, "Cuba, NY," 1961, photorevised 1979, "Franklinville, NY," 1963, and "Rawson, NY," 1963, photorevised 1976.

4. Telecon Note: Conversation between Mr. Chester Halgas, Cattaraugus County Environmental Health Department, and Peter Morton, NUS Corp., April 11, 1988.

5. New York State Department of Environmental Conservation, Significant Habitat Overlay, "Buffalo, NY," Quadrangle, 1962, revised December 31, 1985.

6. NYSDEC memorandum from Mr. Robert Mitrey to Mr. John McMahon (both of NYSDEC), Subject: Referral for Legal Action, August 22, 1984.

7. New York State Atlas of Community Water System Sources, New York State Department of Health, Bureau of Public Water Supply Protection, 1982.

8. Uncontrolled hazardous waste site ranking system, A user's manual 40 CFR, Part 300, Appendix A, 1986.

9. U.S. EPA Contract Laboratory Program, IT Analytical Services, (organic analyses), and Energy and Environmental Engineering, (inorganic analyses), Case No. 9045, Laboratory Analysis from NUS Region 2 FIT Site inspection conducted on February 25, 1988.

10. General Sciences Corp., Graphical Exposure Modeling System (GEMS), Landover, Maryland, 1986.

11. Water Quality Regulations, Surface Water and Groundwater Classifications and Standards, Title 6, Chapter X, Parts 700-705, NYSDEC.

REFERENCE NO. 1

NUS CORPORATION

II

0166

Cattaraugus County Landfills
TDD #02-8801-32 NYM9

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2/25/88
Thomas Varner

02-8801-32 2-11-88

4

Cattaraugus Co. Landfill

on-site reconnaissance

NUS Personnel

Peter Morton	–	project manager
Jane Bullis	–	Site Safety
Tom Vanes	–	co-investigator

weather condition - overcast cold (21°), wind 0-10 MPH from west

0955 Arrive on site Doug Baldwin site contact is not here yet

J Bullis, T Vanes } prepping to go level B

contractors are present on site hooking up tank to leachate collection system

0960 Doug Baldwin arrives,

the following info are information obtained from Mr. Baldwin:

Peter Morton 2-11-88

Thomas Vanes 2/11/88

02-8801-32 2-11-88 5

catt. co. LF

The entire facility is inactive

landfill operations began Nov. '74

active until Dec. 31, 1987

waste - non hazardous industrial no hazardous waste, Cattaraugus Co municipal waste

on-site activities - closure plan,

intermediate cover (minimum of 1 foot, 2-3 ft. cover on most places) now contractors are installing tanks for leachate collection

areas 1 + 2 ~~had~~ have no liner but they have since been surrounded by collection

Phase 3 4 - double clay liner + leachate collection system

phase 1+2 - all unlined drains attempt to collect leachate

(~16 acres total) Area uses private wells for drinking nearest is farm just to south ~0.25 mile away

Pete B. Horton
2-11-88

Thomas Vanses
2/11/88

02-8801-32 2-11-88

0920 T Varnes prepping for level B to open well

T Bullis gets HNu ready (unit is clean!)

HNu # 307138

T Varnes SCBA # ~~307168~~ 307175 (initialed 2/11/88)

S Bullis II ~~307168~~ (initialed 2/11/88) backup 307168

SCBA # 307173 has leak in diaphragm

0945 At monitoring wells at NE corner of landfill

only one of two wells will open

T Varnes opens, no readings w/ HNu

0947 measuring well depth - 35' 3" to TOC
depth to water - >20

M-scope not working properly, water >20

well 6" outer casing
4" inner casing

0954 [illegible] well [illegible] [illegible] T [illegible] TV [illegible]

Peter r. Morton
2-11-88

Thomas Varnes
2/11/88

02-8801-32 2-11-88

0959 T Varner on air, opening well at SE corner

h/o readings
well is 6" Ø, no install casing
can see water ~ 10' deep (10' from TOC)
well is 16' 10" total depth

1003 TV off air

Mr. Baldwin again:

there are 3 manholes present with water in them that is leachate from both landfills - we'll sample them

Mr Baldwin has all of the well info in the office in Salamanca. I'll call next week

1030 leaving site, heading to DEC Buffalo Office

Peter Potter
2-11-88

Thomas Varner
2/11/88

NY 8801-32 2/25/88

Site inspection

NUS personnel

Peter Morton	-	Project Manager
Tom Varner	-	Co-investigator
Dave Dullis	-	Site Safety
Mark Ellis	-	Sample Management
Randy Rice	-	Sampler
Ken Bogdan	-	Sampler

Weather conditions: clear sunny cold (≈20°F)
wind 0-5 mph from west

0920 arrive on site begin setting up decon
area, meet w/ Roy Baldwin
R Rice K Bogdan suiting up
for level B

T Varner preparing to decon trailers

OVA # 409760
HNu # 469747
rad meter # 423609

R. Rice SCBA # 192040
K. Bogdan SCBA # 192035

Pete Morton 2/25/88 Thomas Varner 2/26/88

[illegible] freezing to open upgradient well
MW-5, measure depth

Decon procedure not effective in these temps
as nitric is freezing to the fibers, necessary
to rinse with hot tap water to clean off

10 15 We can't get lock at ~~[illegible]~~ MW-12 open
we proceed to well ~~[illegible]~~ MW-54
~~[illegible]~~ MW-54 has no lock

1023 [illegible] on [illegible] opens well.
no readings w/ OVA or HNu

[illegible] measuring depth to water 29'6" from TOC
depth of well 59'

water column 29'6"

well volume (4") = 14.3 [illegible] vol. of 10' of column
× 3
42.9 [illegible] 1 volume
× 3
128.7 [illegible] 3 volumes

[signature] 2/26/88

[signature] 2/26/88

02 -8801 -32 2/25/88

1100 at MW-5A ~~[illegible]~~ well getting submersible pump ready to purge

1115 putting pump in well

117 3 gallon pail filled in 5 seconds

40 x 3 gall = 120 gals

40 x 5 sec = 200 sec

(300 sec) if we pump for 5 mins greater than 3 volumes will be purged

we pumped well dry in 4 min we'll collect GW-1

GW-1 (MS/MSD) will be collected double volume

1130 R Rio begins collecting sample GW-1

Photo # 1 R Rio, K Bogdan collecting GW-1

1200 back at decon area, prepping to collect GW-2 GW-3

Next samples will be GW-2 (+ dup GW-3) GW-4 from wells at eastern edge of phase 1+2 CF

Peter Martz 2/25/88 Thomas [illegible] 2/26/88

(MW-10)
1235 At [illegible] well cluster on eastern edge of [illegible]

[illegible]

1305 Finally got shallow well unlocked have gotten permission to cut lock off this well

K Bogdan preparing to go in

trash pump is broken,

SCBA # ~~68~~ pa # 192035 689957 ← tank #

K. Bogdan on air 1315
off air 1320

depth to water 26 1/2' from TOC

well depth 35'

water column 8 1/2'
4" PVC riser casing = 5.2 ← 5 feet
.33 ← 1/2 feet

5.5 one vol
x3
16.5 gallons to evacuate

Peter Norton 2/25/88

[illegible] Varney 2/26/88

02-8861-32 2/25/88

1330 depth to water of deep well 36 ½'

1340 begin purging shallow well

evacuated 12 gallons well went dry, no readings

deep well volume 87' deep
depth to water 36'

51' water column

4"⌀ casing = 6.5 gallon 10' of column
× 5
32.5 = 50' of column
+ .65
~33 gallons vol
× 3
99 gallons must be purged

1350 begin purging deep well,

pumping 3 gall in 10 sec, (18 gal/min)
6 min pumping will be reached ×6
106 gal.

1357 Stop purging deep well

Peter S. Morton [signature]
2/25/88

Thomas Varner [signature]
2/26/88

02-8801-32 2/25/88

1400 we'll collect GW-2 & dup GW-3 from shallow well now (MW-105)

1405 photo #3 K Bogdan, R Rice collecting GW-2, no readings

1415 K Bogdan, R Rice collect environmental duplicate GW-3 from same well MW-105

1424 Began collecting GW-~~5~~ 4 from deep well PN 2/25/88

1425 R Rice K Bogdan collecting GW-~~5~~ 4 2/25/88

Photo #~~3~~ 4 PN 3/2/88

no readings —

1430 we note that HNu has died, samplers smell something

we'll go level B

1440 Samplers in level B
— Bulls backups

1450 finish collecting sample
samplers off air

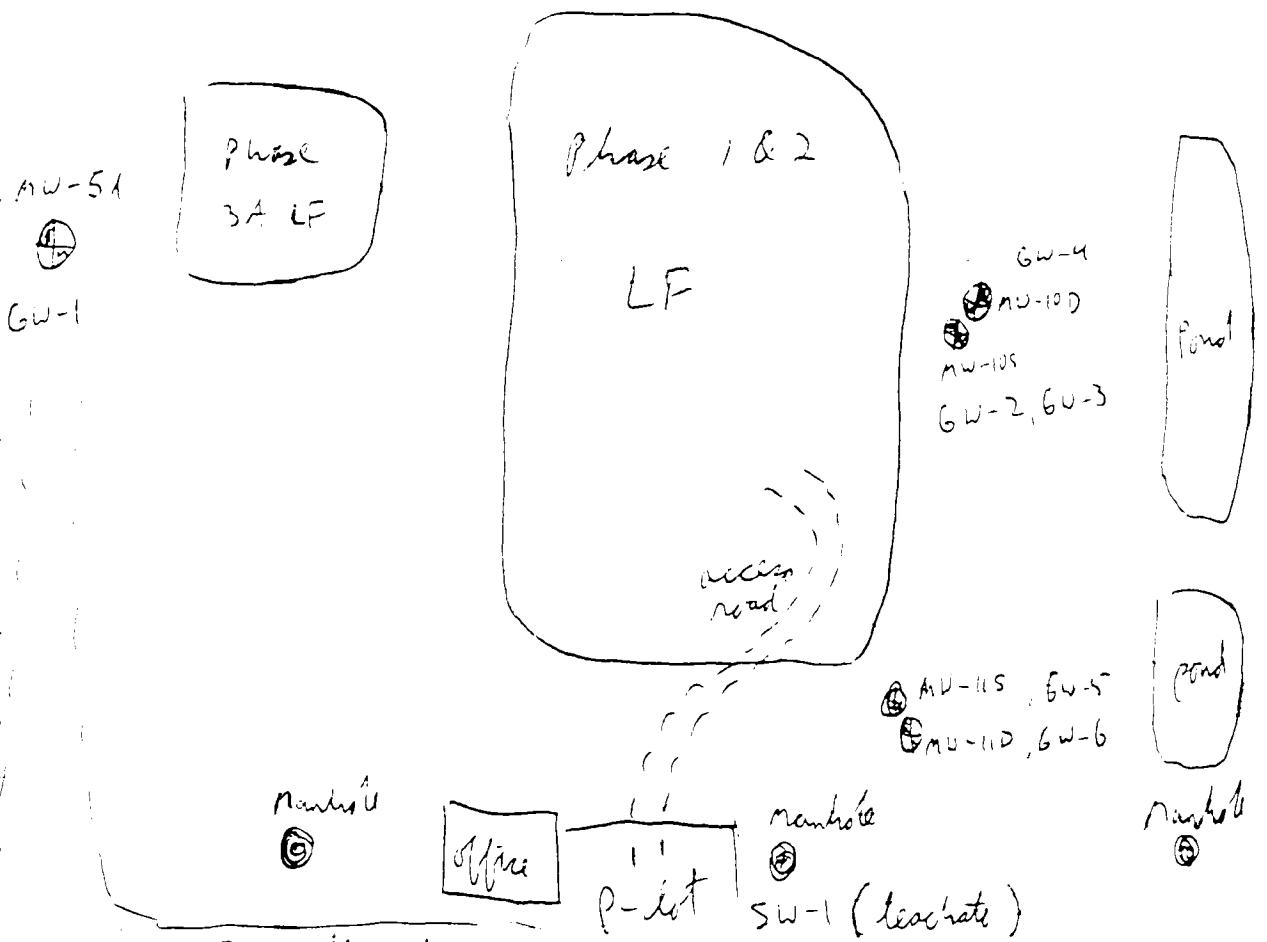
1455 Photo looking north at Phase I and II LF

1510 we've delivered GW-2, GW-3 GU-4 at decon area prepping to sample GW-5 and GU-6 at S.E corner cluster next (cluster MW-115, MU-11D)

Pete Porter [?] 2/25/88

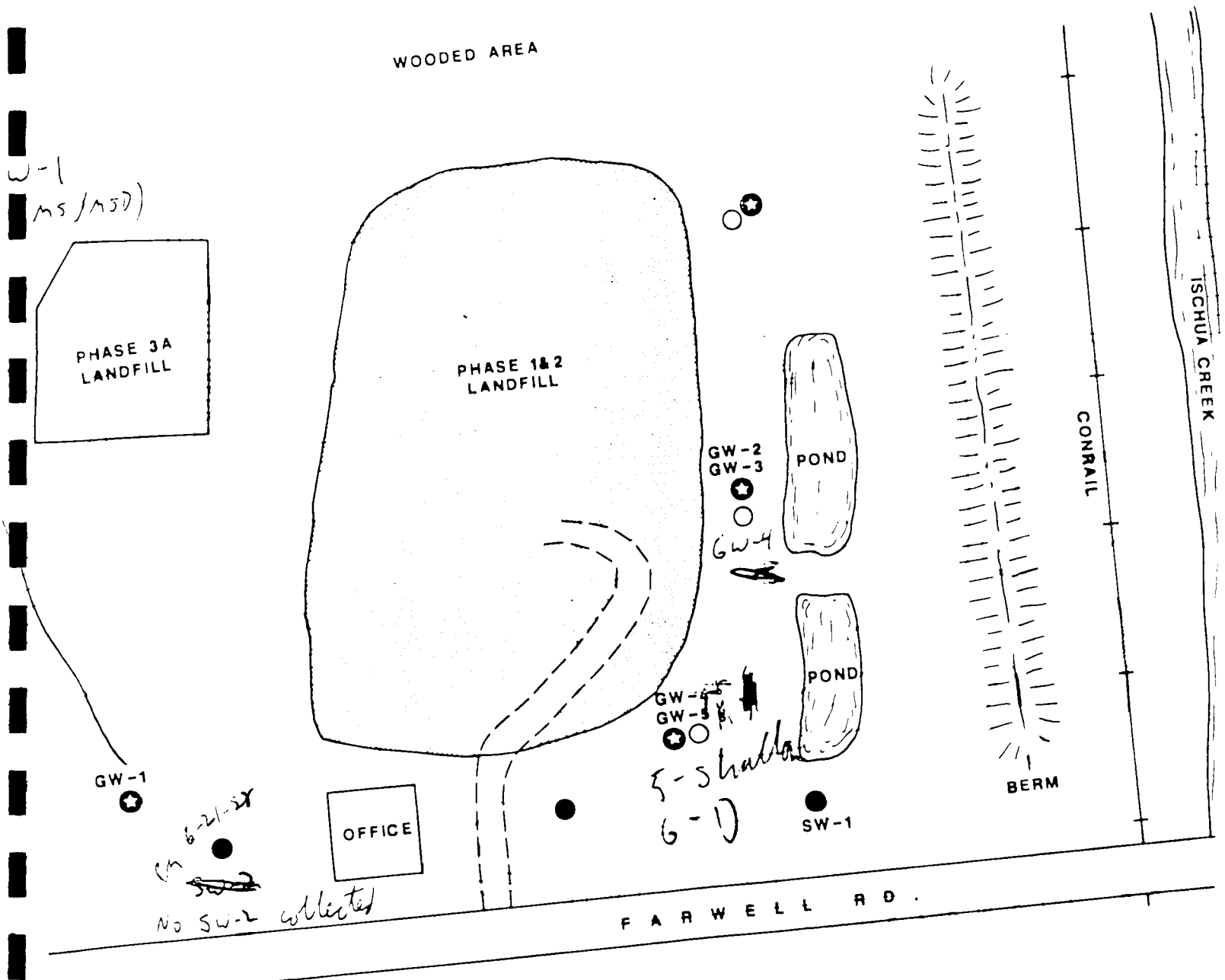
Thomas Vance [?] 2/26/88

Sample location map
(added to logbook to clarify sample locations on 6-21-88)



environmental
total 5 sample collected
on 2-25-88 : 6 groundwater samples
1 leachate sample

Pete Porter
6-21-88



LEGEND:

- MONITORING WELL
- MANHOLE
- MONITORING WELL

PRE-SAMPLE LOCATION MAP
CATTARAUGUS COUNTY LANDFILL,
ISCHUA, N.Y.

(NOT TO SCALE)

02-8801-32 2/25/88

1520 R Rice going on site
K Bogdan backhoe

R Rice on site
OVA pegged when inner casing opened
at 100x

in deep hole

Shallow hole - 6 ppm in hole

1540 It is noted that we inadvertently collected duplicate samples at both MW-10S and MW-10D. Sample numbered GW-5 is same as GW-4 and is unnecessary. We will throw it away. ~~There will be no GW-5 sample~~ PSM 2/25/88

The samples from ~~10~~ 11-D and ~~10~~ 11-S will be GW-~~5~~ 5 (shallow) and GW-6 (deep)

1550 R Rice on site, measuring wells

deep well - ~~78~~ 96' deep

46 to water

56 water column = 32.5 gallons one vol
x 3
97.5 to evacuate

Peter Morton 2/25/88 Thomas Varner 2/26/88

shallow 45' deep
31.9' to water

5.1' of water
2.6 gal ← 4' column
.65 ← 1
+ .065 ← 0.1'

3.315 gal
x 3

~10 gal to purge

→

1620 < Bogelan on way to try to sample manhole
T Varney back up - sample SW-1

1635 well MW-11-S pumped dry

1640 begin evacuation MW-11D

R Rice on
T Varney also backup here

1645 evacuating MW-11D
R Rice off

1650 Done purging deep well
will not sample S-well

P.R. ... 2/25/88 Thomas Varney 2/26/88

leachate sample was collected from
manhole at NE corner of parking lot,
south of southeast corner of Phase 1 & 2 landfill
Pete T. Morton
6-21-88

→

6 2-

shallow

1620

1635

1640

1645

R

1650

w

2

02-8801-32 2/25/88

1705 RKrco K Bogdan collecting
GW-7 1-6 ppm

Photo # 7 (?)

1720 Photo 8, 9 of landfill sign looking north
on Farnell Rd looking west

1725 Bogdan off air

1735 RKrco finishes sampling GW-6,
MW 11-D off air

1740 Photo 10-14 panorama photo of site
Sample MW-11S was short on volume
because well went dry, very slow recharge

1750 Finishing packing samples, packing
up decon area, deconning
equipment we used

The samples will be dropped at Federal Express
in Buffalo in the morning

Peter Morton
2/25/88

Thomas Vance
2/26/88

02-8801-32 2/25/88

Sample Summary

NUS #	Organic traffic Report #	Inorganic Traffic Report #
GW-1*	BQ 803	MBP 613
GW-2**	BQ 804	MBP 614
GW-3** PA 31356	BQ 805	MBP 615
GW-4	BQ 806	MBP 616
GW-5	BQ 807	MBP 617
GW-6	BQ 808	MBP 618
SW-1	BQ 809	MBP 619
~~PA 31356~~ RIN-1	BQ 810	MBP 620
~~PA 31356~~ (TB)-1	BQ 811	N/A

* MS/MSD

** environmental duplicate (same as GW-3)

Case # 9045

Organic lab

IT Analytical Services
5103 old William Penn Hwy
Export PA 15632
Attn Robert Finley

Aurbill # 719519882 4

Inorganic Lab

Energy + Environmental Engineering
35 Medford St
Somerville MA 02143
Attn Cynthia Smith

Aurbill # 719519835

Samples shipped from Buffalo Fed Ex on morning of 2/26/88

Peter Horton 2/29/88

REFERENCE NO. 2

Engineering Report

GROUND WATER MONITORING SYSTEM INSTALLATION FARWELL LANDFILL

Ischua, New York
Cattaraugus County

September 1987
Project: 595-05-1

REVIEW COPY
DRAFT

MALCOLM PIRNIE
ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

FARWELL LANDFILL
GROUND WATER MONITORING SYSTEM INSTALLATION

SEPTEMBER 1987

Project Number 595-05-1

MALCOLM PIRNIE, INC.
Environmental Engineers,
Scientists and Planners
S-3515 Abbott Road
Buffalo, New York 14219

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1.0 INTRODUCTION

1.1 Background

Cattaraugus County owns and operates the Farwell Sanitary Landfill which is located on an approximate 227-acre site on Farwell Road in the Town of Ischua, New York.

The property was used for farming prior to site development. A location map illustrating the location of the landfill site is presented as Figure 1. The landfill is separated into three (3) disposal areas totalling approximately 16 acres. The Phase I and II areas, covering approximately 13 acres, are currently inactive. The Phase IIIA area, covering approximately 3 acres, currently receives resource recovery ash and non-hazardous industrial waste.

Cattaraugus County was issued an Order on Consent by the New York State Department of Environmental Conservation (NYSDEC) in August 1984 to bring the landfill site into compliance with State regulations. In compliance with this Order on Consent, the County initiated an attempt to obtain a Part 360 permit for Phase II Expansion. The County has since discontinued this attempt due to the high costs associated with a detailed hydrogeologic investigation and the probability that a request to permit the expansion area would be denied. The County has agreed to stop receiving wastes at the Farwell landfill by January 1, 1988 and is pursuing closure of all three landfill areas in accordance with 6NYCRR Part 360. The NYSDEC requires installation of a ground water monitoring system in accordance with 6NYCRR Part 360 as part of closure activities.

The Phase I and II areas were operated from 1975 to 1985. Little information is available on the type and quantity of wastes contained in the Phase I and II areas; however, the landfill is known to have received various types of residential, commercial and non-hazardous industrial wastes along with incinerator (resource recovery) ash, sewage treatment sludge and construction debris. The Phase I and II areas are unlined and were without leachate collection until 1986 when the existing

leachate collection system was installed. The Phase IIIA area was designed and constructed with a two-foot thick soil liner and leachate collection system.

1.2 Purposes and Scope

A field investigation was performed at the Farwell Landfill to comply with the requirements of NYCRR Part 360, with regard to closure/post-closure ground water monitoring requirements for Solid Waste Management Facilities. The investigation included:

- Installation of additional monitoring wells both upgradient and downgradient of the fill areas to further define subsurface hydrogeologic conditions;
- Determination of the direction of ground water flow; and
- Establishment of baseline ground water quality based upon two rounds of sampling in existing and newly-installed wells.

2.0 FIELD INVESTIGATION

2.1 Boring Program

A monitoring well installation program was initiated on June 3, 1987. Rochester Drilling Company drilled all exploratory sample borings and completed all monitoring well installations. Due to drilling difficulties, Rochester Drilling Company sub-contracted Frey Well Drilling Company of Alden, New York and Dallas-Morris Drilling Company of Bradford, Pennsylvania to complete boreholes for monitoring well installations.

A total of four (4) deep monitoring wells and four (4) sample borings were completed as a part of this field investigation. Three (3) deep wells (9D, 10D and 11D) were installed adjacent to existing shallow wells 9S, 10S and 11S downgradient of the landfill. The remaining deep well, 13D, was installed at a new locale upgradient of the landfill. The number 13 was chosen since a No. 12 well already existed on-site. One additional well boring, 13S, was drilled adjacent to 13D but was subsequently abandoned due to a lack of water and installation difficulties. The total drilling footage for this investigation was 893 linear feet. Plate 1 indicates the final locations of the new monitoring wells.

All monitoring well boreholes were advanced by an Ingersoll-Rand T-4 Air Rotary rig. All exploratory sample borings were advanced using CME-55 or Mobile B61 drilling rigs. All drilling and sampling equipment was steam-cleaned between each monitoring locale and before leaving the site. A summary of drilling operations are reviewed by location below and are summarized in Table 1.

- 11D sample boring was initiated on June 3 and completed June 15, 1987. Rochester Drilling Company utilized a Mobile B-61 Pacemaker rig with 6-1/4" hollow stem augers. Bentonite (GPG30) drilling mud was utilized to aid advancement. The total linear footage was 85'.

- 11D well boring was initiated on June 15 and completed on June 16, 1987. Frey Well Drilling Company utilized an Ingersoll-Rand T-4 Air Rotary rig. A 12-1/4" tricone bit was advanced to a depth of 86' and then withdrawn, followed by 9-5/8" casing driven to 86'. The casing was cleaned with an 8-3/4" hammer bit and 8-3/4" roller bit. The casing was then advanced to 92' and subsequently cleaned out by an 8-3/4" hammer. The monitoring well installation occurred on June 16, 1987. Rochester Drilling Company installed the well at 88' after backfilling from 92' with #4 silica sand.

- 9D sample boring was initiated on June 16 and completed on June 23, 1987. Rochester Drilling Company utilized a Mobile B-61 Pacemaker with 6-1/4" hollow stem augers and a 4" roller bit. Bentonite (GPG30) drilling mud was used to aid advancement. The total linear footage was 102'.

- 9D well boring was initiated on June 24, 1987. Frey Well Drilling Company utilized an Ingersoll-Rand T-4 Air Rotary rig and 9-5/8" casing. The 9-5/8" casing was driven to 76' and cleaned out with an 8-3/4" hammer bit. The monitoring well installation occurred on June 24, 1987.

- 10D sample boring was initiated on June 18 and completed on June 22, 1987. Rochester Drilling Company advanced 5" casing with a 4-7/8" roller bit to 30', and 4" casing with a 3-7/8" roller bit to 87'. A spin/drive method was used to advance casing. Bentonite (GPG30) drilling mud was used to aid advancement. The total footage was 87'.

- 10D well boring was initiated on June 22 and completed June 23, 1987. Frey Well Drilling Company utilized an Ingersoll-Rand T-4 Air Rotary rig. A 9-5/8" casing was driven to 87' and cleaned out with an 8-3/4" hammer bit. The monitoring well installation occurred on June 23, 1987.

- 13D sample boring was initiated on June 23, 1987 and completed on July 2, 1987. Rochester Drilling Company advanced 3" steel casing with a 2-7/8" roller bit to 134'. A spin/drive method was used to advance the casing. Bentonite (GPG 30) drilling mud was used to aid advancement.

- 13D well boring was initiated on June 18 and completed on June 19, 1987. Frey Well Drilling Company utilized an Ingersoll-Rand T-4 Air Rotary rig. A 12-1/4" tricone roller bit was advanced to a depth of 83' and subsequently withdrawn. An 8" casing was installed to 83' and cleaned out with a 6-1/2" hammer bit. The casing was then driven to 135' and subsequently cleaned out with a 6-1/2" hammer bit. The monitoring well installation occurred on July 7, 1987.

- 13S well boring was initiated and completed on July 6, 1987. Dallas-Morris Drilling Company utilized an Ingersoll-Rand T-4 Air Rotary rig. A 7-1/2" casing was driven to a depth of 95' and subsequently cleaned out with a hammer bit. Due to a lack of water in the well bore after a 3-1/2 day period coupled with subsequent installation difficulties, it was decided, after conferring with the NYSDEC, that the well be abandoned and not re-drilled.

Split spoon soil samples were collected at five-foot intervals in sample borings 9D, 10D, and 11D to depths of 102', 87' and 85' respectively. Split spoon samples were collected continuously in sample boring 13D to a depth of 102' and at selected intervals thereafter. All split spoon samples were field-logged using both Burmister and Unified Soil Classification systems (refer to Appendix 1). Soil samples were stored in appropriately labeled glass jars. All sample borings were backfilled to the surface upon completion with cement-bentonite grout. Boring logs are presented in Appendix 2.

The new monitoring wells were constructed using 4-inch ID, Schedule 40 PVC pipe with accompanying 10 slot PVC screen, #4 silica sand, bentonite pellets, cement-bentonite grout and protective locking sleeves. All PVC pipe had flush joint threading. Cement-bentonite grout was tremie-backfilled to ground surface. A detail of a typical well design is presented as Figure 2. Well construction details are summarized in Table 2 and detailed in Appendix 3.

Monitoring wells were developed no sooner than 48 hours after installation by surging with compressed air. All new wells were surveyed to determine the exact locations and elevations relative to an established datum.

Ground water elevations from both new and existing on-site monitoring wells were recorded on July 16, 23 and 30, 1987. The data is presented in Table 3.

3.0 SITE GEOLOGY AND HYDROGEOLOGY

3.1 Geologic Units

Hydrogeologic cross-sections have been prepared which illustrate the vertical and lateral extent of the geologic deposits encountered during this program (refer to Plate 2). The cross-sections were prepared using the boring logs as presented in Appendix 2.

In order of abundance, the unconsolidated deposits occurring beneath the site include:

- glacial till;
- glaciofluvial deposits (sands and gravel); and
- glaciolacustrine/overbank deposits (sorted silts).

An organic horizon was also encountered at boring 9D. These deposits are briefly described below:

- Organic horizon/layer

  This layer was found in the uppermost two feet in sample boring 9D. It consists mainly of organic silts with varying percentages of f-m sand, rock fragments, clay and organic materials (viz: roots).

- Glaciolacustrine/Overbank Deposits

  These deposits consist of dense to very dense silt with some vf-f varved sands and clay and a trace of gravel. This zone is approximately three feet thick and appears to be a localized lense in the vicinity of MW9D.

- Glaciofluvial Deposits

  As Plate 2 illustrates, the thickness and lateral extent of these deposits varies considerably across the site. A continuous layer apparently exists between 13D and 11D and appears to slope as well as thicken in an easterly direction toward 11D. The material generally

consists of medium dense to dense sand and subrounded gravel ranging from moist to saturated. Pure sand lenses (which lacked gravel) were also detected in sample boring 13D. These particular lenses ranged from 2 to 4 feet in thickness.

- Glacial Till

  This deposit, which predominates beneath the site, consists of an unconsolidated mixture of medium dense to very dense silt and subangular gravel with smaller percentages of sand, clay, rock fragments, and cobbles. The material was fairly dry to a depth of 96 feet at sample boring 13D, which is upgradient of the landfill, however, it was considerably moist to wet throughout the subsurface on the downgradient side (viz. sample borings 9, 10 and 11). This is illustrated on Plate 2.

The underlying bedrock formations are of late Devonian Age from the Chautauquan series, Arkwright Group. The formations include the Canadaway underlying the Chadakoin and are comprised of gray shale with interbedded siltstone. Structural details known about Cattaraugus County, based on exposed bedrock units, indicate a homoclinial structure with a dip less than 40 feet per mile to the south/southwest. Bedrock was confirmed at a number of previous wells drilled on-site, namely, numbers 4, 5A, 6, 8 and 12 (Refer to Plate 1 for locations). For further geologic details, refer to "Preliminary Hydrogeologic Investigation for the Farwell Landfill Site".

3.2 Ground Water Conditions

Two saturated ground water zones occur on-site within the unconsolidated deposits as illustrated in the hydrogeologic cross-sections, Plate 2. A deep zone, which is penetrated by the deep wells, is attributed to natural ground water conditions within the region. A shallower zone, which is penetrated by the

downgradient wells, is assumed to be a localized feature as a result of vertical seepage from the overlying landfill. This shallow zone is only associated with the downgradient wells (9, 10 and 11) and is likely attributed to the moist/wet conditions found within the unconsolidated deposits throughout the area. As Section B-B illustrates, moist/wet conditions begin almost immediately below ground surface and continue thereafter.

In contrast, Well 13D, upgradient to the landfill, does not encounter the shallow ground water zone. At this locale, the unconsolidated deposits remain fairly dry until the deep (or natural) ground water zone appears. Thus, the shallow ground water surface can be interpreted as a saturated layer which "blankets" the natural ground water surface. As Section B-B depicts, this "blanket" is expected to dissipate away from the landfill due to a reduction in overlying moisture.

Vertical gradients of ground water flow were calculated for downgradient well pairs 10S/10D and 11S/11D using the formula (Freeze and Cherry, 1979):

$$I_v = \frac{H}{B}$$

Where: I_v = vertical gradient of ground water flow (ft/ft).
H = difference in ground water elevations (ft).
B = difference in well screen elevations (ft).

The results are as follows:

10S/10D: I_v = -0.22 ft/ft suggesting a downward component of flow within the glacial till deposits.

11S/11D: I_v = -0.16 ft/ft again suggesting a downward component or seepage between the glacial till and glaciofluvial deposits.

A leachate collection system is in place for the Farwell Landfill encompassing all three fill areas. The system is effective in capturing leachate generated in the lined Phase IIIA area and at the periphery of the Phase I and II areas; however, the lack of a liner in the Phase I and II areas facilitates migration of leachate through the bottom of the landfill and into the unconsolidated deposits located below. Information acquired from split-spoon soil samples, along with chemical data (to be discussed in Section 4.3), indicate that vertical seepage is occurring within these unconsolidated deposits as a result of leachate migration from the site.

Using the ground water elevations summarized in Table 3, an isopotential map was prepared for the deep wells (9D, 10D, 11D and 13D) as measured on July 16, 1987 (refer to Plate 3). It is noted that the isopotential lines are inferred due to the limited number of data points. As Plate 3 depicts, the general direction of ground water flow across the site is to the east (toward Ischua Creek) as well as to the south/southeast. Based on published literature (Zarriello and Reynolds, 1987), the regional trend for ground water flow (associated primarily with the glaciofluvial aquifer(s)) is to the south toward the City of Olean following Ischua and Olean Creeks.

A ground water isopotential map was not prepared for the shallow wells; however, the predicted direction of flow, based on the limited data available, would be to the east toward Ischua Creek.

4.0 GROUND WATER QUALITY SAMPLING

4.1 Sample Collection

A total of six (6) ground water monitoring wells (viz: 9D, 10S, 10D, 11S, 11D and 13D) were sampled on July 16 and July 30, 1987, to evaluate existing ground water quality for the site. The parameters tested for are listed in Table 4. Well 9S was dry on both occasions and thus could not be sampled.

Prior to evacuation, the ground water elevations were measured in the wells as presented in Table 3. Continuously recharging wells, (viz. 13D, 11D, and 10D) were evacuated until the conductivity stabilized. At least three well casing volumes were removed. The remaining wells were allowed to recharge until sufficient quantities for sampling were obtained. Measurements of pH, color and conductivity were taken in the field. Table 5 presents a summary of field data measurements.

Wells 13D, 11D, 10D and 9D were evacuated using a Gould 3-3/4" OD submersible pump while Wells 11S and 10S were evacuated with a PVC bailer. The PVC bailers, pump and hosing, were decontaminated in sequence with an alconox solution, potable water, and distilled water between wells. Ground water samples were collected using Teflon bailers which were decontaminated in sequence with an alconox solution, potable water, acetone and distilled water between wells.

Samples were stored in either plastic or glass containers, as appropriate. All containers were precleaned and prelabeled. Necessary preservation of samples, including cooling, were conducted in the field. Samples were placed in coolers and transferred under chain-of-custody command to Recra Environmental, Inc.

4.2 QA/QC Procedures

Quality assurance and quality control (QA/QC) measures taken to ensure the reliability of the data generated were as follows:

- one unidentified trip blank was included with the first set of samples collected on July 16, 1987; and

- one unidentified duplicate sample was included in the second set of samples collect on July 30, 1987.

All QA/QC documentation is provided in Appendix 4 with the analytical reports prepared by Recra Environmental, Inc.

4.3 Discussion of Ground Water Quality Data

The ground water quality results for the two (2) sampling rounds at the Farwell Site are presented in Tables 6 through 15. The associated laboratory data is found in Appendix 4 of this report. Table 16 summarizes 'parameters of concern', as determined based on a comparison of the data to Class "GA" Ground Water Quality Standards. This data is briefly discussed below.

Certain volatile organic compounds (VOC's) were detected at elevated levels in the downgradient monitoring wells as compared to Well 13D (viz. upgradient) and NYSDEC ground water quality standards. Additionally, VOC concentrations were found to be significantly higher in the deeper downgradient wells as compared to the shallow wells. Key statistics are as follows:

- Concentrations of total volatile organics in Wells 9D and 10D averaged approximately 14 times greater than the concentrations found in Well 13D.

- Concentrations of total volatile organics in Well 11D were approximately 29 times greater than those concentrations in Well 13D.

- Concentrations of total volatile organics in Wells 10S and 11S averaged 1.5 times those concentrations in Well 13D.

- Concentrations of 1,1-dichloroethylene detected in the downgradient wells were significantly higher than the ground water quality standard. It is noted that a current standard does not exist for this parameter and that the above evaluation was made according to an earlier quoted limit (refer to Table 16).

- Other volatile organics, which were detected in the downgradient wells were slightly higher than the ground water quality standards.

