932054 NGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

VOLUME I

Nash Road Landfill

Site No. 932054

Town of Wheatfield

Niagara County

Date: July 1985



Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233 Henry G. Williams, Commissioner

Division of Solid and Hazardous Waste Norman H. Nosenchuck, P.E., Director

By:

In Association With DAMES & MOORE

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TABLE OF CONTENTS

SECTION		PAGE
I	Executive Summary	1-1
II	Purpose	11-1
III	Scope of Work	111-1
IV	Site Assessment Site Topography Site Hydrogeology Regional Geology Site Geology Hydrology Surface Water Hydrology Groundwater Hydrology Contamination	IV-1 IV-2 IV-2 IV-3 IV-8 IV-8 IV-9
v	Final Hazard Ranking System Summary Location HRS Worksheets HRS Documentation Records EPA Form 2070-13	v-1
VI	Preliminary Remedial Alternatives and Costs Introduction Identification of Remedial Methods Second Screening of Remedial Actions Evaluation of Remedial Alternatives Conceptual Cost Estimate	VI-1 VI-1 VI-1 VI-2 VI-3 VI-5

References

Appendix A - Field Proced	dure	2
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Appendix A - Field Procedures

Appendix B - Boring Logs, Well Schematics, and Permeability Test Data

Appendix C - Geophysical Survey Data

Appendix D - Chemical Data

LIST OF TABLES

TABLE	TITLE
111.1	Work Plan - Task Descriptions
IV.1	In Situ Permeability
IV.2	Analytical Results for Surface Water Samples
IV.3	Analytical Results for Sediment Samples
IV.4	Analytical Results for Ground Water Samples
IV.5	Results of Metals Analysis for Osterman Well
VI.1	Identification of Remedial Action Methods
VI.2	Preliminary Screening of Remedial Actions
VI.3	Evaluation of Potential Remedial Alternatives
VI.4	Summary of Conceptual Remedial Cost Estimate

LIST OF FIGURES

FIGURE	TITLE
I.1	Site Location Map
1.2	Plot Plan
111.1	Plot Plan
111.2	Location of ER Stations
IV.1	Site Location Map
IV.2	Surface Topography
IV.3	Depth to Bedrock Surface
IV.4	ER Profile Map (Electrode Spacing = 70 feet)
IV.5	ER Profile Map (Electrode Spacing = 50 feet)
IV.6	Depth to Top of Till
IV.7	Lower Sand Isopachs
1V.8	ER Profile Map (Electrode Spacing = 30 feet)
IV.9	ER Profile Map (Electrode Spacing = 20 feet)
IV.10	ER Profile Map (Electrode Spacing = 10 feet)
IV.11	Depth to Top of Upper Clay Unit
IV.12	Upper Sand Isopachs
IV.13	Magnetic Contour Map
IV.14	Cross Section A-A'
IV.15	Cross Section B-B'
IV.16	Cross Section A-A' based on downhole gamma logs
IV.17	Cross Section B-B' based on downhole gamma logs
IV.18	Cross Section C-C' based on Electrical Resistivity Soundings
IV.19	Location of ER Stations
IV.20	Depth to Piezometric Surface in Till
V.ii.l	Site Location Map
V.iv.1	Plot Plan

SECTION I

EXECUTIVE SUMMARY

The Nash Road site is an inactive landfill located in the Town of Wheatfield, Niagara County (NYS), adjacent to the North Tonawanda City boundary (Figure I.1). The site is rectangular, totaling approximately 25 acres. The Nash Road site is located in a suburban residential area, and is partly overgrown with trees and marsh vegetation. Nearby residents use the site as a jogging area, dirt bike track, and play area.

The Nash Road site was operated as a landfill by Niagara Sanitation Company between 1964 and 1968. Both municipal and industrial wastes, including caustic materials and sludges, are disposed at the site. In addition, between 6/6/68 and 7/15/68, approximately 900 cubic yards of waste material from a sewer excavation at the Love Canal site was disposed in an excavated trench on this site (memo of 8/9/78 to Hennessey, NYSDOT).

Although some wastes are covered, protruding refuse is visible from the ground surface. Current concern centers on the possible lack of containment of the waste and the migration of these wastes offsite.

The Phase II investigation included surface water, sediment, and groundwater sampling and analyses in order to identify the occurrence and location of contaminants and to assess the potential hazard associated with the landfill site (Figure I.2).

Seven onsite groundwater wells were installed and aquifer testing was performed. Water samples were tested for the 15 Love Canal indicator parameters (methylene chloride, chloroform, carbon tetrachloride, benzene, toluene, chlorobenzene, 1,1,2-trichloroethane, tetrachloroethene, 1,1,2,2-tetrachloroethane, trichloroethene, trichlorobenzene (and isomers), dichlorobenzene (and isomers), hexachlorobutadiene, total organic halogens and pH). Sediment samples were tested for the 15 indicator parameters and for Pb, Cr, Cd, Cu, CN, Hg, Ni, and Zn. Geophysical surveys and downhole geophysics were used to help delineate the details of subsurface hydrogeology.

Site stratigraphy can be summarized as follows:

mixed sand/waste fill silt (MC) upper sand (SP) clay (CH and CL with sand seams) lower sand (SP) till (GM) dolomite bedrock

Most waste was mixed with and covered by the upper sand. The disposal trench for Love Canal waste was excavated through the sand into the clay unit.

The monitoring well screens were placed in the till and the silt/upper sand units. The piezometric surface within the fill shows a groundwater high beneath the north-center part of the site.

Surface water samples were found to contain low levels of methylene chloride and total organic halogens; no other contaminants were detected. Sediment taken from dried shallow puddles showed low levels of metals.

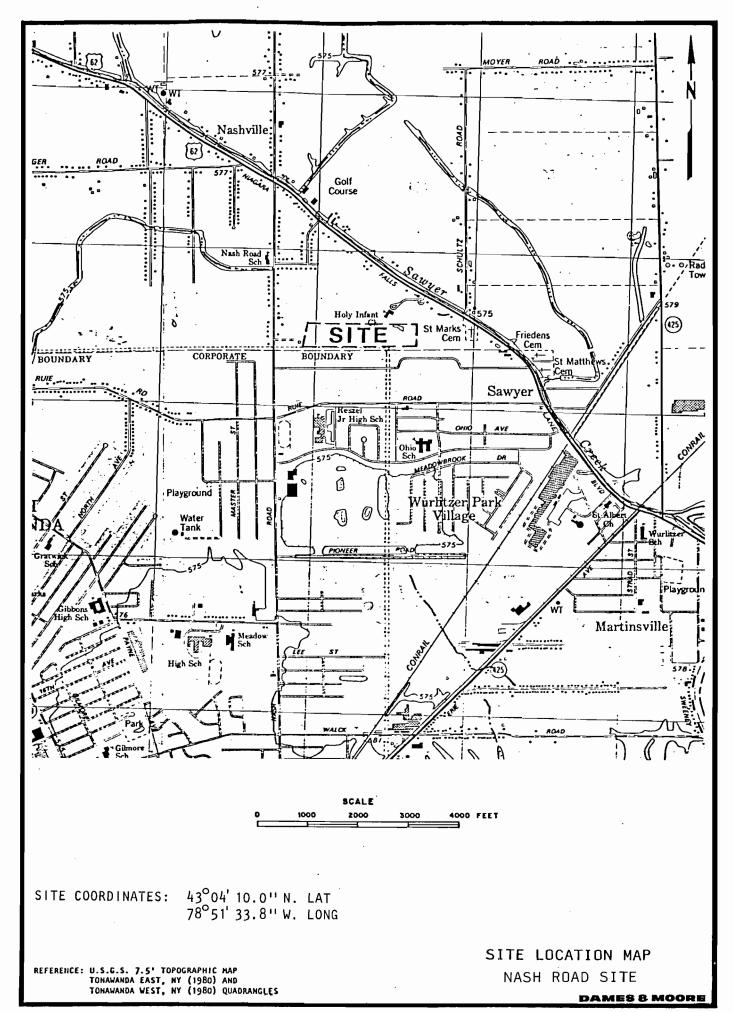
Limited analyses of ground water samples from new on-site monitoring wells indicated no organic contamination. One offsite residential well, approximately 80 feet deep, was analyzed for all priority pollutants; the analyses show metal contamination. An earlier USGS study showed metal contamination in the shallow aquifer.

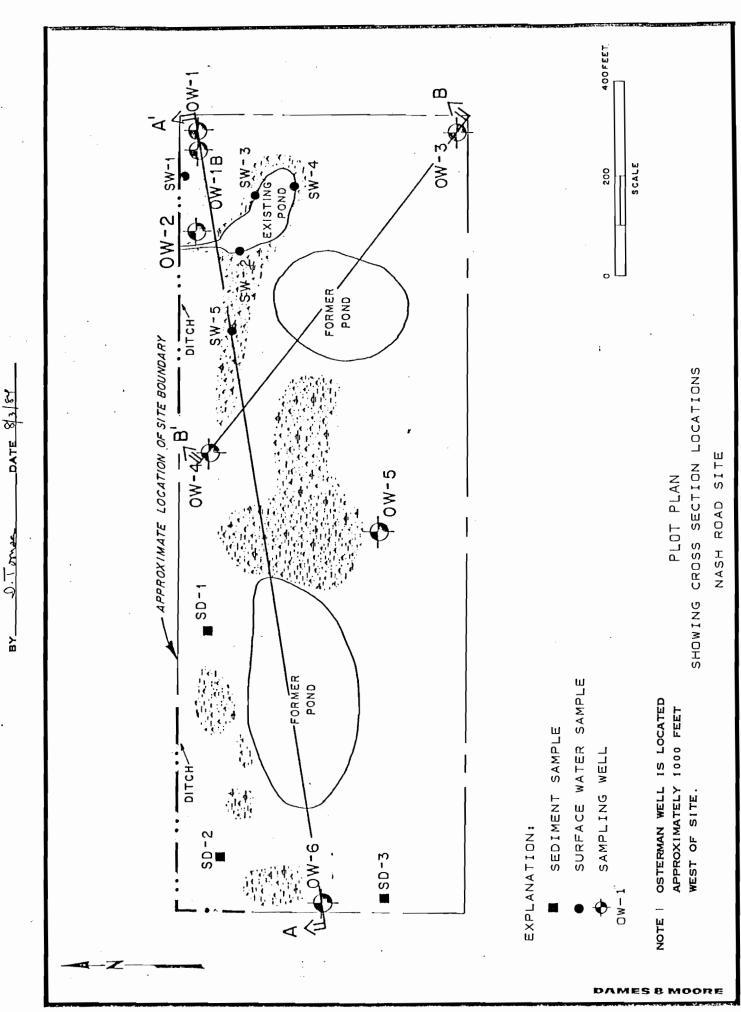
Based upon the results of this study and previous studies, the HRS scores for the Nash Road site have been calculated as follows:

$$S_{M} = 5.37$$

$$S_{FE} = 26.25$$

$$S_{DC} = 37.50$$





SECTION II

PURPOSE

Purposes

The Nash Road site is an inactive disposal area containing municipal wastes and industrial wastes, including waste materials from a sewer excavation at the Love Canal site. Disposal has occurred in and above lacustrine sands and clays; there are no engineered containment facilities on the site.

The purposes of the Nash Road Phase II Site investigation were 1) to identify the presence and location of any hazardous substance migrating from the site, 2) to determine if any imminent hazard exists, 3) to gather necessary information and to complete the HRS scoring, and 4) to prepare a site investigation report.

SECTION III

SCOPE OF WORK

Scope of Work

Phase II investigations at the Nash Road site were begun in June, 1983 in conjunction with Phase I investigation and are ongoing as of the date of this report. The scope of the investigation was originally presented in the Phase I report (June, 1983) and later in the Quality Assurance Project Plan for Nash Road and Solvent Chemical Sites (March, 1984). During the performance of the field investigation, the scope of the work was expanded at the request of the NYSDEC, in order to obtain a more comprehensive understanding of the entire Nash Road landfill.

The scope of our investigation is summarized in tabular form on Table III.l and is summarized below.

Step 1 - Emergency Evaluation Surface Water

A surface water monitoring program was implemented in June 1983 to determine if any imminent hazard exists at the site and to evaluate the movement of surface contaminants in a northerly and northeasterly direction. Five surface water samples were collected around the ponds (including trench) and ditch in the eastern part of the site (see Figure III.1). These samples were analyzed for the 15 indicator parameters (methylene chloride, chloroform, carbon tetrachloride, benzene, toluene, chlorobenzene, 1,1,2-trichloroethane, tetrachloroethene, 1,1,2,2-tetrachloroethane, trichloroethylene, trichlorobenzene (and isomers), dichlorobenzene (and isomers), hexachlorobutadiene,

total organic halogens, and pH). The procedure for collecting the samples is discussed in Appendix A. The results of these analyses are presented in Appendix D and are discussed in Section IV.

Step 2 - Site Investigation

Geophysical Survey (east end) - Resistivity and magnetometer surveys were performed in late May 1984 to define the boundaries and depth of the disposal trench, to identify the presence of buried metal objects, to provide stratigraphic information, and to evaluate the presence of a contaminant plume. Prior to the survey, standing water was drained from the site in order to provide access for the field team.

The magnetic survey of the Nash Road site was conducted using a 40-foot grid pattern over the entire site. A north-south orientation was used on the traverses across the site. The magnetic base station was located offsite in a wooded area west of the site.

The electrical resistivity (ER) survey of the Nash Road site was conducted using both soundings and profiles. Soundings were conducted first to a depth of 100 feet in order to interpret geologic and stratigraphic features. Other soundings were conducted to a depth of 30 feet and others only as deep as necessary to distinguish lenses of interest. Profiles were conducted at electrode spacings of 10, 20, 30, 50, and 70 feet.

Figure III.2 shows the location of the ER sounding and profile stations. Field procedures are outlined in Appendix A. Magnetometer, sounding, and profile field data are included in Appendix C.

Groundwater Monitoring - A network of five deep and two shallow groundwater sampling wells was installed in June 1984. The locations of the wells were chosen to provide information about the geology of the subsurface and the groundwater flow regime at the entire Nash Road Landfill (see Figure III.1). Soil was drilled and sampled from the ground surface to the top of the bedrock. Stainless steel wells were installed with filter sand packs, and primary and secondary bentonite seals.

Each well was logged visually during drilling and later with a downhole gamma logging unit. Additionally, aquifer characteristics were evaluated by means of in-situ falling head permeability tests and routine water level measurements. To further characterize the lithology of the site soils, a grain size analysis of each soil unit was performed in the laboratory, according to ASTM D-422-63.

Groundwater samples were taken in July 1984 from the seven sampling wells and from a nearby unused residential well. Groundwater samples were analyzed for the 15 indicator parameters; the chemical analytical results are discussed in Section IV and listed in Appendix D. All field procedures are detailed in Appendix A. Boring logs and well schematics and

grain size analyses are included in Appendix B. Gamma logs are shown on Figures IV.16 and IV.17.

Sediment Sampling - Sediment samples were collected in July 1984 at three locations in the western part of the site, as shown on Figure III.l. It was originally planned that surface water would also be collected at these locations, but no surface water was present on this end of the site at the time of sampling. Locations of the sampling points are along the western and northern margins of the site and were chosen to complement the earlier surface water sampling network and to provide information about offsite surface movement of contaminants in a westerly and northerly direction. Sediments are being analyzed for Pb, Cr, Cu, Cd, CN, Hg, Ni, Zn, and organic priority pollutants. Results are discussed in Section IV and listed in Appendix D.

Air Survey - An HNU meter survey was performed during July 1984 to evaluate the presence of organic vapor contaminants. No contamination was detected. The procedure for this survey is described in Appendix A. Field data is presented in Appendix D.

TABLE III.1

WORK PLAN - TASK DESCRIPTION (as implemented) NIAGARA SANITATION, NASH ROAD

	NIAGARA SAN	ITATION, NASH ROAD
	TASKS	DESCRIPTION OF TASK
Step 1	- Emergency Evaluation	
	orm Surface Water ling and Analyses	Inspect the site and collect 5 water samples around the disposal trench. Analyze the samples for methylene chloride, chloroform, carbon tetrachloride, benzene, toluene, chlorobenzene, 1,1,2-trichloroethane, tetrachloroethene, 1,1,2,2-tetrachloroethane, trichloroethene, trichloroethene, trichlorobenzene (and isomers), dichlorobenzene (and isomers), hexachlorobutadiene, total organic halogens and pH.
Step 2	- Site Investigation	
II-A	Update Work Plan	Review the information in the Phase I report, and Step 1 evaluation, and revise the Phase II work plan.
II-B	Conduct Geophysical Studies	Conduct EM and resistivity to define the boundary and depth of the disposal trench and to provide hydrogeological information.
II-C	Conduct Boring/Install Monitoring Wells	Install 7 stainless steel sampling wells.
II-D	Construct Test Pits/ Auger Holes	No further construction of test auger holes necessary.
II-E	Perform Sampling and Analysis	
	Soil samples from borings	Collect samples during drilling at 5-foot intervals or at changes in subsurface lithology. Perform grain size analysis of each lithologic unit on site.
	Soil samples from	No further sampling necessary.