- Well 13D (upgradient to the landfill) showed no apparent contamination of volatile organics. All parameters were below laboratory detection limits and/or ground water quality standards.

Certain trace metals were also elevated above ground water quality standards in some of the downgradient monitoring wells. Concentrations of arsenic, lead, iron and manganese were notably higher in the shallow wells as compared to the deep. Well 13D had an average iron concentration of 0.3 mg/l for the two sampling occasions, indicating that iron is naturally occurring in the area. It is noted here that all metal analyses were for total fractions only, and it is expected that the soluble fractions would be considerably less.

Finally, concentrations of TOC, COD and sulfate were elevated in most of the downgradient wells as compared to Well 13D. Also, sulfate concentrations exceeded the ground water quality standard in several of the downgradient wells on one of the sampling occasions.

It is important to note the distribution of the volatile organic compounds (VOCs) versus the trace metals within this hydrogeologic regime. The VOCs are more concentrated in the deep monitoring wells (downgradient) while the trace metals tend to be more concentrated in the shallow wells. This difference in

distribution is believed to be the result of several physiochemical factors. For the VOCs of concern, all have relatively high solubilities (compared to other organics), high specific gravity (relative to water) and low sorption constants (Hem, 1970). These physiochemical factors provide for the high-to-very-high mobility of these compounds within saturated environments, such as the one that apparently exists beneath the site. It is believed that the VOCs migrate downward from the Phase I and II areas of the landfill and are then transported laterally via the deep ground water system. The trace metals, on the other hand, exhibit a totally different behavior. It is believed that adsorption and precipitation reactions are causing the metals to migrate at very slow rates as compared to the VOCs, thus restricting their movement into lower regimes.

5.0 SUMMARY AND RECOMMENDATIONS FOR FURTHER STUDY

Two (2) saturated/ground water zones were encountered at depth. A deep zone is attributed to regional or natural ground water conditions while a shallower zone (associated only with the downgradient wells) is thought to be a localized effect, attributed to vertical seepage from the overlying landfill. A saturated sand and gravel layer exists beneath the site from 80 to 120 feet in depth. It was found to be discontinuous in a north-south direction as evidenced from sampling information. The direction of lateral ground water flow is to the east and south/southeast across the site. Moist/wet subsurface conditions encountered on the downgradient side of the landfill, coupled with ground water quality data, demonstrate the vertical transmitting properties of the underlying unconsolidated deposits.

Ground water quality data indicated contamination to varying degrees in all of the downgradient monitoring wells. Of prime concern, were certain volatile organic compounds which exceeded Class GA Ground Water Quality Standards. Certain metals (i.e. arsenic and lead) also exceeded Ground Water Quality Standards to a lesser degree in some of the downgradient wells. The fact that volatile organics are concentrated in the deep wells while trace metals are concentrated in the shallow wells, illustrates the relative mobilities of these parameters under saturated site conditions.

Due to the apparent contamination observed in the downgradient monitoring wells, it is recommended that further hydrogeologic investigation take place at (and in the vicinity of) the Farwell Landfill Site in order to meet the following objectives:

- o define subsurface hydrogeologic conditions beyond the site (in a downgradient direction); and
- o define the vertical and lateral extent of subsurface contamination off-site.

In order to meet the above identified objectives, a proposed scope of work (to be detailed in a subsequent Work Plan) will address:

- o installation of additional monitoring well couplets (deep and shallow) along Ischua Creek and south of the site;
- o ground water quality sampling of existing and new wells;
- o surface water quality sampling upstream and downstream in Ischua Creek;
- o in-situ permeability testing of wells for approximating ground water velocities and rates of contaminant migration; and
- o design and implementation of an on-site pumping test to obtain additional information for future remedial activities, if deemed necessary.

Prior to implementation, the Work Plan will be submitted to the NYSDEC for review/comment and approval.

REFERENCES

Freeze, R. A. and Cherry, J. A., 1979; Groundwater; Prentice-Hall, Inc.; Englewood Cliffs, N.J.

Hem, J.D.; 1970; Study and Interpretation of the Chemical Characteristics of Natural Water: USGS Water Supply Paper 1973.

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APPENDIX 1

SOIL CLASSIFICATION SYSTEM

KEY TO SOILS IDENTIFICATION
(Burmister System)

Granular Soils - Particle Size Classification

Material		Fractions	Passing	Retained On
BOULDERS	Material retained on the 9 in. sieve			9 in.
COBBLES	Material passing the 9 in. sieve and retained on the 3 in. sieve		9 in.	3 in.
GRAVEL	Material passing the 3 in. sieve and retained on the No. 10 sieve	coarse (c) medium (m) fine (f)	3 in. 1 in. 3/8 in.	1 in. 3/8 in. No. 10
SAND	Material passing the No. 10 sieve and retained on the No. 200 sieve	coarse (c) medium (m) fine (f)	No. 10 No. 30 No. 60	No. 30 No. 60 No. 200
SILT	Material passing the No. 200 sieve that is non-plastic in character and exhibits little or no strength when air-dried		No. 200	

Clay Soils - Plasticity Classification

Material*	Degree of Overall Plasticity	Overall Plasticity Index Sand - Silt - Clay Components
Clayey SILT	Slight	1 to 5
SILT & CLAY	Low	5 to 10
CLAY & SILT	Medium	10 to 20
Silty CLAY	High	20 to 40
CLAY	Very High	40 and greater

*Soils passing the No. 200 sieve which can be made to exhibit plasticity and clay qualities within a certain range of moisture content, and which exhibits considerable strength when air-dried.

Penetration Resistance and Soil Properties on Basis of the Standard Penetration Test
(After Peck, Hanson and Thornburg, 1974)

Sands (Fairly Reliable)		Clays (Rather Unreliable)	
Number of Blows per ft, N	Relative Density	Number of Blows per ft, N	Consistency
0-4	Very Loose	Below 2	Very Soft
4-10	Loose	2-4	Soft
10-30	Medium	4-8	Medium
30-50	Dense	8-15	Stiff
Over 50	Very Dense	15-30	Very Stiff
		Over 30	Hard

Terms Identifying Composition of Soil

Written*	Defining Range of Percentage by Weight
and	35 to 50
some	20 to 35
little	10 to 20
trace	0 to 10

*Plus (+) or minus (-) sign used after identifying term denotes extremes of range, e.g., "some (-) Gravel" indicates 20 to 24 percent Gravel; "some (+) Gravel" indicates 31 to 35 percent Gravel.

SOIL TERMS

UNIFIED SOIL CLASSIFICATION (USCS)

COARSE GRAINED SOILS
More than half of material is LARGER than No. 200 sieve size

		FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 3" & basing fractions on estimated weights)	GROUP SYMBOLS	TYPICAL NAMES
GRAVELS (50% or more of coarse fraction is LARGER than No. 4 sieve size)	CLEAN GRAVELS (Low % fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	GW	Well graded gravels, gravel-sand mixtures, little or no fines
		Predominantly one size or a range of sizes with some intermediate sizes missing	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
	GRAVELS W/FINES (High % fines)	Non-plastic fines (for identification procedures see ML)	GM	Silty gravels, poorly graded gravel-sand-silt mixtures
		Plastic fines (for identification procedures see CL)	GC	Clayey gravels, poorly graded gravel-sand-clay mixtures
SANDS (50% or more of coarse fraction is SMALLER than No. 4 sieve size)	CLEAN SANDS (Low % fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	SW	Well graded sand, gravelly sands, little or no fines
		Predominantly one size or a range of sizes with some intermediate sizes missing	SP	Poorly graded sands, gravelly sands, little or no fines
	SANDS W/FINES (High % fines)	Non plastic fines (for identification procedures see ML)	SM	Silty sands, poorly graded sand-silt mixtures
		Plastic fines (for identification procedures see CL)	SC	Clayey sands, poorly graded sand-clay mixtures

FINE GRAINED SOILS
More than half of material is SMALLER than No. 200 sieve size

	FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 3" & basing fractions on estimated weights)			GROUP SYMBOLS	TYPICAL NAMES
	Identification procedures on fraction smaller than No. 40 sieve size				
	DRY STRENGTH (Crushing Characteristics)	DILATANCY (Reaction to Shaking)	TOUGHNESS (Consistency Near Plastic Limit)		
SILTS & CLAYS (Liquid limit LESS THAN 50)	None to slight	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity
	Medium to high	None to very slow	Medium	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	Slight to medium	Slow	Slight	OL	Organic silts and organic silt-clays of low plasticity
SILTS & CLAYS (Liquid limit GREATER THAN 50)	Slight to medium	Slow to none	Slight to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	High to very high	None	High	CH	Inorganic clays of high plasticity, fat clays
	Medium to high	None to very slow	Slight to medium	OH	Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS	Readily identified by color, odor, spongy feel and frequently by fibrous texture			Pt	Peat and other organic soils

Boundary classifications: Soils possessing characteristics of two groups are designated by combining group symbols. For example: GW-GC, well graded gravel-sand mixture with clay binder.
All sieve sizes on this chart are U.S. standard.

DENSITY OF GRANULAR SOILS

DESIGNATION	STANDARD PENETRATION RESISTANCE — BLOWS/FOOT
Very loose	0 - 4
Loose	5 - 10
Medium dense	11 - 30
Dense	31 - 50
Very dense	Over 50

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNC. COMPRESSIVE STR. TONS /SQ. FT.	STANDARD PENETRATION RESISTANCE — BLOWS/FOOT	FIELD IDENTIFICATION METHODS
Very soft	Less than 0.25	0 to 2	Easily penetrated several inches by fist
Soft	0.25 to 0.50	2 to 4	Easily penetrated several inches by thumb
Medium stiff	0.50 to 1.0	4 to 8	Can be penetrated several inches by thumb
Stiff	1.0 to 2.0	8 to 15	Readily indented by thumb
Very stiff	2.0 to 4.0	15 to 30	Readily indented by thumbnail
Hard	More than 4.0	Over 30	Indented with difficulty by thumbnail

ROCK TERMS

ROCK HARDNESS (FROM CORE SAMPLES)

DESCRIPTIVE TERMS	SCREWDRIVER OR KNIFE EFFECTS	HAMMER EFFECTS
Soft	Easily gouged	Crushes when pressed with hammer
Medium soft	Can be gouged	Breaks (one blow) Crumbly edges
Medium hard	Can be scratched	Breaks (one blow) Sharp edges
Hard	Cannot be scratched	Breaks conchoidally (several blows) Sharp edges

ROCK BROKENNESS

DESCRIPTIVE TERMS	ABBREVIATION	SPACING
Very broken	(V. Br.)	0 - 2"
Broken	(Br.)	2" - 1'
Blocky	(Bl.)	1' - 3'
Massive	(M.)	3' - 10'

LEGEND

SOIL SAMPLES - TYPES

S - 2" O.D. Split Barrel Sample
U - O.D. Undisturbed Sample

ROCK SAMPLES - TYPES

X - NX (Conventional) Core (~ 2-1/8" O.D.)
O - NQ (Wireline) Core (~1-7/8" O.D.)

WATER LEVELS

12/18 ▽ 12.6' Initial Level w/Date & Depth
12/18 ▽ 12.6' Stabilized Level w/Date

APPENDIX 2

BORING LOGS

MALCOLM PIRNIE INC.

PROJECT :FARWELL LF CLOSURE
DATE :6/16-19,22-23/1987
CONTRACTOR :ROCHESTER DRILLING
ELEVATION :TOP OF CASING ELEV. 1545.31

BORING NUMBER: MW-9D
PROJECT NO. :0595-051-100
LOCATION :ISCHUA, N.Y.
INSPECTOR :P.TANNER
SAMP. METHOD :Split spoon

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION: Density, color, SOIL, admixtures moisture, other notes, ORIGIN
S-1	3 4 6 18	0-2'	(rec. 8/24") loose, br., SILT, some f-m sand, some organic materials (roots), lt. rock fragments, tr. clay, moist. (Organic Horizon) (Pt)
S-2	11 10 12 10	5-7'	(rec. 10/24") m.dense, br. SILT and GRAVEL (subangular to subrounded)(f-c) some f-m sand, tr. clay, moist. (GM) glacial till
S-3	5 6 15 23	10-12'	(rec. 12/24") same (GM) glacial till
S-4	4 12 28 45	15-17'	(rec. 12/24") same (GM) glacial till
S-5	13 25 42 49	20-22'	(rec. 18/24") v. dense, SAND and GRAVEL,(rounded), tr. silt, tr. clay, moist. (GP) glaciofluvial
S-6	10 24 28 50	25-27'	(rec. 12/24") 10" v.dense br. SAND and GRAVEL, (rounded), tr. silt, wet, to 2" m. SAND, tr. silt, wet. (GP) glaciofluvial
S-7	10 33 68 100/3	30-32'	(rec. 18/24") v. dense, br. SAND and GRAVEL (rounded), tr. silt, tr. clay, wet (GP) glaciofluvial
S-8	28 100/2	35-37'	(rec.10/24") (3")v. dense, br. m SAND and GRAVEL, (rounded) wet.,to (7") v. dense br. SILT

WOH = weight of hammer

BORING NUMBER :MW-9D

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION: Density, color, SOIL, admixtures moisture, other notes, ORIGIN
			and GRAVEL (subangular to subrounded) (f-c), some f-m sand, tr. clay, moist to wet. (GM) glacial till
S-9	8 38 100/3	40/42'	(rec. 10/24") v. dense SILT and GRAVEL (subangular to subrounded) (f-c), some f m sand, tr. clay, moist to wet. (GM) glacial till
S 10	100/3	45/47'	(rec. 10/24") same as above (GM) glacial till
S 11	100/3	50/52'	(rec. 8/24") same as above (GM) glacial till
S-12	100/3"	55/57'	(rec. 8/24") same as above wet. (GM) glacial till
S 13	38 77 55 52	60/62'	(rec.0/24") no recovery, attempted twice
S 14	22 22 40 100/3"	65-67'	(rec.0/24") no recovery, attempted twice
S-15	14 40 80 100/3"	70/72'	(rec.24/24") v dense, blue gray, SILT, some vf f sand, some clay, tr. gravel (rounded), several br. vf to f SAND lenses throughout, varved, moist (ML) glaciolacustrine/overbank
S 16	75 114	75/77'	(rec. 6/24") v dense, br. SILT and GRAVEL, (f-c) (subangular to (subrounded) lt. f sand, tr. clay, wet. (GM) glacial till
S-17	9 12 26 45	80/82'	(rec. 10/24") same as above,wet. (GM) glacial till

BORING NUMBER :MW-9D

SAMPLE No.		Depth (ft.)	SOIL DESCRIPTION Density, color, SOIL, admixtures moisture, other notes, ORIGIN	STR.
S-18	43 100/3"	85/87'	(rec. 8/24") same as above, wet. (GM) glacial till	
S 19	100/3"	90/92'	no recovery, only wash	
S 20	37 100/3"	95-97	same as above S 18. wet. (GM) glacial till	
S 21	100/5"	100/102'	(rec. 5/24") same as above wet. (GM) glacial till	

end of boring 102'

Notes;

water lost from annulus at 75'

MALCOLM PIRNIE INC.

PROJECT :FARWELL LF CLOSURE
DATE :6/18-20,22/1987
CONTRACTOR :ROCHESTER DRILLING
ELEVATION :TOP OF CASING ELEV. 1527.79

BORING NUMBER:MW-10D
PROJECT NO. :0595-051-100
LOCATION :ISCHUA, N.Y.
INSPECTOR :P.TANNER
SAMP. METHOD :Split spoon

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION: Density, color, SOIL, admixtures moisture, other notes, ORIGIN
S-1	8 12 34 15	0/2'	(rec. 14/24") v dense, br. SILT and GRAVEL (f-c) (subangular to subrounded), lt. vf sand, tr. clay, dry. (GM) glacial till
S 2	5 10 13 20	5/7'	(rec. 12/24") same as above, moist. (GM) glacial till
S 3	10 10 21 39	10/12'	(rec. 12/24") same as above moist. (GM) glacial till
S 4	13 16 29 32	15/17'	(rec. 22/24") same as above, wet. (GM) glacial till
S 5	10 20 59 50	20/22'	(rec.6/24") v. dense, br. SILT and GRAVEL (subangular to subrounded) (f-c) lt. f sand, tr. clay, wet. (GM) glacial till
S 6	19 26 37 61	25/27'	(rec. 10/24") same as above wet. (GM) glacial till
S 7	22 51 43 60	30/32'	(rec. 11/24") same as above, damp. (GM) glacial till

WH = Weight of Hammer

BORING NUMBER :MW-10D

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION: Density, color, SOIL, admixtures, moisture, other notes, ORIGIN
S 8	21 42 55 79	35/37'	(rec.16/24") same as above, moist. (GM) glacial till
S 9	24 57 100/3	40/42'	(rec. 13/24") same as above moist to wet. (GM) glacial till
S 10	20 100/5	45/47'	(rec. 8/24") same as above wet. (GM) glacial till
S 11	24 100/3	50/52'	(rec. 5/24") same as above,wet. (GM) glacial till
S 12	48 100/5	55/57'	(rec. 10/24") same as above,wet. (GM) glacial till
S 13	42 63 52 81	60/62'	(rec. 24/24") same as above, wet. (GM) glacial till
S 14	38 100/5"	65/67'	(rec 13/24") same as above, wet. (GM) glacial till
S 15	100/3	70/72'	(rec. 0/24") no recovery
S-16	51 49 67 100/2	75/77'	(rec. 11/24") same as above, wet. (GM) glacial till
S 17	33 70 59 38	80/82'	(rec. 14/24") same as above, wet. (GM) glacial till
S 18	22 45 49 60	85/87'	(rec. 12/24") v.dense, br. SILT and GRAVEL (subangular to subrounded) (r-c) some f sand, lt. to tr. clay, wet. (GM) glacial till

BORING NUMBER :MW-10D

SAMPLE			SOIL DESCRIPTION
No.		Depth (ft.)	Density, color, SOIL, admixtures moisture, other notes, ORIGIN
S 19	27 43 66 100	87/89'	(rec. 20/24") same as above, wet. (SM) glacial till

Notes:

end of boring 87'

6/20/87 water at 62.6' in casing

MALCOLM PIRNIE INC.

PROJECT :FARWELL LF CLOSURE
DATE :6/3-5,8-12,15-16/87
CONTRACTOR :ROCHESTER DRILLING
ELEVATION : TOP OF CASING 1535.74

BORING NUMBER:MW-11D
PROJECT NO. :0395-051-100
LOCATION :ISCHUA, N.Y.
INSPECTOR :P.TANNER
SAMP. METHOD :Split spoon

SAMPLE No.	Blows per 6"(ft.)	Depth	SOIL DESCRIPTION Density, color, SOIL, admixtures moisture, other notes, ORIGIN
S 1	2 6 8 16	0/2'	(rec,. 24/24") 14" m. dense, br. f SAND, some gravel (subangular) (f-c) lt. silt, tr. clay, wet. to 10" m. dense, br. SILT, tr. gravel tr. clay, wet. (SP) glacial till
S 2	6 14 12 21	5/7'	(rec. 14/24") 3" m. dense, br gy, SILT, some gravel (subangular to angular), (f-c) tr. vf. sand,tr. clay, damp. 11" m. dense, SILT and GRAVEL, (subangular to rounded), moist. (GM) glacial till
S 3	15 14 10 6	10/12'	(rec. 11/24") m. dense, br. SILT and GRAVEL, (f-c) lt. vf. sand, tr. clay, damp to moist. (GM) glacial till
S 4	6 8 16 18	15/17'	(rec. 9/24") same as above, moist (GM) glacial till
S 5	24 100/3	20/22'	(rec. 0/24") no recovery
S 6	19 22 32 43	25/27'	(rec. 15/24") v. dense, br. vf f SAND, some gravel (subangular to subrounded),(f-c), some silt, moist. (SP) glaciofluvial
S 7	29 32 41 50	30/32"	(rec. 0/24") no recovery, cobble plugged spoon

BORING NUMBER :MW-11D

SAMPLE No.	Blows per 6"(ft.)	Depth	SOIL DESCRIPTION: Density, color, SOIL, admixtures moisture, other notes, ORIGIN
S 8	22 29 57 75	35/37'	(rec. 24/24) 10" v. dense, br gy, SILT and GRAVEL (subangular to subrounded,(f-c) moist, grading to 7" v. dense, SILT and GRAVEL (subangular to angular, some f to m sand, tr. clay, wet. (GM) glacial till
S 9	40 37 72 88	40/42'	(rec. 24/24") v. dense, br. SILT and GRAVEL, (subangular to subrounded) (f-c) lt. vf f sand, tr. clay, dry to sl. moist. (GM) glacial till
S 10	36 54 59 35	45/47'	(rec. 24/24") same as above
S 11	11 20 29 32	50/52'	(rec. 24/24") same as above, moist to wet. (GM) glacial till
S 12	4 6 29 60	55-57'	(rec. 12/24") 11" same as above 1" br. SILT, lt. vf f sand wet. (GM) glacial till
S 13	3 12 18 38	60-62'	(rec. 24/24") dense, br. SILT some gravel, (subangular to subrounded) (f-c) lt. vf f sand, tr. clay, wet. (GM) glacial till
S-14	19 22 28 47	65-67'	(rec. 24/24") dense, br. SILT and GRAVEL, (subangular to subrounded), (f-c), some f-c sand, tr. clay, wet. (GM) glacial till
S-15	13 32 100/3	70-72'	(rec. 10/24") v.dense, br. SILT and GRAVEL, (subrounded to subrounded) (f-c),some f-c sand, tr. clay, wet.

BORING NUMBER :MW-11D

SAMPLE No.		Depth (ft.)	SOIL DESCRIPTION Density, color, SOIL, admixtures moisture, other notes, ORIGIN
S-16	55 100/3	75-77'	(rec. 6/24") v. dense, SAND and GRAVEL, (subrounded to rounded), (f-c) lt. silt, wet. (SP-SM) glaciofluvial
S-17	16 42 100/3	12/24"	(rec. 12/24") 8" v. dense, br. m SAND and GRAVEL (rounded)(f-c) wet, grading to 4" f-m SAND, lt. silt, tr. clay, wet. glaciofluvial (SW/SW)
S-18	30 100/4	85-87'	(rec. 8/24") v. dense, br. SAND, some gravel (f-c) (rounded), lt. silt wet. glaciofluvial (SW)

Notes;

sample boring completed at 87'

well temp. casing set at 92'
6/4/87, no water in borehole, depth of 20'

6/9/87, depth to water 42.2'

MALCOLM PIRNIE INC.

BORING NUMBER: B-17

PROJECT :FARWELL LF CLOSURE
DATE :6/23-26.29-30,7/1-2/87
CONTRACTOR :ROCHESTER DRILLING
ELEVATION :TOP OF CASING ELEV. 1587.12

PROJECT NO. :0395-081-100
LOCATION :ISCHUA, N.Y.
INSPECTOR :PJT, RO
SAMP. METHOD :Split spoon

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION: Density, color, SOIL, admixtures moisture, other notes, ORIGIN	Remarks
S-1	7 20 24 25	0-2'	(rec. 11/24) v.dense, br. SILT and GRAVEL (subangular to subrounded) tr. vf. sand, tr. clay, dry. TILL (GM)	
S-2	15 16 35 21	2-4'	(rec. 10/24) same as above --	
S-3	15 7 7 13	4-6'	(rec. 10/24) same	
S-4	11 15 32 21	6-8'	(rec. 0/24)	
S-5	19 10 10 16	8-10'	(rec. 10/24) same	
S-6	6 17 17 9	10-12'	(rec. 6/24) same	
S-7	15 16 16 19	12-14'	(rec. 7/24) same	6/24/87 dry hole
S-8	19 19 10 13	14-16'	(rec. 7/24) same	
S-9	12 16 17 20	16-18'	(rec. 7/24) same	
S-10	16 20 23 27	18-20'	(rec. 5/24) same	6/25/87 dry hole

weight of hammer: 145 lbs

BORING NUMBER : 130

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION: Density, color, SOIL, admixtures moisture, other notes, ORIGIN	Remarks
S-11	20 33 40 50	20-22'	(rec. 8/24) same	
S-12	19 34 32 52	22-24'	(rec. 8/24) same	
S-13	21 26 35 44	24-26'	(rec. 7/24) same	
S-14	29 52 100/3	26-28'	(rec. 3/24) same	
S-15	32 36 45 62	28-30'	(rec. 7/24) same	
S-16	19 33 62 71	30-32'	(rec. 8/24) same	
S-17	35 41 47 66	32-34'	(rec. 10/24) same	
S-18	32 37 11 54	34-36'	(rec. 10/24) same	change from 5" to 3" casing at 35 ft.
S-19	69 100/3	36-38'	(rec. 3/24) same	
S-20	22 29 34 40	38-40	(rec. 5/24) same	
S-21	27 29 43 52	40-42'	(rec. 5/24) same	
S-22	24 29 47 65	42-44'	(rec. 6/24) same	

BORING NUMBER : 130

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION: Density, color, SOIL, admixtures, moisture, other notes, ORIGIN	Remarks
S-23	31 27 36 44	44-46'	(rec. 6/24) same	Change to 300 lb hammer at 45 ft for improved sample recovery
S-24	26 35 39 44	46-48	(rec. 5/24) same	
S-25	16 22 34 35	48-50'	(rec. 5/24) same	
S-26	20 30 47 60	50-52'	(rec. 6/24) same	
S-27	72 29 40 62	52-54'	(rec. 5/24) same	
S-28	29 64 53 71	54-56'	(rec. 7/24) same	
S-29	33 47 62 84	56-58'	(rec. 8/24) same	
S-30	26 34 64 61	58-60	(rec. 5/24) same	
S-31	99 100/3	60-62'	(rec. 5/24) same	
S-32	43 71 100/2	62-64'	(rec. 2/24) same	
S-33	16 36 40 72	64-66'	(rec. 6/24) same	
S-34	23 31 44 62	66-68'	(rec. 6/24) same	

BORING NUMBER : 13D

SAMPLE No.	Blows per 6"(ft.)	Depth	SOIL DESCRIPTION: Density, color, SOIL, admixtures, moisture, other notes, ORIGIN	Remarks
S-35	29	68-70'	(rec. 0/24) same	
	93			
	57			
	72			
S-36	100/2	70-72'	(rec. 0/24)	
S-37	19	72-74'	(rec. 5/24) same	
	28			
	36			
	41			
S-38	24	74-76'	(rec. 5/24) same	
	30			
	40			
	43			
S-39	24	76-78'	(rec. 7/24) same	
	27			
	34			
	69			
S-40	71	78-80'	(rec. 8/24) same	
	20			
	34			
	42			
S-41	16	80-82'	(rec. 0/24)	
	20			
	29			
	38			
S-42	15	82-84'	(rec. 6/24), v. dense, br. SILT & GRAVEL (subangular to subrounded), little f. sand, tr. clay, dry to damp, TILL (GM)	
	20			
	23			
	27			
S-43	27	84-86'	(rec. 4/24), same, dry to damp	
	44			
	43			
	62			
S-44	25	86-88'	(rec. 6/24), same, dry to damp	
	43			
	50			
	76			
S-45	25	88-90'	(rec. 5/24), same, dry to damp	
	60			
	27			
	40			
S-46	25	90-92'	(rec. 5/24), same, dry to damp	
	50			
	100/3			

BORING NUMBER :130

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION: Density, color, SOIL, admixtures, moisture, other notes, ORIGIN	Remarks
S-47	27 39 62 79	92-94'	(rec. 5/24), same, dry to damp	
S-48	100/3	94-96'	(rec. 3/24), same, dry to damp	
S-49	20 17 15 22	96-98'	(rec. 12/24), med. dense, br. fine to med. SAND, some silt, moist to wet, stratified, GLACIOFLUVIAL (SM)	*
S-50	11 16 22 33	98-100'	(rec. 13/24), same, moist to wet	
S-51	24 23 32 40	100-102'	(rec. 0/24)	
S-52	25 58 31 69	105-108'	(rec. 0/24), rec. only wash from hole	
S-53	14 29 47 69	108-110'	(rec. 11/24), v. dense, br. SILT & GRAVEL (subang. to subrnded), lt. f. sand, tr. clay, moist to wet (GM) TILL	
S-54	20 35 24 29	115-117'	(rec. 8/24), v. dense, br., SILT & GRAVEL (subang. to subrnded), some f. to med. sand, tr. clay, moist to wet, TILL (GM)	
S-55	26 20 20 23	117-119'	(rec. 9/24), 5", same as above; 4", dense, br., med. to crs. SAND, little silt, moist to wet, GLACIOFLUVIAL (SW)	*
S-56	20 19 25 31	119-121'	(rec. 8/24), v. dense, br. SILT & GRAVEL (subang. to subrnded.), some f. to med. sand, tr. clay, moist to wet, TILL (GM)	
S-57	24 20 27 30	121-123'	(rec. 9/24), 5", same as above; 4", dense, br. med. to crs. SAND, little silt, moist to wet (SW) GLACIOFLUVIAL	*

MALCOLM PIRNIE INC.

PROJECT	:FARWELL LF CLOSURE	BORING NUMBER:	B-13
DATE	:6/23-26,29-30,7/1-2/87	PROJECT NO.	:0595-051-100
CONTRACTOR	:ROCHESTER DRILLING	LOCATION	:ISCHUA, N.Y.
ELEVATION	:TOP OF CASING ELEV. 1567.12	INSPECTOR	:PJT, SD
		SAMP. METHOD	:Split spoon

SAMPLE No.	Blows per 6"	Depth (ft.)	SOIL DESCRIPTION Density, color, SOIL, admixtures moisture, other notes, ORIGIN	Remarks
S-58	22 24 29 27	123-125'	(rec.6/24") v. dense, br. SILT and GRAVEL (f-c) (subangular to subrounded) some f-m sand, tr. clay, moist. (GM) till	
S-59	20 22 24 25	130-132'	(rec. 8/24), same , moist	
S-60	22 24 30 29	132-134'	(rec. 7/24") same , moist.	

weight of hammer: 140 lbs

APPENDIX 3

WELL CONSTRUCTION DETAILS

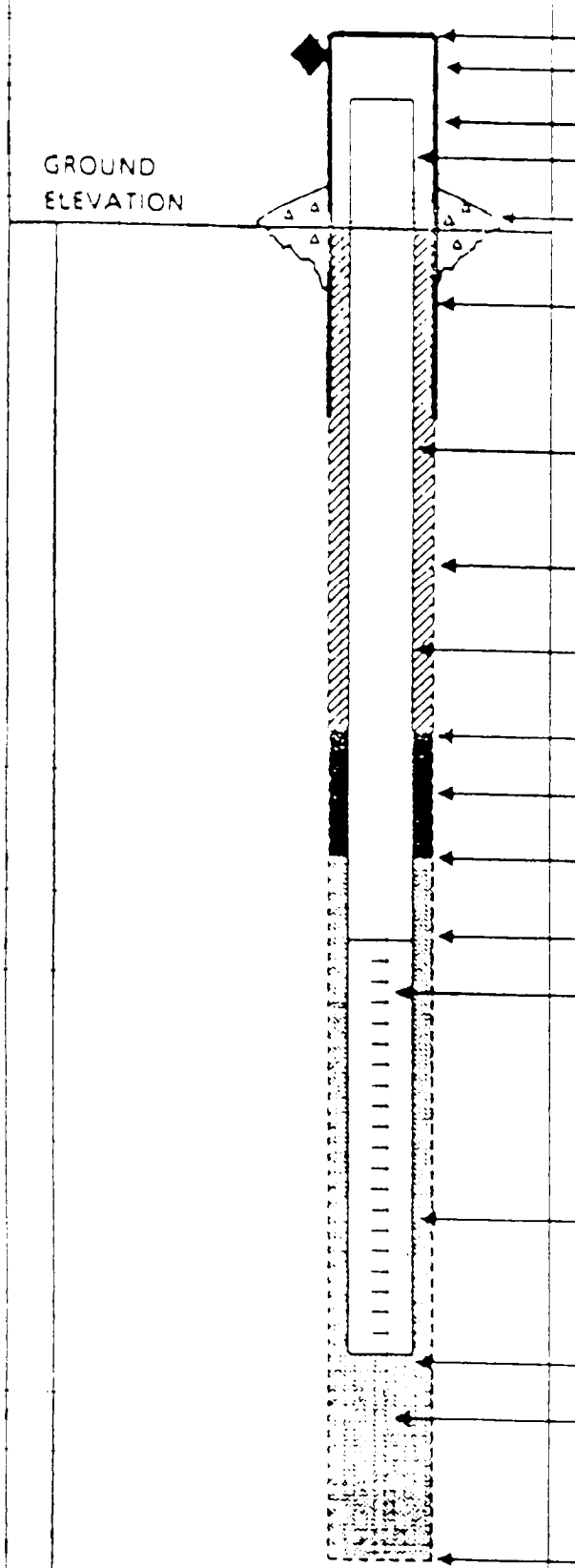
MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT FARWELL CLOSURE
PROJECT NO 0595-051
ELEVATION 1549.31
FIELD GEOLOGIST PJT

LOCATION MW9D
BORING
DATE JUNE 24, 1987

DRILLER ROCHESTER DRILLING
DRILLING FREY WELL DRILL
METHOD AIR ROTARY
DEVELOPMENT METHOD COMPRESSED AIR



ELEVATION OF TOP OF SURFACE CASING: 1549.31
ELEVATION OF TOP OF RISER PIPE: —

STICK - UP TOP OF SURFACE CASING: 3.14
STICK - UP RISER PIPE: —

TYPE OF SURFACE SEAL: CEMENT-BENTONITE
GROUND ELEVATION: 1542.17

I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL

RISER PIPE I.D. 4"
TYPE OF RISER PIPE: PVC, Sched. 40

BOREHOLE DIAMETER: 9 5/8"

TYPE OF BACKFILL: CEMENT-BENTONITE grout

ELEVATION / DEPTH TOP OF SEAL: 64'

TYPE OF SEAL: BENTONITE

DEPTH TOP OF SAND PACK: 68'

ELEVATION / DEPTH TOP OF SCREEN: 70'

TYPE OF SCREEN: PVC, SCHED. 40

SLOT SIZE x LENGTH: .010 Slot x 5

I.D. OF SCREEN: 4"

TYPE OF SAND PACK: #4 Silica Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 75'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 76'

TYPE OF BACKFILL BELOW OBSERVATION WELL: #4 Silica Sand

ELEVATION / DEPTH OF HOLE: 76'

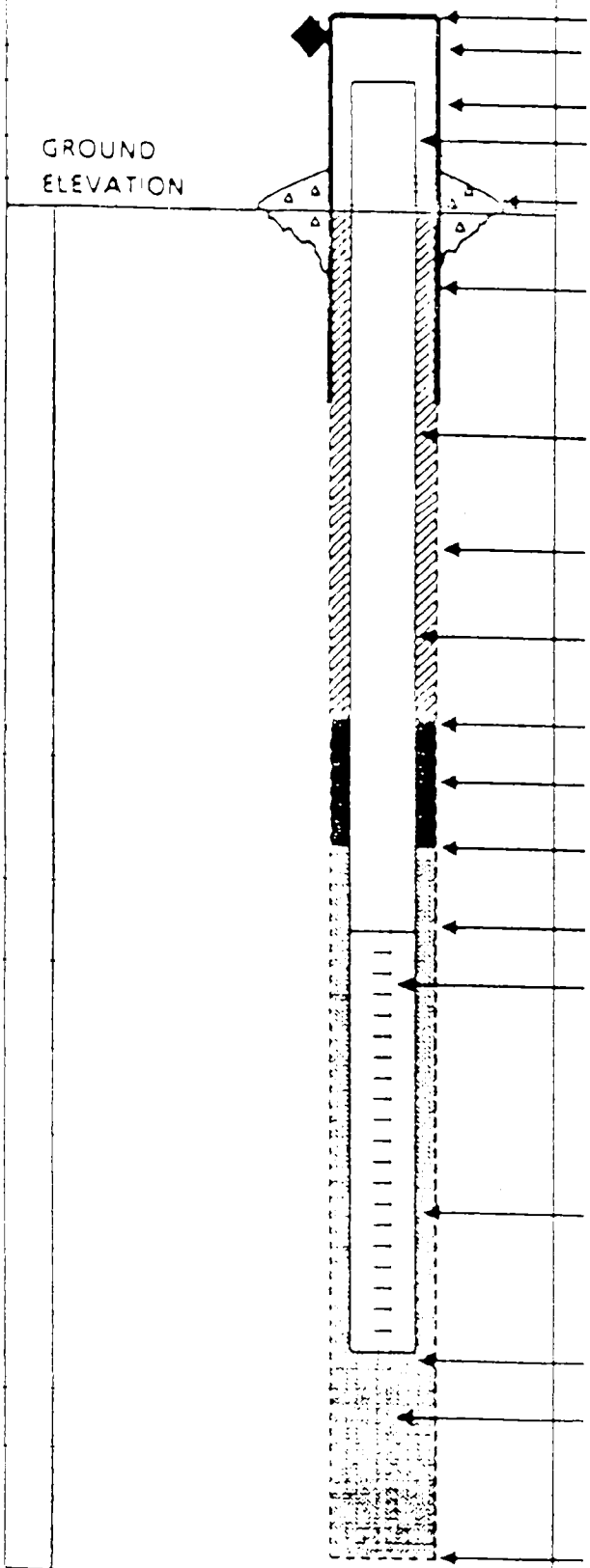
MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT Farwell Closure
PROJECT NO 0595-051
ELEVATION 1527.79
FIELD GEOLOGIST PJT, RO