Soil samples from test No further sampling necessary.

surface soils

pits and auger holes

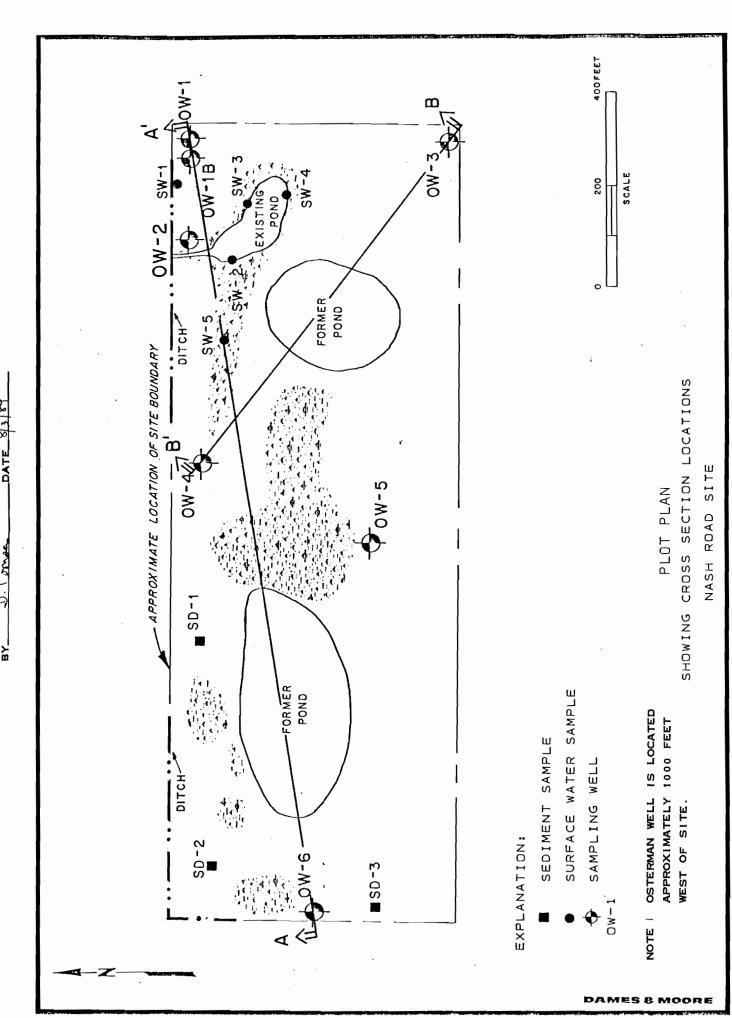
TASKS	DESCRIPTION OF TASK
Sediment samples from surface water	Collect 3 sediment samples at the west end and analyze samples for Pb, Cr, Cd, Cu, CN, Hg, Ni, Zn, and a GC/MS organic priority pollutant scan.
Groundwater samples	Collect samples from the 7 new monitoring wells and analyze for the parameter listed in Step 1.
Surface water samples	No water at west end of site at time of investigation. Air samples Using the HNU meter, determine if organic vapors are present.
Waste samples	No further sampling necessary.
II-F Calculate Final HRS	Revise HRS based on the field data collected in Tasks IIB-IIE, complete the HRS form.
II-G Conduct Site Assessment	Prepare final report containing Phase I report, additional field data, final HRS and HRS documentation records, and site assessments. The site assessment

II-H Project Management

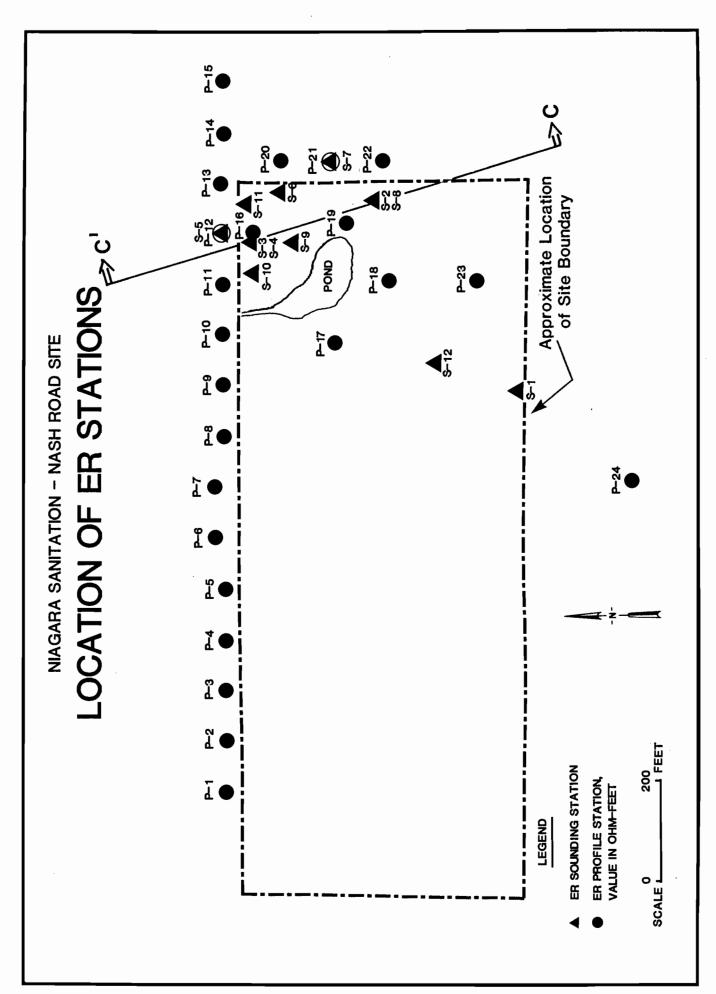
will consist of a conceptual evaluation of alternatives and a preliminary cost estimate of the

Project coordination, administration and reporting.

most probable alternative.



51/200- SOEET"



SECTION IV

SITE ASSESSMENT

Site Topography

The site is an inactive landfill located in the Town of Wheatfield, Niagara County, adjacent to the North Tonawanda City boundary. The site is a rectangular area, twenty five acres in size. It is surrounded by a suburban residential area, and is partially overgrown with trees and marsh vegetation. Dirt roads provide access to and within the site.

The landfill is visible to many of the residential neighbors south of the site. It is used by nearby residents as a jogging area, dirt bike track, and general play area.

Access to the site is open and unguarded. National Fuel Gas Corporation has a facility adjacent to the western border of the site. A gas pipeline, a salt-brine pipeline, and above-ground electrical lines also pass through the site along the southern boundary.

Before landfilling began, the site was a swamp area with surface water drainage to the north toward Sawyer Creek. General surface features are shown on Figures IV.l and IV.2. Landfilling of wastes and excavation of a disposal trench (labelled "existing pond") has resulted in irregular ground surface topography. Relief on the site is greater than 10 feet.

The volume of onsite surface water fluctuates seasonally. In the

spring, approximately one-third of the site is underwater; in late summer, only the disposal trench and connected ponds are filled with water. The northern margin of the site is bounded in most parts by a ditch, which, in the spring, contains surface water. The large ponds and the disposal trench drain into this ditch.

During the field activities in May through July, 1984, abundant wildlife was observed on the site, including birds, rabbits, frogs, turtles. No human use of surface water was observed. Groundwater is similarly unused, although an older home adjacent to the site has a (unused) residential water well. It is possible that other older homes in the vicinity of the landfill have residential wells. (Niagara Co. Dept. of Health is unaware of any other existing wells.) All nearby residents presently are supplied with municipal drinking water.

Site Hydrogeology

Regional Geology

The Nash Road Site is located in the Erie-Ontario Lowlands physiographic province. The bedrock of this region is predominantly limestone, dolostone, and shale.

In the recent past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The activity of the glacier widened preexisting valleys and deposited widespread accumulations of till. The melting of ice, ending approximately 12,000 years ago, produced large

volumes of meltwater; this water subsequently shaped channels and deposited thick accumulations of stratified, granular sediments.

As glacial ice retreated from the region, meltwater formed lakes in front of the ice margin. This region is covered by lake sediments, the most recent being from Lake Tonawanda, an elongate lake which occupied an east-west valley and drained north into Lake Iroquois. The sediments consist of blanket sands and beach ridges which are occasionally interlayered with lacustrine silts and clays.

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

Site Geology

This analysis is based on subsurface information from the drilling program, downhole gamma logging and geophysical surveys and sounding of the site. Also used in this analysis were the USGS shallow borings made in 1982.

Bedrock is Lockport Dolostone, occurring at depths varying from 65 feet to 71 feet below the ground surface. The surface of the bedrock slopes generally northward (Figure IV.3) and forms a

north-trending channel in the center of the site. An ER profile of the 70-foot deep surface (Figure IV.4) resulted in electrical values indicative of bedrock. Values south of the disposal trench, as seen on Figure IV.4 and all ER profiles are numerically lower and suggest a wet area.

A till unit is located immediately above the bedrock surface. The till is a pink, very dense, silt and gravel with some sand. Grain size analyses show silt contents as great as 65%. Gravel size increases to the west. The till blankets the site with an average thickness of 25 feet. The 50-foot deep surface, which occurs within the till, has been mapped with ER profiling (Figure IV.5). The values are relatively consistent, except again for the low values south of the disposal trench. The top surface of the till, as shown on Figure IV.6, forms a channel trending generally northwest, with a maximum relief across the study area of 17 feet.

Overlying the till is a lower sand unit. A grain size analysis of the unit indicates that it is a fine sand with approximately 35% silt. This sand unit does not blanket the site, but rather occurs as a wedge-shaped unit, thickening to the north-center part of the site (Figure IV.7). At the western and eastern margin of the site, the sand unit has a thickness of less than one foot. An ER profile map of the 30-foot deep surface (Figure IV.8), which corresponds approximately with the depth of the lower sand, shows lower values south of the trench. Again, these can be interpreted as an increased water content of the soils in

this area. Based on its lithology and stratigraphic position, this sand unit is interpreted to be an early deposit of Lake Tonawanda.

Above the lower sand and blanketing the site is a layered "fat" clay unit which grades vertically into a layered silty "lean" clay. Both of these units contain numerous sand seams. Hydrometer analyses of these fat and lean clays confirm the vertically increasing silt content. These clay units are classic examples of Lake Tonawanda deposits, as mapped by Muller (1977). The most likely mineralogy for the clay minerals is illite. Two ER profile maps of the 20-foot deep and 10-foot deep surfaces (both of which are within this clay unit) show, again, an area south of the trench with distinctly low resistivity values. This again is interpreted as the result of increased water content. Contours on the top surface of the upper clay unit, as shown on Figure IV.11, show a surface sloping gently north and west; maximum relief is 3 feet.

An upper sand unit is located immediately above the clay unit, in all parts of the site except in the northeast corner. This sand unit varies in thickness from greater than 8 feet in the southwest to 0 feet in the northeast (Figure IV.12). A grain size analysis of this unit indicates a fine sand with approximately 20% silt. This unit probably originated as a late deposit of Lake Tonawanda.

In the eastern part of this site, the upper sand is overlain by a

layered silt. A grain size analysis of this silt shows that it contains approximately 20% sand and little clay. During testing, a suspension of this silt was extremely frothy and had a soapy odor. The occurrence of this fine-grained unit suggests a possible deepening of the Lake Tonawanda water.

The uppermost unit on the site is a mixed sand/waste fill. This unit is defined best from the results of the magnetometer survey. Readings on the site were highly variable due to the disturbed soil, landfill type debris and buried metallic objects. On Figure IV.13, the areas of very high magnetic readings (greater than 58,000 gammas) are interpreted as buried ferromagnetic metal objects. The magnetic readings of 57,500 gammas are interpreted as disturbed soil areas and possibly buried ferromagnetic metal objects.

The magnetic data indicates that there are five areas on the landfill that may be underlain by buried ferromagnetic metal objects. The data also suggest that the landfill has several distinct areas of disturbed soil, i.e., pits and/or trenches, and mixed soil/waste fill. Samples taken during drilling support this interpretation.

The stratigraphic relationship between the units can be seen on the cross sections prepared from boring logs (Figures IV.14 and IV.15). The locations of these lines are shown on the Plot Plan (Figure III.1). The sand/waste mixed fill covers part of the ground surface and is underlain by the upper sand or the clayey

silt. In virgin areas, the ground surface is either silt or sand. Excavation of the disposal trench, not shown on the cross section, would have exposed the fat clay in the base of the trench.

Cross sections have also been prepared based on gamma log records (Figures IV.16 and IV.17). These cross sections show the same stratigraphy as those based on boring logs, as well as some finer detail and time lines. For example, peaks A and B are on approximately horizontal lines suggesting site-wide thin sand seams within the lacustrine clay. Similarly, peak C corresponds to the occurrence of the lower sand unit and peak E to the upper sand and sand/waste fill units. It should be noted that the gamma log responses of the upper sand unit and the fill/sand unit are the same due to the presence of the sand. These units are plotted together on the gamma log cross sections.

A cross section based on ER sounding values has been prepared and is shown on Figure IV.18. The location of this cross section line is shown on Figure IV.19. On the cross section, all lithologic units are discernable. In addition, a "wet zone" is indicated between depths of 16 feet and 26 feet, sloping to the north. This ER peak corresponds roughly with the depths of peak B on the gamma log cross sections and therefore may indicate a silt or other low gamma count density material. Boring logs (OW-l and OW-3) show this depth range to be a very soft wet clay. This anomaly is of particular interest to the study because it coincides with the approximate depth of the disposal trench.

Hydrology

To date, the hydrology of the Nash Road site is known from insitu permeability tests, groundwater elevation measurements, surface and groundwater chemical information, and interpretations from the subsurface geology.

Surface Water Hydrology:

The occurrence and location of surface water on the Nash Road site is variable and seasonal. Most surface water bodies occur in small enclosed depressions, less than 3 feet deep. They are formed by either snow meltwater or rainwater and generally disappear, due to evaporation, during the summer months. Water in these ponds was observed to be either clear or rust-colored. Most of these ponds are rimmed with marsh-type vegetation. Due to their temporal and enclosed nature, no water samples were taken in these ponds.

In contrast to the small ponds, several large connected ponds, including one which was a disposal trench, are located in the northeast section of the site and contain water year-round. The color of this water is clear, with occasional patches of green floating algae and weeds. The edges of these ponds are rimmed with marsh-like vegetation. Rusty barrels and other debris can be seen floating in these ponds. Nearby residents reported to our field team that these ponds do not freeze in the winter. In the spring and early summer, these ponds drain into a ditch along the northern margin of the site.

Groundwater Hydrology:

Permeabilities for the various screened units are shown in Table IV.1. The magnitudes of the values are typical of the corresponding soil lithologies. The till/bedrock interface permeability is variable, depending upon the degree of fracture of the bedrock and the sand and gravel content of the till.

The piezometric surface within the till is mapped on Figure IV.20. The configuration of the contours suggests a groundwater mound beneath the center of the site. This mound may be attributable to the occurrence of the lower sand unit, immediately above the till, acting as a source of recharge for the till.

The thick, soft clay unit above the lower sand may act as an aquitard, thus allowing only lateral recharge of the lower sand unit. Alternately, the clay may be permeable due to its soft (low density) consistency and layered fabric with numerous sand seams (see gamma logs). Additionally, the excavation of the disposal trench removed part of the clay unit and possibly disturbed the clay floor of the trench during the drag-line excavation procedure. This activity may have opened a new flow path by which surface water now may be connected with sand seams in the clay and possibly with the lower sand unit.

The upper sand unit probably forms a shallow aquifer, although no wells were placed in this unit. Based on our interpretation of the upper clay unit surface geometry (Figure IV.11), we expect

that flow direction within the shallow aquifer to follow the contours of the underlying clay unit. Again, this clay unit has been partially excavated in the trench, thereby providing a connection between the upper aquifer and trench water, and, by extension, possibly into the lower aquifer.

Contamination

Contamination of the environment within the site boundaries has been evaluated by chemical analyses of surface water, sediment, and groundwater samples and an HNU air quality survey. Migration of contamination away from the site is assessed by chemical analyses of surface water and one nearby (unused) residential well, as well as our interpretation of groundwater and surface water flow characteristics.

Surface Water Contamination

Water samples from ponds and from the ditch were analyzed in July 1983, as an emergency measure to assess the migration of contamination off-site via a surface water pathway. The results of these analyses are shown on Table IV.2. The samples were analyzed for the indicator parameters. Only very low levels of total organic halogens and methylene chloride were found. The ditch water sample had slightly greater levels than any of the pond and trench samples. This may indicate another subsurface or surface water source to the ditch, either west or north of the site. The TOX values (10 ppb and less) could be indicative of background levels. Alternately, the low levels of methylene chloride could be due to the laboratory contamination. These

chemical analyses were performed without complete quality assurance procedures due to the emergency response nature of this part of the study.

A sample of ponded water was collected by Region 9 DEC on July 11, 1983 and analyzed for GC/MS organics. Two compounds were identified at low concentrations including: Diethylphthalate (identified) and Toluene (42.7 ug/l).

From these analyses, no significant surface water contamination from organic indicator pollutants is believed to exist at the eastern end of the site.

Sediment Contamination

In the summer of 1984, three sediment samples were taken from "dried puddles" in the western end of the site (see Figure III.1 for sampling locations). These samples were analyzed for organic priority pollutants and metals. The results of these analyses are presented in Table IV.3. Also presented in this table are ranges of concentrations of metals in non-contaminated soils. The values for cadmium, chromium, copper, lead, nickel and zinc are all within the range of "typical" soils. Also there is no significant variation between the values for different sampling locations. Values for mercury and cyanide were not presented in Friberg, Nordberg and Vouk (1979); however, the values of cyanide are less than the detection limit. Mercury was detected at very low levels. Based on the results of the analysis of these

samples, no sediment contamination is believed to exist at the site.

Groundwater Contamination

Seven on-site monitoring wells and one nearby off-site unused residential well (Osterman well) were sampled in the summer of 1984. The on-site wells were analyzed for volatile organics, base/neutral extractable organics, total organic halogens and pH. The results of compounds that were detected are presented on Table IV.4. Based on the results of these analyses, no significant organic contamination is believed to exist at the site.

The Osterman well sample was analyzed for priority pollutants (volatiles, acid extractables, base/neutral extractables, pesticides/PCBs, metals, cyanides and phenolics). The results of the analyses for organics that were detected are presented in Table IV.4. The results of analysis of two samples for metal are presented in Table IV.5. Only metals that were detected in at least one of the ground water samples are presented in this table.

Lead was found in one of these two Osterman well samples at levels in excess of the New York State Class GA water quality standard (25 ug/1). However, in the other sample the concentration of lead was less than the detection limit. Cadmium was detected in both samples. The concentration in one of the samples was at the water quality limit (10 ug/1) and the

concentration in the other sample was less than the water quality limit. The concentrations of other metals were below water quality limits. It should be noted that the analytical results presented in Table IV.5 are total metals on unfiltered samples and that the monitoring well samples were not analyzed for metals. Additional sampling is required to determine if metals < contamination exists at the site and to determine whether or not the contamination is migrating from the site.

Air Contamination

An HNU air quality survey was performed in the summer of 1984 and nor airborne organic contaminants were detected.

TABLE IV.1

Summary In-Situ Permeability

Well	Permeability co	m/sec
OW-1	4.37×10^{-4}	silt
OW-2	6.75×10^{-4}	silt and sand
OW-1B	8.43×10^{-7}	till/bedrock
OW-3	1.43×10^{-6}	wet zone in till
OW-4	7.88 $\times 10^{-7}$	till/bedrock
OW-5	7.5×10^{-4}	till/bedrock
OW-6	6.8×10^{-4}	till/bedrock

TABLE IV.2

Analytical Results for Surface Water Samples

Parameter (ug/1)	SW-l	SW-2	sw-3	SW-4	SW-5
Methylene Chloride	11	<10	10	<10	<10
Chloroform	<10	<10	<10	<10	<10
Carbon Tetrachloride	<10	<10	<10	<10	<10
Benzene	<10	<10	<10	<10	<10
Toluene	<10	<10	<10	<10	<10
Chlorobenzene	<10	<10	<10	<10	<10
1,1,2,2,-trichloroetha	ane<10	<10	<10	<10	<10
Tetrachloroethane	<10	<10	<10	<10	<10
1,1,2,2,-tetrachloro- ethene	<10	<10	<10	<10	<10
Trichloroethene	<10	<10	<10	<10	<10
Trichlorobenzene (isomers)	<10	<10	<10	<10	<10
Dichlorobenzene (isomer)	<10	<10	<10	<10	<10
Hexchlorobutadiene	<10	<10	<10	<10	<10
рн	6.9	8.1	7.1	7.4	7.4
Total organic halogens	s 10.	5.	7.	7.	8.

(See Figure III.1 for location of sampling points)

TABLE IV.3 Analytical Results $^{\{1\}}$ for Sediment Samples

Parameter (ug/g)	SD-1	Sample No. SD-2	No. SD-3	Range of Concentration in non-contaminated soils (2)
Cadmium	8.38		?:	₽
Chromium	8.9	6.3	5.6	trace to 250
Copper	5.7	8.2	10.0	2 to 100
Lead	18.	7.0	14.	2 to 200
Mercury	0.0084	0.064	0.010	(3)
Nickel	6.5	8.5	9.4	3 to 1,000
Zinc	40.	34.	48.	10 to 300
Cyanide	_	₽	\	(3)

Samples were analyzed for volatile organics, acid and base/neutral extractable organics and pesticides/PCB's. All results for organics analysis were less than detection limits Ĵ

Source: Handbook on the Toxicology of Metals, Edited by L. Friberg, G. F. Nordberg and V. Vouck, 1979. 6

No information for this parameter available in Friberg, Nordberg, and Vouk (1979) (3)

(See Figure III.1 for location of sampling points)

TABLE IV.4
ANALYTICAL RESULTS (ORGANICS AND PH) FOR GROUND WATER SAMPLES

			MAS.	PLE II	AND PE	SAMPLE IDENTIFICATION	44001	WATE	SAMPLE IDENTIFICATION		
Parameter	0W-1	OW-1B	0W-2	OW-2 OW-3	OW-4	OW-5	9-WO) FT-1	Osterman Well	Osterman Property	OST-1
Methylene Chloride (ug/l)	S S	QN Q	CN	QN	QZ QZ	ΘŽ	15	QN	Ę	ΩN	14
Toluene (ug/l)	ğ	S.	ğ	Q.	B	Q.	QN	QN	Ø. 9>	QN	QN
1,1,1,- trichloroethane (ug/1)	Ð	43.8	Ö	Ö	QN	Ö	Ö	Ö	QN Q	Ö.	B
Butylbenzylphthalate (ug/l)	Ø.	ξ.	£	Q	QN	QN	£	£	B	Š.	33
Total Organic Halides (mg/l)	<0.02	<0.02	0.04	0.04	60.0	<0.02	0.12	!	0.04	1	. 1
на	8.05	8.14	8.12	8.11	8.14	8.16	8.07	6.45	8.20	ł	1

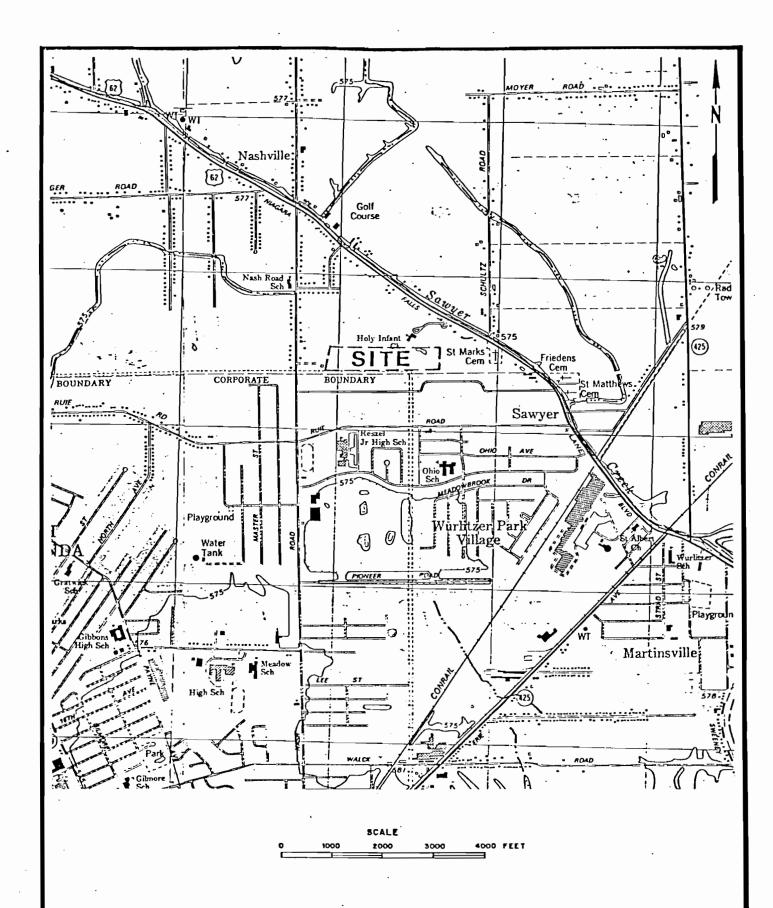
ND = Not Detected

TABLE IV.5

Results of Metals Analysis For Osterman Well

Sample Identification

Parameter	Osterman Property	OST-1	Class GA Water Quality Standards
Total Cadmium (ug/l)	6	10	10
Total Copper (ug/1)	13	10	1,000
Total Zinc (ug/1)	258	50	5,000
Total Lead (ug/l)	<5	140	25
Total Mercury (ug/l)	<0.5	Ø.8	2



SITE COORDINATES: 43°04' 10.0" N. LAT 78°51' 33.8" W. LONG

REFERENCE: U.S.G.S. 7.5' TOPOGRAPHIC MAP
TONAWANDA EAST, NY (1980) AND
TONAWANDA VEST, NY (1980) QUADRANGLES

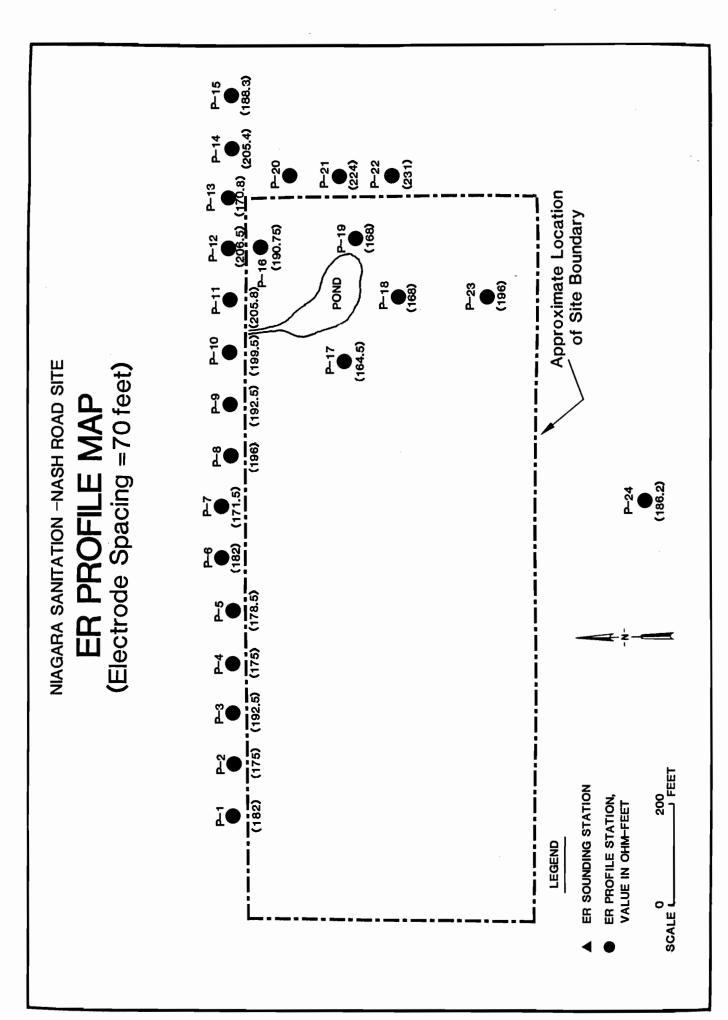
SITE LOCATION MAP NASH ROAD SITE

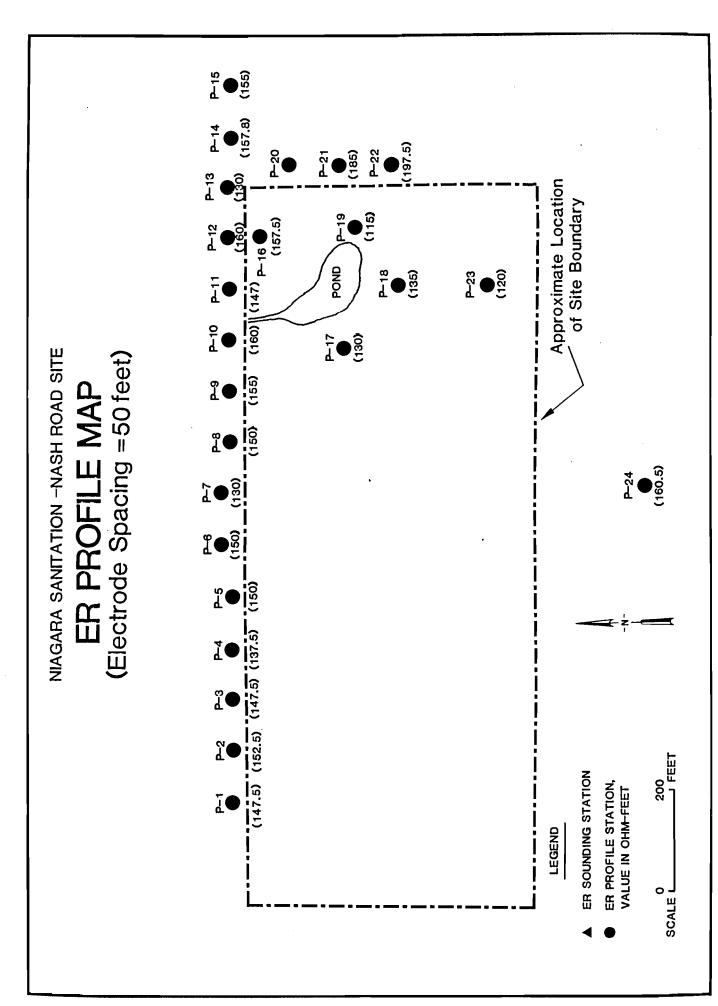
400 FEET SCALE 200 EXISTING SURFACE TOPOGRAPHY NASH ROAD SITE FORMER POND APPROXIMATE LOCATION OF SITE BOUNDARY DITCH BENCHMARK - DATUM EL.O.O' OW-4 Note: Elevation values in feet relative to a FORMER POND BY arbitrary datum DITCH-0W-6 DAMES 8 MOORE

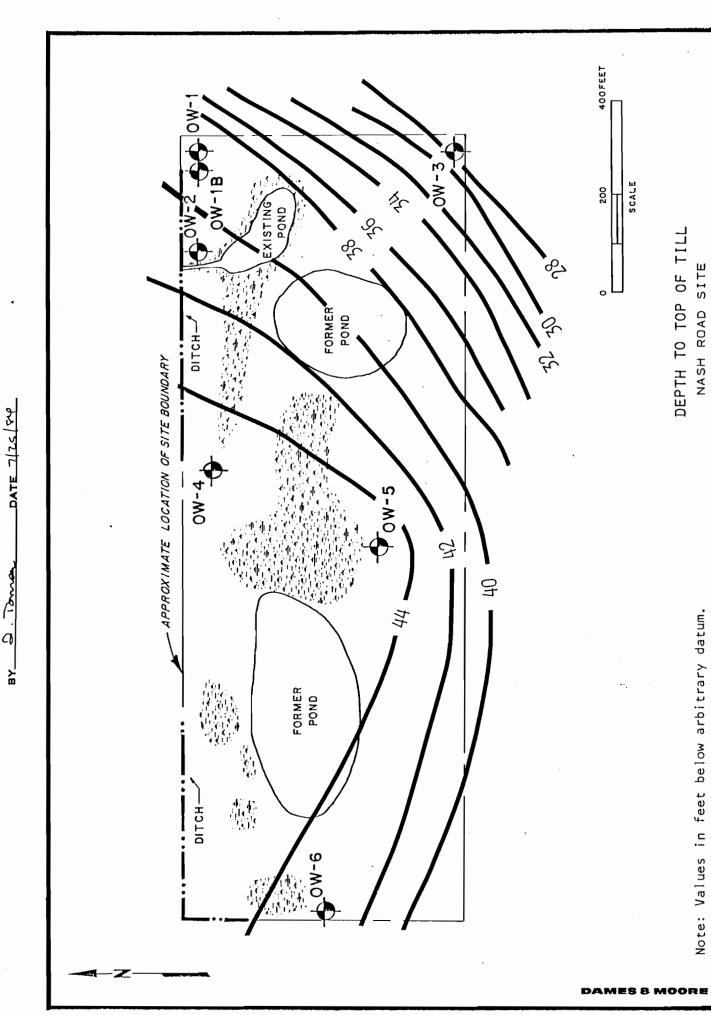
3

400FEET 0W-3 DEPTH TO BEDROCK SURFACE SCALE 200 XISTING NASH ROAD SITE FORMER APPROXIMATE LOCATION OF SITE BOUNDARY Note: Values in feet below arbitrary datum. FORMER POND 600