LOCATION HW-10D
BORING
DATE June 23, 1987

DRILLER Rochester Drill
DRILLING Frey Well Drill
METHOD Air Rotary
DEVELOPMENT METHOD Compressed Air



ELEVATION OF TOP OF SURFACE CASING: 1527.79
ELEVATION OF TOP OF RISER PIPE: —
STICK - UP TOP OF SURFACE CASING: 2.3
STICK - UP RISER PIPE: —
TYPE OF SURFACE SEAL: Cement - bentonite
GROUND ELEVATION: 1525.49
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 4"
TYPE OF RISER PIPE: PVC, Sched. 40
BOREHOLE DIAMETER: 9 5/8"
TYPE OF BACKFILL: Cement - bentonite grout
ELEVATION / DEPTH TOP OF SEAL: 70'
TYPE OF SEAL: Bentonite
DEPTH TOP OF SAND PACK: 74'
ELEVATION / DEPTH TOP OF SCREEN: 76'
TYPE OF SCREEN: PVC, Sched. 40
SLOT SIZE x LENGTH: .010 slot x 10
I.D. OF SCREEN: 4"
TYPE OF SAND PACK: #4 silica sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 86'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 87'
TYPE OF BACKFILL BELOW OBSERVATION WELL: #4 silica sand
ELEVATION / DEPTH OF HOLE: 87'

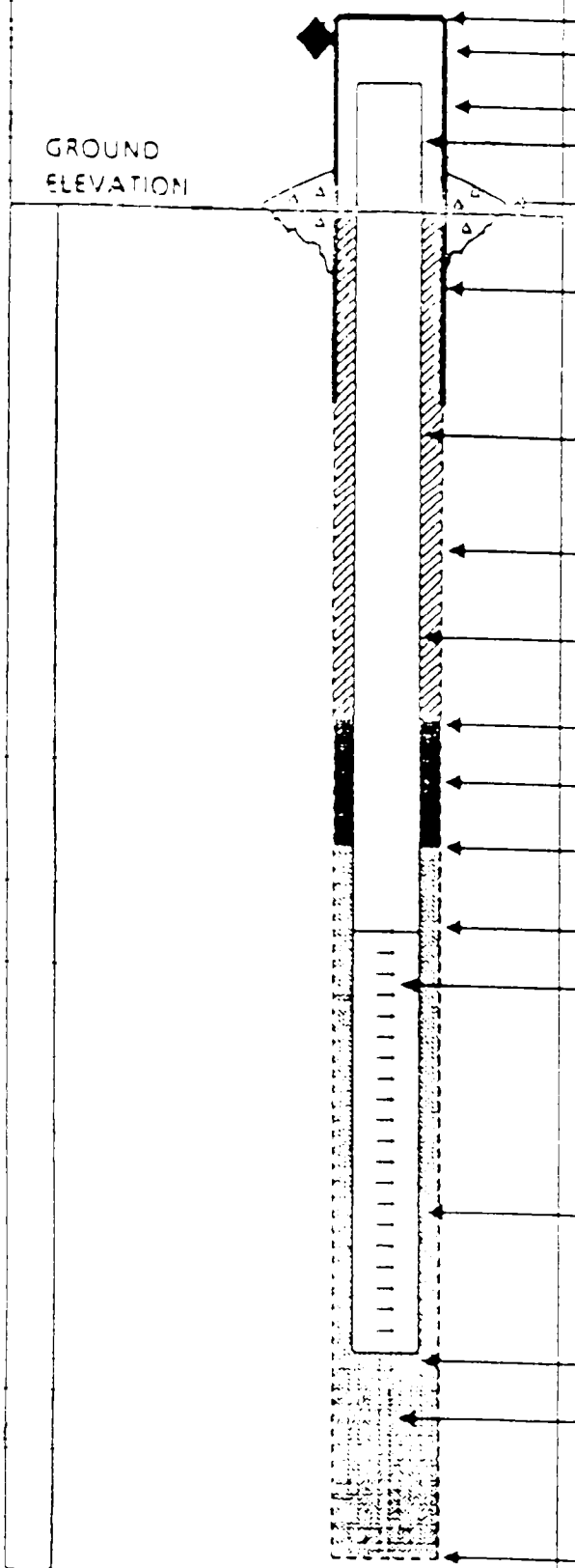
MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT Farwell Closure
PROJECT NO. 0525-051
ELEVATION 1535.74
FIELD GEOLOGIST PJT

LOCATION MW-11D
BORING
DATE JUNE 16, 1987

DRILLER Rochester Drill Co.
DRILLING Frey Well Drill
METHOD Air Rotary
DEVELOPMENT
METHOD Compressed Air



ELEVATION OF TOP OF SURFACE CASING: 1535.74
ELEVATION OF TOP OF RISER PIPE: –

STICK - UP TOP OF SURFACE CASING: 2.79
STICK - UP RISER PIPE: –

TYPE OF SURFACE SEAL: Cement-bentonite
GROUND ELEVATION 1532.95

I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL

RISER PIPE I.D. 4"
TYPE OF RISER PIPE: PVC, SCHED. 40

BOREHOLE DIAMETER: 9 5/8"

TYPE OF BACKFILL: Cement-bentonite grout

ELEVATION / DEPTH TOP OF SEAL: 77'

TYPE OF SEAL: BENTONITE

DEPTH TOP OF SAND PACK: 81'

ELEVATION / DEPTH TOP OF SCREEN: 83'

TYPE OF SCREEN: PVC, SCHED. 40

SLOT SIZE x LENGTH: .010 slot x 5

I.D. OF SCREEN: 4"

TYPE OF SAND PACK: #4 Silica SAND

ELEVATION / DEPTH BOTTOM OF SCREEN: 88'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 92.0'

TYPE OF BACKFILL BELOW OBSERVATION WELL: #4 SILICA SAND

ELEVATION / DEPTH OF HOLE: 92.0'

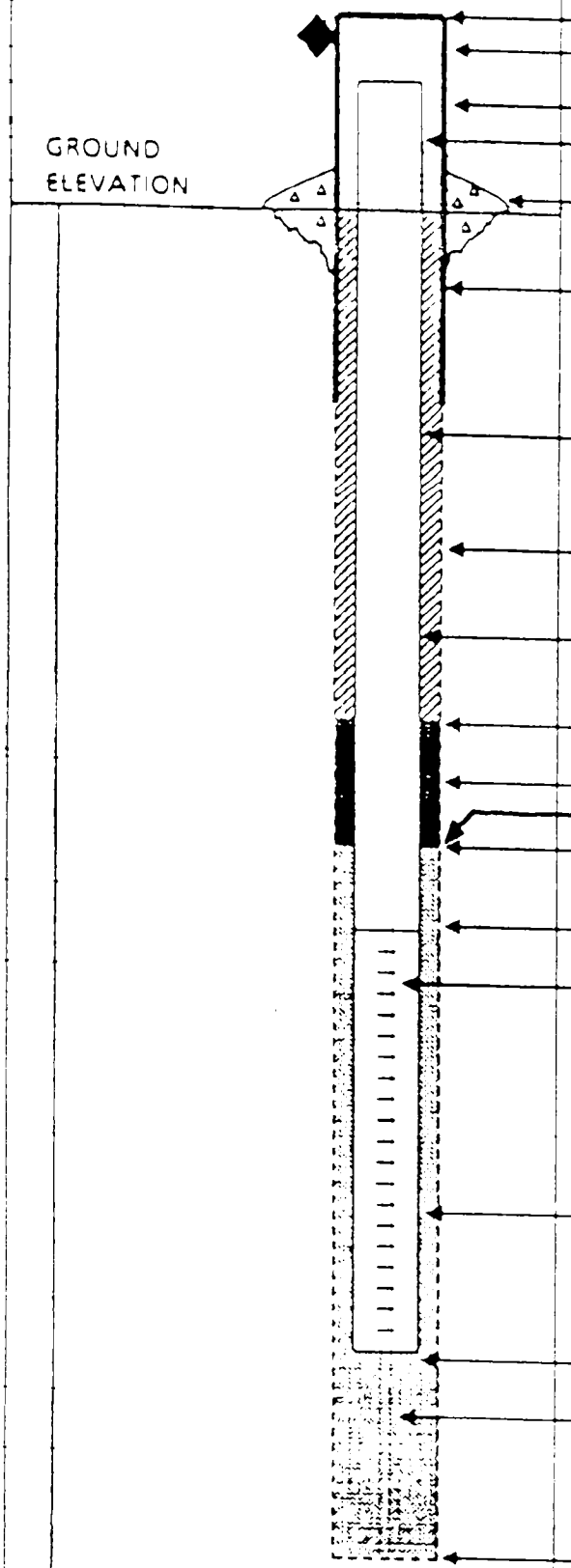
MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT Farwell Closure
PROJECT NO 0595-061
ELEVATION 1587.12
FIELD GEOLOGIST PJT, RDO

LOCATION MW-13D
BORING B-13
DATE July 7, 1987

DRILLER Rochester Drill Co. Perry Well Drilling Co.
DRILLING METHOD Air Rotary
DEVELOPMENT METHOD Compressed Air



ELEVATION OF TOP OF SURFACE CASING: 1587.12
ELEVATION OF TOP OF RISER PIPE: –

STICK - UP TOP OF SURFACE CASING: 2.34
STICK - UP RISER PIPE: –

TYPE OF SURFACE SEAL Cement-bentonite grout
ground elevation 1584.78

I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D. 4"
TYPE OF RISER PIPE: PVC, SCHED. 40

BOREHOLE DIAMETER: 8"

TYPE OF BACKFILL: CEMENT-BENTONITE grout

ELEVATION / DEPTH TOP OF SEAL: 112'

TYPE OF SEAL: BENTONITE

TOP OF CAVING: 116'

DEPTH TOP OF SAND PACK: 119

ELEVATION / DEPTH TOP OF SCREEN: 121'

TYPE OF SCREEN: PVC, SCHED. 40

SLOT SIZE x LENGTH: .010 Slot x 10

I D OF SCREEN: 4"

TYPE OF SAND PACK: #4 Silica SAND

ELEVATION / DEPTH BOTTOM OF SCREEN: 131'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 135'

TYPE OF BACKFILL BELOW OBSERVATION WELL: BACKFILL, FROM CAVING

ELEVATION / DEPTH OF HOLE: 135'

APPENDIX 4

GROUND WATER QUALITY
LABORATORY DATA
AND
QA/QC DOCUMENTATION

0595-05-1

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

Farwell 7/87
1ST ROUND

ANALYTICAL RESULTS

Prepared For

Malcolm Pirnie, Inc.
S-3515 Abbott Road
Orchard Park, NY 14219

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14150

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency references.

- 40 CFR Part 136 "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act" October 26, 1984 (Federal Register) U.S. Environmental Protection Agency.
- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods". Office of Solid Waste and Emergency Response. July 1982, SW-846, Second Edition.

COMMENTS

Comments pertain to data on one or all pages of this report.

The values reported as "less than" (<) indicate the working detection limit for the particular sample and/or parameter.

The values reported as "less than or equal to" (≤) indicate the compound may be present at trace levels relative to the detection limit but not subject to accurate quantification.

Total Organic Carbon results may not include volatile constituents since the sample was purged with an inert gas prior to analysis.

Results of the analysis of Pesticide/PCB's are based on the matching of retention times between samples and standards on a single gas chromatographic column.

AQUEOUS MATRIX
METHOD 8240 - PRIORITY POLLUTANT VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)		
	9D (7/16/87)	10D (7/16/87)	10S (7/16/87)
Acrolein	<400	<400	<400
Acrylonitrile	<400	<400	<400
Benzene	<4.4	<4.4	<4.4
Bromodichloromethane	<2.2	<2.2	<2.2
Bromoform	<4.7	<4.7	<4.7
Bromomethane	<10	<10	<10
Carbon tetrachloride	<2.8	<2.8	<2.8
Chlorobenzene	<6.0	<6.0	<6.0
Chloroethane	61	37	<10
2-Chloroethylvinyl ether	<10	<10	<10
Chloroform	<1.6	<1.6	<1.6
Chloromethane	<10	<10	<10
Dibromochloromethane	<3.1	<3.1	<3.1
1,2-Dichlorobenzene	<2.2	<2.2	<2.2
1,3-Dichlorobenzene	<2.1	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5	<2.5
1,1-Dichloroethane	300	400	43
1,2-Dichloroethane	<2.8	<2.8	<2.8
1,1-Dichloroethylene	4.2	3.2	<2.8
trans-1,2-Dichloroethylene	40	58	<1.6
1,2-Dichloropropane	<6.0	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0
Ethylbenzene	<7.2	<7.2	<7.2
Methylene chloride	7.6	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1	<4.1
Toluene	<6.0	<6.0	<6.0
1,1,1-Trichloroethane	84	41	<3.8
1,1,2-Trichloroethane	<5.0	<5.0	<5.0
Trichloroethylene	7.2	11	<1.9
Vinyl chloride	<10	<10	<10
Analysis Date	7/20/87	7/20/87	7/20/87
Internal Standards Level Added = 50 µg/l (% Recovery)			
Bromochloromethane	93	96	121
1,4-Difluorobenzene	111	105	119
Chlorobenzene D_5	111	123	97

I.D. #87-889

AQUEOUS MATRIX
METHOD 8240 - PRIORITY POLLUTANT VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) 11D (7/16/87)	11S (7/16/87)
Acrolein	<400	<400
Acrylonitrile	<400	<400
Benzene	7.0	<4.4
Bromodichloromethane	<2.2	<2.2
Bromoform	<4.7	<4.7
Bromomethane	<10	<10
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	<6.0	<6.0
Chloroethane	51	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Chloromethane	<10	<10
Dibromochloromethane	<3.1	<3.1
1,2-Dichlorobenzene	<2.2	<2.2
1,3-Dichlorobenzene	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5
1,1-Dichloroethane	350	9.0
1,2-Dichloroethane	<2.8	<2.8
1,1-Dichloroethylene	6.4	<2.8
trans-1,2-Dichloroethylene	50	<1.6
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Ethylbenzene	<7.2	<7.2
Methylene chloride	4.4	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	2.4	<6.0
1,1,1-Trichloroethane	150	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	65	3.2
Vinyl chloride	<10	<10
Analysis Date	7/20/87	7/20/87
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	124	107
1,4-Difluorobenzene	125	97
Chlorobenzene D_5	120	94

AQUEOUS MATRIX
METHOD 8240 - PRIORITY POLLUTANT VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) 130 (7/16/87)	TRIP BLANK (7/16/87)
Acrolein	<400	<400
Acrylonitrile	<400	<400
Benzene	<4.4	<4.4
Bromodichloromethane	<2.2	<2.2
Bromoform	<4.7	<4.7
Bromomethane	<10	<10
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	<6.0	<6.0
Chloroethane	<10	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Chloromethane	<10	<10
Dibromochloromethane	<3.1	<3.1
1,2-Dichlorobenzene	<2.2	<2.2
1,3-Dichlorobenzene	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5
1,1-Dichloroethane	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8
1,1-Dichloroethylene	<2.8	<2.8
trans-1,2-Dichloroethylene	<1.6	<1.6
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Ethylbenzene	<7.2	<7.2
Methylene chloride	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	<6.0	<6.0
1,1,1-Trichloroethane	<3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	<1.9	<1.9
Vinyl chloride	<10	<10
Analysis Date	7/20/87	7/20/87
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	118	101
1,4-Difluorobenzene	120	89
Chlorobenzene D_5	113	93

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)		
	9D (7/16/87)	10D (7/16/87)	10S (7/16/87)
Acenaphthene	<1.9	<1.9	<1.9
Acenaphtnylene	<3.5	<3.5	<3.5
Anthracene	<1.9	<1.9	<1.9
Benzo(a)anthracene	<7.8	<7.8	<7.8
Benzo(b)fluoranthene	<4.8	<4.8	<4.8
Benzo(k)fluoranthene	<2.5	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	4.0	7.2	4.2
4-Bromophenylphenylether	<1.9	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2	<4.2
Chrysene	<2.5	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5	<2.5
Di-n-butyl phthalate	<2.5	10	15
1,2-Dichlorobenzene	<1.9	<1.9	<1.9
1,3-Dichlorobenzene	<1.9	<1.9	<1.9
1,4-Dichlorobenzene	<4.4	<4.4	<4.4
3,3'-Dichlorobenzidine	<17	<17	<17
Diethyl phthalate	<22	<22	<22
Dimethyl phthalate	<1.6	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5	<2.5
Fluoranthene	<2.2	<2.2	<2.2
Fluorene	<1.9	<1.9	<1.9
Hexachlorobenzene	<1.9	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25	<25
Hexachloroethane	<1.6	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7	<3.7
Isophorone	<2.2	<2.2	<2.2
Naphthalene	2.0	<1.6	<1.6
Nitrobenzene	<1.9	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25	<25
Phenanthrene	<5.4	<5.4	<5.4
Pyrene	<1.9	<1.9	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)		
	9D (7/16/87)	10D (7/16/87)	10S (7/16/87)
1,2,4-Trichlorobenzene	<1.9	<1.9	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0	<3.0
2-Chlorophenol	<3.3	<3.3	<3.3
2,4-Dichlorophenol	<2.7	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7	<2.7
2,4-Dinitrophenol	<42	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24	<24
2-Nitrophenol	<3.6	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4	<2.4
Pentachlorophenol	<3.6	<3.6	<3.6
Phenol	<1.5	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7	<2.7
Extraction Date	7/21/87	7/21/87	7/21/87
Analysis Date	7/21/87	7/21/87	7/21/87
Internal Standards			
Level Added = 40 µg/l			
(% Recovery)			
Phenanthrene-D_{10}	95	161	165
Surrogates			
Level Added = 100 µg/l			
(% Recovery)			
Decafluorobiphenyl	12	32	36
2-Fluorobiphenyl	32	40	47
2-Fluorophenol	24	26	20
Phenol-D_6	12	20	15

AQUEOUS MATRIX
METHOD 8270 PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) 11D (7/16/87)	11S (7/16/87)
Acenaphthene	<1.9	<1.9
Acenaphthylene	<3.5	<3.5
Anthracene	<1.9	<1.9
Benzo(a)anthracene	<7.8	<7.8
Benzo(b)fluoranthene	<4.8	<4.8
Benzo(k)fluoranthene	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	16	4.6
4-Bromophenylphenylether	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2
Chrysene	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5
Di-n-butyl phthalate	<2.5	21
1,2-Dichlorobenzene	<1.9	<1.9
1,3-Dichlorobenzene	<1.9	<1.9
1,4-Dichlorobenzene	<4.4	<4.4
3,3'-Dichlorobenzidine	<17	<17
Diethyl phthalate	<22	<22
Dimethyl phthalate	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5
Fluoranthene	<2.2	<2.2
Fluorene	<1.9	<1.9
Hexachlorobenzene	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25
Hexachloroethane	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7
Isophorone	<2.2	<2.2
Naphthalene	<1.6	<1.6
Nitrobenzene	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25
Phenanthrene	<5.4	<5.4
Pyrene	<1.9	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) 11D (7/16/87)	11S (7/16/87)
1,2,4-Trichlorobenzene	<1.9	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0
2-Chlorophenol	<3.3	<3.3
2,4-Dichlorophenol	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7
2,4-Dinitrophenol	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24
2-Nitrophenol	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4
Pentachlorophenol	<3.6	<3.6
Phenol	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7
Extraction Date	7/21/87	7/21/87
Analysis Date	7/21/87	7/21/87
Internal Standards		
Level Added = 40 µg/l		
(% Recovery)		
Phenanthrene-D_{10}	86	179
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl	51	29
2-Fluorobiphenyl	44	34
2-Fluorophenol	36	21
Phenol-D_6	31	17

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)	
	130 (7/16/87)	TRIP BLANK (7/16/87)
Acenaphthene	<1.9	<1.9
Acenaphthylene	<3.5	<3.5
Anthracene	<1.9	<1.9
Benzo(a)anthracene	<7.8	<7.8
Benzo(b)fluoranthene	<4.8	<4.8
Benzo(k)fluoranthene	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	4.0	25
4-Bromophenylphenylether	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2
Chrysene	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5
Di-n-butyl phthalate	<2.5	<2.5
1,2-Dichlorobenzene	<1.9	<1.9
1,3-Dichlorobenzene	<1.9	<1.9
1,4-Dichlorobenzene	<4.4	<4.4
3,3'-Dichlorobenzidine	<17	<17
Diethyl phthalate	<22	<22
Dimethyl phthalate	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5
Fluoranthene	<2.2	<2.2
Fluorene	<1.9	<1.9
Hexachlorobenzene	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25
Hexachloroethane	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7
Isophorone	<2.2	<2.2
Napnthalene	<1.6	<1.6
Nitrobenzene	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25
Phenanthrene	<5.4	<5.4
Pyrene	<1.9	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)	
	13D (7/16/87)	TRIP BLANK (7/16/87)
1,2,4-Trichlorobenzene	<1.9	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0
2-Chlorophenol	<3.3	<3.3
2,4-Dichlorophenol	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7
2,4-Dinitrophenol	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24
2-Nitrophenol	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4
Pentachlorophenol	<3.6	<3.6
Phenol	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7
Extraction Date	7/21/87	7/21/87
Analysis Date	7/21/87	7/21/87
Internal Standards		
Level Added = 40 µg/l		
(% Recovery)		
Phenanthrene-D_{10}	102	100
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl	47	45
2-Fluorobiphenyl	46	47
2-Fluorophenol	32	30
Phenol-D_6	23	25

AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = ug/l)	SAMPLE IDENTIFICATION (DATE)		
	9D (7/16/87)	10D (7/16/87)	10S (7/16/87)
Aldrin	0.012	<0.004	0.0061
Alpha-BHC	<0.01	<0.008	<0.005
Beta-BHC	0.098	<0.008	0.082
Delta-BHC	0.019	<0.008	0.013
Gamma-BHC	<0.01	<0.008	<0.01
Chlordane	<0.1	<0.08	<0.1
4,4'-DDD	<0.02	<0.02	<0.02
4,4'-DDE	<0.01	<0.008	<0.02
4,4'-DDT	<0.02	<0.02	<0.02
Dieldrin	<0.01	<0.008	<0.01
Endosulfan I	<0.01	<0.008	<0.01
Endosulfan II	<0.02	<0.02	<0.02
Endosulfan sulfate	<0.1	<0.05	<0.07
Endrin	<0.01	<0.008	<0.01
Endrin aldehyde	<0.02	<0.02	<0.02
Heptachlor	0.014	<0.008	<0.01
Heptachlor epoxide	<0.006	<0.005	<0.005
Toxaphene	<0.5	<0.4	<0.5
Aroclor 1016	<0.2	<0.3	<0.3
Aroclor 1221	<0.5	<0.5	<0.6
Aroclor 1232	<0.5	<0.5	<0.6
Aroclor 1242	<0.2	<0.3	<0.3
Aroclor 1248	<0.2	<0.3	<0.3
Aroclor 1254	<0.2	<0.3	<0.3
Aroclor 1260	<0.2	<0.3	<0.3
Extraction Date	7/22/87	7/22/87	7/22/87
Analysis Date	7/24/87	7/23/87	7/24/87

AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) 11D (7/16/87)	11S (7/16/87)
Aldrin	0.009	0.0052
Alpha-BHC	<0.008	0.010
Beta-BHC	0.16	0.088
Delta-BHC	<0.02	0.038
Gamma-BHC	<0.02	0.014
Chlordane	<0.2	<0.2
4,4'-DDD	<0.03	<0.02
4,4'-DDE	<0.02	<0.01
4,4'-DDT	<0.03	<0.02
Dieldrin	<0.02	<0.01
Endosulfan I	<0.02	<0.02
Endosulfan II	<0.03	<0.02
Endosulfan sulfate	<0.1	<0.09
Endrin	<0.02	<0.01
Endrin aldehyde	<0.03	<0.02
Heptachlor	<0.02	<0.03
Heptachlor epoxide	<0.02	0.015
Toxaphene	<0.8	<0.5
Aroclor 1016	<0.5	<0.3
Aroclor 1221	<1	<0.6
Aroclor 1232	<1	<0.6
Aroclor 1242	<0.5	<0.3
Aroclor 1248	<0.5	<0.3
Aroclor 1254	<0.3	<0.3
Aroclor 1260	<0.3	<0.3
Extraction Date	7/22/87	7/22/87
Analysis Date	7/25/87	7/24/87

AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)	
	13D (7/16/87)	TRIP BLANK (7/16/87)
Aldrin	0.005	0.0055
Alpha-BHC	<0.004	0.0086
Beta-BHC	0.083	0.11
Delta-BHC	0.013	0.015
Gamma-BHC	<0.004	<0.008
Chlordane	<0.1	<0.08
4,4'-DDD	<0.02	<0.02
4,4'-DDE	<0.01	<0.008
4,4'-DDT	<0.02	<0.02
Dieldrin	<0.01	<0.008
Endosulfan I	<0.01	<0.008
Endosulfan II	<0.02	<0.02
Endosulfan sulfate	<0.06	<0.06
Endrin	<0.01	<0.008
Endrin aldehyde	<0.02	<0.02
Heptachlor	<0.01	<0.02
Heptachlor epoxide	<0.01	<0.008
Toxaphene	<0.4	<0.4
Aroclor 1016	<0.2	<0.1
Aroclor 1221	<0.4	<0.2
Aroclor 1232	<0.4	<0.2
Aroclor 1242	<0.2	<0.1
Aroclor 1248	<0.2	<0.1
Aroclor 1254	<0.1	<0.1
Aroclor 1260	<0.1	<0.1
Extraction Date	7/22/87	7/22/87
Analysis Date	7/24/87	7/24/87

AQUEOUS MATRIX
PRIORITY POLLUTANT METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 9D (7/16/87)	10D (7/16/87)	10S (7/16/87)
Total Antimony	204.2	8/7/87	<0.005	<0.005	<0.005
Total Arsenic	206.2	7/24/87	<0.005	<0.005	0.51
Total Beryllium	210.1	7/23/87	<0.005	<0.005	<0.005
Total Cadmium	213.1	7/23/87	0.0070	<0.006	<0.005
Total Chromium	218.1	7/22/87	0.050	<0.01	0.15
Total Copper	220.1	7/23/87	0.096	0.015	0.32
Total Lead	239.2	7/27/87	0.031	<0.005	<0.005
Total Mercury	245.1	7/23/87	<0.0005	<0.0005	<0.0005
Total Nickel	249.1	8/7/87	0.073	<0.006	0.27
Total Selenium	270.2	8/16/87	<0.005	<0.005	<0.005
Total Silver	272.1	7/23/87	<0.005	<0.005	0.0050
Total Thallium	279.2	7/27/87	<0.005	<0.005	<0.005
Total Zinc	289.1	7/23/87	0.33	0.22	0.94

AQUEOUS MATRIX
PRIORITY POLLUTANT METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 11D (7/16/87)	11S (7/16/87)
Total Antimony	204.2	8/7/87	<0.005	<0.005
Total Arsenic	206.2	7/24/87	<0.005	0.042
Total Beryllium	210.1	7/23/87	<0.005	<0.005
Total Cadmium	213.1	7/23/87	<0.005	<0.005
Total Chromium	218.1	7/22/87	<0.01	0.090
Total Copper	220.1	7/23/87	<0.005	0.17
Total Lead	239.2	7/27/87	0.010	0.057
Total Mercury	245.1	7/23/87	<0.005	<0.005
Total Nickel	249.1	8/7/87	0.005	0.16
Total Selenium	270.2	8/6/87	<0.005	<0.005
Total Silver	272.1	7/23/87	<0.005	<0.005
Total Thallium	279.2	7/27/87	<0.005	<0.005
Total Zinc	289.1	7/23/87	0.042	0.90

AQUEOUS MATRIX
PRIORITY POLLUTANT METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 13D (7/16/87)	TRIP BLANK (7/16/87)
Total Antimony	204.2	8/7/87	<0.005	<0.005
Total Arsenic	206.2	7/24/87	<0.005	<0.005
Total Beryllium	210.1	7/23/87	<0.005	<0.005
Total Cadmium	213.1	7/23/87	<0.005	0.0050
Total Chromium	218.1	7/22/87	0.020	<0.01
Total Copper	220.1	7/23/87	0.012	<0.005
Total Lead	239.2	7/27/87	0.0060	0.014
Total Mercury	245.1	7/23/87	<0.0005	<0.0005
Total Nickel	249.1	8/7/87	0.006	0.008
Total Selenium	270.2	8/6/87	<0.005	<0.005
Total Silver	272.1	7/23/87	<0.005	<0.005
Total Thallium	279.2	7/27/87	<0.005	<0.005
Total Zinc	289.1	7/23/87	0.32	0.063

AQUEOUS MATRIX
METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 9D (7/16/87)	10D (7/16/87)	10S (7/16/87)
Total Aluminum	202.1	7/23/87	24	0.060	97
Total Boron	212.3	7/28/87	<6	<6	<6
Total Calcium	215.1	7/28/87	150	180	630
Total Chromium	218.1	7/22/87	0.050	<0.01	0.15
Hexavalent Chromium	218.4	7/20/87	<0.005	<0.005	<0.005
Total Iron	236.1	7/23/87	46	0.22	300
Total Manganese	243.1	7/24/87	4.0	0.17	8.1
Total Sodium	273.1	7/23/87	29	40	23

AQUEOUS MATRIX
METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 11D (7/16/87)	11S (7/16/87)
Total Aluminum	202.1	7/23/87	0.16	62
Total Boron	212.3	7/28/87	<6	<6
Total Calcium	215.1	7/28/87	160	320
Total Chromium	218.1	7/22/87	<0.01	0.090
Hexavalent Chromium	218.4	7/20/87	<0.005	<0.005
Total Iron	236.1	7/23/87	0.35	120
Total Manganese	243.1	7/24/87	0.12	3.6
Total Sodium	273.1	7/23/87	15	79

AQUEOUS MATRIX
METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 13D (7/16/87)	TRIP BLANK (7/15/87)
Total Aluminum	202.1	7/23/87	0.070	<0.03
Total Boron	212.3	7/28/87	<6	<6
Total Calcium	215.1	7/28/87	110	69
Total Chromium	218.1	7/22/87	0.020	<0.01
Hexavalent Chromium	218.4	7/20/87	0.0070	<0.005
Total Iron	236.1	7/23/87	0.51	0.040
Total Manganese	243.1	7/24/87	<0.005	<0.005
Total Sodium	273.1	7/23/87	16	<5

AQUEOUS MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 9D (7/16/87)	10D (7/16/87)
Total Alkalinity	310.1	mg/l as $CaCO_3$	7/22/87	58	401
Ammonia	350.3	mg NH_3-N/L	7/21/87	<0.1	0.17
Biochemical Oxygen Demand	405.1	mg/l	7/17/87	<40	<2
Total Organic Carbon	9060	mg/l	7/21/87	24	91.5
Chloride	325.3	mg/l	7/20/87	18	45
Chemical Oxygen Demand	410.1	mg/l	7/21/87	462	24
Total Cyanide	9010	mg/l	7/27-28/87	<0.010	<0.010
Total Hardness	130.2	mg/l as $CaCO_3$	7/28/87	1,350	434
Nitrate	352.1	mg NO_3-N/L	7/17/87	0.11	<0.05
Total Kjeldahl Nitrogen	351.3	mg/l	7/23/87	1.1	0.21
Total Recoverable Phenolics	9065	mg/l	8/3/87	<0.010	<0.010
Filterable Residue (180°C)	160.1	mg/l	7/17/87	206	596
Sulfate	9038	mg/l	7/24/87	960	29
Surfactants (MBAS)	425.1	mg/l	7/17/87	<0.02	<0.02
Turbidity	180.1	N.T.U.	7/17/87	1,050	0.53

AQUEOUS MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 10S (7/16/87)	11D (7/16/87)
Total Alkalinity	310.1	mg/l as $CaCO_3$	7/22/87	548	241
Ammonia	350.3	mg NH_3-N/L	7/21/87	3.6	<0.1
Biochemical Oxygen Demand	405.1	mg/l	7/17/87	4.47	3.6
Total Organic Carbon	9060	mg/l	7/21/87	70	44.5
Chloride	325.3	mg/l	7/20/87	20	66
Chemical Oxygen Demand	410.1	mg/l	7/21/87	66	<5
Total Cyanide	9010	mg/l	7/27-28/87	<0.010	<0.010
Total Hardness	130.2	mg/l as $CaCO_3$	7/28/87	1,700	337
Nitrate	352.1	mg NO_3-N/L	7/17/87	0.09	<0.05
Total Kjeldahl Nitrogen	351.3	mg/l	7/23/87	7.6	3.6
Total Recoverable Phenolics	9065	mg/l	8/3/87	<0.010	<0.010
Filterable Residue (180°C)	160.1	mg/l	7/17/87	740	418
Sulfate	9038	mg/l	7/24/87	320	8.3
Surfactants (MBAS)	425.1	mg/l	7/17/87	<0.02	<0.02
Turbidity	180.1	N.T.U.	7/17/87	2,200	4.3

AQUEOUS MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 11S (7/16/87)	13D (7/16/87)
Total Alkalinity	310.1	mg/l as $CaCO_3$	7/22/87	569	118
Ammonia	350.3	mg NH_3-N/L	7/21/87	7.29	<0.1
Biochemical Oxygen Demand	405.1	mg/l	7/17/87	20	<2
Total Organic Carbon	9060	mg/l	7/21/87	85.4	13.6
Chloride	325.3	mg/l	7/20/87	124	38
Chemical Oxygen Demand	410.1	mg/l	7/21/87	99.5	<5
Total Cyanide	9010	mg/l	7/27-28/87	<0.010	<0.010
Total Hardness	130.2	mg/l as $CaCO_3$	7/28/87	1,100	158
Nitrate	352.1	mg NO_3-N/L	7/17/87	0.14	0.68
Total Kjeldahl Nitrogen	351.3	mg/l	7/23/87	20.2	0.36
Total Recoverable Phenolics	9065	mg/l	8/3/87	<0.010	<0.010
Filterable Residue (180°C)	160.1	mg/l	7/17/87	960	307
Sulfate	9038	mg/l	7/24/87	880	20
Surfactants (MBAS)	425.1	mg/l	7/17/87	<0.02	<0.02
Turbidity	180.1	N.T.U.	7/17/87	24,500	0.80

AQUEOUS MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) TRIP BLANK (7/16/87)
Total Alkalinity	310.1	mg/l as $CaCO_3$	7/22/87	1.0
Ammonia	350.3	mg NH_3-N/L	7/21/87	<0.1
Biochemical Oxygen Demand	405.1	mg/l	7/17/87	<2
Total Organic Carbon	9060	mg/l	7/21/87	<1
Chloride	325.3	mg/l	7/20/87	<0.5
Chemical Oxygen Demand	410.1	mg/l	7/21/87	<5
Total Cyanide	9010	mg/l	7/27-28/87	<0.010
Total Hardness	130.2	mg/l as $CaCO_3$	7/28/87	4.0
Nitrate	352.1	mg NO_3-N/L	7/17/87	<0.05
Total Kjeldahl Nitrogen	351.3	mg/l	7/23/87	<0.1
Total Recoverable Phenolics	9065	mg/l	8/3/87	<0.010
Filterable Residue (180°C)	160.1	mg/l	7/17/87	16
Sulfate	9038	mg/l	7/24/87	<1
Surfactants (MBAS)	425.1	mg/l	7/17/87	<0.02
Turbidity	180.1	N.T.U.	7/17/87	0.21

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 8240 - PRIORITY POLLUTANT VOLATILES