FIGURE IX.3







200 EXISTING FORMER POND APPROXIMATE LOCATION OF SITE BOUNDARY \sim \sim DITCH 0W-4 OW-5 FORMER POND DITCH

7/25/84

FILE

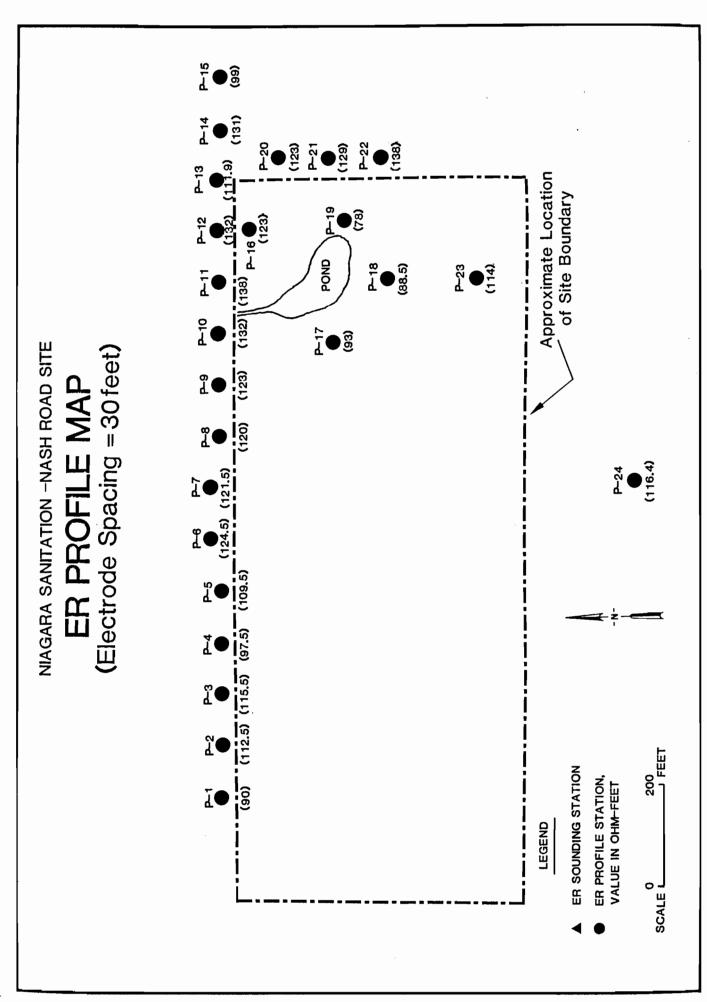
BY

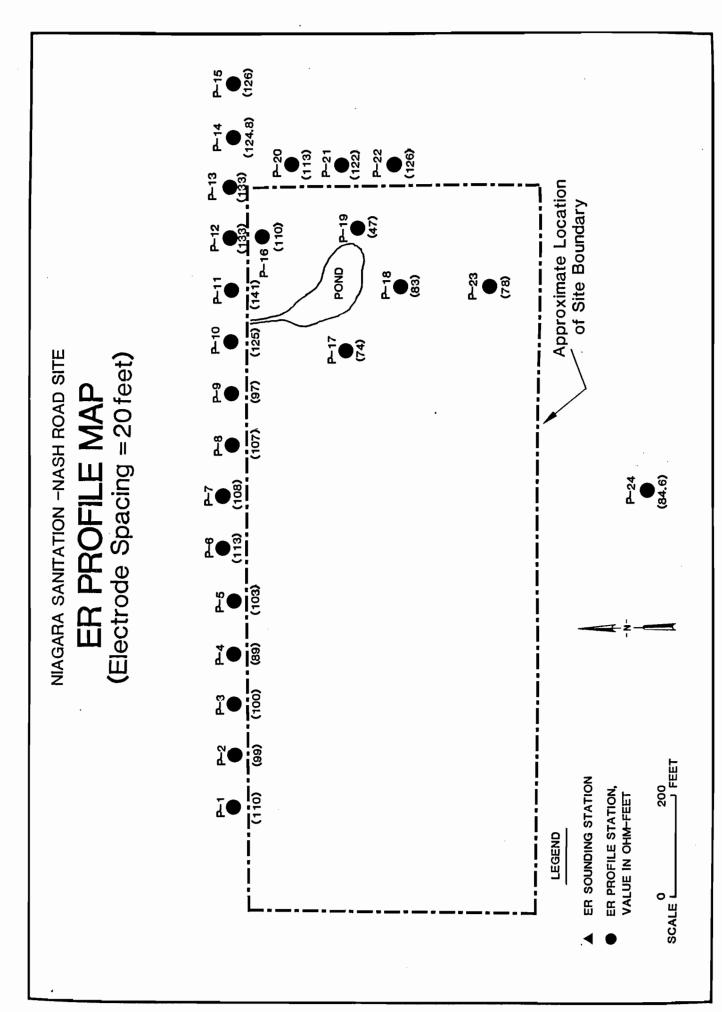
LOWER SAND ISOPACHS NASH ROAD SITE

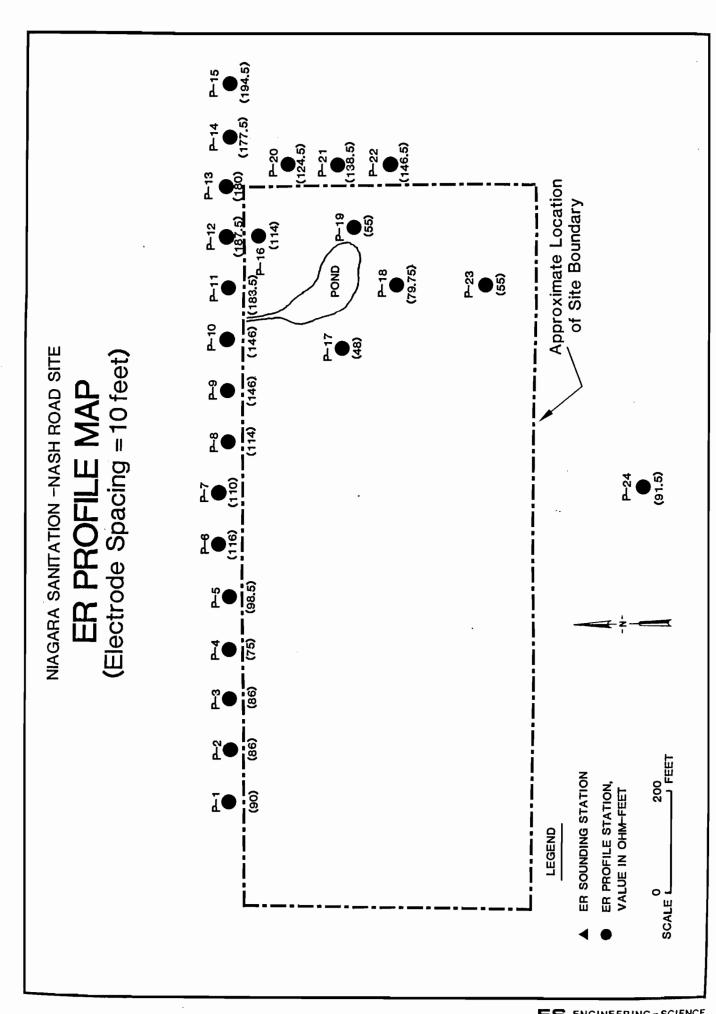
SCALE

Note: Values in feet

DAMES 8 MOORE







DEPTH TO TOP OF UPPER CLAY UNIT NASH ROAD SITE SCALE 200 FORMER POND APPROXIMATE LOCATION OF SITE BOUNDARY DITCH-Note: Values in feet below arbitrary datum. FORMER POND DITCH

FILE : 3305 : 13/19

400 FEET SCALE 200 EXIST ING UPPER SAND ISOPACHS NASH ROAD SITE FORMER POND APPROXIMATE LOCATION OF SITE BOUNDARY 0W-4 FORMER POND Note: Values in feet 9-WO -DITCH ڡ တ DAMES 8 MOORE

DATE 2/25/84

O. Trough

BY

FILE 13305 - 100/14

MAGNETIC CONTOUR MAP

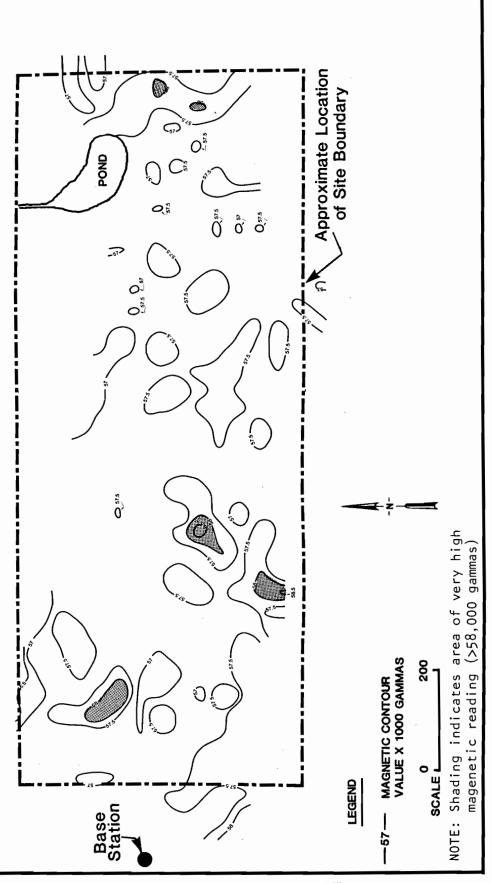
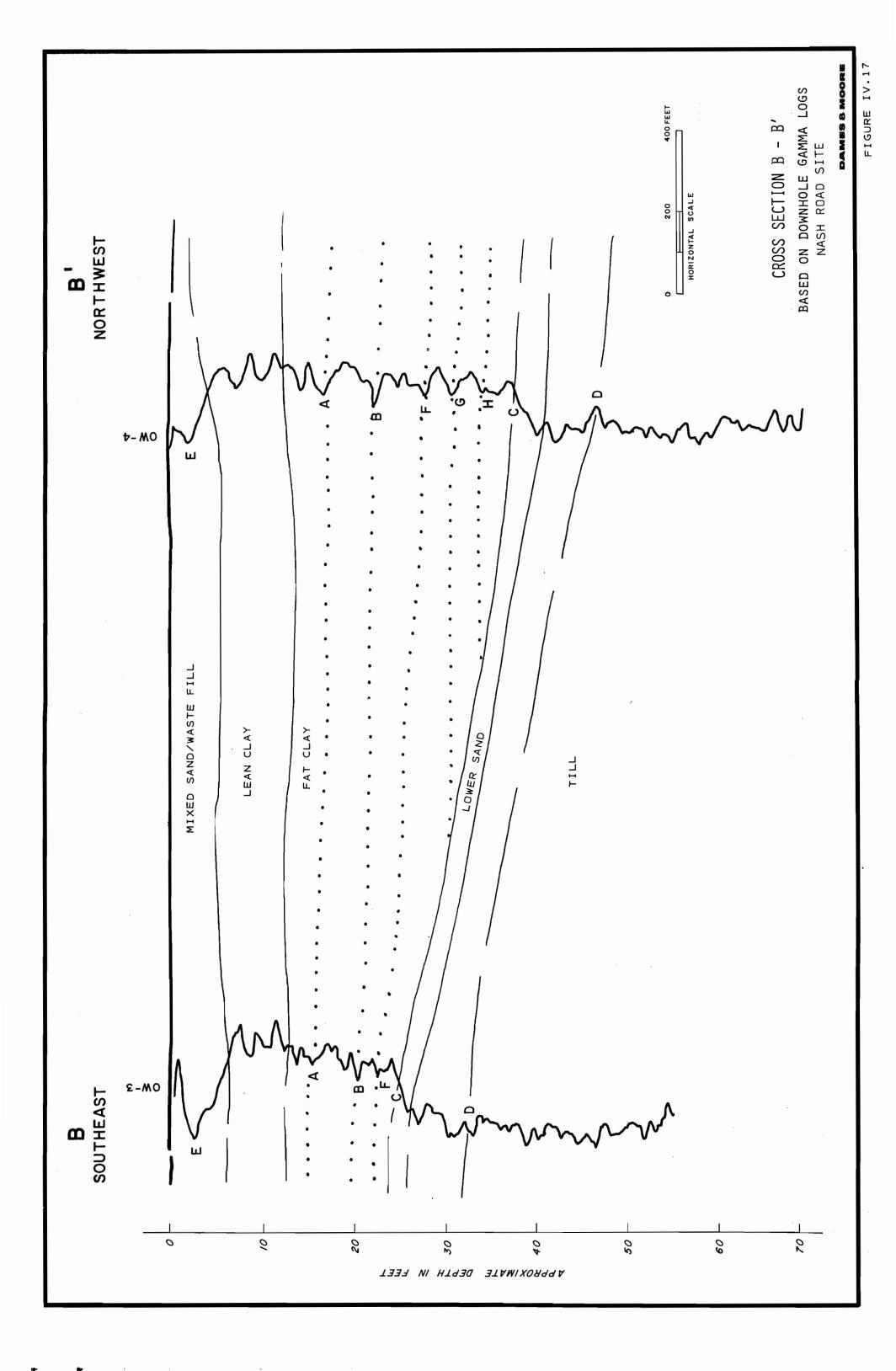
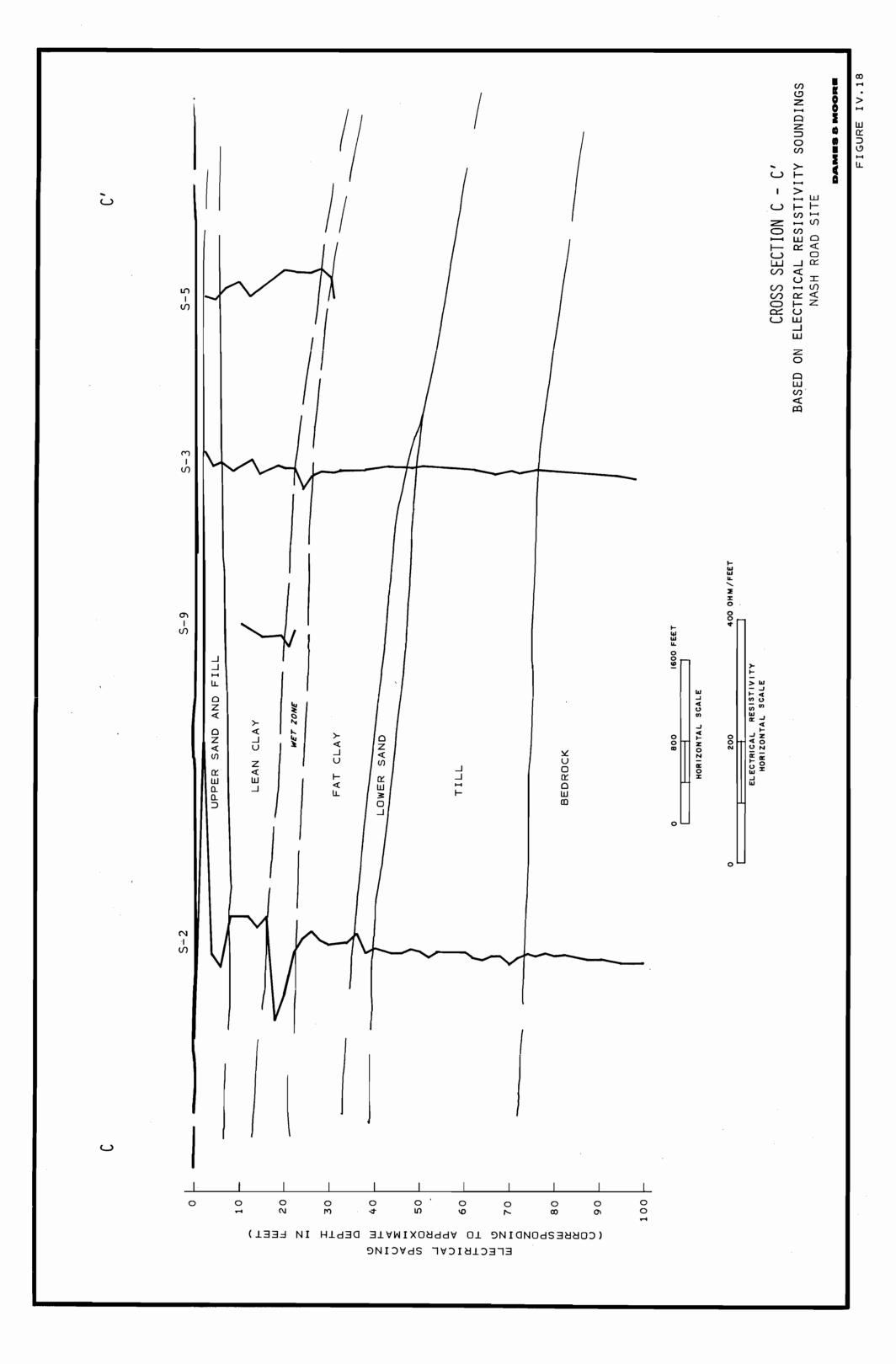


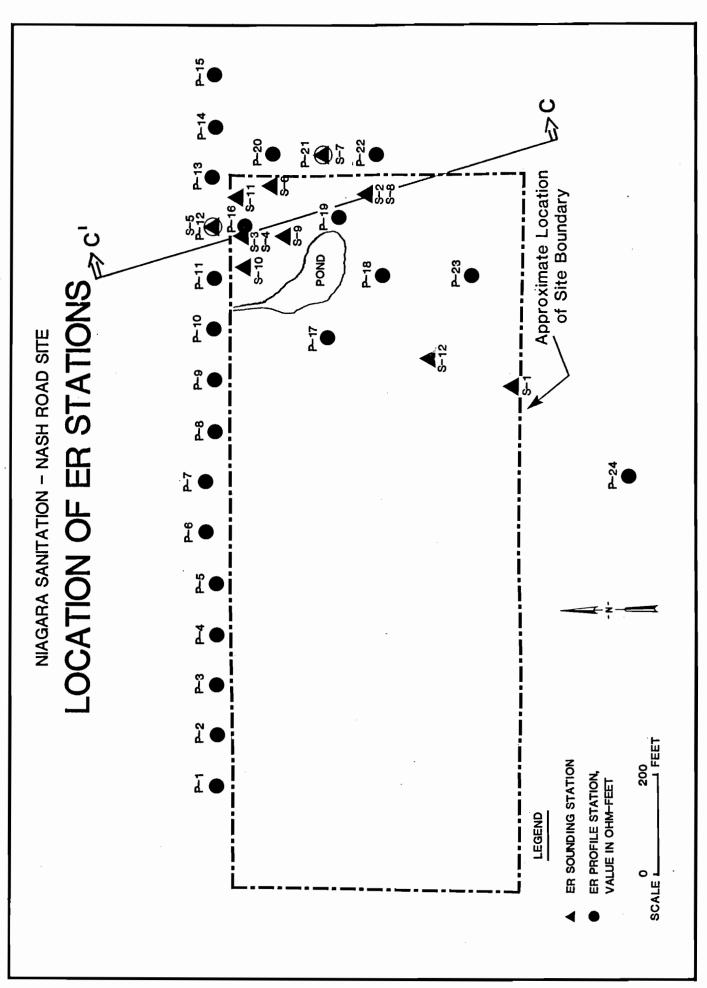
FIGURE IX.14

BY (1) TONOS DATE 8/6/84

FIGURE IV.16







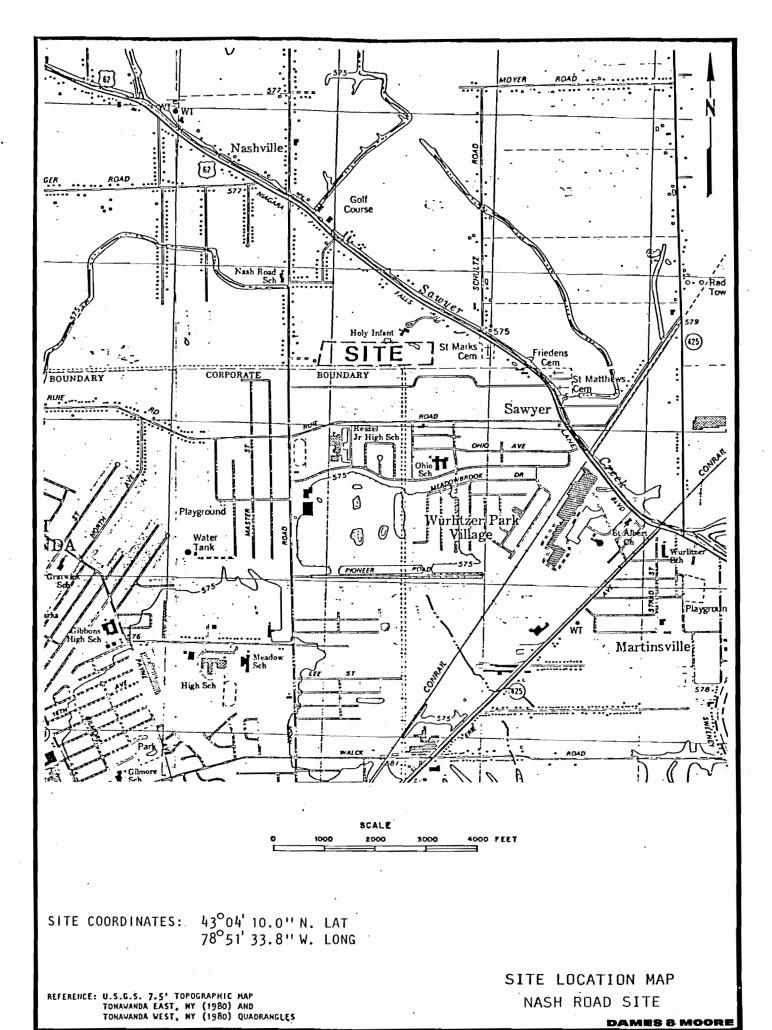
400 FEET DEPTH TO PIEZOMETRIC SURFACE IN TILL SCALE 200 NASH ROAD SITE FORMER POND PPROXIMATE LOCATION OF SITE BOUNDAR Note: Values in feet below arbitrary datum. FORMER POND

DATE 2/25/84

FINAL HAZARD RANKING SYSTEM for Niagara Sanitation Landfill Nash Road Town of Wheatfield Niagara County, New York State

The 25-acre site is an inactive landfill in the Town of Wheatfield, Niagara County (NYS) adjacent to the North Tonawanda City boundary. It is located in a suburban residential area, and is partly overgrown with trees and marsh vegetation. Nearby residents use the site as a jogging area, dirt bike track, and play area. The landfill was operated by Niagara Sanitation Company between 1964 and 1968. Both municipal and industrial wastes, including caustic materials and sludges, are disposed at the site. In addition, between 6/6/68 and 7/15/68, approximately 900 cubic yards of waste materials from the excavation of a sewer line at the Love Canal site were disposed in an excavated trench on this site (memo of 8/9/78 to Hennessy, NYSDOT).

Although some wastes are covered, protruding refuse is visible on the ground surface. For the Phase II study, several surface water, sediment and groundwater samples were chemically analyzed for a limited number of contaminants. Sediment was found to contain low levels of metals. No organic contaminants were found in the groundwater or surface water. A USGS (1982) investigation identified metal contamination in the shallow aquifer; current concern centers on the possible lack of containment of the waste and the migration of contaminants off-site. At the present time, no cleanup or enforcement actions are ongoing.



EICHDE T

HRS COVER SHEET

Facility name:	NASH ROAD LANDFILL				
Location:	TOWN OF WHEATFIELD				
EPA Region:	II				
Person(s) in charge of the f	cility: Ed Greinert				
	Town Supervisor				
	Town of Wheatfield, N.Y.				
Name of Reviewer: Eileen Gi	ligan Date: 11/8/84				
General description of the facility: (For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.) Landfill used by Niagara Sanitation 1964-1968 for both municipal and industrial wastes. Waste materials from the excavation of a sewer at the Love Canal site disposed on the site in 1968. Improperly closed, rubbish visible. Phenols, lead, and organics found in soil and groundwater samples.					
Scores: S _M = 5.37 (S _{gw} = 5	$65S_{SW} = 7.38S_{a} = 0.0$)				
$S_{FE} = 26.25$					
$S_{DC} = 37.50$					

HRS COVER SHEET

Facility Name: <u>Nash</u>	Road Landfill	Date	11/	8/84	
Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi- plier	Score	Max. Score	Ref. (Section)
1 Observed Release	() 45	1	0	45	4.1
If observed release is					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	0 1 2 3	1	0	3	
1-yr. 24-hr. Rainfall Distance to Nearest	0 1 2 3	1 2	2 6	3 6	
Surface Water Physical State	0 1 2 3	• 1	3	3	
Total Route C	haracteristics Sco	re	11	15	
3 Containment	0 1 2 3	1	3	3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 (8	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7	8 1	6	8	
Total Waste C	haracteristics Scor	·e	24	26	
5 Targets					4.5
Surface Water Use Distance to a Sensiti	0 1 2 3 ve 0 1 2 3	3 2	6 0	9 6	
Environment Population Served/ Distance to Water Intake Downstream	① 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
Total T	argets Score		6	55	
6 If line 1 is 45, mul			4752	64,350	
7 Divide line 6 by 64,			S _{sw} = 7	ļ <u> </u>	

Facility Name: Nash Road	Landfil	1	_ Date:_	11/8	/84	
Ground Water Route Work Sheet						
Rating Factor		ed Value le One)	Multi- plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0	45	1	_45	45	3.1
If observed release is			•			
Route Characteristics						3.2
Depth to Aquifer of Concern	0 1	2 3	2		6	
Net Precipitation Permeability of the	0 1 0 1	2 3 2 3	1 1		3 3	
Unsaturated Zone Physical State	0 1	2 3	1.		3	
Total Route (Characte	ristics Sc	ore		15	
3 Containment	0 1	2 3	1		3	3.3
4 Waste Characteristics						3.4
Toxicity/Persistence Hazardous Waste Quantity	0 3 6 0 1 2	9 12 15 (1 3 4 5 6 7	8) 1 8 1	18 6	18 8	
Total Waste Ch	naracter	istics Sco	re	24	26	
5 Targets						3.5
Ground Water Use Distance to Nearest Well/Population Served	$ \begin{array}{cccc} 0 & 1 \\ 0 & 4 \\ 12 & 16 \\ 24 & 30 \end{array} $	2 3 6 8 10 18 20 32 35 40	3 1	3 0	9 40	
Total Tai	gets Sco	ore		3	49	
6 If line 1 is 45, mult			5 4 × 5	3240	57,330	
7 Divide line 6 by 57,3	330 and n	nultiply b	y 100	S _{gw} =	5.65	

GROUND WATER ROUTE WORK SHEET

Air Route Work Sheet Assigned Value Multi-Max. Ref. Rating Factor Score (Circle One) plier Score (Section) 1 Observed Release (o) 45 0 45 5.1 Date and Location: July 1984 Air Quality Survey Sampling Protocol: HNU survey If line $\boxed{1}$ is 0, the $S_a = 0$. Enter on line $\boxed{5}$. \checkmark If line 1 is 45, then proceed to line 2. Waste Characteristics 5.2 3 Reactivity and Incompatibility Toxicity 0 1 2 3 4 5 6 7 8 Hazardous Waste Total Waste Characteristics Score 20 3 Targets 5.3 Population Within 0 9 12 15 18 30 4-Mile Radius 21 24 27 30 6 Distance to Sensitive 0 1 2 3 Environment 3 Land Use 0 1 2 3 Total Targets Score 39 4 Multiply $1 \times 2 \times 3$ 35,100 5 Divide line 4 by 35,100 and multiply by 100

Date: 8/13/84

Facility Name: Nash Road Landfill

AIR ROUTE WORK SHEET

-							
	Direct Contact Work Sheet						
-	Rating Factor		ned Value cle One)	Multi- plier	Score	Max. Score	Ref. (Section)
-	1 Observed Incident	0	45	1	0	45	8.1
, ug	If line 1 is 45, pro						
~q	2 Accessibility	0 1	2 (3)	1	3	3	8.2
٠	3 Containment	0 (1	5)	1	15		8.3
	Waste Characteristics Toxicity	0 1	2 (3)	5	15	15	8.4
	5 Targets						8.5
١	Population Within 1-Mile Radius	0 1	2 3 4 5	4	12	20	
	Distance to a Critical Habitat	<u>(i)</u> 1	2 3	4	0	12	
	Total Ta	rgets Sco	ore		12	32	
	6 If line 1 is 45, multiply $1 \times 4 \times 5$						
	If line 1 is 0, mult	iply 2	× 3 × 4	x 5	8100	21,600	
'	7 Divide line 6 by 21,	600 and m	nultiply by	100	s _{DC} =	37.50	

Facility Name: Nash Road Landfill

DIRECT CONTACT WORK SHEET

Facility Name: Nash Road Landfill Date: 8/13/84 Fire and Explosion Work Sheet Assigned Value Multi-Ref. Max. Rating Factor Score (Circle One) plier Score (Section) |1| (3) Containment 3 7.1 3 2 Waste Characteristics 7.2 Direct Evidence Ignitability Reactivity Incompatibility Hazardous Waste Quantity Total Waste Characteristics Score 20 3 Targets 7.3 0 1 2 (3) 4 5 Distance to Nearest 1 5 Population Distance to Nearest 1 3 Building Distance to Sensitive 3 Environment Land Use Population Within 2-Mile Radius Buildings Within 0 1 2 3 (4) 5 2-Mile Radius Total Targets Score 14 24 4 Multiply $1 \times 2 \times 3$ 378 1,440 5 Divide line 4 by 1,440 and multiply by 100 26.25 S_{FE} =

FIRE AND EXPLOSION WORK SHEET

Worksheet for Computing S_{M}

	S	s ²
Groundwater Route Score (Sgw)	5.65	31.92
Surface Water Route Score (S _{SW})	7.38	54.53
Air Route Score (S _a)	0.0	0.0
$s_{gw}^2 + s_{sw}^2 + s_a^2$		86.45
$\sqrt{s_{gw}^2 + s_{sw}^2 + s_a^2}$		9.30
$\sqrt{s_{gw}^2 + s_{sw}^2 + s_a^2} / 1.73 = s_M =$		5.37

WORK SHEET FOR COMPUTING SM

HRS DOCUMENTATION RECORDS

- 1) HAZARD RANKING SYSTEM
- 2) HNU PHOTO-IONIZER READING
- 3) OSTERMAN WELL
- 4) TRIP BLANKS
- 5) SEDIMENT DATA
- 6) GROUNDWATER DATA
- 7) SURFACE WATER DATA
- 8) BORING LOGS
- 9) SAMPLING LOCATION MAP
- 10) PERMEABILITY TEST DATA
- 11) BACKGROUND INFORMATION

1) HAZARD RANKING SYSTEM

DOCUMENTATION RECORDS FOR HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME:	Nash Road Landfill	
LOCATION:	Nash Road, Town of Wheatfield,	Niagara Co., New York

GROUND WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum):

lead

total halogenated organics

nickel

arsenic

phenol

Rationale for attributing the contaminants to the facility:

groundwater sample from USGS study (1982)

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) in concern:

- shallow aquifer in upper (surface)sand unit
- 2) low aquifer at till/bedrock interface
 (Engineering Science/Dames & Moore soil borings)

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

- 1) approximately 0 feet
- 2) approximately 8 feet

(ES/D&M soil borings and field investigations)
Depth from the ground surface to the lowest point of waste disposal/
storage:

27 feet in disposal trench

(New York State Department of Transportation memorandum of August 9, 1978)

(Niagara County Department of Health memorandum from M. Hopkins, January 27, 1984)

Net Precipitation

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

40"

(Federal Register, Volume 47 no. 137, Friday, July 16, 1982)

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

27"

(Federal Register, Volume 47 no. 137, Friday, July 16, 1982)

Net precipitation (subtract the above figures):

$$40" - 27" = 13"$$

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

In western part of site, surface soil is a fine to medium sand. In eastern part of site, surface soil is clayey silt with trace of fine sand.

Permeability associated with soil type:

- 1) western part: 10^{-3} cm/sec (Lambe & Whitman)
- 2) eastern part: 5×10^{-4} cm/sec (in-situ test)

Physical State

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

solids

liquids in drums

(Dames & Moore site visit) (Memo of August 9, 1978)

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

drums and uncontained wastes

Method with highest score:

drums

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

phenol lead nickel

arsenic (USGS study of 1982)

Compound with highest score:

lead (3,3) → 18

chlorotoluenes benzoyl chloride benzoic acid (Hooker letter of May 9, 1968)

Hazardous Waste Quantity

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

900 cubic yards of chemical waste from Love Canal plus unknown quantity of other industrial waste

Basis of estimating and/or computing waste quantity:

DOT memo of August 9, 1978

5 TARGETS

Ground Water Use

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

Available for industrial use

(Discussion with M. Hopkins, Niagara Co. Dept. of Health, 1983)

Distance to Nearest Well

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

Osterman residential well at 7403 Nash Road (presently unused but useable)

Distance to above well or building:

1,000 feet west of site

(USGS Topographic map; Tonawanda East, NY quadrangle)

Population Served by Ground Water Wells Within a 3-Mile Radius

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

None.

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

Not applicable.

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

0

SURFACE WATER ROUTE

1 OBSERVED RELEASE

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

XOT

methylene chloride

(Very low levels (11 ppb) may be indicative of background levels)

Rationale for attributing the contaminants to the facility:

Analysis of surface water samples in June, 1983 by Engineering Science/ Dames & Moore

* * *

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0%

(USGS topographic map; Tonawanda East, NY)
Name/description of nearest downslope surface water:

Sawyer Creek

(USGS topographic mapl Tonawanda East, NY)

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

<1%

(USGS topographic map; Tonawanda East, NY)

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

Yes. Wastes in swamp areas and in water-filled disposal trenches.

Is the facility completely surrounded by areas of higher elevation?

No. (USGS topographic map; Tonawanda East, NY)

1-Year 24-Hour Rainfall in Inches

2.1"
(Federal Register vol. 47, no. 137, Friday, July 16, 1982)

Distance to Nearest Downslope Surface Water

0.25 miles
(USGS topographic map; Tonawanda East, NY)

Physical State of Wastes

liquid and solid (Dames & Moore site visit memo of 8/9/78)

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

drums and uncontained (NYSDEC memo of August 9, 1978)

Method with the highest score:

drums

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

phenol lead iron nickel chlorotoluenes benzoyl chloride benzoic acid (Hooker letter of May 9, 1968)

(USGS study - 1982) Compound with the highest score:

lead

Hazardous Waste Quantity

 $(3,3) \to 18$

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

900 cubic yards of chemical waste from Love Canal and unknown quantity of other industrial waste

Basis of estimating and/or computing waste quantity:

NYSDOT memo of August 9, 1978

* * *

5 TARGETS

Surface Water Use

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

recreation transportation (numerous ES/D&M site visits) Is there tidal influence?

none within 2 miles.