SAMPLE IDENTIFICATION 13D

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
Benzene	200	107
Bromodichloromethane	200	105
Bromoform	200	70
1,2-Dichloroethane	200	82
trans-1,2-Dichloroethylene	200	92
cis-1,3-Dichloropropene	156	94
trans-1,3-Dichloropropene	244	83
Ethylbenzene	200	93
1,1,2,2-Tetrachloroethane	200	72
Toluene	200	78
1,1,1-Trichloroethane	200	98
Analysis Date	7/20/87	
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane		99
1,4-Difluorobenzene		98
Chlorobenzene D_5		90

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

SAMPLE IDENTIFICATION 110

COMPOUND (Units of Measure = µg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Bis(2-ethylhexyl)phthalate	23	8.5	16	10
Extraction Date	7/21/87	7/21/87	-	-
Analysis Date	7/21/87	7/21/87	-	-
Internal Standards				
Level Added = 40 µg/l				
(% Recovery)				
Phenanthrene-D_{10}	89	82	86	4.9
Surrogates				
Level Added = 100 µg/l				
(% Recovery)				
Decafluorobiphenyl	52	50	51	1.4
2-Fluorobiphenyl	44	45	44	0.71
2-Fluorophenol	38	33	36	3.5
Phenol-D_6	32	30	31	1.4

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

SAMPLE IDENTIFICATION METHOD BLANK SPIKE

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
2-Chlorophenol	25	64
1,3-Dichlorobenzene	25	48
2,4-Dichlorophenol	25	72
Di-n-octylphthalate	25	80
Fluoranthene	25	100
Fluorene	25	72
Napnthalene	25	64
Nitrobenzene	25	80
2,4,6-Trichlorophenol	25	76
Extraction Date	7/21/87	
Analysis Date	7/21/87	
Internal Standards		
Level Added = 40 µg/l		
(% Recovery)		
Phenanthrene-D_{10}		103
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl		39
2-Fluorobiphenyl		29
2-Fluorophenol		26
Phenol-D_6		19

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

SAMPLE IDENTIFICATION 11D

COMPOUND (Units of Measure = µg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Aldrin	0.009	<0.008	0.009	-
Beta-BHC	0.15	0.18	0.16	0.021
Extraction Date	7/22/87	7/22/87	-	-
Analysis Date	7/25/87	7/25/87	-	-

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

SAMPLE IDENTIFICATION METHOD BLANK SPIKE

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
Aldrin	0.20	65
Gamma-BHC	0.20	100
4,4'-DDE	0.20	100
Endosulfan II	0.20	110
Endrin	0.20	105
Heptachlor	0.20	91
Extraction Date	7/22/87	
Analysis Date	7/23/87	

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
PRIORITY POLLUTANT METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Antimony	204.2	100	<0.005	<0.005	<0.005	-
Total Arsenic	206.2		<0.005	<0.005	<0.005	-
Total Beryllium	210.1		<0.005	<0.005	<0.005	-
Total Cadmium	213.1		<0.006	<0.006	<0.006	-
Total Chromium	218.1		<0.01	<0.01	<0.01	-
Total Copper	220.1		0.015	0.014	0.015	0.00071
Total Lead	239.2		<0.005	<0.005	<0.005	-
Total Mercury	245.1		<0.0005	<0.0005	<0.0005	-
Total Nickel	249.2		<0.006	<0.006	<0.006	-
Total Selenium	270.2		<0.005	<0.005	<0.005	-
Total Silver	272.1		<0.005	<0.005	<0.005	-
Total Thallium	279.2		<0.005	<0.005	<0.005	-
Total Zinc	289.1		0.31	0.13	0.22	0.12

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
PRIORITY POLLUTANT METALS

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Antimony	204.2	100	50	90
Total Arsenic	206.2		50	88
Total Beryllium	210.1		500	100
Total Cadmium	213.1		500	100
Total Copper	220.1		500	98
Total Lead	239.2		50	95
Total Mercury	245.1		0.40	116
Total Nickel	249.2		500	116
Total Selenium	270.2		50	118
Total Silver	272.1		500	98
Total Thallium	279.2		50	90
Total Zinc	289.1		500	95

I.D. #87-889

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Aluminum	202.1	10D	0.090	0.030	0.060	0.042
Total Boron	212.3		<6	<6	<6	-
Total Calcium	215.1		170	190	180	14
Hexavalent Chromium	218.4		<0.005	<0.005	<0.005	-
Total Iron	236.1		0.27	0.17	0.22	0.071
Total Manganese	243.1		0.17	0.17	0.17	0
Total Sodium	273.1		40	40	40	0

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METALS

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Aluminum	202.1	10D	5,000	107
Total Boron	212.3		50,000	116
Total Calcium	215.1		5,000	112
Hexavalent Chromium	218.4		500	87
Total Iron	236.1		500	99
Total Manganese	243.1		500	102
Total Sodium	273.1		5,000	111

I.D. #87-889

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Alkalinity	310.1	mg/l as $CaCO_3$	9D	58	58	58	0
Ammonia	350.3	mg NH_3-N/L	11S	7.22	7.36	7.29	0.099
Biochemical Oxygen Demand	405.1	mg/l	11D	3.3	3.9	3.6	0.42
Total Organic Carbon	9060	mg/l	13D	13.8	13.5	13.6	0.21
Chloride	325.3	mg/l	9D	18	18	18	0
Chemical Oxygen Demand	410.1	mg/l	*	18	18	18	0
Total Cyanide	9010	mg/l	13D	<0.010	<0.010	<0.010	-
Total Hardness	130.2	mg/l as $CaCO_3$	11D	336	338	337	1.4
Total Kjeldahl Nitrogen	351.3	mg/l	13D	0.34	0.39	0.36	0.035
Total Recoverable Phenolics	9065	mg/l	13D	<0.010	<0.010	<0.010	-
Filterable Residue (180°C)	160.1	mg/l	13D	314	300	307	9.9
Sulfate	9038	mg/l	*	4,220	4,260	4,240	28
Surfactants (MBAS)	425.1	mg/l	13D	<0.02	<0.02	<0.02	-
Turbidity	180.1	N.T.U.	11D	4.2	4.4.	4.3.	0.14

*Quality control results were generated from a sample of similar matrix at the time of analysis.

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Alkalinity	310.1	9D	5,000	99
Ammonia	350.3	11S	1,000	90
Total Organic Carbon	9060	13D	200	89
Chloride	325.3	9D	2,000	103
Chemical Oxygen Demand	410.1	*	1,500	97
Total Cyanide	9010	Trip Blank	48	110
Total Hardness	130.2	11D	5,000	100
Nitrate	352.1	Trip Blank	0.5	77
Total Kjeldahl Nitrogen	351.3	13D	1,000	133
Total Recoverable Phenolics	9065	13D	21	98
Sulfate	9038	*	1,000	92
Surfactants (MBAS)	425.1	13D	5.0	101

*Quality control results were generated from a sample of similar matrix at the time of analysis.

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO. 0595-051 | SITE NAME Frewell LF

SAMPLERS (SIGNATURE) Paula Turner

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	2 oz glass	16 oz	16 oz plast	8 oz glass	1 L pkg	REMARKS
1S	7/16/87	11AM		✓		2	2					VOA
1D	"	"		✓		2	2					VOA
10S	"	10AM		✓		2	2					VOA
10S	"	"		✓		2		2				Pesticides Herbicides
10S	"	"		✓		3			3			Water Quality parameters
10S	"	"		✓		1				1		Phenols
10S	"	"		✓		1					1	MBAS
10S	"	"		✓		1					1	BOD
10S	"	"		✓		1			1			OP metals
10S	"	"		✓		2			2			total metals
10S	"	"		✓		1			1			Cyanide
1S	"	11AM		✓		1			1			Cyanide
1D	"	"		✓		1			1			Cyanide
0D	"	11AM		✓		2	2					VOA

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Paula Turner	7/16/87 [illegible]	[signature]			

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RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE TIME	REMARKS

Distribution: Original accompanies shipment, copy to coordinator field files.

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO: 0595-051

SITE NAME: FARWELL LF

SAMPLERS (SIGNATURE): [signature]

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	16oz amber	16oz plastic	8oz glass	1L plast			REMARKS
D	7/16/87	1R		✓		2	2						Pesticides/herbicides
D	"	"		✓		3		3					Water quality parameters
D	"	"		✓		1			1				Phenols
D	"	"		✓		1				1			MBAS
D	"	"		✓		1				1			BOD
D	"	"		✓		1		1					PP metals
D	"	"		✓		2		2					total metals
D	"	"		✓		1		1					Cyanide
D	"	"		✓		2	2						Pesticides/herbicides
D	"	"		✓		3		3					Water Quality param.
D	"	"		✓		1			1				Phenols
D	"	"		✓		1				1			MBAS
D	"	"		✓		1				1			BOD
D	"	"		✓		1		1					PP metals

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[signature]	7/16/87	1P	[signature]				

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RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS

Distribution: Original accompanies shipment; copy to coordinator field files

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO. 1895-051 | SITE NAME Farwell Landfill

SAMPLERS (SIGNATURE) Paula Tanner

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8 oz glass	1L P plastic	1L P plastic	16 oz plastic	8 oz glass		REMARKS
Blank	11/6/87	7AM		✓		1	1						Phenol
Blank	"	"		✓		1		1					MBAs
Blank	"	"		✓		1		1					BOD
Blank	"	"		✓		1			1				OP metals
Blank	"	"		✓		2			2				total metals
Blank	"	"		✓		1			1				Cyanide
Blank	"	"		✓		2				2			VOAs

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Paula Tanner	11/6/87	11:57	[signature]				
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RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	

Distribution: Original accompanies shipment; copy to coordinator field files.

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO: 0595-057
SITE NAME: Farwell LF
SAMPLERS (SIGNATURE): Paula Tanner

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	16oz plastic	2oz glass	1l amber	8oz glass	1l plastic		REMARKS
[illegible]D	7/16/87	[illegible]		✓		2	2						Total metals
[illegible]D	"	"		✓		1	1						Cyanide
[illegible]D	"	"		✓		2		2					VOA
[illegible]D	"	8[illegible]		✓		2			2				Pesticide / Herbicide
[illegible]D	"	[illegible]		✓		3	3						water quality param + O
[illegible]D	"	"		✓		1				1			Phenol
[illegible]D	"	"		✓		1					1		MBAS
[illegible]D	"	"		✓		1					1		BOD
[illegible]D	"	"		✓		1	1						DP metals
[illegible]D	"	"		✓		2	2						Total metals
[illegible]D	"	"		✓		1	1						Cyanide
[illegible]D	"	"		✓		2		2					VOAs
[illegible]	7/16/87	7AM		✓		2			2				Pesticide / Herbicide
[illegible]	7/16/87	"		✓		3	3						water quality param

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Paula Tanner	7/16/87	[illegible]	[illegible signature]				
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RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO: 0595-051

SITE NAME: FARWELL LF

SAMPLERS (SIGNATURE): Paula Tanner

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	1 [illegible] amber	16oz plast	8oz glass	1 lt plast			REMARKS
1/S	7/16/87	1130		✓		2	2						Pesticides / Herbicides
1/S	"	"		✓		3		3					water quality param
1/S	"	"		✓		1			1				phenols
1/S	"	"		✓		1				1			MBAS
1/S	"	"		✓		1				1			BOD
1/S	"	"		✓		1		1					PP metals
1/S	"	"		✓		2		2					metals (tot)
1/D	"	"		✓		2	2						Pesticides / herbicides
1/D	"	"		✓		3		3					water quality param
1/D	"	"		✓		1			1				phenols
1/D	"	"		✓		1				1			MBAS
1/D	"	"		✓		1				1			BOD
1/D	"	"		✓		1		1					PP metals
1/D	"	"		✓		2		2					metals (total)

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RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

Farwell 7/87

2nd Round

ANALYTICAL RESULTS

Prepared For

Malcolm Pirnie, Inc.
S-3515 Abbott Road
Orchard Park, NY 14219

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14150

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to one of the following U.S. Environmental Protection Agency references.

- 40 CFR Part 136 "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act" October 26, 1984 (Federal Register) U.S. Environmental Protection Agency.
- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods". Office of Solid Waste and Emergency Response. July 1982, SW-846, Second Edition.

COMMENTS

Comments pertain to data on one or all pages of this report.

The values reported as "less than" (<) indicate the working detection limit for the particular sample and/or parameter.

The values reported as "less than or equal to" (≤) indicate the compound may be present at trace levels relative to the detection limit but not subject to accurate quantification.

Results of the analysis of Pesticide/PCB's are based on the matching of retention times between samples and standards on a single gas chromatographic column.

Total Organic Carbon results may not include volatile constituents since the sample was purged with an inert gas prior to analysis.

AQUEOUS MATRIX
METHOD 8240 - PRIORITY POLLUTANT VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) 9D (7/30/87)	10D (7/30/87)	10S (7/30/87)
Acrolein	<400	<400	<400
Acrylonitrile	<400	<400	<400
Benzene	<4.4	<4.4	<4.4
Bromodichloromethane	<2.2	<2.2	<2.2
Bromoform	<4.7	<4.7	<4.7
Bromomethane	<10	<10	<10
Carbon tetrachloride	<2.8	<2.8	<2.8
Chlorobenzene	<6.0	<6.0	<6.0
Chloroethane	130	32	<10
2-Chloroethylvinyl ether	<10	<10	<10
Chloroform	<1.6	<1.6	<1.6
Chloromethane	<10	<10	<10
Dibromochloromethane	<3.1	<3.1	<3.1
1,2-Dichlorobenzene	<2.2	<2.2	<2.2
1,3-Dichlorobenzene	<2.1	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5	<2.5
1,1-Dichloroethane	520	470	56
1,2-Dichloroethane	<2.8	<2.8	<2.8
1,1-Dichloroethylene	62	15	<2.8
trans-1,2-Dichloroethylene	<1.6	54	<1.6
1,2-Dichloropropane	<6.0	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0
Ethylbenzene	<7.2	<7.2	<7.2
Methylene chloride	<2.8	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1	<4.1
Toluene	<6.0	19	<6.0
1,1,1-Trichloroethane	<3.8	38	<3.8
1,1,2-Trichloroethane	<5.0	<5.0	<5.0
Trichloroethylene	<1.9	13	<1.9
Vinyl chloride	<10	<10	<10
Analysis Date	8/5/87	8/5/87	8/5/87
Internal Standards Level Added = 50 µg/l (% Recovery)			
Bromochloromethane	97	98	97
1,4-Difluorobenzene	99	99	96
Chlorobenzene D_5	104	103	98

AQUEOUS MATRIX
METHOD 8240 - PRIORITY POLLUTANT VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)	
	IID (7/30/87)	IIS (7/30/87)
Acrolein	<400	<400
Acrylonitrile	<400	<400
Benzene	8.4	<4.4
Bromodichloromethane	<2.2	<2.2
Bromoform	<4.7	<4.7
Bromomethane	<10	<10
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	<6.0	<6.0
Chloroethane	580	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Chloromethane	<10	<10
Dibromochloromethane	<3.1	<3.1
1,2-Dichlorobenzene	<2.2	<2.2
1,3-Dichlorobenzene	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5
1,1-Dichloroethane	250	11
1,2-Dichloroethane	3.0	<2.8
1,1-Dichloroethylene	57	<2.8
trans-1,2-Dichloroethylene	69	<1.6
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Ethylbenzene	<7.2	<7.2
Methylene chloride	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	13	<6.0
1,1,1-Trichloroethane	810	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	120	<1.9
Vinyl chloride	11	<10
Analysis Date	8/6/87	8/5/87
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	94	94
1,4-Difluorobenzene	97	95
Chlorobenzene D_5	102	99

AQUEOUS MATRIX
METHOD 8240 - PRIORITY POLLUTANT VOLATILES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)	
	13D (7/30/87)	FIELD DUP. (7/30/87)
Acrolein	<400	<400
Acrylonitrile	<400	<400
Benzene	<4.4	<4.4
Bromodichloromethane	<2.2	<2.2
Bromoform	<4.7	<4.7
Bromomethane	<10	<10
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	<6.0	<6.0
Chloroethane	<10	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Chloromethane	<10	<10
Dibromochloromethane	<3.1	<3.1
1,2-Dichlorobenzene	<2.2	<2.2
1,3-Dichlorobenzene	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5
1,1-Dichloroethane	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8
1,1-Dichloroethylene	<2.8	<2.8
trans-1,2-Dichloroethylene	<1.6	<1.6
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Ethylbenzene	<7.2	<7.2
Methylene chloride	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	6.4	<6.0
1,1,1-Trichloroethane	<3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	<1.9	<1.9
Vinyl chloride	<10	<10
Analysis Date	8/5/87	8/5/87
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	83	92
1,4-Difluorobenzene	85	95
Chlorobenzene D_5	88	100

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = ug/l)	SAMPLE IDENTIFICATION (DATE)		
	9D (7/30/87)	10D (7/30/87)	10S (7/30/87)
Acenaphthene	<1.9	<1.9	<1.9
Acenaphthylene	<3.5	<3.5	<3.5
Anthracene	<1.9	<1.9	<1.9
Benzo(a)anthracene	<7.8	<7.8	<7.8
Benzo(b)fluoranthene	<4.8	<4.8	<4.8
Benzo(k)fluoranthene	<2.5	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	<2.5	<2.5	<2.5
4-Bromophenylphenylether	<1.9	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2	<4.2
Chrysene	<2.5	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5	<2.5
Di-n-butyl phthalate	2.8	2.6	3.6
1,2-Dichlorobenzene	<1.9	<1.9	<1.9
1,3-Dichlorobenzene	<1.9	<1.9	<1.9
1,4-Dichlorobenzene	<4.4	<4.4	<4.4
3,3'-Dichlorobenzidine	<17	<17	<17
Diethyl phthalate	<22	<22	<22
Dimethyl phthalate	<1.6	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5	<2.5
Fluoranthene	<2.2	<2.2	<2.2
Fluorene	<1.9	<1.9	<1.9
Hexachlorobenzene	<1.9	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25	<25
Hexachloroethane	<1.6	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7	<3.7
Isophorone	<2.2	<2.2	<2.2
Naphthalene	2.4	<1.6	<1.6
Nitrobenzene	<1.9	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25	<25
Phenanthrene	<5.4	<5.4	<5.4
Pyrene	<1.9	<1.9	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)		
	9D (7/30/87)	10D (7/30/87)	10S (7/30/87)
1,2,4-Trichlorobenzene	<1.9	<1.9	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0	<3.0
2-Chlorophenol	<3.3	<3.3	<3.3
2,4-Dichlorophenol	<2.7	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7	<2.7
2,4-Dinitrophenol	<42	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24	<24
2-Nitrophenol	<3.6	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4	<2.4
Pentachlorophenol	<3.6	<3.6	<3.6
Phenol	<1.5	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7	<2.7
Extraction Date	8/3/87	8/3/87	8/3/87
Analysis Date	8/6/87	8/6/87	8/6/87
Internal Standards			
Level Added = 40 µg/l			
(% Recovery)			
Phenanthrene-D_{10}	124	133	116
Surrogates			
Level Added = 100 µg/l			
(% Recovery)			
Decafluorobiphenyl	43	39	36
2-Fluorobiphenyl	57	57	54
2-Fluorophenol	63	54	42
Phenol-D_6	46	37	32

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)	
	11D (7/30/87)	11S (7/30/87)
Acenaphthene	<1.9	<1.9
Acenaphthylene	<3.5	<3.5
Anthracene	<1.9	<1.9
Benzo(a)anthracene	<7.8	<7.8
Benzo(b)fluoranthene	<4.8	<4.8
Benzo(k)fluoranthene	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	<2.5	<2.5
4-Bromophenylphenylether	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2
Chrysene	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5
Di-n-butyl phthalate	3.0	7.0
1,2-Dichlorobenzene	<1.9	<1.9
1,3-Dichlorobenzene	<1.9	<1.9
1,4-Dichlorobenzene	<4.4	<4.4
3,3'-Dichlorobenzidine	<17	<17
Diethyl phthalate	<22	<22
Dimethyl phthalate	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5
Fluoranthene	<2.2	<2.2
Fluorene	<1.9	<1.9
Hexachlorobenzene	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25
Hexachloroethane	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7
Isophorone	<2.2	<2.2
Naphthalene	<1.6	<1.6
Nitrobenzene	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25
Phenanthrene	<5.4	<5.4
Pyrene	<1.9	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) 11D (7/30/87)	11S (7/30/87)
1,2,4-Trichlorobenzene	<1.9	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0
2-Chlorophenol	<3.3	<3.3
2,4-Dichlorophenol	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7
2,4-Dinitrophenol	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24
2-Nitrophenol	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4
Pentachlorophenol	<3.6	<3.6
Phenol	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7
Extraction Date	8/3/87	8/3/87
Analysis Date	8/6/87	8/6/87
Internal Standards		
Level Added = 40 µg/l		
(% Recovery)		
Phenanthrene-D_{10}	113	121
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl	40	41
2-Fluorobiphenyl	61	57
2-Fluorophenol	37	52
Phenol-D_6	26	44

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)	
	13D (7/30/87)	FIELD DUP. (7/30/87)
Acenaphthene	<1.9	<1.9
Acenaphthylene	<3.5	<3.5
Anthracene	<1.9	<1.9
Benzo(a)anthracene	<7.8	<7.8
Benzo(b)fluoranthene	<4.8	<4.8
Benzo(k)fluoranthene	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	<2.5	6.0
4-Bromophenylphenylether	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2
Chrysene	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5
Di-n-butyl phthalate	15	3.6
1,2-Dichlorobenzene	<1.9	<1.9
1,3-Dichlorobenzene	<1.9	<1.9
1,4-Dichlorobenzene	<4.4	<4.4
3,3'-Dichlorobenzidine	<17	<17
Diethyl phthalate	<22	<22
Dimethyl phthalate	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5
Fluoranthene	<2.2	<2.2
Fluorene	<1.9	<1.9
Hexachlorobenzene	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25
Hexachloroethane	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7
Isophorone	<2.2	<2.2
Naphthalene	<1.6	<1.6
Nitrobenzene	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25
Phenanthrene	<5.4	<5.4
Pyrene	<1.9	<1.9

(Continued)

AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE)	
	130 (7/30/87)	FIELD DUP. (7/30/87)
1,2,4-Trichlorobenzene	<1.9	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0
2-Chlorophenol	<3.3	<3.3
2,4-Dichlorophenol	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7
2,4-Dinitrophenol	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24
2-Nitrophenol	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4
Pentachlorophenol	13	<3.6
Phenol	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7
Extraction Date	8/3/87	8/3/87
Analysis Date	8/6/87	8/6/87
Internal Standards		
Level Added = 40 µg/l		
(% Recovery)		
Phenanthrene-D_{10}	128	121
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl	48	41
2-Fluorobiphenyl	59	56
2-Fluorophenol	84	56
Phenol-D_6	70	41

AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = ug/l)	SAMPLE IDENTIFICATION (DATE) 9D (7/30/87)	10D (7/30/87)
Aldrin	<0.01	<0.01
Alpha-BHC	<0.01	<0.01
Beta-BHC	<0.01	<0.01
Delta-BHC	<0.01	<0.01
Gamma-BHC	<0.01	<0.01
Chlordane	<0.5	<0.5
4,4'-DDD	<0.05	<0.05
4,4'-DDE	<0.02	<0.02
4,4'-DDT	<0.05	<0.05
Dieldrin	<0.02	<0.02
Endosulfan I	<0.02	<0.02
Endosulfan II	<0.05	<0.05
Endosulfan sulfate	<0.05	<0.05
Endrin	<0.02	<0.02
Endrin aldehyde	<0.05	<0.05
Heptachlor	<0.01	<0.01
Heptachlor epoxide	<0.01	<0.01
Toxaphene	<1	<1
Aroclor 1016	<0.5	<0.5
Aroclor 1221	<1	<1
Aroclor 1232	<1	<1
Aroclor 1242	<0.5	<0.5
Aroclor 1248	<0.5	<0.5
Aroclor 1254	<0.2	<0.2
Aroclor 1260	<0.2	<0.2
Extraction Date	7/31/87	7/31/87
Analysis Date	8/5/87	8/5/87

AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = ug/l)	SAMPLE IDENTIFICATION (DATE)	
	10S (7/30/87)	11D (7/30/87)
Aldrin	<0.01	<0.02
Alpha-BHC	<0.01	<0.02
Beta-BHC	<0.01	<0.02
Delta-BHC	<0.01	<0.02
Gamma-BHC	<0.01	<0.02
Chlordane	<0.5	<1
4,4'-DDD	<0.05	<0.1
4,4'-DDE	<0.02	<0.04
4,4'-DDT	<0.05	<0.1
Dieldrin	<0.02	<0.04
Endosulfan I	<0.02	<0.04
Endosulfan II	<0.05	<0.1
Endosulfan sulfate	<0.05	<0.1
Endrin	<0.02	<0.04
Endrin aldehyde	<0.05	<0.1
Heptachlor	<0.01	<0.02
Heptachlor epoxide	<0.01	<0.02
Toxaphene	<1	<2
Aroclor 1016	<0.5	<1
Aroclor 1221	<1	<2
Aroclor 1232	<1	<2
Aroclor 1242	<0.5	<1
Aroclor 1248	<0.5	<1
Aroclor 1254	<0.2	<0.4
Aroclor 1260	<0.2	<0.4
Extraction Date	7/31/87	7/31/87
Analysis Date	8/6/87	8/6/87

AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = ug/l)	SAMPLE IDENTIFICATION (DATE) 11S (7/30/87)	13D (7/30/87)
Aldrin	<0.01	<0.01
Alpha-BHC	<0.01	<0.01
Beta-BHC	<0.01	<0.01
Delta-BHC	<0.01	<0.01
Gamma-BHC	<0.01	<0.01
Chlordane	<0.5	<0.5
4,4'-DDD	<0.05	<0.05
4,4'-DDE	<0.02	<0.02
4,4'-DDT	<0.05	<0.05
Dieldrin	<0.02	<0.02
Endosulfan I	<0.02	<0.02
Endosulfan II	<0.05	<0.05
Endosulfan sulfate	<0.05	<0.05
Endrin	<0.02	<0.02
Endrin aldehyde	<0.05	<0.05
Heptachlor	<0.01	<0.01
Heptachlor epoxide	<0.01	<0.01
Toxaphene	<1	<1
Aroclor 1016	<0.5	<0.5
Aroclor 1221	<1	<1
Aroclor 1232	<1	<1
Aroclor 1242	<0.5	<0.5
Aroclor 1248	<0.5	<0.5
Aroclor 1254	<0.2	<0.2
Aroclor 1260	<0.2	<0.2
Extraction Date	7/31/87	7/31/87
Analysis Date	8/6/87	8/6/87

AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/l)	SAMPLE IDENTIFICATION (DATE) FIELD DUP. (7/30/87)
Aldrin	<0.01
Alpha-BHC	<0.01
Beta-BHC	<0.01
Delta-BHC	<0.01
Gamma-BHC	<0.01
Chlordane	<0.5
4,4'-DDD	<0.05
4,4'-DDE	<0.02
4,4'-DDT	<0.05
Dieldrin	<0.02
Endosulfan I	<0.02
Endosulfan II	<0.05
Endosulfan sulfate	<0.05
Endrin	<0.02
Endrin aldehyde	<0.05
Heptachlor	<0.01
Heptachlor epoxide	<0.01
Toxaphene	<1
Aroclor 1016	<0.5
Aroclor 1221	<1
Aroclor 1232	<1
Aroclor 1242	<0.5
Aroclor 1248	<0.5
Aroclor 1254	<0.2
Aroclor 1260	<0.2
Extraction Date	7/31/87
Analysis Date	8/5/87

AQUEOUS MATRIX
METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 9D (7/30/87)	10D (7/30/87)	10S (7/30/87)
Total Aluminum	202.1	8/5/87	42	<0.3	290
Total Antimony	204.2	8/7/87	<0.005	<0.005	<0.005
Total Arsenic	206.2	8/6/87	0.076	<0.005	0.59
Total Beryllium	210.1	8/14/87	<0.005	<0.005	0.013
Total Boron	*	8/14/87	<4	<4	<4
Total Cadmium	213.1	8/4/87	<0.005	<0.005	<0.005
Total Calcium	215.1	8/18/87	160	140	1,100
Total Chromium	218.1	8/4/87	0.069	0.005	0.40
Hexavalent Chromium	218.5	8/4/87	<0.005	<0.005	<0.005
Total Copper	220.1	8/4/87	0.15	0.006	1.0
Total Iron	236.1	8/7/87	86	0.08	700
Total Lead	239.2	8/17/87	0.09	0.023	0.54
Total Manganese	243.1	8/14/87	6.9	0.36	25
Total Mercury	245.1	8/6/87	<0.0008	<0.0008	0.0009
Total Nickel	249.2	8/19/87	0.17	<0.005	0.97
Total Selenium	270.2	8/12/87	<0.005	<0.005	<0.005
Total Silver	272.1	8/4/87	<0.005	<0.005	<0.005
Total Sodium	273.1	8/18/87	29	32	22
Total Thallium	279.2	8/7/87	<0.005	<0.005	<0.005
Total Zinc	289.1	8/7/87	0.47	<0.02	2.5

*Methodology for the determination of Boron by Flame Atomic Absorption Spectroscopy taken from the Perkin Elmer Corporation.

AQUEOUS MATRIX
METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 11D (7/30/87)	11S (7/30/87)
Total Aluminum	202.1	8/5/87	0.11	230
Total Antimony	204.2	8/7/87	<0.005	<0.005
Total Arsenic	206.2	8/6/87	<0.005	0.51
Total Beryllium	210.1	8/14/87	<0.005	0.008
Total Boron	*	8/14/87	<4	<4
Total Cadmium	213.1	8/4/87	<0.005	<0.005
Total Calcium	215.1	8/13/87	110	470
Total Chromium	218.1	8/4/87	<0.005	0.28
Hexavalent Chromium	218.5	8/4/87	0.007	<0.005
Total Copper	220.1	8/4/87	<0.005	0.57
Total Iron	236.1	8/7/87	0.04	430
Total Lead	239.2	8/17/87	<0.005	0.37
Total Manganese	243.1	8/14/87	0.13	12
Total Mercury	245.1	8/6/87	0.0009	<0.0008
Total Nickel	249.2	8/19/87	<0.005	0.69
Total Selenium	270.2	8/12/87	<0.005	<0.005
Total Silver	272.1	8/4/87	<0.005	<0.005
Total Sodium	273.1	8/18/87	16	69
Total Thallium	279.2	8/7/87	<0.005	<0.005
Total Zinc	289.1	8/7/87	<0.005	1.9

*Methodology for the determination of Boron by Flame Atomic Absorption Spectroscopy taken from the Perkin Elmer Corporation.

AQUEOUS MATRIX
METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) 130 (7/30/87)	FIELD DUP. (7/30/87)
Total Aluminum	202.1	8/5/87	0.10	0.20
Total Antimony	204.2	8/7/87	<0.005	<0.005
Total Arsenic	206.2	8/6/87	<0.005	<0.005
Total Beryllium	210.1	8/14/87	<0.005	<0.005
Total Boron	*	8/14/87	<4	<4
Total Cadmium	213.1	8/4/87	<0.005	<0.005
Total Calcium	215.1	8/18/87	4.2	4.2
Total Chromium	218.1	8/4/87	0.007	0.008
Hexavalent Chromium	218.5	8/4/87	0.011	0.006
Total Copper	220.1	8/4/87	0.007	0.006
Total Iron	236.1	8/7/87	0.10	0.13
Total Lead	239.2	8/17/87	0.018	0.018
Total Manganese	243.1	8/14/87	0.01	0.01
Total Mercury	245.1	8/6/87	<0.0008	<0.0008
Total Nickel	249.2	8/19/87	<0.005	<0.005
Total Selenium	270.2	8/12/87	<0.005	<0.005
Total Silver	272.1	8/4/87	<0.005	<0.005
Total Sodium	273.1	8/18/87	17	17
Total Thallium	279.2	8/7/87	<0.005	<0.005
Total Zinc	289.1	8/7/87	<0.005	<0.005

*Methodology for the determination of Boron by Flame Atomic Absorption Spectroscopy taken from the Perkin Elmer Corporation..

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION, DATE	
				9D (7/30/87)	10D (7/30/87)
Total Alkalinity	310.1	mg/l as $CaCO_3$	8/12/87	190	420
Ammonia	350.3	mg NH_3-N/L	8/5/87	<0.1	0.29
Biochemical Oxygen Demand	405.1	mg/l	7/31/87	14	<2
Total Organic Carbon	415.1	mg/l	8/4/87	64	9.2
Chloride	325.3	mg/l	8/5/87	16	<0.5
Chemical Oxygen Demand	410.1	mg/l	8/12/87	330	14
Total Cyanide	335.2	mg/l	8/4/87	<0.010	<0.010
Total Hardness	130.2	mg/l as $CaCO_3$	8/4/87	460	460
Nitrate	352.1	mg NO_3-N/L	7/31/87	<0.05	<0.05
Total Kjeldahl Nitrogen	351.3	mg/l	8/10/87	1.1	0.43
Total Recoverable Phenolics	420.1	mg/l	8/11/87	<0.010	<0.010
Filterable Residue (180°C)	160.1	mg/l	7/31/87	220	570
Sulfate	375.4	mg/l	8/7/87	58	24
Surfactants (MBAS)	425.1	mg/l	7/31/87	0.13*	<0.02
Turbidity	180.1	N.T.U.	7/31/87	290	1.2

*Sample formed emulsion.

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE)	
				10S (7/30/87)	11D (7/30/87)
Total Alkalinity	310.1	mg/l as $CaCO_3$	8/12/87	520	230
Ammonia	350.3	mg NH_3-N/L	8/5/87	2.3	0.29
Biochemical Oxygen Demand	405.1	mg/l	7/31/87	17	<2
Total Organic Carbon	415.1	mg/l	8/4/87	160	14
Chloride	325.3	mg/l	8/5/87	<0.5	<0.05
Chemical Oxygen Demand	410.1	mg/l	8/12/87	160	5.9
Total Cyanide	335.2	mg/l	8/4/87	<0.010	<0.010
Total Hardness	130.2	mg/l as $CaCO_3$	8/4/87	6,700	380
Nitrate	352.1	mg NO_3-N/L	7/31/87	0.12	<0.05
Total Kjeldahl Nitrogen	351.3	mg/l	8/10/87	18	0.14
Total Recoverable Phenolics	420.1	mg/l	8/11/87	<0.010	<0.010
Filterable Residue (180°C)	160.1	mg/l	7/31/87	710	460
Sulfate	375.4	mg/l	8/7/87	50	9.0
Surfactants (MBAS)	425.1	mg/l	7/31/87	<0.1*	<0.02
Turbidity	180.1	N.T.U.	7/31/87	44,000	2.0

*Sample formed emulsion.

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE)	
				11S (7/30/87)	13D (7/30/87)
Total Alkalinity	310.1	mg/l as $CaCO_3$	8/12/87	560	150
Ammonia	350.3	mg NH_3-N/L	8/5/87	3.0	<0.1
Biochemical Oxygen Demand	405.1	mg/l	7/31/87	4.1	<2
Total Organic Carbon	415.1	mg/l	8/4/87	74	1.5
Chloride	325.3	mg/l	8/5/87	0.52	18
Chemical Oxygen Demand	410.1	mg/l	8/12/87	83	<5
Total Cyanide	335.2	mg/l	8/4/87	<0.010	<0.010
Total Hardness	130.2	mg/l as $CaCO_3$	8/4/87	1,800	150
Nitrate	352.1	mg NO_3-N/L	7/31/87	0.14	0.84
Total Kjeldahl Nitrogen	351.3	mg/l	8/10/87	11	<0.1
Total Recoverable Phenolics	420.1	mg/l	8/11/87	<0.010	<0.010
Filterable Residue (180°C)	160.1	mg/l	7/31/87	950	220
Sulfate	375.4	mg/l	8/7/87	61	27
Surfactants (MBAS)	425.1	mg/l	7/31/87	0.41*	0.066
Turbidity	180.1	N.T.U.	7/31/87	6,200	60

*Sample formed emulsion.

AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION (DATE) FIELD DUP. (7/30/87)
Total Alkalinity	310.1	mg/l as $CaCO_3$	8/12/87	110
Ammonia	350.3	mg NH_3-N/L	8/5/87	<0.1
Biochemical Oxygen Demand	405.1	mg/l	7/31/87	<2
Total Organic Carbon	415.1	mg/l	8/4/87	<1.0
Chloride	325.3	mg/l	8/5/87	16
Chemical Oxygen Demand	410.1	mg/l	8/12/87	<5
Total Cyanide	335.2	mg/l	8/4/87	<0.010
Total Hardness	130.2	mg/l as $CaCO_3$	8/4/87	140
Nitrate	352.1	mg NO_3-N/L	7/31/87	0.78
Total Kjeldahl Nitrogen	351.3	mg/l	8/10/87	0.37
Total Recoverable Phenolics	420.1	mg/l	8/11/87	<0.010
Filterable Residue (180°C)	160.1	mg/l	7/31/87	220
Sulfate	375.4	mg/l	8/7/87	28
Surfactants (MBAS)	425.1	mg/l	7/31/87	<0.02
Turbidity	180.1	N.T.U.	7/31/87	32

I/6301

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 8240 - PRIORITY POLLUTANT VOLATILES

SAMPLE IDENTIFICATION 10D

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
Benzene	200	86
Bromodichloromethane	200	84
Bromoform	200	76
1,2-Dichloroethane	200	91
trans-1,2-Dichloroethylene	200	60
cis-1,3-Dichloropropene	249	88
trans-1,3-Dichloropropene	152	87
Ethylbenzene	200	82
1,1,2,2-Tetrachloroethane	200	86
Toluene	200	120
1,1,1-Trichloroethane	200	70
Analysis Date	8/5/87	
Internal Standards Level Added = 50 µg/l (% Recovery)		
Bromochloromethane	101	
1,4-Difluorobenzene	100	
Chlorobenzene D_5	103	

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

SAMPLE IDENTIFICATION 130

COMPOUND (Units of Measure = ug/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Di-n-butyl phthalate	<2.5	15	15	-
Diethyl phthalate	<22	<22	<22	-
Di-n-octylphthalate	<2.5	<2.5	<2.5	-
Phenanthrene	<5.4	<5.4	<5.4	-
Pentachlorophenol	<3.5	13	13	-
Extraction Date	8/3/87	8/3/87	-	-
Analysis Date	8/5/87	8/6/87	-	-
Internal Standards				
Level Added = 40 µg/l				
(% Recovery)				
Phenanthrene-D_{10}	121	136	128	11
Surrogates				
Level Added = 100 µg/l				
(% Recovery)				
Decafluorobiphenyl	49	47	48	1.4
2-Fluorobiphenyl	60	58	59	1.4
2-Fluorophenol	82	85	84	2.1
Phenol-D_6	70	71	70	0.71

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 8270 - PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES

SAMPLE IDENTIFICATION *

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
2-Chlorophenol	25	52
1,3-Dichlorobenzene	25	88
2,4-Dichlorophenol	25	56
Di-n-octylphthalate	25	60
Fluoranthene	25	80
Fluorene	25	92
Naphthalene	25	100
Nitrobenzene	25	112
2,4,6-Trichlorophenol	25	68
Extraction Date		8/3/87
Analysis Date		8/6/87
Internal Standards		
Level Added = 40 µg/l		
(% Recovery)		
Phenanthrene-D_{10}		86
Surrogates		
Level Added = 100 µg/l		
(% Recovery)		
Decafluorobiphenyl		51
2-Fluorobiphenyl		82
2-Fluorophenol		62
Phenol-D_6		43

*Quality control results were generated from a sample of similar matrix at the time of analysis.

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

SAMPLE IDENTIFICATION 11D

COMPOUND (Units of Measure = ug/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Aldrin	<0.02	<0.02	<0.02	-
Alpha-BHC	<0.02	<0.02	<0.02	-
Beta-BHC	<0.02	<0.02	<0.02	-
Delta-BHC	<0.02	<0.02	<0.02	-
Gamma-BHC	<0.02	<0.02	<0.02	-
Chlordane	<1	<1	<1	-
4,4'-DDD	<0.1	<0.1	<0.1	-
4,4'-DDE	<0.04	<0.04	<0.04	-
4,4'-DDT	<0.1	<0.1	<0.1	-
Dieldrin	<0.04	<0.04	<0.04	-
Endosulfan I	<0.04	<0.04	<0.04	-
Endosulfan II	<0.1	<0.1	<0.1	-
Endosulfan sulfate	<0.1	<0.1	<0.1	-
Endrin	<0.04	<0.04	<0.04	-
Endrin aldenyde	<0.1	<0.1	<0.1	-
Heptachlor	<0.02	<0.02	<0.02	-
Heptachlor epoxide	<0.02	<0.02	<0.02	-
Toxaphene	<2	<2	<2	-
Aroclor 1016	<1	<1	<1	-
Aroclor 1221	<2	<2	<2	-
Aroclor 1232	<2	<2	<2	-
Aroclor 1242	<1	<1	<1	-
Aroclor 1248	<1	<1	<1	-
Aroclor 1254	<0.4	<0.4	<0.4	-
Aroclor 1260	<0.4	<0.4	<0.4	-
Extraction Date	7/31/87	7/31/87	-	-
Analysis Date	8/6/87	8/6/87	-	-

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METHOD 8080 - ORGANOCHLORINE PESTICIDES/PCB'S

SAMPLE IDENTIFICATION METHOD BLANK SPIKE

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
Aldrin	0.20	92
Gamma-BHC	0.20	100
4,4'-DDE	0.20	105
Endosulfan II	0.20	103
Endrin	0.20	118
Heptachlor	0.20	100
Aroclor 1016	1.0	111
Aroclor 1260	1.0	95
Extraction Date	7/31/87	
Analysis Date	8/5/87	

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
METALS

PARAMETER (Units of Measure = mg/l)	METHOD NUMBER	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Aluminum	202.1	10D	<0.3	<0.3	<0.3	-
Total Antimony	204.2		<0.005	<0.005	<0.005	-
Total Arsenic	206.2		<0.005	<0.005	<0.005	-
Total Beryllium	210.1		<0.005	<0.005	<0.005	-
Total Boron	*		<4	<4	<4	-
Total Cadmium	213.1		<0.005	<0.005	<0.005	-
Total Calcium	215.1		140	140	140	0
Total Chromium	218.1		0.005	0.005	0.005	0
Hexavalent Chromium	218.5		<0.005	<0.005	<0.005	-
Total Copper	220.1		0.006	0.005	0.006	0.00071
Total Iron	236.1		0.09	0.07	0.08	0.014
Total Lead	239.2		0.024	0.022	0.023	0.0014
Total Manganese	243.1		0.36	0.36	0.36	0
Total Mercury	245.1		<0.0008	<0.0008	<0.0008	-
Total Nickel	249.2		<0.005	<0.005	<0.005	-
Total Selenium	270.2		<0.005	<0.005	<0.005	-
Total Silver	272.1		<0.005	<0.005	<0.005	-
Total Sodium	273.1		32	32	32	0
Total Thallium	279.2		<0.005	<0.005	<0.005	-
Total Zinc	289.1		<0.02	<0.02	<0.02	-

*Methodology for the determination of Boron by Flame Atomic Absorption Spectroscopy taken from the Perkin Elmer Corporation.

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
METALS

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Aluminum	202.1	10D	5,000	106
Total Antimony	204.2		50	94
Total Arsenic	206.2		50	96
Total Beryllium	210.1		500	106
Total Boron	*		50,000	103
Total Cadmium	213.1		500	101
Total Calcium	215.1		5,000	109
Total Chromium	218.1		500	109
Hexavalent Chromium	218.5		500	99
Total Copper	220.1		500	102
Total Iron	236.1		500	96
Total Lead	239.2		50	104
Total Manganese	243.1		500	100
Total Mercury	245.1		0.4	93
Total Nickel	249.2		50	96
Total Selenium	270.2		50	116
Total Silver	272.1		500	95
Total Sodium	273.1		5,000	105
Total Thallium	279.2		50	94
Total Zinc	289.1		500	100

*Methodology for the determination of Boron by Flame Atomic Absorption Spectroscopy taken from the Perkin Elmer Corporation.

QUALITY CONTROL INFORMATION - PRECISION
AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Alkalinity	310.1	mg/l as $CaCO_3$	10D	420	420	420	0
Ammonia	350.3	mg NH_3-N/L	9D	<0.1	<0.1	<0.1	-
Biochemical Oxygen Demand	405.1	mg/l	13D	<2	<2	<2	-
Total Organic Carbon	415.1	mg/l	11S	75	72	74	2.1
Chloride	325.3	mg/l	10S	<0.5	<0.5	<0.5	-
Chemical Oxygen Demand	410.1	mg/l	*	69	71	70	1.4
Total Cyanide	335.2	mg/l	10S	<0.010	<0.010	<0.010	-
Total Hardness	130.2	mg/l as $CaCO_3$	*	147	149	148	1.4
Nitrate	352.1	mg NO_3-N/L	13D	0.79	0.88	0.84	0.064
Total Kjeldahl Nitrogen	351.3	mg/l	*	5.9	6.0	6.0	0.071
Total Recoverable Phenolics	420.1	mg/l	13D	<0.010	<0.010	<0.010	-
Filterable Residue (180°C)	160.1	mg/l	13D	220	220	220	0
Sulfate	375.4	mg/l	*	1,400	1,400	1,400	0
Surfactants (MBAS)	425.1	mg/l	13D	0.065	0.067	0.066	0.0014
Turbidity	180.1	N.T.U.	11D	1.9	2.0	2.0	0.071

*Quality control results were generated from a sample of similar matrix at the time of analysis.

QUALITY CONTROL INFORMATION - ACCURACY
AQUEOUS MATRIX
WATER QUALITY TESTING

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Alkalinity	310.1	10D	5,000	104
Ammonia	350.3	9D	1,000	97
Total Organic Carbon	415.1	11S	1,000	75
Chloride	325.3	10S	4,500	100
Chemical Oxygen Demand	410.1	*	1,000	98
Total Cyanide	335.2	11S	50	112
Total Hardness	130.2	13D	5,000	101
Nitrate	352.1	13D	0.5	90
Total Kjeldahl Nitrogen	351.3	*	1,000	98
Total Recoverable Phenolics	420.1	13D	30	97
Sulfate	375.4	*	2,000	101
Surfactants (MBAS)	425.1	13D	100	109

*Quality control results were generated from a sample of similar matrix at the time of analysis.

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO: [illegible]

SITE NAME: ENGLISH LP

SAMPLERS (SIGNATURE): [illegible]

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS						REMARKS
[illegible]	2/24	[illegible]		✓		2	2					Pesticides/Herbicides
[illegible]	"	"		✓		2		2				VOAs
[illegible]	"	"		✓		1			1			Metals
[illegible]	"	"		✓		3				3		Total Quality Parameters
[illegible]	"	"		✓		1				1		Cyanide
[illegible]	"	"		✓		2				2		TOC, Phenol
[illegible]	"	"		✓		1				1		TP Metals
[illegible]	"	"		✓		2					2	NH3, TKN
[illegible]	"	"		✓		2	2					Pesticides/Herbicides
[illegible]	"	"		✓		2		2				VOAs
[illegible]	"	"		✓		1			1			Metals
[illegible]	"	"		✓		3				3		Total Quality Parameters
[illegible]	"	"		✓		1				1		Cyanide
[illegible]	"	"		✓		2				2		TOC, Phenol

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[illegible]	2/24	1100	[illegible]
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
DATE	TIME	REMARKS	

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO: [illegible]

SITE NAME: Fennell #1

SAMPLERS (SIGNATURE): [illegible]

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	REMARKS
[illegible]	[illegible]	[illegible]		✓		1	PP Metals
[illegible]	[illegible]	[illegible]		✓		2	VOA's / TCL
[illegible]	[illegible]	[illegible]		✓		2	Pesticides/PCB's
[illegible]	[illegible]	[illegible]		✓		2	BNA's
[illegible]	[illegible]	[illegible]		✓		1	Phenols
[illegible]	[illegible]	[illegible]		✓		3	Total Cyanide/Phenolics
[illegible]	[illegible]	[illegible]		✓		1	Sulfide
[illegible]	[illegible]	[illegible]		✓		2	Total Petroleum Hydrocarbons
[illegible]	[illegible]	[illegible]		✓		1	PP Metals
[illegible]	[illegible]	[illegible]		✓		2	VOA's / TCL
[illegible]	[illegible]	[illegible]		✓		2	Pesticides/PCB's
[illegible]	[illegible]	[illegible]		✓		2	BNA's
[illegible]	[illegible]	[illegible]		✓		1	Phenols
[illegible]	[illegible]	[illegible]		✓		3	Total Cyanide/Phenolics

RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED BY (SIGNATURE)
[illegible]	[illegible]	[illegible]			
RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE TIME	REMARKS	

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO

SITE NAME Tanner II

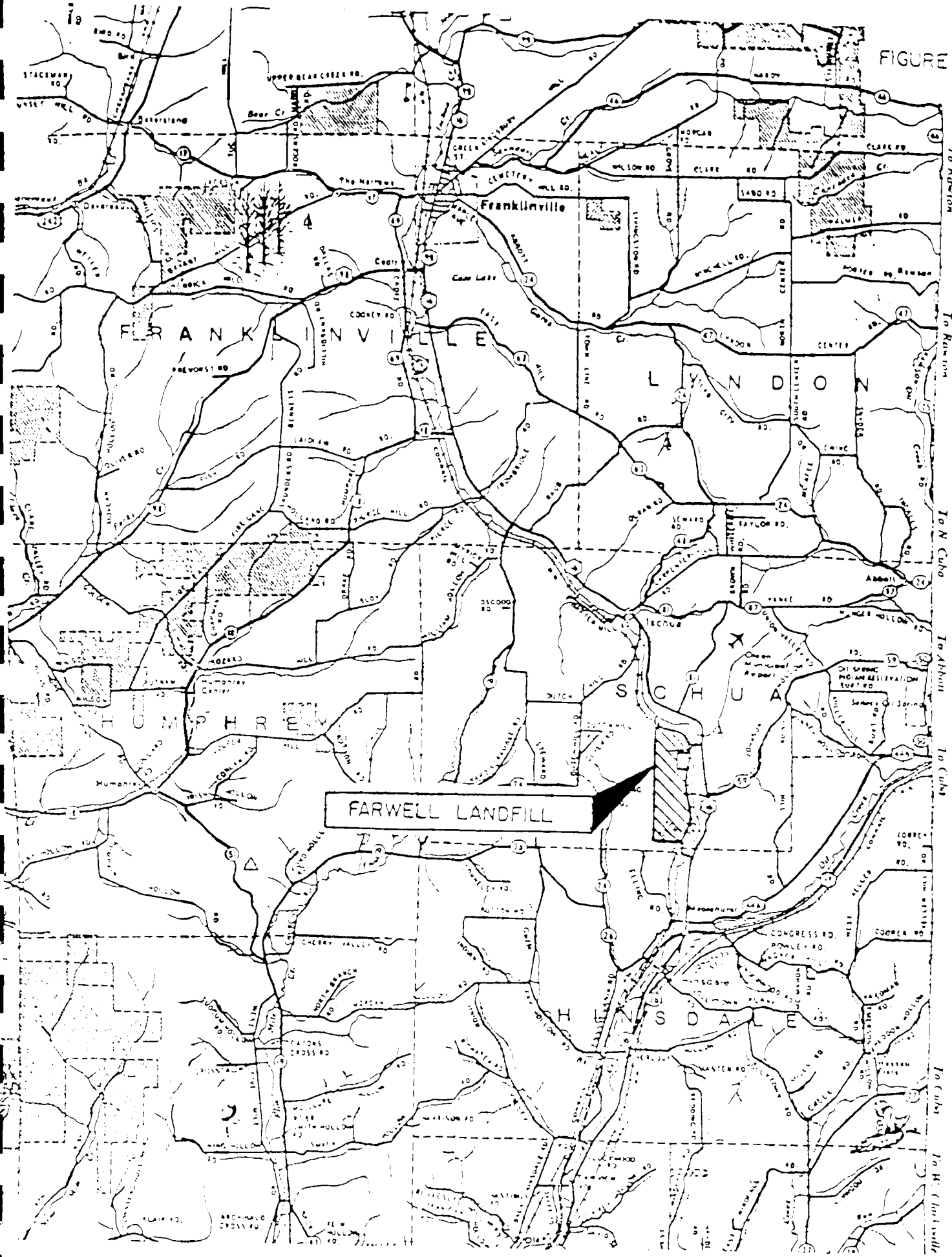
SAMPLERS (SIGNATURE)

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS							REMARKS
													Blank
													Field Duplicate
													MS/MSD
													TPH/BTEX
													Pesticides/Herbicides
													VOAs
													Metals
													Water Quality Parameters
													Cyanide
													Total metals
													Dissolved
													MS/MSD
													Pesticides/Herbicides
													VOAs

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
	9/5/	1530	
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
DATE	TIME	REMARKS	

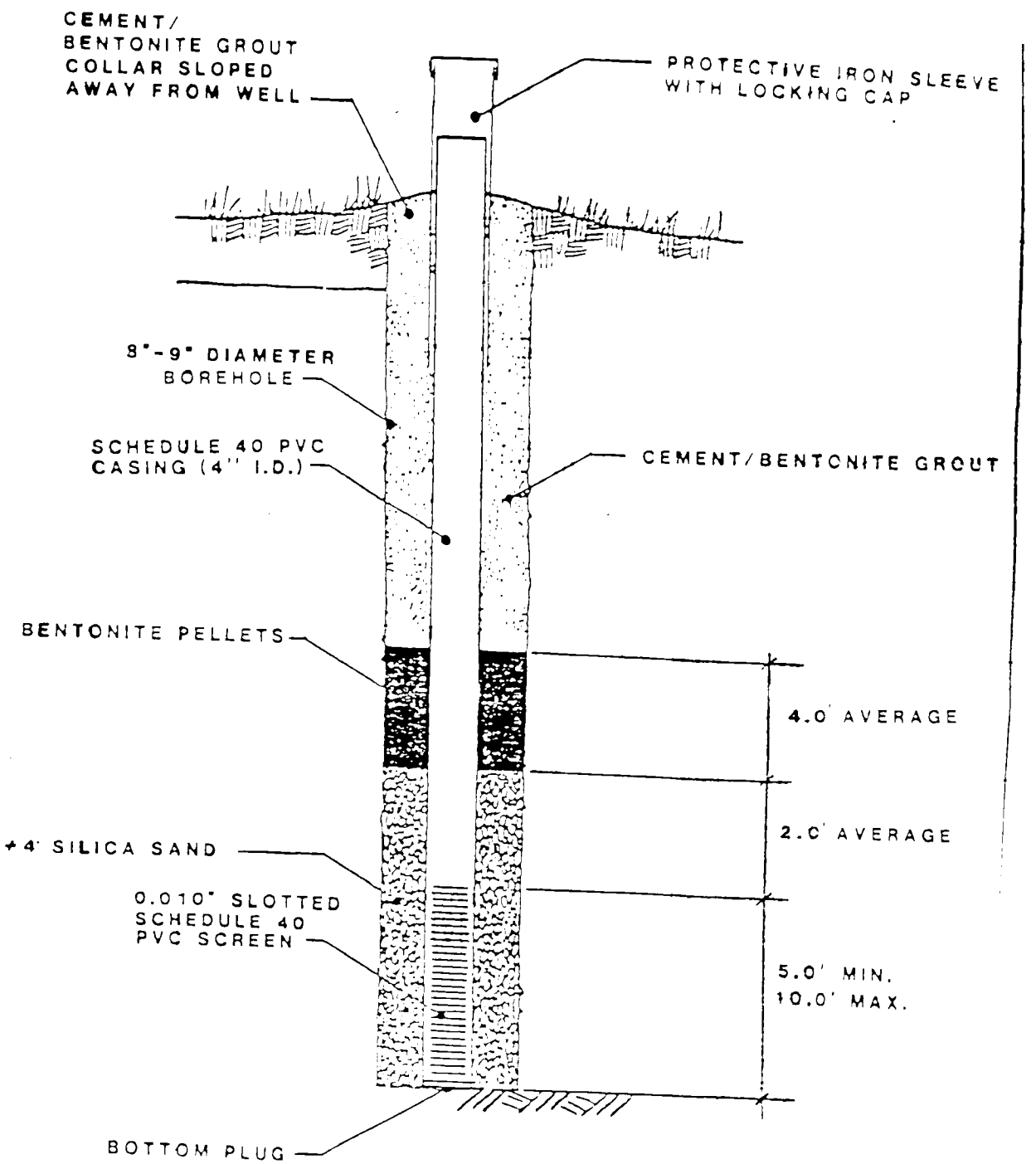
FIGURE 1



MALCOLM PIRNIE

FARWELL LANDFILL
LOCATION MAP

FIGURE 2



TYPICAL MONITORING WELL

TABLE 1
FARWELL LANDFILL CLOSURE
WELL DRILLING SUMMARY

ATION	DRILLING METHOD	DRILLING RIG	DRILLING CO.	TOTAL DEPTH	SAMPLING INFO.	DRILLING DATE (S)	WELL INSTALLATION DATE
sample bore	6-1/4" HSA	Mobile B-61 Pacemaker	Rochester Drill. Co.	85'	5' interval	6/3-5, 6/8-11, 6/15/87	-
well bore	12-1/4" tricone to 86', Drive 9 5/8" casing. Clean with 8-3/4" hammer and roller bit, drive to 92'. Clean 8-3/4" hammer.	Ingersoll-Rand T-4	Frey Well Drill. Co.	92'	none	6/15-16/87	6/16/87
sample bore	6-1/4" HSA 4" roller bit	Mobile B-61 Pacemaker	Rochester Drill. Co.	102'	5' interval	6/16-19, 6/22-23/87	-
well bore	Air Rotary hammer drill/drive 9-5/8" casing. Clean with 8-3/4" hammer.	Ingersoll-Rand T-4	Frey Well Drill. Co.	76'	none	6/24/87	6/24/87
sample bore	spin/drive 5" casing, 4-7/8" roller bit to 30 Spin/Drive 4" casing, 3-7/8" roller bit 87'.	CME-55	Rochester Drill. Co.	87'	5' interval	6/18-20/ 6/22/87	-

1/REP142

TABLE 1 (cont'd)
FARWELL LANDFILL CLOSURE
WELL DRILLING SUMMARY

LOCATION	DRILLING METHOD	DRILLING RIG	DRILLING CO.	TOTAL DEPTH	SAMPLING INFO.	DRILLING DATE (S)	WELL INSTALLATION DATE
MD well bore	Air Rotary hammer drill/drive 9-5/8" casing, clean out 8-3/4" hammer.	Ingersoll-Rand T-4	Frey Well Drill. Co.	87'	none	6/22-23/87	6/23/87
SD sample bore	Spin/drive 3" casing, 2-7/8" roller bit.	CME-55	Rochester Drill Co.	134'	continuous	6/23-26, 6/29-30, 7/1-2/87	-
SD well bore	12-1/4" tri-cone to 83' Remove drive 8" casing. Clean with 6-1/2" hammer. Drill drive to 135'. Clean with 6-1/2" hammer.	Ingersoll-Rand T-4	Frey Well Drill. Co.	135'	none	6/18-19/87	7/7/87
S well bore	Air Rotary hammer	Ingersoll-Rand T-4	Dallas - Morris Well Drill. Co.	95'	none	7/6/87	abandoned

TABLE 2

FARWELL LANDFILL CLOSURE
WELL CONSTRUCTION DATA

WELL NO.	APPROX. BORING DEPTH BELOW GROUND (ft.)	STICK-UP (ft.)	SCREENED INTERVAL	MATERIAL SCREENED	DIAMETER OF SAND PACK (in.)
MW9S	46'	2.10'	46'-36'	glacial till	8"
MW9D	76'	3.14'	75'-70'	glaciolacustrine and glacial till	9-5/8"
MW10S	35'	1.75'	34'-24'	glacial till	8"
MW10D	87'	2.30'	86 -76'	glacial till	9-5/8"
MW11S	45'	2.35'	44'-34'	glacial till	8"
MW11D	92'	2.79'	88'-83'	glaciofluvial	9-5/8"
MW13D	131'	2.34'	131'-121'	glaciofluvial and glacial till	8"

TABLE 3
FARWELL LANDFILL
WATER LEVEL ELEVATIONS

GROUND ELEVATION	DEPTH TOP SCREEN	ELEVATION TOP SCREEN	DEPTH BOTTOM SCREEN	DEPTH TO WATER(1) 7/16/87	ELEVATION WATER SURFACE	DEPTH TO WATER(1) 7/23/87	ELEVATION WATER SURFACE	DEPTH TO WATER(1) 7/30/87	ELEVATION WATER SURFACE
1542.36	N/A	-	N/A	-	-	-	-	-	-
1524.54	N/A	-	N/A	-	-	-	-	-	-
1536.84	N/A	-	N/A	-	-	-	-	-	-
1598.08	N/A	-	N/A	-	-	dry	dry	-	-
1640.57	N/A	-	N/A	-	-	32.04	1610.33	33.10	1609.27
1620.85	150.0'	1470.85	160.0'	100+	-	100+	-	100+	-
1556.38	30.5'	1525.88	35.5'	dry	dry	dry	dry	dry	dry
1633.17	13.5'	1619.67	18.5'	dry	dry	dry	dry	dry	dry
1541.87	36.0'	1505.87	46.0'	dry	dry	dry	dry	dry	dry
1542.17	70.0'	1472.17	75.0'	54.01	1491.3	55.78	1489.53	54.71	1490.60
1525.75	24.0'	1501.75	34.0'	26.91	1500.59	27.23	1500.27	29.34	1498.16
1525.49	76.0'	1449.49	86.0'	36.44	1491.35	37.29	1490.50	38.22	1489.57
1532.75	33.0'	1499.75	44.0'	39.41	1495.69	40.45	1494.65	41.04	1494.06
1532.95	83.0'	1449.95	88.0'	47.10	1488.64	47.15	1488.59	47.85	1487.89
1627.33	38.0'	1589.33	48.0'	-	-	43.67	1585.60	43.60	1585.67
1584.78	121.0'	1463.78	131.0'	97.29	1489.83	97.25	1489.87	97.72	1489.40

Wells 1A, 2, 3, 4, 5A were not measured for water levels;
well construction details and materials screened are unknown.

(1) Measured from top of steel casing stick-up.

3/REPT42

TABLE 4

BACKGROUND GROUND WATER ANALYTICAL PARAMETERS

A complete Priority Pollutant Analysis (1)

Boron

Total Kjeldahl Nitrogen (TKN)

Ammonia

Nitrate

BOD

COD

TOC

TDS

Sulfate

Aluminum

Chromium (Hexavalent)

Sodium

Detergent (MBAS)

Calcium

Alkalinity

Total Hardness

Chloride

Iron

Manganese

Specific Conductivity (2)

pH (2)

Turbidity

NOTES:

(1) Listed in the Federal Resister Volume 45. No. 98, Monday, May 19, 1980, pages 33573-33579, including Metals*, Cyanide, Total Phenols, Volatile Compounds, Acid/Base Neutral Compounds and Pesticides.

(2) Field Measurements, recorded on Table 5.

* Total Metals analyses (unfiltered)

TABLE 5

FARWELL LANDFILL CLOSURE
SUMMARY OF GROUND WATER FIELD MEASUREMENTS

WELL#	pH	SPECIFIC CONDUCTANCE (umhos/cm)	SAMPLE APPEARANCE	DATE ACQUIRED
9S	N/A	N/A	N/A	7/16/87
				7/30/87
9D	10.7	4500	turbid/brown	7/16/87
	11.4	400	turbid/brown	7/30/87
10S	7.0	1200	turbid/orange	7/16/87
	9.4	1000	turbid/orange	7/30/87
10D	7.2	800	clear	7/16/87
	10.0	1000	clear	7/30/87
11S	7.0	1400	turbid/brown	7/16/87
	7.0	1200	turbid/brown	7/30/87
11D	7.4	500	clear	7/16/87
	9.7	700	clear	7/30/87
13D	7.1	250	clear	7/16/87
	7.0	1000	clear	7/30/87

NOTE: N/A, not obtained due to insufficient water yield/dry well.

TABLE 6

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR PRIORITY POLLUTANT BASE/NEUTRAL/ACID EXTRACTABLES IN GROUND WATER
SAMPLE EVENT 7/16/87

PARAMETER (Units of Measure - ug/ℓ)	Ground Water Monitoring Wells						TRIP BLANK (1)
	9D	10S	10D	11S	11D	13D	
Acenaphthene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Acenaphthylene	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5
Anthracene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Benzo(a)anthracene	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8
Benzo(b)fluoranthene	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8
Benzo(k)fluoranthene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7	<5.7	≦5.7	<5.7	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	4.0	4.2	7.2	4.6	16	4.0	25
4-Bromophenylphenylether	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5	<2.5	≦2.5	<2.5	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
Chrysene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Di-n-butyl phthalate	<2.5	15	10	21	<2.5	<2.5	<2.5
1,2-Dichlorobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
1,3-Dichlorobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
1,4-Dichlorobenzene	<4.4	≦4.4	≦4.4	≦4.4	<4.4	≦4.4	≦4.4
3,3'-Dichlorobenzidine	<17	<17	<17	<17	<17	<17	<17
Diethyl phthalate	<22	≦22	≦22	≦22	<22	<22	<22
Dimethyl phthalate	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5	<2.5	≦2.5	<2.5	<2.5	<2.5
Fluoranthene	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Fluorene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Hexachlorobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25	<25	<25	<25	<25	<25
Hexachloroethane	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7
Isophorone	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Naphthalene	2.0	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Nitrobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25	<25	<25	<25	<25	<25
Phenanthrene	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
Pyrene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9

TABLE 6 (cont'd.)

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR PRIORITY POLLUTANT BASE/NEUTRAL/ACID
EXTRACTABLES IN GROUND WATER
SAMPLE EVENT 7/16/87

PARAMETER (Units of Measure - µg/ℓ)	Ground Water Monitoring Wells						TRIP BLANK
	9D	10S	10D	11S	11D	13D	
1,2,4-Trichlorobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-Chlorophenol	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
2,4-Dichlorophenol	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
2,4-Dinitrophenol	<42	<42	<42	<42	<42	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24	<24	<24	<24	<24	<24
2-Nitrophenol	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Pentachlorophenol	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6
Phenol	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7

NOTE:
(1) Trip Blank included with samples obtained 7/16/87.
Trip Blank I.D. = Distilled Water

TABLE 7

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR PRIORITY POLLUTANT VOLATILES IN GROUND WATER
SAMPLE EVENT 7/16/87

PARAMETER (Units of Measure - µg/ℓ)	Ground Water Monitoring Wells						TRIP BLANK (1)
	9D	10S	10D	11S	11D	13D	
Acrolein	<400	<400	<400	<400	<400	<400	<400
Acrylonitrile	<400	<400	<400	<400	<400	<400	<400
Benzene	≦4.4	≦4.4	≦4.4	≦4.4	7.0	<4.4	<4.4
Bromodichloromethane	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Bromoform	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
Bromomethane	<10	<10	<10	<10	<10	<10	<10
Carbon Tetrachloride	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
Chlorobenzene	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
Chloroethane	61	<10	37	<10	51	<10	<10
2-Chloroethylvinyl ether	<10	<10	<10	<10	<10	<10	<10
Chloroform	<1.6	<1.6	≦1.6	<1.6	≦1.6	<1.6	≦1.6
Chloromethane	<10	<10	<10	<10	<10	<10	<10
Dibromochloromethane	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
1,2-Dichlorobenzene	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
1,3-Dichlorobenzene	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
1,1-Dichloroethane	300	43	400	9.0	350	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
1,1-Dichloroethylene	4.2	<2.8	3.2	<2.8	6.4	<2.8	<2.8
trans-1,2-Dichloroethylene	40	≦1.6	58	≦1.6	50	<1.6	<1.6
1,2-Dichloropropane	<6.0	<6.0	<6.0	≦6.0	<6.0	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2
Methylene chloride	7.6	<2.8	<2.8	<2.8	4.4	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
Toluene	<6.0	<6.0	<6.0	<6.0	2.4	<6.0	<6.0
1,1,1-Trichloroethane	84	<3.8	41	<3.8	150	≦3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethylene	7.2	<1.9	11	3.2	65	<1.9	<1.9
Vinyl chloride	<10	<10	<10	<10	≦10	<10	<10

NOTES:
(1) Trip Blank included with samples obtained 7/16/86.
Trip blank D.W. = Distilled Water.

TABLE 8

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR PESTICIDES/PCBs IN GROUND WATER
SAMPLE EVENT 7/16/87

PARAMETER	Ground Water Monitoring Wells						QA/QC
	9D	10S	10D	11S	11D	13D	TRIP BLANK (1)
(Units of Measure - ug/ℓ)							
Aldrin	0.012	0.0061	<0.004	0.0052	0.009	0.005	[illegible]
Alpha-BHC	<0.01	<0.005	<0.008	0.010	<0.008	<0.004	[illegible]
Beta-BHC	0.098	0.082	<0.008	0.088	0.16	0.083	0.11
Delta-BHC	0.019	0.013	<0.008	0.038	<0.02	0.013	0.015
Gamma-BHC	<0.01	<0.01	<0.008	0.014	<0.02	<0.004	<0.008
Chlordane	<0.1	<0.1	<0.08	<0.2	<0.2	<0.1	<0.08
4,4'-DDD	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02
4,4'-DDE	<0.01	<0.02	<0.008	<0.01	<0.02	<0.01	<0.008
4,4'-DDT	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02
Dieldrin	<0.01	<0.01	<0.008	<0.01	<0.02	<0.01	<0.008
Endosulfan I	<0.01	<0.01	<0.008	<0.02	<0.02	<0.01	<0.008
Endosulfan II	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02
Endosulfan sulfate	<0.1	<0.07	<0.05	<0.09	<0.1	<0.06	<0.06
Endrin	<0.01	<0.01	<0.008	<0.01	<0.02	<0.01	<0.008
Endrin aldehyde	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02
Heptachlor	0.014	<0.01	<0.008	<0.03	<0.02	<0.01	<0.02
Heptachlor epoxide	<0.006	<0.005	<0.005	0.015	<0.02	<0.01	<0.008
Toxaphene	<0.5	<0.5	<0.4	<0.5	<0.8	<0.4	<0.4
Aroclor 1016	<0.2	<0.3	<0.3	<0.3	<0.5	<0.2	<0.1
Aroclor 1221	<0.5	<0.6	<0.5	<0.6	<1	<0.4	<0.2
Aroclor 1232	<0.5	<0.6	<0.5	<0.6	<1	<0.4	<0.2
Aroclor 1242	<0.2	<0.3	<0.3	<0.3	<0.5	<0.2	<0.1
Aroclor 1248	<0.2	<0.3	<0.3	<0.3	<0.5	<0.2	<0.1
Aroclor 1254	<0.2	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1
Aroclor 1260	<0.2	<0.3	<0.3	<0.3	<0.3	<0.1	<0.1

NOTE:

(1) Trip Blank included with samples obtained 7/16/87.
Trip Blank I.D. = Distilled Water.