No.

Distance to a Sensitive Environment (Ref: USGS topographic map)

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

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

None within 1 mile.

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

None within 1 mile. (Conversation with G. Batcheller, NYSDEC, Region 9)

Population Served by Surface Water

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

None. (USGS topographic map; Tonawanda East, NY)

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

Not applicable.

Total population served:

0.

Name/description of nearest of above water bodies:

Not applicable.

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

Not applicable.

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

None detected with HNU meter during air survey of site by Dames & Moore in July, 1984.

Date and location of detection of contaminants

Not applicable.

Methods used to detect the contaminants:
Not applicable.

Rationale for attributing the contaminants to the site:

Not applicable.

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Not applicable.

Most incompatible pair of compounds:

Not applicable.

Toxicity

Most toxic compound:

'Not applicable.

Hazardous Waste Quantity

Total quantity of hazardous waste:

Not applicable.

Basis of estimating and/or computing waste quantity:

Not applicable.

3 TARGETS

Population Within 4-Mile Radius

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

0 to 4 mi

0 to 1 mi

0 to 1/2 mi

0 to 1/4 mi

Approximately 1,800 people (estimate from USGS topographic map)

Distance to a Sensitive Environment

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

None within 2 miles. (USGS topographic map)

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

None within 1 mile. (USGS topographic map)

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

None within 1 mile.
(Conversation with G. Batcheller of NYSDEC, Region 9)

Land Use (Ref: Numberous site visits by ES/D&M personnel)

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

0.01 mile (adjacent to National Fuel Gas installation)

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

None within 2 miles.

Distance to residential area, if 2 miles or less:

0.01 mile (adjacent to suburban area)

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

0.01 mile (adjacent to corn field)

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

None within 2 miles.

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

No.

2) HNU PHOTO-IONIZER READING

3305-003-1 SUBJECT HNU DHOTO-IONIZER READING SHEET 7/10/84 4 ppm/cm SCALE HORE 2"= 1 HR

....

CHECKED BY_

SISION

3) OSTERMAN WELL

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COMPUCHEM LABORATORIES

August 30, 1984

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta. GA 30329

Dear Mr. Schroder:

Thank you for selecting CompuChem® Laboratories for your recent sample analysis. We have completed the analysis that you requested and have enclosed a summary of the CompuChem® data for your review. Additional data details are available for purchase if you require them.

As you know, EPA has proposed detection limits for the priority pollutants in the December 3, 1979, Federal Register, and we have reported all priority pollutant concentrations which have exceeded these limits (or their equivalent for solid matrices). In addition, we have permanently stored a complete record of your data on magnetic tape. This includes chromatograms, mass spectra, calibration and quality control data for the organics. Therefore, your original data is readily available for future reference. Should you require additional information from your data base, please contact us at 1/800-334-8525.

In order to expedite data to you, we have forwarded the results for all completed analyses. If you submitted more samples than are included in the enclosed results, the data will be forthcoming upon completion of our final review.

Your confidence in our CompuChem $^{\otimes}$ service is appreciated. We look forward to a continuing association.

Sincerely,

Customer Service Dept. CompuChem®

Enclosure:

Report: 0ST-1 - 32303

DATA REPORT NOTICE

CompuChem employs Methods 624 and 625 for GC/MS analysis of organics in liquid matrices. These methods were proposed on December 3, 1979 by the U.S.E.P.A. in Volume 44 of the Federal Register. These methods were subsequently revised and reissued in July, 1982 as publication EPA-600/4-82-057. The EPA Environmental Monitoring and Support Laboratory (EMSL-Cincinnati) has subsequently issued method modifications which provide for the analysis of solid matrices. These modifications specify changes in the sample preparation procedures.

Additionally, for solid samples detection limits and any analytical results reported are based on processing the method specified sample size of as-received material.

The referenced methods are no longer appropriate for several of the original priority pollutant compounds. This is due to either the deletion from the toxic pollutant list (40 CFR Part 401) by EPA or the determination by EPA that the referenced methods may not be optimized for certain compounds (EPA-600/4-82-057) originally incorporated by the methods.

CompuChem® presents these compounds in its sample data report for completeness as many of the government compound list forms continue to display the affected compounds. For consistency, these compounds are reported as "BDL" or "Below Detection Limit" as they are either not likely to exist in the sample or are not likely to be detected by the method. Those compounds which have actually been deleted are listed below with the Federal Register deletion reference.

'Compound Name	GC/MS Fraction	Federal Register	Date
Dichlorodifluoromethane	Volatile	46FR2264	1/8/81
.*Trichlorofluoromethane	Volatile	46FR2264	1/8/81
Bis(Chloromethyl)Ether	Volatile	46FR10723	2/4/81

^{*}While this compound has been deleted, CompuChem® continues to identify and quantitate for it.

REPORT OF DATA

SAMPLE IDENTIFIER: OST-1

COMPUCHEM SAMPLE NUMBER: 32303

SUBMITTED TO:

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

DIANA A. SCAMMELL
TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT

ROBERT E. MEIERER DIRECTOR OF QUALITY ASSURANCE

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: OST-1 COMPUCHEM SAMPLE NUMBER: 32303

:		•	<u>Date</u>	
Recei	ved/Refrigerated		7-27-84	
0rgan	ics	,		
			7 20 04	
	Extracted		7-30-84	
	Analyzed			
	1. Volatiles		7-31-84	
;	2. Acid		8-8-84	
	3. Base/Neutrals		8-7-84	
; ;	4. Pesticides/PCBS		8-7-84	
Inorga	anics			
	1. Metals		8-14-84	
	2. Cyanide		8-9-84	
	3. Phenols		Not Request	6

- VOLATILES ORGANICS

COMPOUND LIST

SAMPLE IDENTIFIER: OST-1
COMPUCHEM SAMPLE NUMBER: 32303

				r	CONCENTRAT		DETECTI LIMIT (UG/L)	ONt
1٧.	CHLOROMETHANE				BDL		10	
•	VINYL CHLORIDE			·	BDL		. 10	
37					BDL		10	
	BROMOMETHANE	V			BDL		10	
	ACROLEIN				BDL		100	
6V.	ACRYLONITRILE				BDL		100	
77	ACRYLONITRILE METHYLENE CHLO	RIDE			14(BG)*		10	
87.	· TRICHLOROFLUOR	OMETHANE			, BDL		10	
	1,1-DICHLOROET				BDL		10	
	1,1-DICHLOROETI				BDL		10	
110.	TRANS-1,2-DICH	LOROETHYLENE			BDL		10	
120.	CHLOROFORM				BDL		10	
	1,2-DICHLOROETI				BDL		10	
140.	1,1,1-TRICHLOR	OETHANE			BDL		10	
150.	CARBON TETRACH	LOR I DE			BDL		10	
16V.	BROMODICHLOROMI	ETHANE			BDL		10	
170.	1,2-DICHLOROPRO	OPANE			BDL		10	
	TRANS-1,3-DICH				BDL		10	
19V.	TRICHLOROETHYL	ENE			BDL	·	10	
	BENZENE	·			BDL		10	
21V •	CIS-1,3-DICHLO	ROPROPENE			BDL	:	10	٠.
22V •	1,1,2-TRICHLOR	JETHANE			BDL		10	
237	DIBROMOCHLOROME	LIHANE			BDL		10 10-	
	BROMOFORM	יו ספסבדוועו באב	* ; * ;		BDL BDL		10	;
26V	1,1,2,2-TETRACH 1,1,2,2-TETRACH	ILORUE I ITTLENE			BDL		10	
	TOLUENE	ILUKUL I HANL			BDL		10	
	CHLOROBENZENE				BDL	• •	10	
290	ETHYLBENZENE				BDL		10	
	2-CHLOROETHYL \	INYL ETHER			BDL		10	
317.	DICHLORODIFLUOF	ROMETHANET			BDL	* * .		
	BIS (CHLOROMETHY				BDL			
4 11 6								

BDL=BELOW DETECTION LIMIT

[†]See Dața Report Notice

^{*}See Quality Control Notice

QUALITY ASSURANCE NOTICE

CompuChem	Sample	No.	32303	_
oompaonem	oump i c			_

Although not required by the Federal Register, December 3, 1979 (modified July, 1982) Volatile Method 624 procedure, the laboratory prepares VOA blanks when compositing water samples and preparing low and medium level hazardous waste VOA samples. This is to insure that the glassware used is free from contamination, and to monitor the possibility of cross-contamination from high levels of volatile organic compounds in some samples and the laboratory atmosphere.

The compositing or method blank (# 32333) prepared with this sample contained the compound(s) listed below. The concentration in the associated sample has been adjusted and the data flagged with a qualifier.

Compound(s)	Adjusted Sample Concentration (ug/1)		Applicable Qualifier	
Methylene Chloride	14	. •	BG	

The following data qualifiers are used by EPA and adopted by CompuChem® for reporting purposes:

BG = The concentration in the blank is greater than $\frac{1}{2}$ of the method detection limit and is less than or equal to $\frac{1}{2}$ the concentration detected in a sample; the concentration in the blank is subtracted from the sample.

COMPOUND LIST -- ACID EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: OST-1 COMPUCHEM SAMPLE NUMBER: 32303

	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1A. PHENOL	BDL	25
2A. 2-CHLOROPHENOL	BDL	25
3A. 2-NITROPHENOL	BDL	25
4A. 2.4-DIMETHYLPHENOL	BDL	25
5A. 2.4-DICHLOROPHENOL	BDL	2 5
6A. P-CHLORO-M-CRESOL	BDL	25
7A. 2,4,6-TRICHLOROPHENOL	BDL	25
8A. 2.4-DINITROPHENOL	BDL	250
9A. 4-NITROPHENOL	BDL	25
10A. 4.6-DINITRO-O-CRESOL	BDL	25 0
11A. PENTACHLOROPHENOL	BDL	25

		 •	:
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			† :
	ņ		
· · · · · · · · · · · · · · · · · · ·			

COMPOUND LIST : -- BASE-NEUTRAL EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: OST-1 COMPUCHEM SAMPLE NUMBER: 32303

		CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1B.	,	BDL	10
	BIS (2-CHLOROETHYL) ETHER	BDL BDL	10 10
	1,3-DICHLOROBENZENE	BDL BDL	10
5B.	1,4-DICHLOROBENZENE 1,2-DICHLOROBENZENE	BDL	10
	BIS (2-CHLOROISOPROPYL) ETHER	BDL BDL	10
	HEXACHLOROETHANE	BDL	10
- 1	N-NITROSODI-N-PROPYLAMINE	BDL	10
	NITROSODI-N-PROPILAMINE	BDL	10
	ISOPHORONE	BDL	10
	BIS(2-CHLOROETHOXY) METHANE	BDL	10
12R	1,2,4-TRICHLOROBENZENE	BDL	10
	NAPHTHALENE	BDL	10
	HEXACHLOROBUTADIENE	BDL	10
	HEXACHLOROCYCLOPENTADIENE	BDL	10
	2-CHLORONAPHTHALENE	BDL	10
	DIMETHYLPHTHALATE	BDL ::	10
18B.	ACENAPHTHYLENE	BDL	10
19B.	2,6-DINITROTOLUENE	BDL	10
	ACENAPHTHENE	BDL	. 10
21B.	2,4-DINITROTOLUENE	BDL 🤚	10
22B.	DIETHYLPHTHALATE	BDL 🛬	10
	FLUORENE	BDL #	10
	4-CHLOROPHENYL PHENYL ETHER	BDL	10
25B.	DIPHENYLAMINE (N-NITROSO)	BDL	10
	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)		10
	4-BROMOPHENYL PHENYL ETHER HEXACHLOROBENZENE	BDL	. 10
20D.	TE AAUTLUKUDE NZENE	BDL	10

(Continued)

BDL=BELOW DETECTION LIMIT

SAMPLE IDENTIFIER: OST-1 COMPUCHEM SAMPLE NUMBER: 32303

		CONCENT (UG/		LIMIT (UG/L)	
					-
29B. PHENANTHRENE			BDL	10	
30B. ANTHRACENE			BDL	10	
31B. DI-N-BUTYLPHTHALATE			BDL	10	
32B. FLUORANTHENE			BDL	10	
33B. BENZIDINE			BDL	10	
34B. PYRENE		`	BDL	10	
35B. BUTYLBENZYLPHTHALATE		33		10	
36B. BENZO(A)ANTHRACENE		•	BDL	10	
37B. 3,3'-DICHLOROBENZIDINE			BDL.	10	
38B . CHRYSENE			BDL .	10	
39B. BIS(2-ETHYLHEXYL)PHTHALA	NTE		BDL	10	
40B. DI-N-OCTYLPHTHALATE	•		BDL	10	
41B. BENZO(B)FLUORANTHENE			BDL	10	
42B. BENZO(K)FLUORANTHENE			BDL	10	
43B. BENZO(A)PYRENE			BDL	10	
44B. INDENO(1,2,3-C,D)PYRENE	v_i .		BDL	25	
45B. DIBENZO(A,H)ANTHRACENE			BDL	25	
46B BENZO(G.H.I)PERYLENE	•		BDL	25	

COMPOUND LIST -- PESTICIDES/PCB'S

SAMPLE IDENTIFIER: OST-1 COMPUCHEM SAMPLE NUMBER: 32303

						CONCENTRATION (UG/L)	-	DETECT LIMI (UG/	T
1P.	ALDRIN					BDL		10	
2P .	ALPHA-BHC	•				BDL		10	
3P.	BETA-BHC					BDL		10	
4P.	GAMMA-BHC	• •				BDL		10	
5P.	DELTA-BHC					BDL		10	
6P 🏄	CHLORDANE					BDL		10	
7P 👬	4,4'-DDT					BDL		10	
8P .	4,4'-DDE					BDL		10	
9P .	4,4'-DDD					BDL		10	
10P.	DIELDRIN					BDL		10	
11P.	ALPHA-ENDOS	ULFAN				BDL		10	
12P.	BETA-ENDOSU	LFAN				BDL		10	
13P:	ENDOSULFAN	SULFATE				BDL		10	
14P.	ENDRIN					BDL		10	
15P.	ENDRIN ALDE	HYDE				BDL		10	
16P.	HEPTACHLOR					BDL		10	
17P.:	HEPTACHLOR	EPOXIDE		,		BDL		10	
18P.	PCB-1242					BDL.		10	
19P.	PCB-1254	1				BDL		10	
20P.	PCB-1221	,				BDL	•	10	· .
21P.	PCB-1232					BDL		10	
	PCB-1248					BDL		10	
	PCB-1260			•		BDL.	·	10	
	PCB-1016	1.0	1 .		:	BDL		10	
25P.	TOXAPHENE				,	BDL.		10	

COMPOUND LIST -- INORGANICS PRIORITY POLLUTANTS

SAMPLE IDENTIFIER: OST-1 COMPUCHEM SAMPLE NUMBER: 32303

	CONCENTRATION (MG/L)	DETECTION LIMIT (MG/L)
1. CADMIUM, TOTAL	BDL	0.010
2. CHROMIUM, TOTAL 3. COPPER, TOTAL	BDL BDL BDL	0.010 0.050 0.10
4. LEAD, TOTAL * 5. MERCURY, TOTAL	0.14	?- 0.50 0.0002 RH
6. ZINC, TOTAL 7. NICKEL, TOTAL	0.05 BDL	0.020
8. CYANIDE	BDL	0.01
		2.05

BDL=BELOW DETECTION LIMIT

*Lead analyzed by flame AAS because of concentration level found.





Send copy to
Gilligan, DEM
File
Rocco

NOV 19 1984

November 8, 1984

Mr. Rocco Palazzolo Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

RE: Data Inquiry for sample OST-1/32303

Dear Mr. Palazzolo:

Enclosed is an amended compound list for sample number 32303 that reflects the correct detection limit for lead.

We apologize for any inconvenience you may have experienced. If you have further questions please feel free to call me at 1/800-334-8525.

Sincerely,

Diana A. Scammell

Technical Specialist, Operations

cc: Robert Meierer Mickey Cartagena File #32303

COMPOUND LIST -- INORGANICS PRIORITY POLLUTANTS

SAMPLE IDENTIFIER: OST-1 COMPUCHEM SAMPLE NUMBER: 32303

			1	CONCENTRATION (MG/L)	DETECTION LIMIT (MG/L)
1.	CADMIUM, TOTAL	:		. BDL	0.010
2.	CHROMIUM, TOTAL			BDL.	0.050
3.	COPPER, TOTAL			BDL	0.10
	LEAD, ŤOTAL*	•		0.14	0.050
	MERCURY, TOTAL			0.0008	0.00020
6.	ZINC, TOTAL			0.05	0.020
7.	NICKEL, TOTAL			BDL	0.10
8.	CYANIDE			BDL	0.010

BDL=BELOW DETECTION LIMIT

*Lead analyzed by flame AAS because of concentration level found.



RECRA ENVIRONMENTAL LABORATORIES

1st sample of Gill Creek Solo. Chen 1st sample of Osterman Welf North

H2M PRIORITY POLLUTANT ANALYSES

Prepared For:

H₂M 575 Broadhallow Road Melville, NY 11747

Prepared By:

Recra Environmental Laboratories 4248 Ridge Lea Road Amherst, NY 14226

Report Date: October 3, 1984

H2M PRIORITY POLLUTANT ANALYSES

Report Date: 10/3/84

INTRODUCTION:

On September 5, 1984 samples were received at Recra Environmental Laboratories. A request was made by H2M to have the samples analyzed for selected fractions of the Environmental Protection Agency decreed priority pollutants.

This report will address the results of those analyses.

METHODS:

Priority pollutant analyses were conducted according to Environmental Protection Agency (EPA) methodologies.

Organic priority pollutants were analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). Pesticide priority pollutants were analyzed by Gas Chromatography.

RESULTS AND DISCUSSION:

No Volatile field blank was received.

Analyses for specific Pesticides/PCB's are based upon the matching of retention times between samples and standards on a single gas chromatographic column. Gas chromatographic values reported as "less than" (<) indicate the working detection limit for the given sample and/or parameter.

Pesticides identified by Gas Chromatography are at concentrations too low for confirmation via Gas Chromatography/Mass Spectrometry.

Compounds reported as ND are "not detected".

Respectfully Submitted,

RECRA ENVIRONMENTAL LABORATORIES

Barbara & Krajewill



ECRA ENVIRONMENTAL LABORATORIES

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 10/3/84

ACID/PHENOLICS

	ACI	D/PHENOLICS	
1 (1) 1 (1) (1) (1) (1) (1) (1) (1) (1)		SAMPLE IDEN	TIFICATION
	DETECTION		
COMPOUND .	LIMIT • , (ug/1)	GILL CREEK	OSTERMAN PROPERTY
2-chlorophenol	3.3	ND	ND ND
2,4-dichlorophenol	2.7	ND	ND
2,4-dimethylphenol	2.7	ND	ND
4,6-dinitro-o-cresol	24	ND	ND
2,4-dinitrophenol	42	ND	ND
2-nitrophenol	3.6	ND	ND
4-nitrophenol	2.4	ND	ND
p-chloro-m-cresol	3.0	ND	ND ND
pentachlorophenol	3.6	ND ND	ND
pheno1	1.5	ND	ND
2,4,6-trichlorophenol	2.7	ND ^	ND ND

ADDITIONAL SAMPLE INFORMATION

Sample Date	7/11/84	7/11/84
Extraction Date	9/7/84	9/7/84
Analysis Date	9/19/84	9/19/84
Internal Standard (IS) - Level	20 μg/1	20 μg/1
deuterated phenanthrene - Recovery	100%	110%
Surrogate Standard (SS1) - Level	120 µg/1	120 μg/1
2-fluorophenol - Recovery	55%	30%
Surrogate Standard (SS2) Level	120 µg/1	120 µg/1
pentafluorophenol - Recovery	43%	27%

FOR RECRA ENVIRONMENTAL LABORATORIES

DATE 10/3/84

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 10/3/84

BASE/NEUTRALS

		SAMPLE IDE	NTIFICATION
	DETECTION		
COMPOUND	LIMIT (ug/1)	GILL CREEK	OSTERMAN PROPERTY
icenaphthene	1.9	ND	ND ND
acenaphthylene	3.5	ND	ND ND
inthracene	1.9	ND ND	ND
*benzidine	44	ND :	ND
benzo(a)anthracene	7.8	ND ND	. ND
penzo(a)pyrene	2.5	ND	ND
benzo(b)fluoranthene	4.8	ND	ND ·
enzo(g,h,i)perylene	4.1	ND	ND
benzo(k)fluoranthene	2.5	ND	ND
is(2-chloroethoxy)methane	5.3	NDND	ND_
bis(2-chloroethyl)ether	5.7	ND	ND
bis(2-chloroisopropyl)ether	5.7	ND	ND_
vis(2-ethylhexyl)phthalate	2.5	ND	ND
4-bromophenylphenylether	1.9	ND	ND
putylbenzylphthalate	2.5	ND	ND ND
2-chloronaphthalene	1.9	ND	ND
4-chlorophenylphenylether	4.2	ND_	ND
chrysene	2.5	ND	ND
dibenzo(a,h)anthracene	2.5	ND	ND
1,2-dichlorobenzene	1.9	ND	ND
1,3-dichlorobenzene	1.9	ND	ND
1,4-dichlorobenzene	4.4	ND .	ND
3,3'-dichlorobenzidine	16.5	i ND	ND ND
diethylphthalate	22	ND	ND
dimethylphthalate	1.6	ND	ND
di-n-butylphthalate	2.5	ND .	ND : I di

(Continued)



H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date:

BASE/NEUTRALS				
		SAMPLE I	DENTIFICATION	
	DETECTION LIMIT			
COMPOUND	(µg/1)	GILL CREEK ·	OSTERMAN PROPERTY	
2,6-dinitrotoluene	1.9	ND	ND	
2,4-dinitrotoluene	5.7	ND	ND ND	
di-n-octylphthalate	2.5	ND_	ND	
1,2-diphenylhydrazine	25	ND .	ND	
fluoranthene	2.2	ND	. ND	
fluorene	1.9	ND_	ND	
hexachlorobenzene	1.9	ND ·	ND	
hexachlorobutadiene	0:9	ND	ND	
hexachlorocyclopentadiene	25	ND	· ND	
hexachloroethane	1.6	ND	ND	
indeno(1,2,3-cd)pyrene ^	3.7	ND	ND .	
isophorone	2.2	ND	ND	
naphthalene	1,6	ND	. ND	
nitrobenzene	1.9	ND	ND	
N-nitrosodimethylamine	25	ND.	ND	
N-nitrosodi-n-propylamine	25	ND	ND	
N-nitrosodiphenylamine	1.9	ND	ND	
phenanthrene	5.4	ND	ND	
pyrene	1.9	ND	ND	
1,2,4-trichlorobenzene	1.9	ND	ND ND	

ADDITIONAL SAMPLE INFORMATION

Sample Date	7/11/84	7/11/84
Extraction Date	9/7/84	9/7/84
Analysis Date	9/19/84	9/19/84
Internal Standard - Level	20 ug/1	20 µg/1
deuterated phenanthrene - Recovery	100%	110%
Surrogate Standard (SS3) - Level	120 ug/1	120 µg/1
decafluorobiphenyl - Recovery	55%	45%
Surrogate Standard (SS4) - Level	100 ug/1	100 µg/1
2-fluorobiphenyl - Recovery	60%	47%

FOR RECRA ENVIRONMENTAL LABORATORIES for Recra Environmental Laboratories for polices of the first format of the first formation of the first format of the first form

RECRA ENVIRONMENTAL LABORATORIES

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY , PRIORITY POLLUTANT ANALYSES

Report Date: 10/3/84

VOLATILES.

and the self is to be	1. C.	SAMPLE IDENTIFICATION			
	DETECTION LIMIT	· 人名巴特斯西德里德			
COMPOUND	(µg/1)	GILL CREEK	OSTERMAN PROPERTY		
acrolein	400_	ND	ND		
acrylonitrile	400	ND	ND The state of th		
benzene	4.4	ND	ND		
bromodichloromethane	2.2	ND_	ND ND		
bromoform	4.7	ND	ND ND		
- bromomethane	10	ND	ND		
_carbon tetrachloride	2.8	ND	ND		
chlorobenzene	6.0	ND	ND		
chloroethane	10	ND	ND		
2-chloroethylvinyl ether	10	ND	ND		
chloroform	1.6	ND	ND		
chloromethane	10	ND	ND		
dibromochloromethane	3.1	ND .	ND ND		
1,1-dichloroethane	4.7	ND_	ND A PARK		
1,2-dichloroethane	2.8	ND	ND		
1,1-dichloroethylene	2.8	ND	ND		
trans-1,2-dichloroethylene	1.6	ND	ND		
1,2-dichloropropane	6.0	ND	ND		
1,3-dichloropropene	5.0	ND_	ND		
ethylbenzene	7.2	ND ND	ND A STATE OF THE		
methylene chloride	2.8	ND	ND ACTION		
1,1,2,2-tetrachloroethane	6.9	ND	ND SERVICE S		
tetrachloroethylene	4.1	ND	ND Programme State of the State		

(Continued)



H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 10/3/84:

VOLATILES

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	THE WAR THE STATE OF THE		SAMPLE IDEN	TIFICATION
		DETECTION	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
	COMPOUND	LIMIT (ug/1)	GILL CREEK	OSTERMAN PROPERTY
1"	toluene	6.0	ND	ND
1	1,1,1-trichloroethane	3.8	ND	ND
	1,1,2-trichloroethane	5.0	ND	ND .
ł.,	trichloroethylene	1.9	ND	ND
1"	vinyl chloride	10	ND	ND

ADDITIONAL SAMPLE INFORMATION

ADDITIONAL SAMELE INFORMATION		
Sample Date	7/11/84	7/11/84
Analysis Date	9/17/84	9/17/84
Internal Standard - Level	40 μg/1	40 μg/1
bromochloromethane - Recovery	73%	80%
Internal Standard - Level	40 μg/1	40 μg/1
2-bromo-1-chloropropane - Recovery	70%	73%
Internal Standard - Level	40 μg/1	40 μg/1
1,4-dichlorobutane - Recovery	76%	76%

FOR RECRA ENVIRONMENTAL LABORATORIES

DATE 10/3/84

1723

H2M GAS CHROMATOGRAPHY PRIORITY POLLUTANT ANALYSES

Report Date: 10/3/84

PESTICI 'PCB'S

	T	STICE PCB'S	7.04.07.014 (0.4)
		SAMPLE IDENTI	FICATION (DATE)
	UNITS OF	GILL CREEK	. OSTERMAN PROPERTY
COMPOUND	MEASURE	(7/11/84)	(7/11/84)
aldrin	иg/1	0.10	<0.01
α-ВНС	ug/l	0.36	<0.01
в-внс	μg/1 ·	0.26	<0.01
б-ВНС	ug/1	0.05	<0.01
ү-ВНС	ug/l	0.04	<0.01
chlordane	ug/1	<0.2	<0.1
4,4'-DDD	ug/l	<0.02	<0.01
4,4'-DDE	ug/1	<0.02	<0.01
4,4'-DDT	ug/1	<0.02	<0.01
dieldrin	ug/1	<0.02	<0.01
α-endosulfan	ug/l	<0.02	<0.01
β-endosulfan	ug/l	<0.02	<0.01
endosulfan sulfate	ug/1	<0.02	<0.01
endrin	ug/l	<0.02	<0.01
endrin aldehyde	ug/l	<0.02	<0.01
heptachlor	μg/1	<0.02	<0.01
heptachlor epoxide	μg/1 .	<0.02	<0.01
PCB-1016	րց/1	<0.2	<0.1
PCB-1221	μg/l	<0.4	<0.2
PCB-1232	νg/1	<0.4	<0.2
PCB-1242	μg/1	<0.2	<0.1
PCB-1248	μg/1	<0.2	<0.1
PCB-1254	μg/l	<0.2	<0.1
PCB-1260	μg/1	<0.2	<0.1
toxaphene	μg/l	<0.2	<0.1

FOR	RECRA	ENVIRONMENTAL	LABORAT	ORIES	7. B.	sole		
	•		. !	DATE	10/3/84			•

HECRA ENVIRONMENTAL LABORATORIES

H2M PRIORITY POLLUTANT ANALYSES

Report Date: 10/3/84

METALS

		METALS	<u> </u>		
1 20		SAMPLE IDENTIFICATION (DATE)			
	UNITS OF	GILLCREEK	OSTERMAN PROPERTY		
COMPOUND	MEASURE	(7/11/84)	(7/11/84)		
Total antimony	mg/l	<0.005	<0.005		
Total arsenic	mg/1	<0.005	<0.005		
Total beryllium	mg/l	<0.005	<0.005		
Total cadmium	mg/1	0.007_	. 0,006		
Total chromium	mg/1	<0.005	<0.005		
Total copper	mg/l	0.010	0.013		
Total lead	mg/l	<0.005	<0.005		
Total mercury	mg/l	0.003	<0.0005		
Total nickel	mg/1	<0.005	<0.005		
Total selenium	mg/l	<0.005	<0.005		
Total silver	mg/1	<0.02	<0.02		
Total thallium	mg/1	<0.005	<0.005		
Total zinc	mg/1	0.061	0.258		

FOR RECRA ENVIRONMENTAL LABORATORIES

DATE

10/3/84

M.

H2M PRIORITY POLLUTANT ANALYSES

Report Date: 10/3/84

MISCELLANEOUS

HISCELLANEOUS				
Print 22		SAMPLE IDENT	TIFICATION (DATE)	
			1 304 1 3	
Asset St.	UNITS OF	GILL CREEK	OSTERMAN PROPERTY	
COMPOUND	MEASURE	(7/11/84)	(7/11/84)	
Right Court	٠,			
Total cyanide	mg/1	<0.010	<0.01	
Total recoverable				
phenolics	mg/l	<0.01	<0.01	

FOR RECRA ENVIRONMENTAL LABORATORIES DATE

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES QUALITY CONTROL

Report Date: 10/3/84

EXTRACTABLE RECOVERY ANALYSIS OF SAMPLE GILL CREEK

SATILE GILL CREEK				
COMPOUND IDENTIFICATION	ng OF SPIKE	ng RECOVERED	Z RECOVERY	
2-chlorophenol	. 50	43	86	
1,3-dichlorobenzene	50	29	58	
2,4-dichlorophenol	50	46	. 92	
di-n-octylphthalate	50	29	58	
fluoranthene	50	50	100	
naphthalene	50	34	68	
nitrobenzene	50	36	72	
2,4,6-trichlorophenol	50	29	58	

ADDITIONAL SAMPLE INFORMATION

Sample Date	7/11/84
Extraction Date	9/7/84
Analysis Date	9/19/84
Internal Standard (IS) - Level	20 µg/1
deuterated phenanthrene - Recovery	120%
Surrogate Standard (SS1) - Level	120 µg/1
2-fluorophenol - Recovery	36%
Surrogate Standard (SS2) - Level	120 µg/1
pentafluorophenol - Recovery	27%
Surrogate Standard (SS3) - Level	120 μg/1
decafluorobiphenyl - Recovery	46%
Surrogate Standard (SS4) - Level	100 µg/1
2-fluorobiphenyl - Recovery	52%

FOR RECRA ENVIRONMENTAL LABORATORIES

DATE

CRA ENVIRONMENTAL LABORATORIES
I.D. #84~898

ANALYTICAL RESULTS

H2M GAS CHROMATOGRAPHY PRIORITY POLLUTANT ANALYSES QUALITY CONTROL

Report Date: 10/3/84

PESTICIDE RECOVERY ANALYSIS OF SAMPLE GILL CREEK

SARE DE GIED CREEK				
COMPOUND IDENTIFICATION	ng OF SPIKE	ng RECOVERED	% RECOVERY	
aldrin	0.26	0.20	77	
ү-ВНС	0.24	0.19	79	
4,4'-DDE	0.25	0.20	80 .	
β-endosulfan_	0.66	0.61	92	
endrin	0.23	0.29	126	
heptachlor	0.24	0.18	75	

FOR RECRA ENVIRONMENTAL LABORATORIES F. Boyolc

DATE 10/3/84



4) TRIP BLANKS

SAMPLE IDENTIFIER: SD-1 Trip Blank COMPUCHEM SAMPLE NUMBER: 32302

VOLATILE ORGANICS	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)	SCAN NUMBER
1V. CHLOROMETHANE	BDL	10	·#
2V. VINYL CHLORIDE	BDL	10	
3V. CHLOROETHANE	BDL -	10	
4V. BROMOMETHANE	BDL	10	
5V. ACROLEIN 6V. ACRYLONITRILE	BDL	100	
6V. ACRYLONITRILE	BDL	100	
7V. METHYLENE CHLORIDE	BDL	. 10	
8V. TRICHLOROFLUOROMETHANE	BDL	10	
9V. 1,1-DICHLOROETHYLENE	BDL	10	
10V. 1,1-DICHLOROETHANE	BDL	10 .	
11V. TRANS-1,2-DICHLOROETHYLENE	BDL	10	
12V. CHLOROFORM	BDL	10	
13V. 1.2-DICHLOROETHANE	BDL	10	
14V. 1,1,1-TRICHLOROETHANE	BDL	10	
15V. CARBON TETRACHLORIDE	BDL	10	
16V. BROMODICHLOROMETHANE	BDL	10	
17V. 1,2-DICHLOROPROPANE	BDL	10	. :
18V. TRANS-1,3-DICHLOROPROPENE	BDL.	10	
19V. TRICHLOROETHYLENE	BDL -	10	
20V. BENZENE	BDL	10	
21V. CIS-1,3-DICHLOROP ROPENE	BDL	10	
22V. 1,1,2-TRICHLOROETHANE	BDL	· 10	
23V. DIBROMOCHLOROMETHANE	BDL	10	
24V · BROMOFORM	BDL	10	
25V. 1,1,2,2-TETRACHLOROETHYLENE	BDL	10	
26V. 1,1,2,2-TETRACHLOROETHANE	BDL	10	
27V. TOLUENE	BDL	10	
28V. CHLOROBENZENE	, BDL	10	
29V. ETHYLBENZENE	BDL	10	i. ,-\'.
30V. 2-CHLOROETHYL VINYL ETHER	BDL	10	
31V. DICHLORODIFLUOROMETHANET	BDL		
32V. BIS(CHLOROMETHYL)ETHER [†]	BDL.		