TABLE 9

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR TOTAL METALS IN GROUND WATER
SAMPLE EVENT 7/16/87

PARAMETER	Sample Identification						QA/QC
	9D	10S	10D	11S	11D	13D	TRIP BLANK (1)
(Units of Measure - mg/ℓ)							
Total Antimony	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Arsenic	<0.005	0.51	<0.005	0.042	<0.005	<0.005	<0.005
Total Beryllium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Cadmium	0.0070	<0.005	<0.006	<0.005	<0.005	<0.005	<0.0051
Total Chromium	0.050	0.15	<0.01	0.090	<0.01	0.020	<0.01
Total Copper	0.096	0.32	0.015	0.17	<0.005	0.012	<0.005
Total Lead	0.031	<0.005	<0.005	0.057	0.010	0.0060	0.014
Total Mercury	<0.0005	<0.0005	<0.0005	<0.005	<0.005	<0.0005	<0.0005
Total Nickel	0.073	0.27	<0.006	0.16	0.005	0.006	0.008
Total Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Silver	<0.005	0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Total Thallium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	0.33	0.94	0.22	0.90	0.042	0.32	0.063
Total Aluminum	24	97	0.060	62	0.16	0.070	<0.03
Total Boron	<6	<6	<6	<6	<6	<6	<6
Total Calcium	150	630	180	320	160	110	69
Hexavalent Chromium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0070	<0.005
Total Iron	46	300	0.22	120	0.35	0.51	0.040
Total Manganese	4.0	8.1	0.17	3.6	0.12	<0.005	<0.005
Total Sodium	29	23	40	79	15	16	<5

NOTE:
(1) Trip Blank included with samples obtained 7/16/87.
Trip Blank I.D. - Distilled Water

TABLE 10

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR GROUND WATER QUALITY PARAMETERS
SAMPLE EVENT 7/16/87

PARAMETER	Units of Measure	Ground Water Monitoring Wells						QA/QC TRIP BLANK (1)
		9D	10S	10D	11S	11D	13D	
tal Alkalinity	mg/l as $CaCO_3$	58	548	401	569	341	118	1.0
monia	mg NH_3-N/L	<0.1	3.6	0.17	7.29	<0.1	<0.1	<0.1
chemical Oxygen Demand	mg/l	<40	4.47	<2	20	3.6	<2	<2
tal Organic Carbon	mg/l	24	70	91.5	85.4	44.5	13.6	<1
oride	mg/l	18	20	45	124	66	38	<0.5
emical Oxygen Demand	mg/l	462	66	24	99.5	<5	<5	<5
tal Cyanide	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tal Hardness	mg/l as $CaCO_3$	1,350	1,700	434	1,100	337	158	4.0
trate	mg NO_3-N/L	0.11	0.09	<0.05	0.14	<0.05	0.68	<0.05
tal Kjeldahl Nitrogen	mg/l	1.1	7.6	0.21	20.2	3.6	0.36	<0.1
tal Recoverable Phenolics	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
terable Residue (180 C)	mg/l	206	740	596	960	418	307	16
fate	mg/l	960	320	29	880	8.8	20	<1
factants (MBAS)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
bidity	N.T.U.	1,050	2,200	0.58	24,500	4.3	0.80	0.21

TE:
Trip Blank included with samples obtained 7/16/87. Trip Blank I.D. - Distilled Water

TABLE 11

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR PRIORITY POLLUTANT BASE/NEUTRAL/ACID
EXTRACTABLES IN GROUND WATER
SAMPLE EVENT 7/30/87

PARAMETER (Units of Measure - µg/ℓ)	Ground Water Monitoring Wells						
	9D	10S	10D	11S	11D	13D	FIELD DUPLICATE
Acenaphthene	≤1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Acenaphthylene	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5
Anthracene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Benzo(a)anthracene	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8	<7.8
Benzo(b)fluoranthene	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8
Benzo(k)fluoranthene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Benzo(a)pyrene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Benzo(g,h,i)perylene	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
Bis(2-chloroethyl)ether	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7
Bis(2-chloroethoxy)methane	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3
Bis(2-chloroisopropyl)ether	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7
Bis(2-ethylhexyl)phthalate	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	6.0
4-Bromophenylphenylether	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Butyl benzyl phthalate	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
2-Chloronaphthalene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
4-Chlorophenylphenylether	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
Chrysene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Dibenzo(a,h)anthracene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Di-n-butyl phthalate	2.8	3.6	2.6	7.0	3.0	15	3.6
1,2-Dichlorobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
1,3-Dichlorobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
1,4-Dichlorobenzene	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
3,3'-Dichlorobenzidine	<17	<17	<17	<17	<17	<17	<17
Diethyl phthalate	≤22	≤22	<22	≤22	≤22	≤22	≤22
Dimethyl phthalate	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
2,4-Dinitrotoluene	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7	<5.7
2,6-Dinitrotoluene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Di-n-octylphthalate	<2.5	<2.5	<2.5	<2.5	<2.5	≤2.5	≤2.5
Fluoranthene	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Fluorene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Hexachlorobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Hexachlorobutadiene	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Hexachlorocyclopentadiene	<25	<25	<25	<25	<25	<25	<25
Hexachloroethane	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Indeno(1,2,3-cd)pyrene	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7
Isophorone	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Naphthalene	2.4	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Nitrobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
N-nitrosodi-n-propylamine	<25	<25	<25	<25	<25	<25	<25
Phenanthrene	≤5.4	≤5.4	≤5.4	≤5.4	≤5.4	≤5.4	≤5.4
Pyrene	≤1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9

TABLE 11 (cont'd.)

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR PRIORITY POLLUTANT BASE/NEUTRAL/ACID
EXTRACTABLES IN GROUND WATER
SAMPLE EVENT 7/30/87

PARAMETER (Units of Measure - µg/ℓ)	Ground Water Monitoring Wells						
	9D	10S	10D	11S	11D	13D	FIELD DUPLICATE
1,2,4-Trichlorobenzene	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
4-Chloro-3-methylphenol	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
2-Chlorophenol	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
2,4-Dichlorophenol	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
2,4-Dimethylphenol	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
2,4-Dinitrophenol	<42	<42	<42	<42	<42	<42	<42
2-Methyl-4,6-dinitrophenol	<24	<24	<24	<24	<24	<24	<24
2-Nitrophenol	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6
4-Nitrophenol	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Pentachlorophenol	≦3.6	<3.6	<3.6	<3.6	<3.6	13	<3.6
Phenol	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2,4,6-Trichlorophenol	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7

NOTE:
(1) Field Duplicate included with samples obtained 7/30/87.
Field Duplicate I.D. = 13D

TABLE 12

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR PRIORITY POLLUTANT VOLATILES IN GROUND WATER
SAMPLE EVENT 7/30/87

PARAMETER (Units of Measure - µg/L)	Ground Water Monitoring Wells						
	9D	10S	10D	11S	11D	13D	FIELD DUPLICATE (1)
Acrolein	<400	<400	<400	<400	≦400	<400	<400
Acrylonitrile	<400	<400	<400	<400	<400	<400	<400
Benzene	<4.4	<4.4	<4.4	<4.4	8.4	≦4.4	<4.4
Bromodichloromethane	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Bromoform	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
Bromomethane	<10	<10	<10	<10	<10	<10	<10
Carbon Tetrachloride	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
Chlorobenzene	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
Chloroethane	130	<10	32	<10	580	<10	<10
2-Chloroethylvinyl ether	<10	<10	<10	<10	<10	<10	<10
Chloroform	<1.6	<1.6	<1.6	<1.6	≦1.6	<1.6	<1.6
Chloromethane	<10	<10	<10	<10	<10	<10	<10
Dibromochloromethane	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
1,2-Dichlorobenzene	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
1,3-Dichlorobenzene	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
1,4-Dichlorobenzene	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
1,1-Dichloroethane	520	56	470	11	250	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8	<2.8	<2.8	3.0	<2.8	<2.8
1,1-Dichloroethylene	62	<2.8	15	<2.8	57	<2.8	<2.8
trans-1,2-Dichloroethylene	<1.6	<1.6	54	<1.6	69	<1.6	<1.6
1,2-Dichloropropane	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2	<7.2
Methylene chloride	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
1,1,2,2-Tetrachloroethane	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
Toluene	<6.0	<6.0	19	<6.0	13	6.4	≦6.0
1,1,1-Trichloroethane	<3.8	<3.8	38	<3.8	810	<3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethylene	<1.9	<1.9	13	<1.9	120	<1.9	<1.9
Vinyl chloride	<10	<10	<10	<10	11	<10	<10

NOTES:
(1) Field Duplicate included with samples obtained 7/30/87.
Field Duplicate I.D. = 13D

TABLE 13

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR PESTICIDES/PCBs IN GROUND WATER
Sample Event 7/30/87

PARAMETER	Ground Water Monitoring Wells						FIELD DUPLICATE (1)
	9D	10S	10D	11S	11D	13D	
(Units of Measure - µg/ℓ)							
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.02	≦0.01	<0.01
Alpha-BHC	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	≦0.01
Beta-BHC	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01
Delta-BHC	<0.01	<0.01	<0.01	<0.01	<0.02	≦0.01	<0.01
Gamma-BHC	<0.01	<0.01	<0.01	<0.01	<0.02	0.011	≦0.01
Chlordane	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5
4,4'-DDD	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05
4,4'-DDE	<0.02	<0.02	<0.02	<0.02	<0.04	<0.02	<0.02
4,4'-DDT	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05
Dieldrin	<0.02	<0.02	<0.02	<0.02	<0.04	<0.02	<0.02
Endosulfan I	<0.02	<0.02	<0.02	<0.02	<0.04	<0.02	<0.02
Endosulfan II	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05
Endosulfan sulfate	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05
Endrin	<0.02	<0.02	<0.02	<0.02	<0.04	<0.02	<0.02
Endrin aldehyde	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01
Heptachlor epoxide	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01
Toxaphene	<1	<1	<1	<1	<2	<1	<1
Aroclor 1016	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5
Aroclor 1221	<1	<1	<1	<1	<2	<1	<1
Aroclor 1232	<1	<1	<1	<1	<2	<1	<1
Aroclor 1242	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5
Aroclor 1248	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5
Aroclor 1254	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2	<0.2
Aroclor 1260	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2	<0.2

NOTE:

(1) Field Duplicate included with samples obtained 7/30/87.
Field Duplicate I.D. = 13D

TABLE 14

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR TOTAL METALS IN GROUND WATER
SAMPLE EVENT 7/30/87

PARAMETER	Ground Water Monitoring Wells						FIELD DUPLICATE (1)
	9D	10S	10D	11S	11D	13D	
(Units of Measure = mg/ℓ)							
Total Aluminum	42	290	<0.3	230	0.11	0.10	0.10
Total Antimony	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Arsenic	0.076	0.59	<0.005	0.51	<0.005	<0.005	<0.005
Total Beryllium	<0.005	0.013	<0.005	0.008	<0.005	<0.005	<0.005
Total Boron	<4	<4	<4	<4	<4	<4	<4
Total Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Calcium	160	1,100	140	470	110	4.2	4.2
Total Chromium	0.069	0.40	0.005	0.28	<0.005	0.007	0.008
Hexavalent Chromium	<0.005	<0.005	<0.005	<0.005	0.007	0.011	0.006
Total Copper	0.15	1.0	0.006	0.57	<0.005	0.007	0.006
Total Iron	86	700	0.08	430	0.04	0.10	0.13
Total Lead	0.09	0.54	0.023	0.37	<0.005	0.018	0.018
Total Manganese	6.9	25	0.36	12	0.13	0.01	0.01
Total Mercury	<0.0008	0.0009	<0.0008	<0.0008	0.0009	<0.0008	<0.0008
Total Nickel	0.17	0.97	<0.005	0.69	<0.005	<0.005	<0.005
Total Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Silver	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Sodium	29	22	32	69	16	17	17
Total Thallium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	0.47	2.5	<0.02	1.9	<0.005	<0.005	<0.005

NOTE:
(1) Field Duplicate included with samples obtained 7/30/87.
Field Duplicate I.D. = 13D

TABLE 15

FARWELL LANDFILL CLOSURE
ANALYTICAL RESULTS FOR GROUND WATER QUALITY PARAMETERS
SAMPLE EVENT 7/30/87

PARAMETER	Units of Measure	Ground Water Monitoring Wells						FIELD DUPLICATE (1)
		9D	10S	10D	11S	11D	13D	
Total Alkalinity	mg/l as $CaCO_3$	190	520	420	560	280	150	110
Ammonia	mg NH_3-N/L	<0.1	2.3	0.29	3.0	0.29	<0.1	<0.1
Biochemical Oxygen Demand	mg/l	14	17	<2	4.1	<2	<2	<2
Total Organic Carbon	mg/l	64	160	9.2	74	14	1.5	<1.0
Chloride	mg/l	16	<0.5	<0.5	0.52	<0.05	18	16
Chemical Oxygen Demand	mg/l	330	160	14	83	5.9	<5	<5
Total Cyanide	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total Hardness	mg/l as $CaCO_3$	460	6,700	460	1,800	380	150	140
Nitrate	mg NO_3-N/L	0.05	0.12	<0.05	0.14	<0.05	0.84	0.78
Total Kjeldahl Nitrogen	mg/l	1.1	18	0.43	11	0.14	0.1	0.37
Total Recoverable Phenolics	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Filterable Residue (180 C)	mg/l	220	710	570	950	460	220	220
Sulfate	mg/l	58	50	24	61	9.0	27	28
Surfactants (MBAS)	mg/l	0.13*	<0.1*	<0.02	0.41*	<0.02	0.066	<0.02
Turbidity	N.T.U.	290	44,000	1.2	6,200	2.0	60	32

* Sample formed emulsion.

NOTE:

(1) Field Duplicate included with samples obtained 7/16/87. Field Duplicate I.D. = 13D

TABLE 16

FARWELL LANDFILL CLOSURE

SUMMARY OF GROUND WATER QUALITY RESULTS FOR JULY 16 and JULY 30, 1987

PARAMETERS OF CONCERN		UPGRADIENT WELL	CONCENTRATIONS DETECTED DOWNGRADIENT WELLS					QUOTED LIMITS 1.
		13D	9D	10S	10D	11S	11D	
VOLATILES (ug/ℓ)								
Benzene	(July 16th)	<4.4	≦4.4	≦4.4	≦4.4	≦4.4	7.0	
	(July 30th)	<4.4	<4.4	<4.4	<4.4	<4.4	8.4	5
Chloroethane		<10	61	<10	37	<10	51	No quoted
		<10	130	<10	32	<10	580	standard
1,1-Dichloroethane		<4.7	300	43	400	9.0	350	
		<4.7	520	56	470	11	250	50
1,1-Dichloroethylene		<2.8	4.2	<2.8	3.2	<2.8	6.4	0.07 3
		<2.8	62	<2.8	15	<2.8	57	
trans-1,2-Dichloroethylene		<1.6	40	≦1.6	58	≦1.6	50	
		<1.6	<1.6	<1.6	54	<1.6	69	50
uene		<6.0	<6.0	<6.0	<6.0	<6.0	2.4	
		6.4	<6.0	<6.0	19	<6.0	13	50
1,1,1-Trichloroethane		≦3.8	84	<3.8	41	<3.8	150	
		<3.8	<3.8	<3.8	38	<3.8	810	50
Trichloroethylene		<1.9	7.2	<1.9	11	3.2	65	
		<1.9	<1.9	<1.9	13	<1.9	120	50
Vinyl chloride		<10	<10	<10	<10	<10	≦10	
		<10	<10	<10	<10	<10	11	5
TOTAL METALS (mg/ℓ)								
Arsenic		<0.005	<0.005	0.51	<0.005	0.042	<0.005	
		<0.005	0.076	0.59	<0.005	0.54	<0.005	0.025
Lead		0.0060	0.031	<0.005	<0.005	0.057	0.010	
		0.018	0.09	0.54	0.023	0.37	<0.005	0.025
Iron 2		0.51	46	300	0.22	120	0.35	
		0.10	86	700	0.08	430	0.04	0.3
Manganese 2		<0.005	4.0	8.1	0.17	3.6	0.12	
		0.01	6.9	25	0.36	12	0.13	0.3

(continued)

TABLE 16 (cont'd.)
FARWELL LANDFILL CLOSURE
SUMMARY OF GROUND WATER QUALITY RESULTS FOR JULY 16 and JULY 30, 1987

PARAMETERS OF CONCERN	UPGRADIENT WELL	CONCENTRATIONS DETECTED DOWNGRADIENT WELLS					QUOTED LIMITS 1.
	13D	9D	10S	10D	11S	11D	
GROUND WATER QUALITY PARAMETERS (mg/ℓ)							
Total Organic Carbon	13.6 1.5	24 64	70 100	91.5 9.2	85.4 74	44.5 14	No quoted standard
Chemical Oxygen Demand	<5 <5	462 330	66 160	24 14	99.5 83	<5 5.9	No quoted standard
Sulfate	20 27	960 58	320 50	29 24	880 61	8.8 9.0	250

NOTES:

1. NYSDEC Codes, Rules and Regulations, Title 6, Chapter X, Part 703.5 - Class GA Ground Water, March 31, 1986.

2. Combined concentrations not to exceed 0.5 mg/ℓ.

3. NYSDEC Ambient Water Quality Standards and Guidance Values, July 24, 1985. No current limit is quoted.

ND = not detectable by analytical testing methods.

COMMENTS (Tables 6 through 15)

The values reported as "less than" (<) indicate the working detection limit for the particular sample and/or parameter.

The values reported as "less than or equal to" (≤) indicate the compound may be present at trace levels relative to the detection limit but not subject to accurate quantification.

Total Organic Carbon results may not include volatile constituents since the sample was purged with an inert gas prior to analysis.

Results of the analysis of Pesticide/PCBs are based on the matching of retention times between samples and standards on a single gas chromatographic column.

CATTARAUGUS COUNTY
DEPARTMENT OF PUBLIC WORKS

FARWELL LANDFILL SITE

PROJECT NO. 0595-04-I

HYDROGEOLOGIC CROSS-SECTIONS FROM LINES A TO A', B TO B' AND C TO C'

SCALE: HORZ. 1" = 50', VERT. 1" = 20'

MALCOLM PIRNIE, INC.

DATE: SEPTEMBER 1987

SHEET 2 OF 3

DWG NO. 0595Z-87.002-0

LEGEND:

13D — MONITORING WELL NUMBER

LITHOLOGIC CONTACT

SCREENED INTERVAL

SAND BACKFILL

GROUND WATER SURFACE (DEEP WELLS)

GROUND WATER SURFACE (SHALLOW WELLS)

M/W — MOIST TO WET INTERVAL

INFERRED

ORGANIC LAYER

GLACIOFLUVIAL DEPOSITS *sand/gravel*

GLACIOLACUSTRINE / OVERBANK DEPOSITS

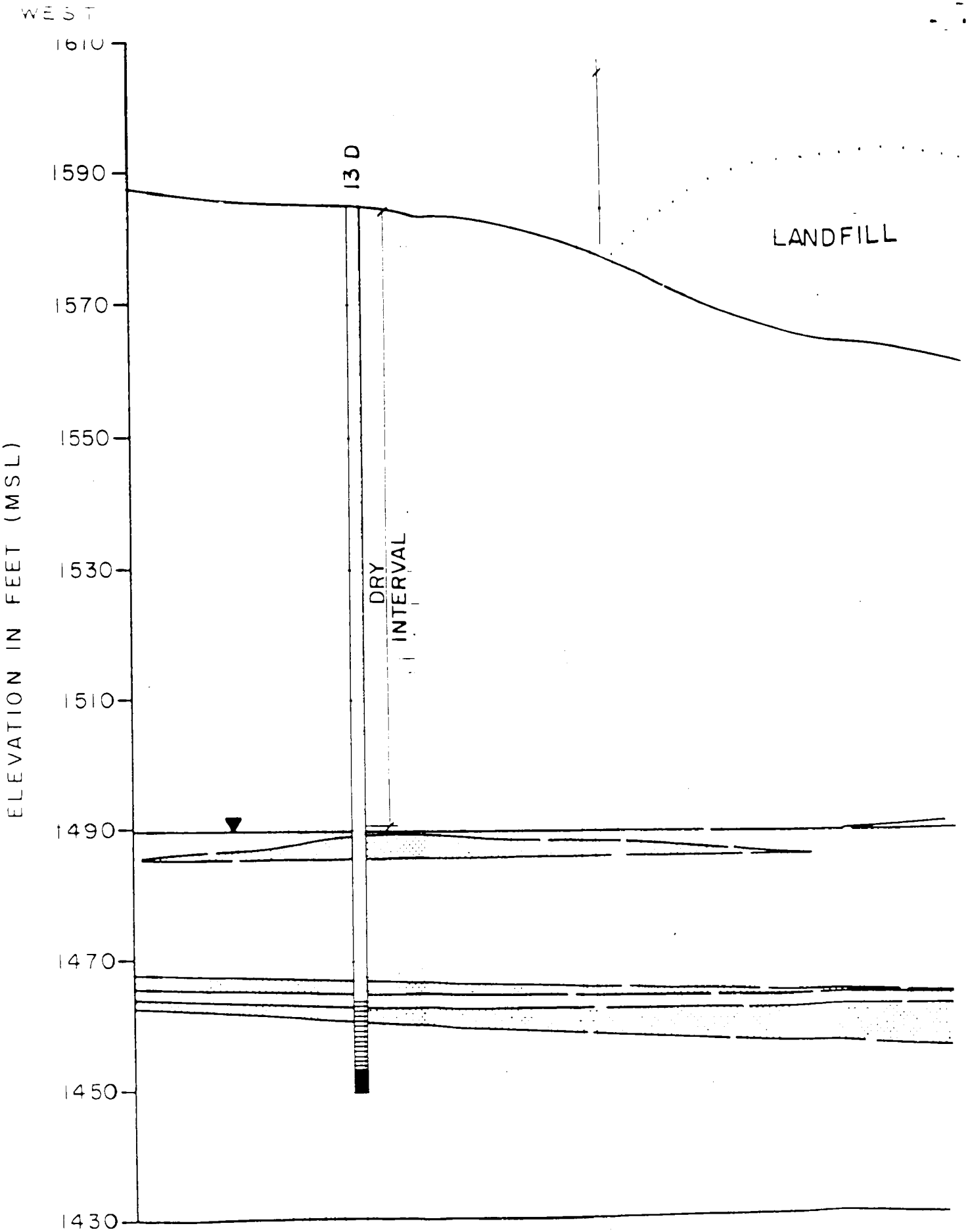
GLACIAL TILL

NOTES:

REFER TO BORING LOGS FOR COMPLETE DESCRIPTIONS AND CLASSIFICATION.
SECTION LINE C-C' WAS OVERLAIN ON LINE B-B' TO ILLUSTRATE 'BACKGROUND' TOPOGRAPHY OF LANDFILL AND INFERRED HYDRAULICS OCCURRING WITHIN AND BENEATH IT.

I

REV


WEST
1610
1590
1570
1550
1530
1510
1490
1470
1450
1430
ELEVATION IN FEET (MSL)
13 D
DRY
INTERVAL
LANDFILL

REFERENCE NO. 3

REFERENCE NO. 4

02-8801-32

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO:	DATE:	TIME:
	4-11-88	1030

DISTRIBUTION: Cattaraugus County Landfill file

BETWEEN:	OF:	PHONE:
Chester Halgas	Cattaraugus Co. Env. Health Dept.	(716) 375-4121

AND: Peter Morton - NUS Corp.

DISCUSSION:

I called Mr. Halgas regarding municipal water supply for the area. There is no municipal supply, everyone within 3 miles of the site is on private well water. The wells he knows of are ≈ 60-70 feet deep so he believes they are screened in the unconsolidated glacial sediments. The farms in the area do not irrigate. Fishing & the recreational purposes are the only uses for Ischua Creek for 3 miles downstream.

ACTION ITEMS:

REFERENCE NO. 5

SIGNIFICANT HABITAT OVERLAY NO. 1 OF 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF FISH AND WILDLIFE
BUREAU OF WILDLIFE

PREPARED FOR: SIGNIFICANT HABITAT UNIT
WILDLIFE RESOURCES CENTER
DELMAR, NEW YORK 12054
(518) 457-5782

PREPARED BY: HABITAT INVENTORY UNIT

QUAD: BUFFALO

SCALE: 1:250,000

AUGUST, 1980

REVISED: 12/31/85

KEY

(SW) SIGNIFICANT FOR WILDLIFE

(SP) SIGNIFICANT FOR PLANTS

(SB) SIGNIFICANT FOR WILDLIFE AND PLANTS

(PW) POTENTIALLY SIGNIFICANT FOR WILDLIFE

(PP) POTENTIALLY SIGNIFICANT FOR PLANTS

(PB) POTENTIALLY SIGNIFICANT FOR WILDLIFE AND PLANTS

(OT) OTHER (e.g. UNIQUE GEOLOGICAL FORMATIONS)

Scale 1:250,000

5 0 5 10 15 20 Statute Miles

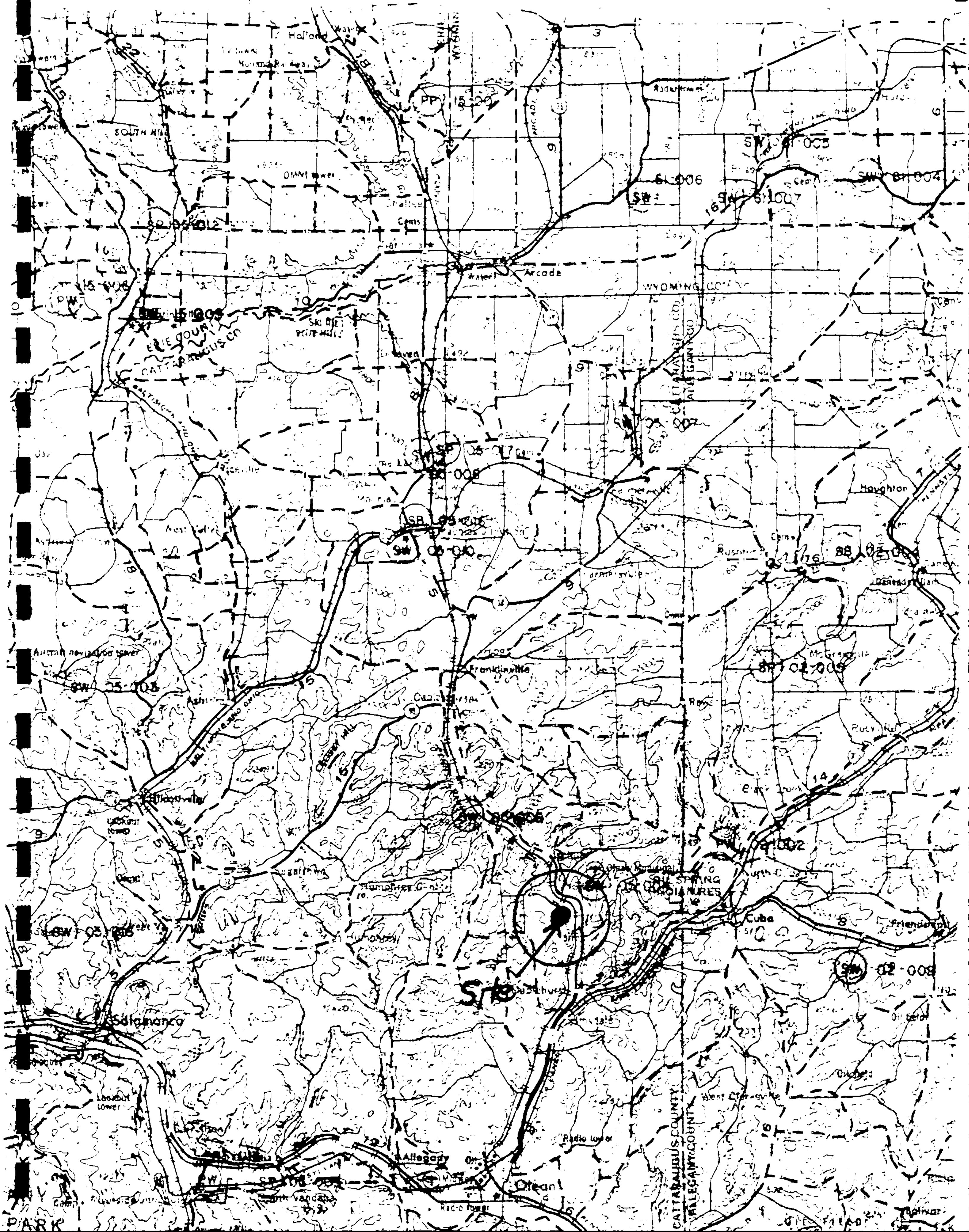
5 0 5 10 15 20 25 30 Kilometers

5 0 5 10 15 Nautical Miles

CONTOUR INTERVAL 100 FEET
WITH SUPPLEMENTARY CONTOURS AT 50 FOOT INTERVALS

FOR SALE BY U.S. GEOLOGICAL SURVEY RESTON, VIRGINIA 22092

LOCATION DIAGRAM



Holland
Arcade
WYOMING CO
SOUTH HILL
ERIE COUN
CATTARAUGUS CO
CATTARAUGUS CO.
ALLEGANY CO.
SW 81-006
SW 81-004
SW 81-007
SW 81-005
Houghton
Franklinville
Ellicottville
Lookout tower
Salamanca
Cuba
Friendship
OIL SPRING
RESERVATION
SW 02-008
SW 02-002
Olean
Allegany
Radio tower
CATTARAUGUS COUNTY
ALLEGANY COUNTY
Oil field
PARK

REFERENCE NO. 6

15 (12/75)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Mr. John McMahon
FROM: Mr. Robert Mitrey by Mr. Kevin Hintz KRH
SUBJECT: *Referral for Legal Action*

DATE: August 22, 1984

The following is intended as a brief outline to be used in the preparation of routine legal referrals. This should not preclude inclusion of facts not specifically requested.

A. *IDENTITY OF RESPONDENT (Give complete legal name, business address and telephone number of respondent)*

Name: Cattaraugus County Refuse Department
Address: 289 Center Street, Salamanca, NY
Responsible Person: William White *Telephone #* 716/945-1210
Title of Responsible Person: Administrator

B. *IDENTITY OF PARENT ENTITY (If different from respondent give complete legal name, business address, name and title of responsible person)*

C. *ADDRESS OR LOCATION OF INSTALLATION BEING INVESTIGATED. (Use map or sketch if necessary)*

Farwell Landfill (Ischua)
Five Points Landfill (Mansfield)

D. *NOTE OWNERSHIP OR CONTROL OF PREMISES IF OTHER THAN RESPONDENT.*

Cattaraugus County

E. *VIOLATION(S) (Indicate specific section or item of statute, regulation permit and/or order being violated.) Give a general description of violation (s).*

Farwell:

Section 360.8(a)(3)	Leachate breaking out and entering surface water
Section 360.8(b)(1)(vii)(c)	Waste uncovered and protruding
Section 360.8(b)(1)(viii)	Excessive slope, pooling and ponding of water. Rough and uneven area
Section 360.8(a)(7)	Windblown paper and litter
Section 360.8(b)(1)(ix)	Inadequate cover vegetation

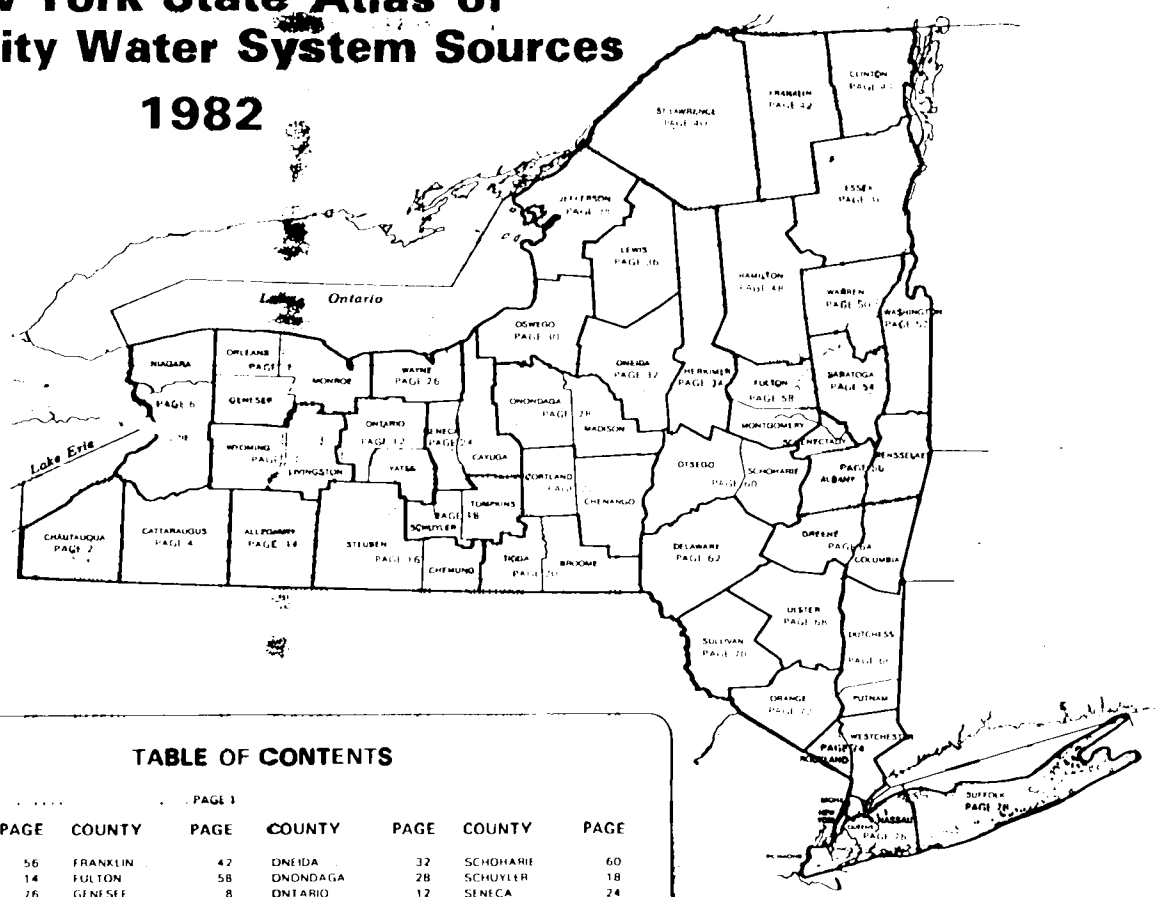
Five Points

REFERENCE NO. 7

New York State Atlas of Community Water System Sources

1982

NEW YORK STATE
DEPARTMENT OF HEALTH



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BRONX	76	GENESEE	8	ONTARIO	12	SENECA	24
BROOME	20	GREENE	64	ORANGE	72	STEUBEN	16
CATTARAUGUS	4	HAMILTON	48	ORLEANS	8	SUFFOLK	78
CAYUGA	24	HERKIMER	34	OSWEGO	30	SULLIVAN	70
CHAUTAUQUA	2	JEFFERSON	38	OTSEGO	60	TIOGA	20
CHEMUNG	16	KINGS	76	PUTNAM	66	TOMPKINS	18
CHENANGO	22	LEWIS	36	QUEENS	76	ULSTER	68
CLINTON	44	LIVINGSTON	10	RENSSELAER	56	WARREN	50
COLUMBIA	64	MADISON	28	RICHMOND	76	WASHINGTON	52
CORTLAND	22	MONROE	8	ROCKLAND	74	WAYNE	26
DELAWARE	62	MONTGOMERY	58	ST LAWRENCE	40	WESTCHESTER	74
DUTCHESS	66	NASSAU	76	SARATOGA	54	WYOMING	10
ERIE	6	NEW YORK	76	SCHENECTADY	56	YATES	12
ESSEX	46	NIAGARA	6				

LEGEND

BOUNDARIES AND PLACES

International
State
County
Town
Indian Reservation
City
Village
Unincorporated Place
Federal Reservation
Built up Area (Over 25 000 population including any contiguous city or village)

CLASSIFICATION OF POPULATED PLACES

100 000 or more — YONKERS
50 000 to 100 000 — Levittown
12 500 to 50 000 — Poughkeepsie
2 500 to 12 500 — Hampton Bays
250 to 2 500 — Baiceville
250 or less — Lyden

TRANSPORTATION

Highways
Divided Highways
Full Control of Access
Partial or No Control of Access
Undivided Highway
Interchange
Touring Route (State U.S. Interstate) or State Parkway
Touring Route Markers
State U.S. Interstate

Railroads
Operating Line
Service Discontinued
Operator
Owner (If Other than Operator)
Company Having Trackage Rights

Airports (Open to the Public, Military)
Runway under 4000'
Runway over 4000'

Rest Areas
Food, Gas, Rest Rooms
Rest Rooms
Gas, Rest Rooms
Parking Only

RECREATION FACILITIES

State or National Recreation Area
State Campground
State Boat Launching Site
State Canal Park
State Fish Hatchery
Other Recreation

CATTARAUGUS COUNTY

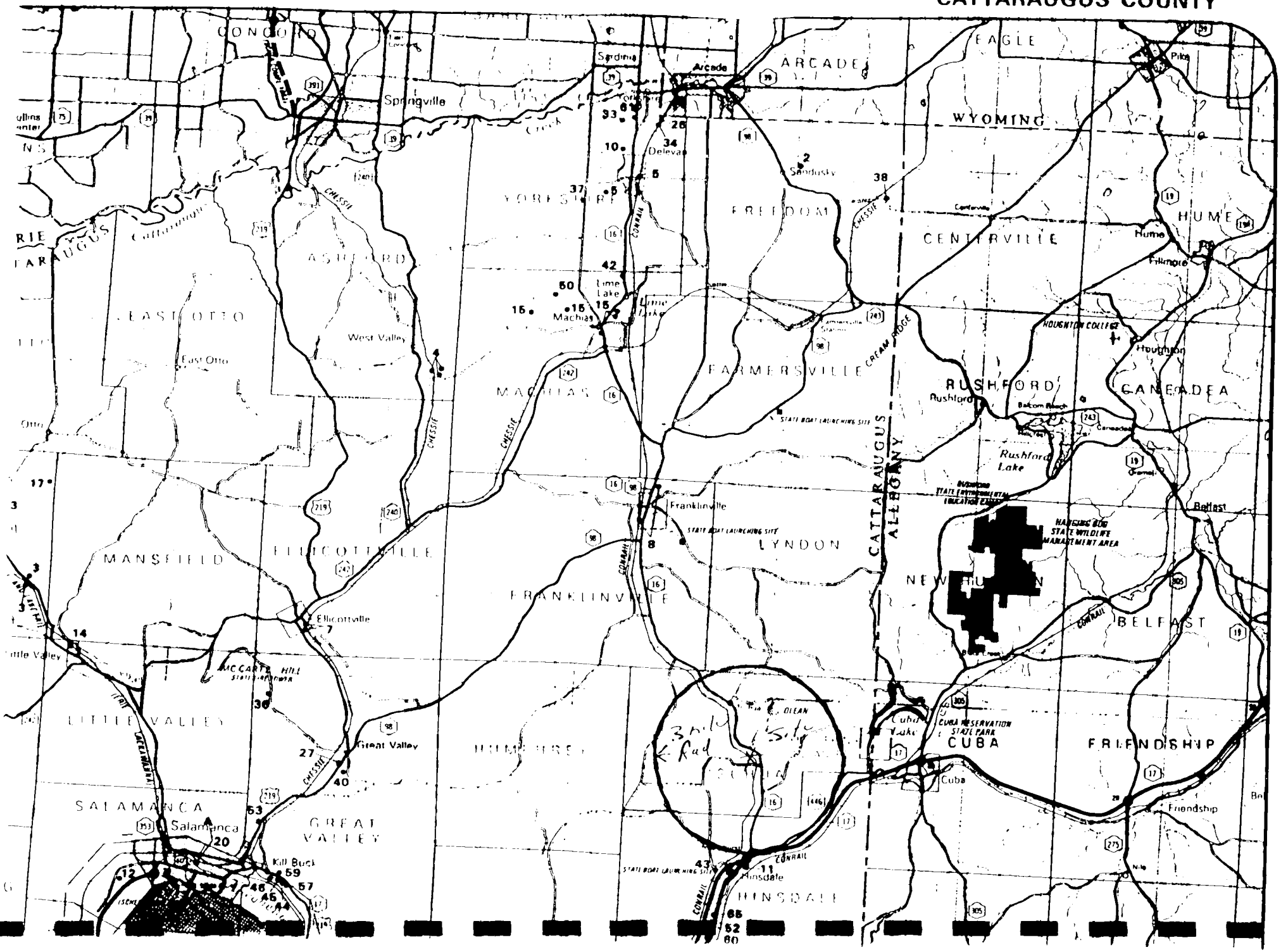
D NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
Municipal Community			
1	Allegany Village	2200	Wells
2	Arcade Village (Wyoming Co, Page 10)		Wells
3	Cattaraugus Village	1200	Wells (Springs)
4	Crystal Water Company (West Valley)	600	Wells
5	Delevan Village	1050	Wells (Springs)
6	East Randolph Village	1200	Wells
7	Ellicottville Village	1100	Wells
8	Franklinville Village	1900	Wells
9	Gowanda Village	3500	Point Peter Brook Reservoir, Wells
10	Grove Street Water Supply	70	Wells
11	**Hinsdale Water District**	**350**	**Wells**
12	**Jimersontown Resettlement**	**250**	**Wells**
13	Limestone Village	550	Wells
14	Little Valley Village	1700	Wells
15	Machias Water District	1000	Wells (Springs)
16	Olean City	18207	Olean Creek, Wells
17	Otto Water District	100	Wells
18	Portville Village	1300	Wells
19	Randolph Village	1500	Wells
20	Salamanca City	6890	Newton Run Reservoir, Wells
21	South Dayton Village	700	Wells
22	Steamburg Resettlement Area	200	Wells
Non Municipal Community			
23	Allegany State Park	45	Wells
24	Barbers Trailer Ranch	50	Wells
25	Burton's Trailer Court	12	Wells
26	Charlie Browns Trailer Court	NA	Wells
27	Chase's Trailer Park	27	Wells
28	Colonial Village	NA	Wells
29	Country Corners Trailer Park	80	Wells
30	Country Squire Mobile Court	78	Wells
31	Deans Trailer Court	45	Wells
32	Deer Pen Mobile Home Park	24	Wells
33	Dumar Trailer Court	NA	Wells
34	Elliott's Apartments	NA	Wells
35	Five Acres Trailer Park	23	Wells
36	Forestry Camp 2	60	Wells
37	Foxfire Haven	35	Wells
38	Freedom Park	14	Wells
39	Giardini Mobile Court	NA	Wells
40	Green Valley Estates	NA	Wells
41	Happy Days Mobile Court	33	Wells
42	Highland Park Village	15	Wells
43	Hillview Village	150	Wells
44	Hoag's Mobile Manor Sec # 1	24	Wells
45	Hoag's Mobile Manor Sec # 2	30	Wells
46	Hoag's Mobile Manor Sec # 3	130	Wells
47	J.N. Adam Developmental Center	550	Wells
48	Jolee Mobile Home Court	40	Wells
49	Kent's Trailer Park	20	Wells
50	Lazy B Ranch	65	Wells
51	Longacres Mobile Court	36	Wells
52	Mac Haven Mobile Park	15	Wells
53	Muzi's Trailer Park	37	Wells
54	Pines Trailer Park	63	Wells
55	Pleasant Valley Mobile Court	36	Wells
56	Prosser Homes	36	Wells
57	Seneca Trailer Park	45	Wells
58	Sherwood Mobile Home Court	54	Wells
59	Siafakas Trailer Park	42	Wells
60	Sweet Mountain Trailer Park	39	Wells
61	Twin Lakes Mobile Homes	330	Wells
62	Valley View Estates	90	Wells
63	Weber's Mobile Home Court	45	Wells
64	White Birch Trailer Court	63	Wells
65	White Lantern Mobile Court	63	Wells
66	Woodlawn Mobile Home Court	25	Wells

982

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

SCALE 1:250,000
5 0 5 MILES

CATTARAUGUS COUNTY



REFERENCE NO. 8

Uncontrolled Hazardous Waste Site Ranking System

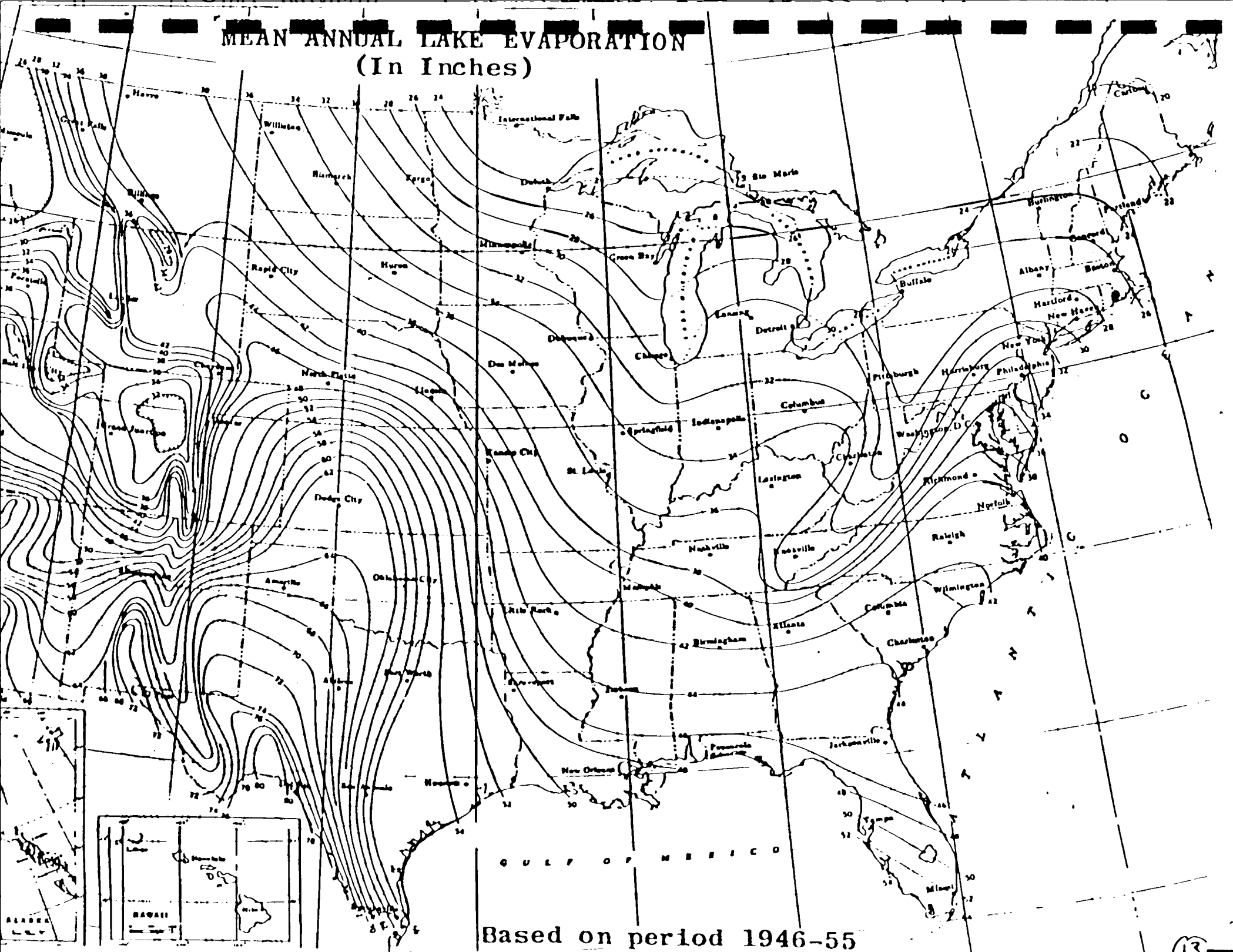
A Users Manual
(HW-10)

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

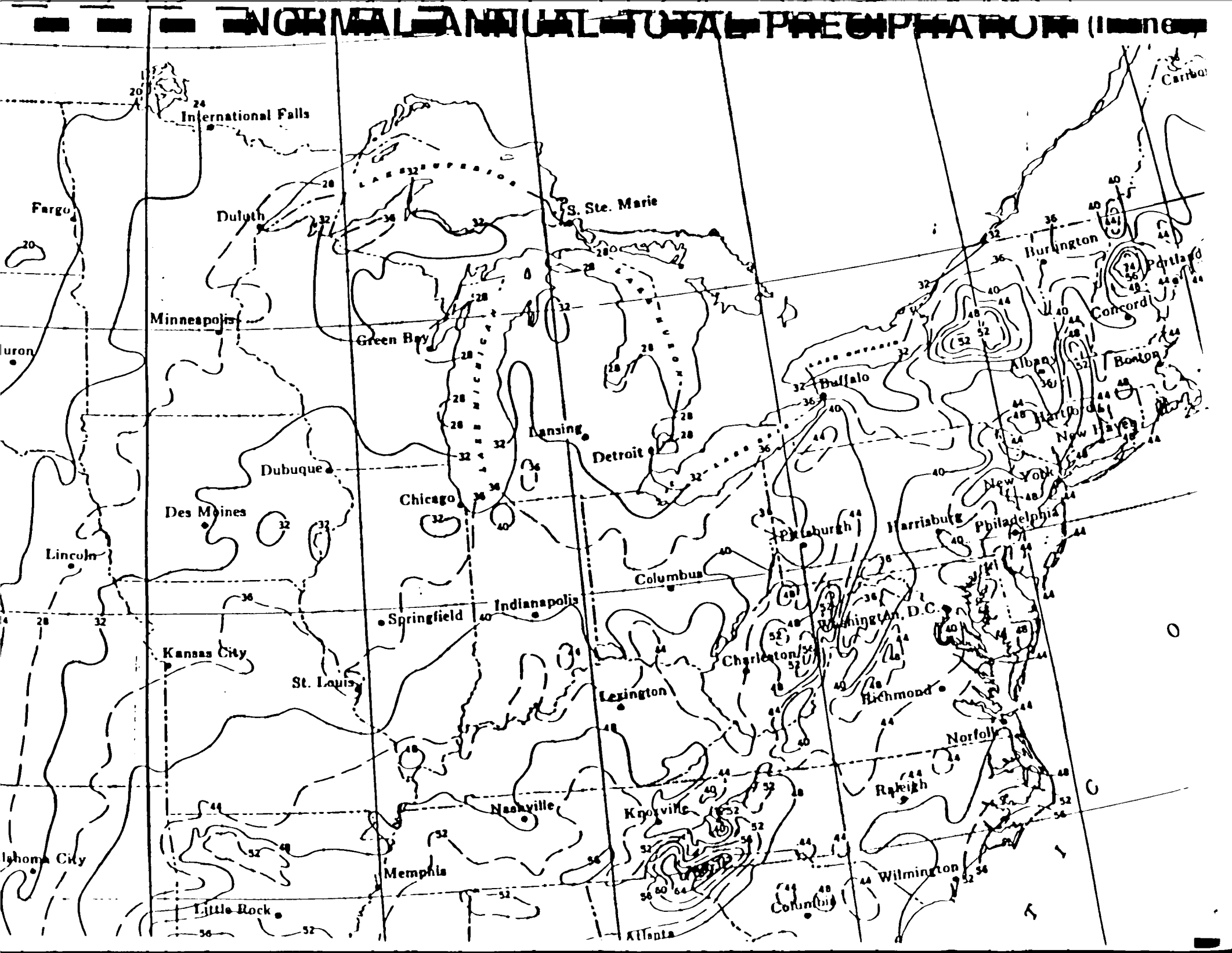
United States
Environmental Protection
Agency

1984

MEAN ANNUAL LAKE EVAPORATION
(In Inches)



Based on period 1946-55


NORMAL ANNUAL TOTAL PRECIPITATION (Inches)
International Falls
Fargo
Duluth
S. Ste. Marie
Minneapolis
Green Bay
Lansing
Detroit
Dubuque
Chicago
Des Moines
Lincoln
Columbus
Springfield
Indianapolis
Kansas City
St. Louis
Lexington
Nashville
Knoxville
Memphis
Little Rock
Atlanta
Columbia
Raleigh
Wilmington
Norfolk
Richmond
Charleston
Harrisburg
Philadelphia
New York
Albany
Buffalo
Burlington
Concord
Portland
Boston
New Haven
Hartford
Pittsburgh

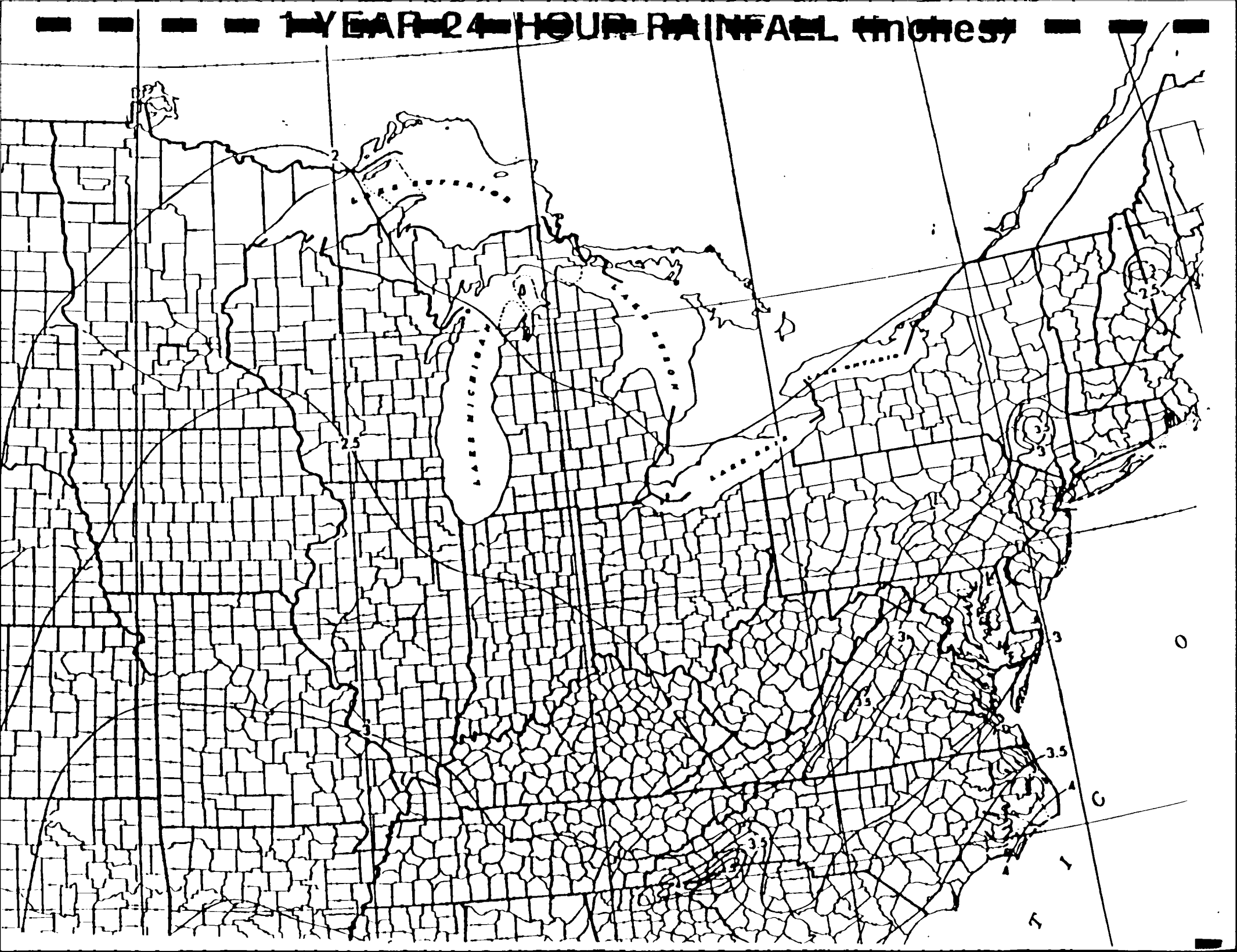

1 YEAR 24 HOUR RAINFALL (inches)
LAKE MICHIGAN
2
2.5
3
3.5
4

TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

Type of Material	Approximate Range of Hydraulic Conductivity	Assigned Value
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$>10^{-3}$ cm/sec	3

*Derived from:

Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWest ed., Academic Press, New York, 1969

Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

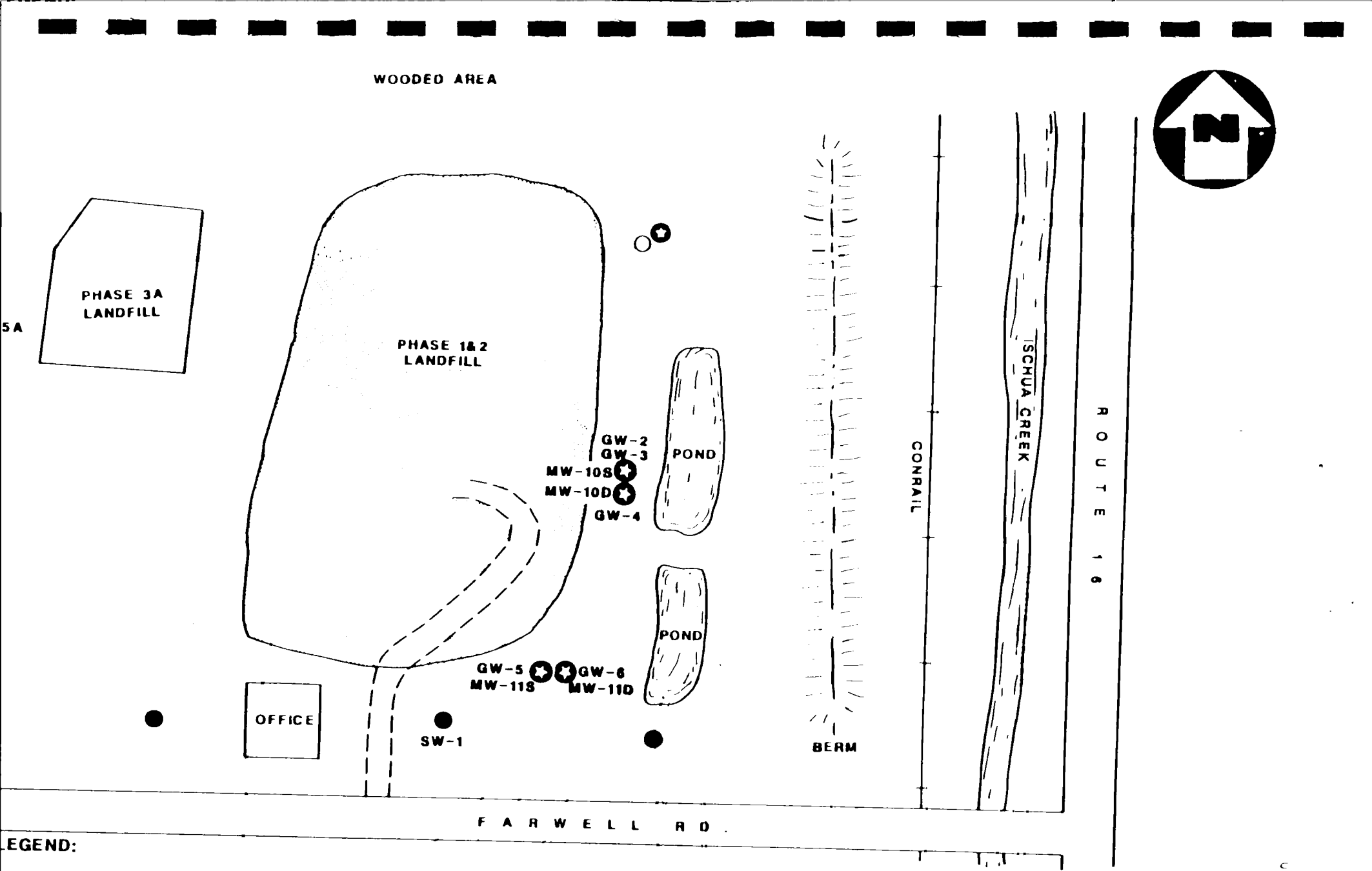
REFERENCE NO. 9

TABLE I
Sample Descriptions
Cattaraugus County Landfill
Ischua, Cattaraugus County, New York
Case #9045
2/25/88

Sample Number	Organic Traffic Report No.	Inorganic Traffic Report No.	Time	Sample Type	Sample Location
NYM9-GW-1*	BQ 803	MBP613	1130	Aqueous	Upgradient well MW-5A at western edge of Phase 3A landfill.
NYM9-GW-2**	BQ 804	MBP614	1405	Aqueous	MW-10S at eastern edge of Phase 1 and 2 landfill.
NYM9-GW-3	BQ 805	MBP615	1415	Aqueous	Environmental duplicate of GW-2 sample.
NYM9-GW-4	BQ 806	MBP616	1425	Aqueous	MW-10D at eastern edge of Phase 1 and 2 landfill.
NYM9-GW-5	BQ 807	MBP617	1705	Aqueous	MW-11S at southeastern corner of Phase 1 and 2 landfill.
NYM9-GW-6	BQ 808	MBP618	1735	Aqueous	MW-11D at southeastern corner of Phase 1 and 2 landfill.
NYM9-SW-1	BQ 809	MBP619	1620	Aqueous	Aqueous leachate sample collected from manhole at southeastern corner of Phase 1 and 2 landfill.
NYM9-RIN-1	BQ 810	MBP620	1100	Aqueous	Rinsate from bailer collected in field.
NYM9-TRBL-1	BQ 811	N/A	N/A	Aqueous	N/A

* MS/MSD - indicates sample designated as a matrix spike (MS) and matrix spike duplicate (MSD).

** Duplicate - indicates sample designated as a duplicate environmental sample.



LEGEND:

- MONITORING WELL
- MANHOLE

ALL SAMPLES PRECEDED BY NYM9

SAMPLE LOCATION MAP
CATTARAUGUS COUNTY LANDFILL,
ISCHUA, N.Y.

(NOT TO SCALE)

FIGURE 2

NUS CORPORATION

02-8801-32-STR

10/26/88

SITE NAME: CATTARAUGUS COUNTY LANDFILL
TDD#: 02-8801-32
SAMPLING DATE: 2/25/88
EPA CASE NO.: 9045 LAB: IT ANALYTICAL SERVICES

VOLATILES

Sample ID No.	NYM9-GW-1(MS/MSD)	NYM9-GW-2(DUP)	NYM9-GW-3	NYM9-GW-4	NYM9-GW-5	NYM9-GW-6	NYM9-SW-1	NYM9-RIN-1	NYM9-TRBL-1
Traffic Report No.	BQ803	BQ804	BQ805	BQ806	BQ807	BQ808	BQ809	BQ810	BQ811
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor	1	1	1	1	1	1	1	1	1
Percent Moisture	--	--	--	--	--	--	--	--	--
Chloromethane									
Bromomethane									
Vinyl Chloride									
Chloroethane				J		J			
Methylene Chloride				21		42			
Acetone							250	B	B
Carbon Disulfide								B	B
1,1-Dichloroethene									
1,1-Dichloroethane				J		5			
Trans-1,2-Dichloroethene (total)		60	60 E	170 E	9 E	200	15		
Chloroform				23	J	29	66		
1,2-Dichloroethane						J			
2-Butanone						J			
1,1,1-Trichloroethane		R	R	R	R	R	530 E	R	
Carbon Tetrachloride				21		61			
Vinyl Acetate	R								
Bromodichloromethane									
1,2-Dichloropropane									
cis-1,3-Dichloropropene					J				
Trichloroethene									
Dibromochloromethane				5	J	25	22		
1,1,2-Trichloroethane									
Benzene									
trans-1,3-Dichloropropene				J					
Bromoform									
4-Methyl-2-Pentanone									
2-Hexanone							27		
Tetrachloroethene							12		
Toluene							J		
1,1,2,2-Tetrachloroethane							20	B	
Chlorobenzene									
Ethylbenzene							J		
Styrene							J		
Xylenes (Total)									
							8		

NOTES:
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E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of a compound, but can't be identified
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

10/26/88

[redacted]TE NAME: CATTARAUGUS COUNTY LANDFILL
[redacted]OB#: 02-8801-32
SAMPLING DATE: 2/25/88
[redacted]CRA CASE NO.: 9045 LAB: IT ANALYTICAL SERVICES

SEMI-VOLATILES										
Sample ID No.	NYM9-GW-1(MS/MSD)	NYM9-GW-2(DUP)	NYM9-GW-3	NYM9-GW-4	NYM9-GW-5	NYM9-GW-6	NYM9-SW-1	NYM9-RIN-1	NYM9-TRBL-1	
[redacted]ffic Report No.	BQ803	BQ804	BQ805	BQ806	BQ807	BQ808	BQ809	BQ810	BQ811	
[redacted]trix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Dilution Factor	1	1	1	1	1	1	1	1	N/A	
[redacted]cent Moisture	--	--	--	--	--	--	--	--	N/A	
[redacted]Phenol										NR
bis(2-Chloroethyl)ether										NR
[redacted]hlorophenol										NR
[redacted]-Dichlorobenzene										NR
1,4-Dichlorobenzene										NR
Benzyl alcohol										NR
[redacted]-Dichlorobenzene										NR
[redacted]ethylphenol										NR
bis(2-Chloroisopropyl)ether										NR
4-Methylphenol										NR
[redacted]troso-di-n-dipropylamine							99			NR
[redacted]chloroethane										NR
Nitrobenzene										NR
Isophorone										NR
[redacted]trophenol										NR
[redacted]Dimethylphenol										NR
Benzoic acid										NR
bis(2-Chloroethoxy)methane										NR
[redacted]Dichlorophenol										NR
1,2,4-Trichlorobenzene										NR
Naphthalene										NR
4-[redacted]loroaniline										NR
Hexa[redacted]chlorobutadiene										NR
4-Chloro-3-Methylphenol										NR
2-Methylnaphthalene										NR
Hexa[redacted]chlorocyclopentadiene										NR
2,4,6-Trichlorophenol										NR
2,4,5-Trichlorophenol										NR
2-Chloronaphthalene										NR
2-[redacted]troaniline										NR
Di[redacted]thylphthalate										NR
Acenaphthylene										NR
2,6-Dinitrotoluene										NR
3-[redacted]troaniline										NR
Ac[redacted]aphthene										NR
2,4-Dinitrophenol										NR
4-Nitrophenol										NR
Di[redacted]benzofuran										NR
2,4-[redacted]Dinitrotoluene										NR
Diethylphthalate										NR
4-Chlorophenyl-phenyl ether				J			10 E			NR
Fl[redacted]ene										NR
4-[redacted]troaniline										NR
4,6-Dinitro-2-methylphenol										NR
N-nitrosodiphenylamine										NR
4-[redacted]mophenyl-phenyl ether									J	NR
He[redacted]chlorobenzene										NR
										NR

10/26/88

SITE NAME: CATTARAUGUS COUNTY LANDFILL
TDD#: 02-8801-32
SAMPLING DATE: 2/25/88
EPA CASE NO.: 9045 LAB: IT ANALYTICAL SERVICES

SEMI-VOLATILES										
Sample ID No.	NYM9-GW-1(MS/MSD)	NYM9-GW-2(DUP)	NYM9-GW-3	NYM9-GW-4	NYM9-GW-5	NYM9-GW-6	NYM9-SW-1	NYM9-RIN-1	NYM9-TRBL-1	
Traffic Report No.	BQ803	BQ804	BQ805	BQ806	BQ807	BQ808	BQ809	BQ810	BQ811	
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Dilution Factor	1	1	1	1	1	1	1	1	N/A	
Percent Moisture	--	--	--	--	--	--	--	--	N/A	
Pentachlorophenol									NR	
Phenanthrene									NR	
Anthracene									NR	
Di-n-butylphthalate									NR	
Fluoranthene								B	NR	
Pyrene									NR	
Butylbenzylphthalate									NR	
3,3'-Dichlorobenzidine									NR	
Benzo(a)anthracene									NR	
Chrysene									NR	
bis(2-Ethylhexyl)phthalate									NR	
Di-n-octylphthalate								B	NR	
Benzo(b)fluoranthene									NR	
Benzo(k)fluoranthene									NR	
Benzo(a)pyrene									NR	
Indeno(1,2,3-cd)pyrene									NR	
Dibenz(a,h)anthracene									NR	
Benzo(g,h,i)perylene									NR	

NOTES:

Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of a compound, but can't be identified
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

10/26/88

SITE NAME: CATTARAUGUS COUNTY LANDFILL
TDD#: 02-8801-32
SAMPLING DATE: 2/25/88
EPA CASE NO.: 9045 LAB: IT ANALYTICAL SERVICES

PESTICIDES

Sample ID No.	NYM9-GW-1(MS/MSD)	NYM9-GW-2(DUP)	NYM9-GW-3	NYM9-GW-4	NYM9-GW-5	NYM9-GW-6	NYM9-SW-1	NYM9-RIN-1	NYM9-TRBL-1
Traffic Report No.	BQ803	BQ804	BQ805	BQ806	BQ807	BQ808	BQ809	BQ810	BQ811
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor	1	1	1	1	1	1	1	1	N/A
Percent Moisture	--	--	--	--	--	--	--	--	N/A
alpha-BHC									NR
beta-BHC									NR
delta-BHC									NR
gamma-BHC (Lindane)	0.09								NR
Heptachlor									NR
Aldrin									NR
Heptachlor epoxide									NR
Endosulfan I									NR
Dieldrin									NR
4,4'-DDE									NR
Endrin									NR
Endosulfan II									NR
4,4'-DDD									NR
Endosulfan sulfate									NR
4,4'-DDT									NR
Methoxychlor									NR
Endrin ketone									NR
alpha-Chlordane									NR
gamma-Chlordane									NR
Toxaphene									NR
Aroclor-1016									NR
Aroclor-1221									NR
Aroclor-1232									NR
Aroclor-1242									NR
Aroclor-1248									NR
Aroclor-1254									NR
Aroclor-1260									NR

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of a compound, but can't be identified
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

10/26/88

SITE NAME: CATTARAUGUS COUNTY LANDFILL
TDD#: 02-8801-32
SAMPLING DATE: 2/25/88
EPA CASE NO.: 9045
LAB NAME: ENERGY AND ENVIRONMENTAL ENGINEERING

INORGANICS

Sample ID No.	NYM9-GW-1(MS/MSD)	NYM9-GW-2(DUP)	NYM9-GW-3	NYM9-GW-4	NYM9-GW-5	NYM9-GW-6	NYM9-SW-1	NYM9-RIM-1	NYM9-TRBL-1
Traffic Report No.	MBP613	MBP614	MBP615	MBP616	MBP617	MBP618	MBP619	MBP620	N/A
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	N/A
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Dilution Factor									
Aluminum	3290 E	R	R	3030 E	416000 E	799 E	14000 E	J	NR
Antimony					J				NR
Arsenic	R	R	R	R	R	R	R	R	NR
Barium	J	1580	2410	501	6940	J	888		NR
Beryllium		J	J		17				NR
Cadmium				7.9			5.2		NR
Calcium	19500	292000	417000	171000	932000	98600	296000		NR
Chromium		R	R	12	554		63		NR
Cobalt	J	J	100		365	J		J	NR
Copper	J	R	R	J	1060	J	71		NR
Iron	88600	R	R	12400	1241000	2810	167000	J	NR
Lead	8.4	R	R	13	591	9.7	36		NR
Magnesium	J	R	R	39400	292000	26500	83200		NR
Manganese	761	R	R	1870	23000	1200	9520		NR
Mercury					0.57				NR
Nickel		R	R		748		50		NR
Potassium	J	R	R	5910	43600	J	105000		NR
Selenium									NR
Silver					J				NR
Sodium	J	19500	19900	30700	65000	33000	169000		NR
Thallium									NR
Vanadium	J	R	R	J	615		J	J	NR
Zinc	37	R	R	58	3150	36	1940		NR

NOTES:
Blank space - compound analyzed for but not detected
E - estimated value
J - estimated value, compound present below CRDL but above IDL
R - analysis did not pass EPA QA/QC
NR - analysis not required

Title: Attachment 2 - CLP Data Assessment Checklist (GC and GC/MS Analysis)
PART II: MMB Review - TOTAL REVIEW

Date: Nov. 6, 1987
Number: HW-4
Revision: 3

CASE # 9045 LAB IT-PA SITE Cattaraugus

19.0 Conclusions: (NOTE: Reviewers must red-line unacceptable data on sample data (FORM I) sheets; red-line data does not imply the compound is not present). Only the MMB reviewer has the authority to red-line unacceptable data. The letter J indicates an estimated value. In addition to the two definitions stated in the contract it also implies that the analyte is present but the quantitative value contains an unspecified degree of error. If an accurate quantity is desired, resampling/analysis is recommended.

19.1 Data Assessment: Method blanks measure Laboratory Contamination. method blank Contamination can be Caused by dirty glassware, impure solvents, etc. In order to be valid, the Concentration of an analyte in a Sample must be at least 5 times (10 times for the Common Contaminants) the Concentration of that analyte in the method blank. For this reason, The following Samples had methylene chloride Qualified with "BU": BØ 803, BØ 804, BØ 805, BØ 806, BØ 807, BØ 808, and the following Samples had bis(2-ethylhexyl)phthalate Qualified with "BU" BØ 803, BØ 804, BØ 805, BØ 806, BØ 807, BØ 808, BØ 809. Toluene Qualified with "BU" in BØ 805, BØ 804, BØ 806 and BØ 807, and For the Same reason 2-Hexanone was Qualified with "BU" in BØ 805.

19.2 Contract Problems/Non-compliance: 1- Several analytes were out of Contract specification in Both initial and Continuing Calibration. 2- Poor Submitted photo Copies of Quan Reports, RIC, spectrums, etc. du many Samples and Standards.

Reviewer's Signature: Raymond S. Diehl-Hamm Date: 7-19-88

Verified By: G Karas Date: 10/5/88

2- Rinse blanks measure Contamination of samples during field activities. Samples Can be Contaminated by improperly decontaminating Sampling equipments. The Same validity as in method blanks apply. The following samples had acetone qualified with "Bu" because of this reason : BΦ 803, BΦ 804, BΦ 805, BΦ 806, BΦ 807, BΦ 808 and BΦ 809. also Di-n-Butylphthalate qualified with "Bu" in : BΦ 803, BΦ 804, BΦ 805, BΦ 806, BΦ 807 and n-nitroso-diphenylamine in BΦ 806, BΦ 807 and BΦ 809.
a number of TICs and unknown Compounds were Qualified with "Bu" in VOA and BN/A Analysis because of their presence in method and Rinse blanks.

3- In order to measure the Concentration of an analyte in a sample. An initial and daily Calibrations are performed. One of the measured Parameter is the analyte's response factor. Analyte's RF either in the initial or Continuing Calibration must be ≥ .05. A Value < .05 indicates serious detection and Quantitation errors.
2-Butanone was Qualified with "R" because of this reason in the Following Samples : BΦ 803, BΦ 804, BΦ 805, BΦ 806, BΦ 807, BΦ 808, BΦ 810. BΦ 809 qualified with "J" for the same reason.
Another measured parameters are (%RSD) percent relative standard deviation which measure the stability of the response factor over increasing standard Concentration in the initial Calibration, and %D) percent difference which Compares the daily RF and the Average RF From the initial Calibration. %D Reflects the instruments daily performance. %RSD must be < 30% and %D must be < 25%. A value outside of Qc limits indicates potential Detection and Quantitation errors. The Following Samples had 1,1 dichloroethane Qualified with "J" BΦ 805, BΦ 806 and BΦ 807, because of %RSD and out of Qc limits and Diethylphthalate was Qualified with "J"

In the initial Calibration, the Following analytes exhibited %RSD out of Contract specification:

1,1 dichloroethane
Acetone
Benzoic acid
4-chloroaniline
3-nitroaniline
4-nitrophenol
4-nitroaniline

No action was taken for non detects.

In the Continuing Calibration %D was above Qc limits in the Following

Bromomethane, 1,1 dichloroethane in : BΦ 811
bis(2-chloroisopropyl)ether in : BΦ 803, BΦ 804, BΦ 805, BΦ 806, BΦ 807, BΦ 808, BΦ 809, BΦ 810

Benzoic acid	in	: BΦ 803 to BΦ 810
Hexachlorocyclopentadiene	in	: BΦ 803 to BΦ 810
2,6 dinitrotoluene	in	: BΦ 803 → BΦ 804
3-nitroaniline	in	: BΦ 803 → BΦ 804
Butylbenzylphthalate	in	: BΦ 803 → BΦ 804
bis(2-ethylHexyl)phthalate	in	: BΦ 803 to BΦ 810
Diethylphthalate	in	: BΦ 805 to BΦ 810
2-nitroaniline	in	: BΦ 805 to BΦ 810
4-Dinitrophenol	in	: BΦ 805 to BΦ 810

No action was taken for non detects.

4 - Identification of Compounds are made by Comparison of suspected Mass spectrum to the mass spectrum of a standard of the suspected Compound. A mass spectrum is a finger print of a Compound, which shows the mass of a Compound & the masses & relative abundance

ions present in the standard with relative intensity > 10% must be present in the Sample and the relative intensity of these ions must agree within ±20%. Because of this reason 2-Methylphenol and Pentachlorophenol were qualified with "U" in: BQ 809. Tetrachloroethene was qualified with "U" in: BQ 806.

In the pesticide fraction, the Lab overlooked the presence of γ-BHC in Sample NO: BQ 803 in Both primary and secondary Column. Calculation was made using the secondary column because of interferences in the primary column.

5- The Lab did not report in Form V (semivolatile) the 50 ppb Continuing Calibration associated with DFTPP tuning 3/19/88.

M.H 7-19-88

4/6/88

0001

CASE NARRATIVE

Laboratory Name: IT Analytical Services/Pittsburgh, Pennsylvania

Laboratory ID: ITPA

Case Number: 9045

Contract Numbers: 68-01-7415

Sample Numbers:

BQ803	BQ806	BQ809
BQ804	BQ807	BQ810
BQ805	BQ808	BQ811

SDG Number: BQ803

Shipment

Nine water samples were received at the ITAS/Pittsburgh Laboratory on February 27, 1988, without sample tags on any of the bottles.

Volatile Analysis

The samples were analyzed on March 3 and 4, 1988. Sample BQ803 was selected for MS/MSD analysis. The concentrations of cis-1,3-dichloropropene (62 micrograms per liter) and trans-1,3-dichloropropane (38 micrograms per liter) deviated from the recommended 50 micrograms per liter in the continuous standard. The laboratory was unable to obtain a standard with a 50/50 microgram per liter isomer ratio.

Sample BQ809 was also analyzed at a dilution for 2-butanone and methylene chloride.

Library searches for the unknown peaks greater than 10 percent of the closest INT. STD. were searched using Finnigan's FLSRQ program. This forward library search program generates a quantitation list; however, this quantitation list does not use RIC area and the amount calculated is not related to RIC area of the Internal Standards. This quantitation list was transferred to Formaster and there edited to reflect RIC area, RIC INT. area and the correct concentration. A hand calcualtion sheet is included in the data packet.

Semivolatile Analysis

The samples were analyzed on March 19 and 21, 1988. Library searches for the unknown peaks greater than 10 percent of the closest INT. STD. were searched using Finnigan's FLSRQ program. This forward library search program generates a quantitation list; however, this quantitation list does not use RIC area and the amount calculated is not related to RIC area of the Internal Standards. This quantitation list was transferred to Formaster and there edited to reflect RIC area, RIC INT. area and the correct concentration. A hand calculation sheet is included in the data packet.

Samples BQ807 and BQ808 had one surrogate recovery for terphenyl outside QC limits. Reanalysis is not required.

Sample BQ803 was selected for a matrix spike and matrix spike duplicate; 4-nitrophenol is outside QC limits.

Pesticides/PCB Analysis

The samples were analyzed on March 26, 1988. Sample BQ803 was selected for MS/MSD analysis. The amount of dibutyl chlorendate added to samples PBLK(3/3/88), BQ803, BQ803MS, and BQ803MSD was 0.5 milliliters instead of 1.0 milliliter.

Release of the data contained in this hard copy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature:

Steven H. Cochenour

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0017 EPA SAMPLE NO.

BQ803

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ803

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1854

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

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	10	U
67-64-1	Acetone	8	B
75-15-0	Carbon Disulfide	150	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	UJ
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	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0036 EPA SAMPLE NO.

Lab Name: IT PITTSBURGH Contract: 68-01-7415 BQ804

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ804

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1855

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
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	10	U
67-64-1	Acetone	8	J
75-15-0	Carbon Disulfide	34	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	60	
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	52	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0068 EPA SAMPLE NO.

Lab Name: IT PITTSBURGH Contract: 68-01-7415

BQ805

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER

Lab Sample ID: BQ805

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 667

Level: (low/med) LOW

Date Received: 02/27/88

% Moisture: not dec.

Date Analyzed: 03/03/88

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
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	7	B
67-64-1	Acetone	55	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	60	
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	5	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0090 EPA SAMPLE NO.

Lab Name: IT PITTSBURGH Contract: 68-01-7415 BQ806

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ806

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 668

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. Date Analyzed: 03/03/88

Column: (pack/cap) PACK Dilution Factor: 1.00

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	2	J
75-00-3	Chloroethane	21	
75-09-2	Methylene Chloride	9	B
67-64-1	Acetone	33	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	J
75-34-3	1,1-Dichloroethane	170	
540-59-0	1,2-Dichloroethene (total)	23	
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	21	
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	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	J
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	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET - 0133

EPA SAMPLE NO.

Lab Name: IT PITTSBURGH Contract: 68-01-7415 BQ807

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ807

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 669

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. Date Analyzed: 03/03/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
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	10	U
67-64-1	Acetone	7	B
75-15-0	Carbon Disulfide	45	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	9	J
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	2	J
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	2	J
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	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 0162

Lab Name: IT PITTSBURGH Contract: 68-01-7415 BQ808

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ808

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1856

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	3	J
75-00-3	Chloroethane	42	
75-09-2	Methylene Chloride	17	B
67-64-1	Acetone	26	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	
75-34-3	1,1-Dichloroethane	200	
540-59-0	1,2-Dichloroethene (total)	29	
67-66-3	Chloroform	1	J
107-06-2	1,2-Dichloroethane	1	J
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	61	
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	25	
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	10	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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0211 EPA SAMPLE NO.

Lab Name: IT PITTSBURGH Contract: 68-01-7415 BQ809

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER

Lab Sample ID: BQ809

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 1857

Level: (low/med) LOW

Date Received: 02/27/88

% Moisture: not dec.

Date Analyzed: 03/04/88

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
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	10	U
67-64-1	Acetone	~~230~~	~~B~~
75-15-0	Carbon Disulfide	190	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	15	
67-66-3	Chloroform	66	
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	~~540~~	E
56-23-5	Carbon Tetrachloride	5	
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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	22	
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	5	U
591-78-6	2-Hexanone	27	
127-18-4	Tetrachloroethene	12	
79-34-5	1,1,2,2-Tetrachloroethane	1	J
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	20	
100-41-4	Ethylbenzene	1	J
100-42-5	Styrene	4	J
1330-20-7	Total Xylenes	5	U
		8	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0314 EPA SAMPLE NO.

BQ810

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA [redacted] Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/wat[redacted] WATER Lab Sample ID: BQ810

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1858

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. _____ Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		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	10	U
67-64-1	Acetone	6	B
75-15-0	Carbon Disulfide	82	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U R
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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	[redacted]enzene	5	U
10061-02	[redacted]rans-1,3-Dichloropropene	5	U
75-25-2	[redacted]romoform	5	U
108-10-1	[redacted]-Methyl-2-Pentanone	5	U
591-78-6	[redacted]-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	1	BJ
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U
		5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0341 EPA SAMPLE NO.

BQ811

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ811

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 679

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. _____ Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		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	10	U
67-64-1	Acetone	7	B
75-15-0	Carbon Disulfide	25	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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-	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	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

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BQ803 052

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ803

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4965

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/19/88

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	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	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0036 EPA SAMPLE NO

Lab Name: IT PITTSBURGH Contract: 68-01-7415 BQ804

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ804

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1855

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

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	8	B
67-64-1	Acetone	34	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	60	
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	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	52	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0068 EPA SAMPLE NO.

Lab Name: IT PITTSBURGH Contract: 68-01-7415

BQ805

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER

Lab Sample ID: BQ805

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 667

Level: (low/med) LOW

Date Received: 02/27/88

% Moisture: not dec.

Date Analyzed: 03/03/88

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
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	7	B
67-64-1	Acetone	55	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	60	
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	1	J
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	5	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0090 EPA SAMPLE NO.

Lab Name: IT PITTSBURGH Contract: 68-01-7415 BQ806

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ806

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 668

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. Date Analyzed: 03/03/88

Column: (pack/cap) PACK Dilution Factor: 1.00

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	2	U
75-00-3	Chloroethane	21	
75-09-2	Methylene Chloride	9	B
67-64-1	Acetone	33	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	170	
540-59-0	1,2-Dichloroethene (total)	23	
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	21	
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	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	J
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	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET - 0133

EPA SAMPLE NO.

BQ807

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ807

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 669

Level: (low/med) LOW Date Received: 02/07/88

% Moisture: not dec. Date Analyzed: 03/03/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
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	10	U
67-64-1	Acetone	7	B
75-15-0	Carbon Disulfide	45	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	9	
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	2	J
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	2	J
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	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	1	J
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U
		5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0162 EPA SAMPLE NO.

Name: IT PITTSBURGH Contract: 68-01-7415 BQ808

Lab Code: ITPA Case No.: 9045 SAS No.: ____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ803

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1856

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	3	J
75-00-3	Chloroethane	42	
75-09-2	Methylene Chloride	17	B
67-64-1	Acetone	26	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	
75-34-3	1,1-Dichloroethane	200	
540-59-0	1,2-Dichloroethene (total)	29	
67-66-3	Chloroform	1	J
107-06-2	1,2-Dichloroethane	1	J
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	61	
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	25	
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	10	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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0211 EPA SAMPLE NO.

Lab Name: IT PITTSBURGH Contract: 68-01-7415 BQ809

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER

Lab Sample ID: BQ809

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 1857

Level: (low/med) LOW

Date Received: 02/27/88

% Moisture: not dec.

Date Analyzed: 03/04/88

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
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	10	U
67-64-1	Acetone	~~230~~ 250	~~EB~~ B
75-15-0	Carbon Disulfide	130	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	15	
67-66-3	Chloroform	66	
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	~~540~~ 550	~~E~~ D
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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	22	
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	5	U
591-78-6	2-Hexanone	27	
127-18-4	Tetrachloroethene	12	
79-34-5	1,1,2,2-Tetrachloroethane	1	J
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	20	✱
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	4	J
1330-20-7	Total Xylenes	5	U
		8	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0314 EPA SAMPLE NO.

BQ810

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA [redacted] No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/wat[redacted] WATER Lab Sample ID: BQ810

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 1858

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. ____ Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

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	82	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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	[redacted]enzene	5	U
10061-02	[redacted]ns-1,3-Dichloropropene	5	U
75-25-2	[redacted]romoform	5	U
108-10-1	[redacted]-Methyl-2-Pentanone	5	U
591-78-6	[redacted]-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	1	BJ
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U
		5	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0341 EPA SAMPLE NO.

BQ811

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ811

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 679

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. ____ Date Analyzed: 03/04/88

Column: (pack/cap) PACK Dilution Factor: 1.00

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	10	U
67-64-1	Acetone	7	B
75-15-0	Carbon Disulfide	25	B
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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-	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	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
		5	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BQ803 052

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ803

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4965

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/03/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/19/88

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	10	U
111-91-1	bis(2-Chloroethoxy)Methane	50	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	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethyl Phthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BQ803 05

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ803

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4965

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/03/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/19/88

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	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 3	J 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	14	JB
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

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 0590 BQ804

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ804

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4968

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/19/88

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	10	U
111-91-1	bis(2-Chloroethoxy)Methane	50	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	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethyl Phthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
		10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0591

BQ804

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ804

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4968

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/19/88

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	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	15	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

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0649

BQ805

Lab Name: IT .SBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ805

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4979

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	10	U
111-91-1	bis(2-Chloroethoxy)Methane	50	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	Dimethyl Phthalate	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.

0650 BQ805

Lab Name: IT SBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ805

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4979

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	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 A	BJ 4
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	20	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	17	B 4
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

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0708

BQ806

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ806

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4977

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	10	U
111-91-1	bis(2-Chloroethoxy)Methane	50	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	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethyl Phthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0709 BQ806

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ806

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4977

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	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	2	J
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)	5	J
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	5	BJ
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	23	BJ
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

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0769

BQ807

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ807

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4978

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	10	U
111-91-1	bis(2-Chloroethoxy)Methane	50	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	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethyl Phthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
		10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0770

BQ807

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ807

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4978

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	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	10	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	50	U
101-55-3	4-Bromophenyl-phenylether	5	J
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	50	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	4	BJ
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	20	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	19	B
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

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 0821 BQ808

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ808

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4988

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	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	Dimethyl Phthalate	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. 0822 BQ808

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ808

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4988

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	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	16	B
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

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 0857 BQ809

Lab Name: IT PITTSBUP Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ809

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4987

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	99	
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	10	U
111-91-1	bis(2-Chloroethoxy)Methane	50	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	10	U
91-58-7	2-Chloronaphthalene	50	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethyl Phthalate	50	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0858 BQ809

Lab Name: IT PITTSBUR Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ809

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4987

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	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	10	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	50	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	10	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	10	U
56-55-3	Benzo(a)Anthracene	20	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	26	B
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

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 0932 BQ810

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ810

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4984

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	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	Dimethyl Phthalate	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.

0933 BQ810

Lab Name: IT PITTSBURGH Contract: 68-01-7418

Lab Cod ITPA Case No.: 9045 SAS No.: SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ810

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 4984

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. dec. Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/21/88

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	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)	4	J
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	4	BJ
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	17	B
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

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1192

BQ803

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ803

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 02/27/88

Moisture: not dec. _____ dec. _____ Date Extracted: 03/03/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/26/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	~~0.050~~ 0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	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	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

1197

EPA SAMPLE NO.

BQ804

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ804

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/26/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	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	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1200

BQ805

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ805

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/26/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	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	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1203

BQ806

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ806

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/26/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	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	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1208

BQ807

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ807

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/26/88

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	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	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

1213

EPA SAMPLE NO.

BQ808

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ808

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/26/88

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	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	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

-1218

BQ809

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _ _ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ809

Sample wt/vol: 1000 (g/mL) 1L Lab File ID: _____

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/26/88

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	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	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1223

BQ810

Lab Name: IT PITTSBURGH Contract: 68-01-7415

Lab Code: ITPA Case No.: 9045 SAS No.: _____ SDG No.: BQ803

Matrix: (soil/water) WATER Lab Sample ID: BQ810

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 02/27/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 03/02/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 03/26/88

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.050	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	0.10	U
53494-70-5	Endrin ketone	0.50	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	0.50	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.50	U
11096-82-5	Aroclor-1260	1.0	U
		1.0	U

SITE NAME Cattaraugus CASE# 9045

ORGANIC

	signature
S.O.P. NARRATIVE AND DATA SHEETS XEROXED	CC
STR1 ENTERED	CC
STR2 ENTERED	✓
DATA1 ENTERED	✓
DATA2 ENTERED	CC
FINAL PRINTOUT	✓ Gave to S. Mayberry

INORGANIC

	signature
S.O.P. NARRATIVE AND DATA SHEETS XEROXED	KB
STR1 ENTERED	CC
STR2 ENTERED	✓
DATA1 ENTERED	✓
DATA2 ENTERED	CC
FINAL PRINTOUT	✓ Gave to S. Mayberry

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Acceptability Narrative

Date: Feb. 1988
Number: HW-2
Revision: 7

Case# 9045 Site Cattaraugus County Matrix: Soil ____
Lab E31 Water 8
Other ____

A.2.1 Are all data of acceptable quality? Yes ____ No ✓

If no, list exceptions with reason(s) for rejection or qualification as estimated value (J).

1) Spike Sample analysis is designed to provide information on the effect of sample matrix on the digestion procedure and instrument performance.
The following analyte was rejected because Spike recovery is less than 30 %.
As → All water samples.

2) The following analytes were rejected because for field-duplicate RPD's greater than 50 % where sample and duplicate are both greater than 5x CRDL.
Zn, Al, Cr, Cu, Fe, Pb, Ms, Mn → MBP-614-MBP-61:
The following analytes were rejected because for field duplicate diffrence between sample and duplicate are greater than CRDL. Where sample and / or duplicate i's less than

A.2.1 (continuation)

5 x CRDL but greater than CRDL.
K, Ni, V → MBP-614 - MBP-615.

A.2.2 Contract Problems/Non-compliance

MMB Reviewer: _____ Date: _____
Signature

Contractor Reviewer: Amita Sumbaly Date: 04-04-88
Signature

Verified by: Manj Sheth Date: 04-6-88

NARRATIVE

Description of Instrumentation:

1. ICP:
Perkin-Elmer 6500XR
Meinhard Model TR-30-C2 Nebulizer
No other significant modifications.

Operating conditions:

RF Power:	1200W
Coolant gas:	16lpm
Auxiliary gas:	0.4lpm
Nebulizer gas:	1.0lpm (indicated)
Observation height:	17mm

Wavelengths used:

Al	237.3nm, concentrations over 7000ug/L
Al	308.2, concentrations under 7000ug/L
Sb	206.8
Ba	233.5
Be	313.0
Cd	214.4
Ca	317.9
Cr	267.7
Co	228.6
Cu	324.7
Fe	233.2, concentrations over 7000ug/L
Fe	259.9, concentrations under 7000ug/L
Pb	220.3
Mg	279.0
Mn	294.9
Ni	231.6
K	766.4
Ag	328.0
Na	589.0
V	292.4
Zn	231.6

Explanation of error messages for ICP raw data:

Peak offset: The system did not find a peak at the analytical wavelength. When the concentration is below the detection limit this is not an error, since it merely states that the element was not found. At higher concentrations it indicates that the peak wavelength has drifted unacceptably (this did not happen during

the gathering of this data), or that the concentration is too high for the system to measure. In this case one of the alternate lines above were used, or the sample was diluted appropriately to bring those elements into range.

Over calibration: The concentration determined was more than 10% above the highest standard. This is not an error condition, until the reading approaches the limit of the system's measuring capabilities. In this case an alternate line was used or the sample was diluted, as above.

2. Graphite Furnace AA:
Perkin-Elmer 5100 Zeeman AA with an AS-60 Autosampler.

Operating conditions:
In accordance with CLP procedures and following manufacturer's recommendations.

3. Cold Vapor Mercury:
Perkin-Elmer 303 AA as modified by Buck Scientific for cold vapor mercury analysis. Perkin-Elmer R100 strip chart recorder.

Calibration Standards:

Mixed (for ICP) and single element calibration standards were made up as described in our Standards Logs from 1000ppm stock solutions supplied primarily by VWR. Specific sources are given in the standards logs.

Initial and continuing calibration verification standards used were the ICV series supplied by EPA. The composition of the ICV standards are given following Form 13.

Laboratory Control Samples:

For ICP and furnace analysis of aqueous samples, digested ICV series standards were used as the laboratory control samples.

Interference Check Sample:

EPA-LV set 1287 was used, in accordance with SOW 787.

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBP613

Lab Name: Energy & Environ. Engr. Contract: 68-01-7442

Lab Code: E3I Case No: 9045 SAS No.: _____ SDG No.: MBP613

Matrix (soil/water): WATER Lab Sample ID: 8002102W

Level (low/med): LOW Date Received: 02/26/88

% Solids 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3290.00		E	P
7440-36-0	Antimony	40.00	U		P
7440-38-2	Arsenic	~~2.00~~	U	N	F
7440-39-3	Barium	65.00	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	19500.00			P
7440-47-3	Chromium	7.00	U		P
7440-48-4	Cobalt	13.00	B		P
7440-50-8	Copper	5.90	B		P
7439-89-6	Iron	88600.00			P
7439-92-1	Lead	8.40			F
7439-95-4	Magnesium	3710.00	B		P
7439-96-5	Manganese	761.00			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	11.00	U		P
7440-09-7	Potassium	1920.00	B		P
7782-49-2	Selenium	2.50	U	W	F
7440-22-4	Silver	2.50	U		P
7440-23-5	Sodium	1850.00	B		P
7440-28-0	Thallium	4.50	U		F
7440-62-2	Vanadium	13.00	B		P
7440-66-6	Zinc	37.00			P
	Cyanide	0.00			NR

Color Before: RED Clarity Before: CLOUDY Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBP614

Lab Name: Energy & Environ. Engr. Contract: 68-01-7442

Lab Code: E3I Case No: 9045 SAS No.: _____ SDG No.: MBP613

Matrix (soil/water): WATER

Lab Sample ID: 8002103W

Level (low/med): LOW

Date Received: 02/26/88

% Solids 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	~~44700.00~~		E	P
7440-36-0	Antimony	40.00	U		P
7440-38-2	Arsenic	~~67.00~~		N	F
7440-39-3	Barium	1580.00			P
7440-41-7	Beryllium	1.70	B		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	292000.00			P
7440-47-3	Chromium	~~64.00~~			P
7440-48-4	Cobalt	50.00	B		P
7440-50-8	Copper	~~127.00~~			P
7439-89-6	Iron	117000.00			P
7439-92-1	Lead	~~57.00~~			F
7439-95-4	Magnesium	~~56700.00~~			P
7439-96-5	Manganese	~~3810.00~~			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	~~74.00~~			P
7440-09-7	Potassium	~~15100.00~~			P
7782-49-2	Selenium	2.50	U	W	F
7440-22-4	Silver	2.50	U		P
7440-23-5	Sodium	19500.00			P
7440-28-0	Thallium	4.50	U		F
7440-62-2	Vanadium	~~68.00~~			P
7440-66-6	Zinc	~~318.00~~			P
	Cyanide	0.00			NR

Color Before: GREY Clarity Before: OPAQUE Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBP615

Lab Name: Energy & Environ. Engr. Contract: 68-01-7442

Lab Code: E3I Case No: 9045 SAS No.: _____ SDG No.: MBP613

Matrix (soil/water): WATER Lab Sample ID: 8002104W

Level (low/med): LOW Date Received: 02/26/88

% Solids 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	~~113000.00~~		E	P
7440-36-0	Antimony	40.00	U		P
7440-38-2	Arsenic	~~68.00~~		N	F
7440-39-3	Barium	2410.00			P
7440-41-7	Beryllium	4.20	B		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	417000.00			P
7440-47-3	Chromium	~~152.00~~			P
7440-48-4	Cobalt	100.00			P
7440-50-8	Copper	~~302.00~~			P
7439-89-6	Iron	~~266000.00~~			P
7439-92-1	Lead	~~150.00~~			F
7439-95-4	Magnesium	~~96600.00~~			P
7439-96-5	Manganese	~~7730.00~~			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	~~184.00~~			P
7440-09-7	Potassium	~~23900.00~~			P
7782-49-2	Selenium	2.50	U	W	F
7440-22-4	Silver	2.50	U		P
7440-23-5	Sodium	19900.00			P
7440-28-0	Thallium	4.50	U		F
7440-62-2	Vanadium	~~171.00~~			P
7440-66-6	Zinc	746.00			P
	Cyanide	0.00			NR

Color Before: GREY Clarity Before: OPAQUE Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBP616

Lab Name: Energy & Environ. Engr. Contract: 68-01-7442

Lab Code: E3I Case No: 9045 SAS No.: _____ SDG No.: MBP613

Matrix (soil/water): WATER

Lab Sample ID: 8002105W

Level (low/med): LOW

Date Received: 02/26/88

% Solids 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3030.00		E	P
7440-36-0	Antimony	40.00	U		P
7440-38-2	Arsenic	~~22.00~~		N	F
7440-39-3	Barium	501.00			P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	7.90			P
7440-70-2	Calcium	171000.00			P
7440-47-3	Chromium	12.00			P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	21.00	B		P
7439-89-6	Iron	12400.00			P
7439-92-1	Lead	13.00			F
7439-95-4	Magnesium	39400.00			P
7439-96-5	Manganese	1870.00			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	11.00	U		P
7440-09-7	Potassium	5910.00			P
7782-49-2	Selenium	2.50	U	W	F
7440-22-4	Silver	2.50	U		P
7440-23-5	Sodium	30700.00			P
7440-28-0	Thallium	4.50	U		F
7440-62-2	Vanadium	14.00	B		P
7440-66-6	Zinc	58.00			P
	Cyanide	0.00			NR

Color Before: COLORLESS Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBP617

Lab Name: Energy & Environ. Engr. Contract: 68-01-7442

Lab Code: E3I Case No: 9045 SAS No.: _____ SDG No.: MBP613

Matrix (soil/water): WATER

Level (low/med): LOW

Lab Sample ID: 8002106W

% Solids 0.0

Date Received: 02/26/88

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	416000.00		E	P
7440-36-0	Antimony	56.00	B		P
7440-38-2	Arsenic	~~45.00~~		N	F
7440-39-3	Barium	6940.00			P
7440-41-7	Beryllium	17.00			P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	932000.00			P
7440-47-3	Chromium	554.00			P
7440-48-4	Cobalt	365.00			P
7440-50-8	Copper	1060.00			P
7439-89-6	Iron	1241000.00			P
7439-92-1	Lead	591.00			F
7439-95-4	Magnesium	292000.00			P
7439-96-5	Manganese	23000.00			P
7439-97-6	Mercury	0.57			CV
7440-02-0	Nickel	748.00			P
7440-09-7	Potassium	43800.00			P
7782-49-2	Selenium	2.50	U	W	F
7440-22-4	Silver	7.40	B		P
7440-23-5	Sodium	65000.00			P
7440-28-0	Thallium	4.50	U		F
7440-62-2	Vanadium	615.00			P
7440-66-6	Zinc	3150.00			P
	Cyanide	0.00			NR

Color Before: GREY Clarity Before: OPAQUE Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBP618

Lab Name: Energy & Environ. Engr. Contract: 68-01-7442

Lab Code: E3I Case No: 9045 SAS No.: _____ SDG No.: MBP613

Matrix (soil/water): WATER

Level (low/med): LOW Lab Sample ID: 8002107W

% Solids 0.0 Date Received: 02/26/88

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	799.00		E	P
7440-36-0	Antimony	40.00	U		P
7440-38-2	Arsenic	4.80	B	N	F
7440-39-3	Barium	145.00	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	98600.00			P
7440-47-3	Chromium	7.00	U		P
7440-48-4	Cobalt	12.00	B		P
7440-50-8	Copper	13.00	B		P
7439-89-6	Iron	2810.00			P
7439-92-1	Lead	9.70			F
7439-95-4	Magnesium	26500.00			P
7439-96-5	Manganese	1200.00			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	11.00	U		P
7440-09-7	Potassium	2360.00	B		P
7782-49-2	Selenium	2.50	U	W	F
7440-22-4	Silver	2.50	U		P
7440-23-5	Sodium	33000.00			P
7440-28-0	Thallium	4.50	U		F
7440-62-2	Vanadium	4.00	U		P
7440-66-6	Zinc	36.00			P
	Cyanide	0.00			NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBP619

Lab Name: Energy & Environ. Engr. Contract: 68-01-7442

Lab Code: E3I Case No: 9045 SAS No.: _____ SDG No.: MBP613

Matrix (soil/water): WATER Lab Sample ID: 8002108W

Level (low/med): LOW Date Received: 02/26/88

% Solids 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14000.00		E	P
7440-36-0	Antimony	40.00	U		P
7440-38-2	Arsenic	~~19.00~~		N	F
7440-39-3	Barium	888.00			P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	5.20			P
7440-70-2	Calcium	296000.00			P
7440-47-3	Chromium	63.00			P
7440-48-4	Cobalt	29.00	B		P
7440-50-8	Copper	71.00			P
7439-89-6	Iron	167000.00			P
7439-92-1	Lead	36.00			F
7439-95-4	Magnesium	83200.00			P
7439-96-5	Manganese	9520.00			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	50.00			P
7440-09-7	Potassium	105000.00			P
7782-49-2	Selenium	2.50	U	W	F
7440-22-4	Silver	2.50	U		P
7440-23-5	Sodium	169000.00			P
7440-28-0	Thallium	4.50	U		F
7440-62-2	Vanadium	35.00	B		P
7440-66-6	Zinc	1940.00			P
	Cyanide	0.00			NR

Color Before: GREY Clarity Before: OPAQUE Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBP620

Lab Name: Energy & Environ. Engr. Contract: 68-01-7442

Lab Code: E3I Case No: 9045 SAS No.: _____ SDG No.: MBP613

Matrix (soil/water): WATER Lab Sample ID: 8002101W

Level (low/med): LOW Date Received: 02/26/88

% Solids 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.00	B	E	P
7440-36-0	Antimony	40.00	U		P
7440-38-2	Arsenic	~~2.00~~	U	N	F
7440-39-3	Barium	3.00	U		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	60.00	U		P
7440-47-3	Chromium	7.00	U		P
7440-48-4	Cobalt	15.00	B		P
7440-50-8	Copper	3.00	U		P
7439-89-6	Iron	26.00	B		P
7439-92-1	Lead	2.00	U		F
7439-95-4	Magnesium	100.00	U		P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	11.00	U		P
7440-09-7	Potassium	700.00	U		P
7782-49-2	Selenium	2.50	U		F
7440-22-4	Silver	2.50	U		P
7440-23-5	Sodium	200.00	U		P
7440-28-0	Thallium	4.50	U		F
7440-62-2	Vanadium	5.20	B		P
7440-66-6	Zinc	4.00	U		P
	Cyanide	0.00			NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

REFERENCE NO. 10

> I

CATARAUGUS COUNTY LANDFILL
LATITUDE 42:13:10 LONGITUDE 78:22:53 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	665	0	0	508	1173
RING TOTALS	0	0	665	0	0	508	1173

> I

CATARAUGUS COUNTY LANDFILL
LATITUDE 42:13:10 LONGITUDE 78:22:53 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	225	0	0	154	379
RING TOTALS	0	0	225	0	0	154	379

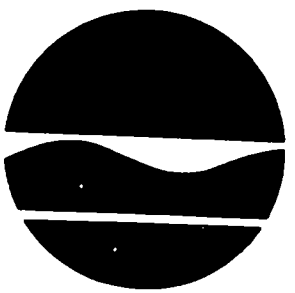
miles	1/4	1/2	1	2	3	4
housing	0	0	225	225	225	377
pop.	0	0	665	665	665	1,170

REFERENCE NO. 11

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

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.

Cattaraugus LF
02-8810-59 | N4ma3IZ

CONFIDENTIAL-NOT FOR PUBLIC RELEASE

HRS

	s	s^2
Groundwater Route Score (S_{gw})	43.25	1870.56
Surface Water Route Score (S_{sw})	11.69	136.66
Air Route Score (S_a)	—	—
$S_{gw}^2 + S_{sw}^2 + S_a^2$		2007.22
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		44.80
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		25.90

WORKSHEET FOR COMPUTING S_M

PRO

	s	s^2
Groundwater Route Score (S_{gw})	59.18	3502.27
Surface Water Route Score (S_{sw})	21.82	476.11
Air Route Score (S_a)	—	—
$S_{gw}^2 + S_{sw}^2 + S_a^2$		3978.38
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		63.07
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		36.46

WORKSHEET FOR COMPUTING S_M

SITE NAME: CATTARAUGUS County LF

TDD/BRICS NO.: 02-8810-59 / NY9812

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Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	HRS	Max Score	PRO
1 Observed Release	0 (45)	1	45	45	45
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					
Depth to Aquifer of Concern	0 1 2 (1)	2	6	6	6
Net Precipitation	0 (1) 2 3	1	2	3	2
Permeability of the Unsaturated Zone	0 (1) 2 3	1	1	3	1
Physical State	0 1 2 (3)	1	3	3	3
Total Route Characteristics Score			12	15	12
3 Containment	0 1 2 (3)	1	3	3	3
4 Waste Characteristics					
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	18
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 (8)	1	1	8	8
Total Waste Characteristics Score			19	26	26
5 Targets					
Ground Water Use	0 1 2 (3)	3	9	9	9
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 (20) / 24 30 32 35 40	1	20	40	20
Total Targets Score			29	49	29
6 If line 1 is 45, multiply 1 x 3 x 5			2430	57,330	33930
If line 1 is 0, multiply 2 x 3 x 4 x 5					
7 Divide line 6 by 57,330 and multiply by 100			S_{gw} = 43.26		59.18

HRS - 0

P/O - □

JUSTIFICATION FOR SCORES/SOURCE

(Unknown HRS values are scored 0 except for containment, which, if unknown, is scored 1. All default values should be noted as such.)

Contaminants found in downgradient wells. Ref 2,9

on-site well depth 35-45 feet Ref 2

Inches Ref 8

10^{-5} to 10^{-7} cm/sec based on glacial till Ref 2,8

Received sewage treatment sludge Ref 2

Phase I + II unlined and without a leachate collection system Ref 2

approx 13 acres in Phase I + II

Lead, Chromium, Manganese, Iron Ref 2,9

unknown amount Ref 2

took sewage sludge, debris construction materials in Phase II-2

only source for drinking within 3 miles - no alternate source, private residents have private wells Ref 4,7

Pop. within 3 miles is 700 nearest well is approx 0.25 miles

Ref 3,8

ADDITIONAL NOTES OR COMMENTS

SITE NAME: CATTARAUGUS COUNTY LF

TDD/BRICS NO.: 02-8810-09 / NYM9812

CONFIDENTIAL-NOT FOR PUBLIC RELEASE

Surface Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	HRS	Max Score	PRO
1 Observed Release	(0) 45	1	0	45	45
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					
Facility Slope and Intervening Terrain	0 1 2 (3)	1	0	3	3
1-yr. 24-hr. Rainfall	0 1 (2) 3	1	2	3	2
Distance to Nearest Surface Water	0 1 2 (3)	2	6	6	6
Physical State	0 1 2 (3)	1	3	3	3
Total Route Characteristics Score			11	15	14
3 Containment	0 1 2 (3)	1	3	3	3
4 Waste Characteristics					
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	18
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1	1	8	8
Total Waste Characteristics Score			19	26	26
5 Targets					
Surface Water Use	0 1 (2) 3	3	6	9	6
Distance to a Sensitive Environment	0 1 2 (3)	2	6	6	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	0
Total Targets Score			12	55	12
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			7524	64,350	14040
7 Divide line 6 by 64,350 and multiply by 100	S_{sw} =		11.69		8182

JUSTIFICATION FOR SCORES/SOURCE

(Unknown HRS values are scored 0 except for containment, which, if unknown, is scored 1. All default values should be noted as such.)

No sample analysis & documentation of contaminants but reports of leachate in migration. Presently leachate & runoff is collected Ref 6

6% slope
20% facility slope
L.F. has leachate collection system

Ref 6

2.25 inches Ref 8
1,000 feet to Ischua Creek
received sewage treatment sludge
Ref 2

Phase 1 & 2 unlined + without leachate collection system
in Plasterfill late 1980's
Lead, Chromium Ref 2,9
Manganese, Iron, Nickle
Barium
unknown amounts of
waste disposed of there was leachate outbreaks
Ref 2,6

Recreational fishing
Ref 4
~~Sensitive~~ Env. within 2 miles
Wetlands within 2 miles Ref 3,5,10
No intakes within 3 miles, everyone within 3 miles is on private well water.
Ref 4

ADDITIONAL NOTES OR COMMENTS