BDL=BELOW DETECTION LIMIT

†See Data Report Notice

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: SD-1 Trip Blank COMPUCHEM SAMPLE NUMBER: 32302

				Date
Rece	ived/Ref	rigerated	:	07/27/84
Orga	nics	1		
\$	Extract	ed		Not Required
,1	Analyze	ed .		
	1.	Volatiles		07/30/84
•	2.	Acid		Not Requested
	3.	Base/Neutrals		Not Requested
•	4.	Pesticides/PCBS	•	Not Requested
Inor	ganics	The state of the s	1	
:	1.	Metals		Not Requested
	2.	Cyanide	٠.	Not Requested
7	3.	Pheno1s		Not Requested

SAMPLE IDENTIFIER: SD-2 Trip Blank COMPUCHEM SAMPLE NUMBER: 32300

VOLATILE ORGANICS	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)	SCAN NUMBER
1V. CHLOROMETHANE	BDL	10	
2V. VINYL CHLORIDE	BDL	10	
3V. CHLOROETHANE	BDL	10	
4V. BROMOMETHANE	BDL	10	
5V. ACROLEIN	BDL	100	
6V. ACRYLONITRILE	BDL	100	• • •
7V. METHYLENE CHLORIDE	BDL	10	
8V. TRICHLOROFLUOROMETHANE	BDL	10	
9V. 1,1-DICHLOROETHYLENE	BDL	10	• •
10V. 1,1-DICHLOROETHANE	BDL	10	
11V. TRANS-1,2-DICHLOROETHYLENE	BDL	10	
12V. CHLOROFORM	BDL	10	
13V. 1,2-DICHLOROETHANE	BDL	10	
14V. 1,1,1-TRICHLOROETHANE	BDL.	10	
15V. CARBON TETRACHLORIDE	BDL.	10	
16V. BROMODICHLOROMETHANE	BDL	10	
17V. 1,2-DICHLOROPROPANE	BDL.	10	
18V. TRANS-1,3-DICHLOROPROPENE	BDL	10	
19V. TRICHLOROETHYLENE	BDL	10	4
20V. BENZENE	BDL	10	
21V. CIS-1,3-DICHLOROPROPENE	BDL.	10	
22V. 1,1,2-TRICHLOROETHANE	BDL	10	1.0
23V. DIBROMOCHLOROMETHANE	BDL	10	
24V . BROMOFORM	BDL	10	
25V. 1,1,2,2-TETRACHLOROETHYLENE	BDL	10	
26V. 1,1,2,2-TETRACHLOROETHANE	BDL	10	
27V. TOLÚENE	BDL -	10	
28V. CHLOROBENZENE	BDL	10	
29V. ETHYLBENZENE	BDL	10	
30V. 2-CHLOROETHYL VINYL ETHER	BDL	10	
31V. DICHLORODIFLUOROMETHANET	BDL		٠.
32V. BIS(CHLOROMETHYL)ETHERT	BDL	•	

BDL=BELOW DETECTION LIMIT

†See Data Report Notice

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: SD-2 Trip Blank COMPUCHEM SAMPLE NUMBER: 32300

	4		Date
Rece	ived/Ref	frigerated	07/27/84
Orgai	nics		
i	Extract	ed	Not Required
, ·	Analyze	ed [· .
• -	1.	Volatiles	07/30/84 J
	2.	Acid	Not Requested
	3.	Base/Neutrals	Not Requested
	4.	Pesticides/PCBS	Not Requested
Inorg	ganics		
	1.	Metals -	Not Requested
,	2.	Cyani de	Not Requested
	3.	Phenols	Not Requested

SAMPLE IDENTIFIER: SD-3 Trip Blank COMPUCHEM SAMPLE NUMBER: 32298

	VOLATILE ORGANICS		ENTRATION UG/L)	DETECTION LIMIT (UG/L)	SCAN NUMBER
17.	CHLO ROME THANE		BDL.	10	
21.	• • • • • • • • • • • • • • • • • • • •		BDL	10	
37.	CHLOROETHANE		BDL	10	
	BROMOMETHANE		BDL	10	
	ACROLEIN		BDL	100	
67.			BDL	100	
	METHYLENE CHLORIDE		BDL	10	4:
	TRICHLOROFLUOROMETHANE		BDL	10	•
	1,1-DICHLOROETHYLENE		BDL BDL	10 10	
	1,1-DICHLOROETHANE TRANS-1,2-DICHLOROETHYLENE		BDL	10	
	CHLOROFORM		BDL	10	
	1,2-DICHLOROETHANE		BDL	10	
	1,1,1-TRICHLOROETHANE		BDL	10	
	CARBON TETRACHLORIDE		BDL	10	
	BROMOD I CHLO ROME THANE		BDL	10	
	1,2-DICHLOROP ROP ANE		BDL	10	
	TRANS-1,3-DICHLOROPROPENE		BDL	10	
197	TRICHLOROETHYLENE		BDL	10	
207.			BDL	10	1.
			BDL	10	
22V.	CIS-1,3-DICHLOROPROPENE 1,1,2-TRICHLOROETHANE		BDL	10	
231.	DIBROMOCHLOROMETHANE		BDL	10	
247.	BROMOFO RM	:	BDL	10	
25V .	1,1,2,2-TETRACHLOROETHYLENE		BDL	10	
26V.	1,1,2,2-TETRACHLOROETHANE		BDL	10	
	TOLUENE		BDL	10	
287.	CHLOROBENZENE		BDL	10	
	ETHYLBENZENE		BDL	10	
	2-CHLOROETHYL VINYL ETHER		BDL .	10	
	DICHLORODIFLUOROMETHANE [†] BIS(CHLOROMETHYL)ETHER [†]		BDL BDL		

BDL=BELOW DETECTION LIMIT

†See Data Report Notice

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: SD-3 Trip Blank COMPUCHEM SAMPLE NUMBER: 32298

	<u>Date</u>
Received/Refrigerated	07/27/84
Organics	
Extracted	Not Required
Analyzed	
1. Volatiles	07/30/84
2. Acid	Not Requested
3. Base/Neutrals	Not Requested
4. Pesticides/PCBS Inorganics	Not Requested
1. Metals	Not Requested
2. Cyanide	Not Requested
3. Phenols	Not Requested

CompuChem LABORATORIES

REPORT OF DATA

SAMPLE IDENTIFIER: SD-3 Trip Blank COMPUCHEM SAMPLE NUMBER: 32298
SD-2 Trip Blank 32300
SD-1 Trip Blank 32302

SUBMITTED TO:

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

DIANA A. SCAMMELL
TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT,

ROBERT E. MEIERER
DIRECTOR OF QUALITY ASSURANCE

DATA REPORT NOTICE

CompuChem employs Methods 624 and 625 for GC/MS analysis of organics in liquid matrices. These methods were proposed on December 3, 1979 by the U.S.E.P.A. in Volume 44 of the Federal Register. These methods were subsequently revised and reissued in July, 1982 as publication EPA-600/4-82-057. The EPA Environmental Monitoring and Support Laboratory (EMSL-Cincinnati) has subsequently issued method modifications which provide for the analysis of solid matrices. These modifications specify changes in the sample preparation procedures.

Additionally, for solid samples detection limits and any analytical results reported are based on processing the method specified sample size of as-received material.

The referenced methods are no longer appropriate for several of the original priority pollutant compounds. This is due to either the deletion from the toxic polluant list (40 CFR Part 401) by EPA or the determination by EPA that the referenced methods may not be optimized for certain compounds (EPA-600/4-82-057) originally incorporated by the methods.

CompuChem® presents these compounds in its sample data report for completeness as many of the government compound list forms continue to display the affected compounds. For consistency, these compounds are reported as "BDL" or "Below Detection Limit" as they are either not likely to exist in the sample or are not likely to be detected by the method. Those compounds which have actually been deleted are listed below with the Federal Register deletion reference.

Compound Name	GC/MS Fraction	Federal Register	Date
Dichlorodifluoromethane *Trichlorofluoromethane	Volatile Volatile	46FR2264 46FR2264	1/8/81 1/8/81
Bis(Chloromethyl)Ether	Volatile	46FR10723	2/4/81

^{*}While this compound has been deleted, CompuChem® continues to identify and quantitate for it.

COMPUCHEM LABORATORIES IS NO LONGER AFFILIATED WITH MEAD CORPORATION.

Washy for rediment & 6 W

3308 East Chapel Hill/Nelson Highway P.O. Box 12652 Research Triangle Park, NC 27709

Telephone: 919-549-8263 800-334-8525

August 7, 1984

CompuChem LABORATORIES

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

Dear Mr. Schroder:

Thank you for selecting CompuChem® Laboratories for your recent sample analysis. We have completed the analysis that you requested and have enclosed a summary of the CompuChem® data for your review. Additional data details are available for purchase if you require them.

As you know, EPA has proposed detection limits for the priority pollutants in the December 3, 1979, Federal Register, and we have reported all priority pollutant concentrations which have exceeded these limits (or their equivalent for solid matrices). In addition, we have permanently stored a complete record of your data on magnetic tape. This includes chromatograms, mass spectra, calibration and quality control data for the organics. Therefore, your original data is readily available for future reference. Should you require additional information from your data base, please contact us at 1/800-334-8525.

In order to expedite data to you, we have forwarded the results for all completed analyses. If you submitted more samples than are included in the enclosed results, the data will be forthcoming upon completion of our final review.

Your confidence in our CompuChem® service is appreciated. We look forward to a continuing association.

Sincerely.

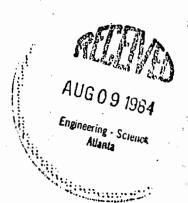
Customer Service Dept. CompuChem®

Enclosure:

Report: SD-3 Trip Blank - 32298

SD-2 Trip Blank - 32300

SD-1 Trip Blank - 32302



5) SEDIMENT DATA

COMPUCHEM LABORATORIES

August 29, 1984

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

Dear Mr. Schroder:

SEP 04 1984

Thank you for selecting CompuChem® Laboratories for your recent sample analysis. We have completed the analysis that you requested and have enclosed a summary of the CompuChem® data for your review. Additional data details are available for purchase if you require them.

As you know, EPA has proposed detection limits for the priority pollutants in the December 3, 1979, Federal Register, and we have reported all priority pollutant concentrations which have exceeded these limits (or their equivalent for solid matrices). In addition, we have permanently stored a complete record of your data on magnetic tape. This includes chromatograms, mass spectra, calibration and quality control data for the organics. Therefore, your original data is readily available for future reference. Should you require additional information from your data base, please contact us at 1/800-334-8525.

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Your confidence in our CompuChem® service is appreciated. We look forward to a continuing association.

Sincerely,

Customer Service Dept. CompuChem®

Enclosure:

Report:	SD-3			32411
	SD-2	-	;	32412
1.0	SD-1	• • · · ·		32413

DATA REPORT NOTICE

CompuChem employs Methods 624 and 625 for GC/MS analysis of organics in liquid matrices. These methods were proposed on December 3, 1979 by the U.S.E.P.A. in Volume 44 of the Federal Register. These methods were subsequently revised and reissued in July, 1982 as publication EPA-600/4-82-057. The EPA Environmental Monitoring and Support Laboratory (EMSL-Cincinnati) has subsequently issued method modifications which provide for the analysis of solid matrices. These modifications specify changes in the sample preparation procedures.

Additionally, for solid samples detection limits and any analytical results reported are based on processing the method specified sample size of asreceived material.

The referenced methods are no longer appropriate for several of the original priority pollutant compounds. This is due to either the deletion from the toxic pollutant list (40 CFR Part 401) by EPA or the determination by EPA that the referenced methods may not be optimized for certain compounds (EPA-600/4-82-057) originally incorporated by the methods.

CompuChem® presents these compounds in its sample data report for completeness as many of the government compound list forms continue to display the affected compounds. For consistency, these compounds are reported as "BDL" or "Below Detection Limit" as they are either not likely to exist in the sample or are not likely to be detected by the method. Those compounds which have actually been deleted are listed below with the Federal Register deletion reference.

Compound Name	GC/MS Fraction	<u>Federal Register</u>	Date
Dichlorodifluoromethane *Trichlorofluoromethane	Volatile Volatile	46FR2264 46FR2264	1/8/81 1/8/81
Bis(Chloromethyl)Ether	Volatile	46FR10723	2/4/81

^{*}While this compound has been deleted, CompuChem® continues to identify and quantitate for it.

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: SD-3 COMPUCHEM SAMPLE NUMBER: 32411

Samples:

Received 7-26-84 Analyzed 8-02-84

SAMPLE IDENTIFIER: SD-3 COMPUCHEM SAMPLE NUMBER: 32411

SD-2

32412 SD-1 32413

SUBMITTED TO:

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

DIANA A. SCAMMELL TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT

ROBERT E. MEIERER DIRECTOR OF QUALITY ASSURANCE

SAMPLE IDENTIFIER: COMPUCHEM SAMPLE NUMBER: SD-3 32411

INORGANICS PRIORITY POLLUTANTS	CONCENTRATION (MG/KG)	DETECTION LIMIT (MG/KG)
et en		
CYANIDE, TOTAL	BDL	1.0

SAMPLE IDENTIFIER: SD-2 COMPUCHEM SAMPLE NUMBER: 32412

INORGANICS PRIORITY POLLUTANTS	CONCENTRATION DETE (MG/KG)	CTION LIMIT (MG/KG)
CYANIDE, TOTAL	BDL	1.0

SAMPLE IDENTIFIER: SD-1 COMPUCHEM SAMPLE NUMBER: 32413

INORGANICS PRIORITY POLLUTA	ANTS	CONCENTRATION (MG/KG)	MG/KG)
			5
. CYANIDE, TOTAL		BDL	1.0

COMPUCHEM LABORATORIES



August 31, 1984

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

SEP 06 1984

Engineering Columbe Atlanta

Dear Mr. Schroder:

Thank you for selecting CompuChem® Laboratories for your recent sample analysis. We have completed the analysis that you requested and have enclosed a summary of the CompuChem® data for your review. Additional data details are available for purchase if you require them.

As you know, EPA has proposed detection limits for the priority pollutants in the December 3, 1979, Federal Register, and we have reported all priority pollutant concentrations which have exceeded these limits (or their equivalent for solid matrices). In addition, we have permanently stored a complete record of your data on magnetic tape. This includes chromatograms, mass spectra, calibration and quality control data for the organics. Therefore, your original data is readily available for future reference. Should you require additional information from your data base, please contact us at 1/800-334-8525.

In order to expedite data to you, we have forwarded the results for all completed analyses. If you submitted more samples than are included in the enclosed results, the data will be forthcoming upon completion of our final review.

Your confidence in our CompuChem® service is appreciated. We look forward to a continuing association.

Sincerely,

Customer Service Dept. CompuChem®

Enclosure:

Report: SD-2 - 32299

DATA REPORT NOTICE

CompuChem employs Methods 624 and 625 for GC/MS analysis of organics in liquid matrices. These methods were proposed on December 3, 1979 by the U.S.E.P.A. in Volume 44 of the Federal Register. These methods were subsequently revised and reissued in July, 1982 as publication EPA-600/4-82-057. The EPA Environmental Monitoring and Support Laboratory (EMSL-Cincinnati) has subsequently issued method modifications which provide for the analysis of solid matrices. These modifications specify changes in the sample preparation procedures.

Additionally, for solid samples detection limits and any analytical results reported are based on processing the method specified sample size of as-received material.

The referenced methods are no longer appropriate for several of the original priority pollutant compounds. This is due to either the deletion from the toxic pollutant list (40 CFR Part 401) by EPA or the determination by EPA that the referenced methods may not be optimized for certain compounds (EPA-600/4-82-057) originally incorporated by the methods.

CompuChem® presents these compounds in its sample data report for completeness as many of the government compound list forms continue to display the affected compounds. For consistency, these compounds are reported as "BDL" or "Below Detection Limit" as they are either not likely to exist in the sample or are not likely to be detected by the method. Those compounds which have actually been deleted are listed below with the Federal Register deletion reference.

Compound Name	GC/MS Fraction	<u>Federal Register</u>	Date
Dichlorodifluoromethane *Trichlorofluoromethane Bis(Chloromethyl)Ether	Volatile	46FR2264	1/8/81
	Volatile	46FR2264	1/8/81
	Volatile	46FR10723	2/4/81

^{*}While this compound has been deleted, CompuChem® continues to identify and quantitate for it.

REPORT OF DATA

SAMPLE IDENTIFIER: SD-2

COMPUCHEM SAMPLE NUMBER: 32299

SUBMITTED TO:

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

DIANA A. SCAMMELL

TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT

ROBERT E. MEIERER DIRECTOR OF QUALITY ASSURANCE

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: SD-2 COMPUCHEM SAMPLE NUMBER: 32299

				<u>Date</u>
Receiv	ed/Ref	rigerated	J.	07/27/84
	:			
Organi	CS			
. . • E	xtract	ed		08/01/84
A	nalyze	d _.	·	
	1.	Volatiles		07/03/84
	2.	Acid		08/08/84
	3.	Base/Neutrals		08/06/84
	*; 4.	Pesticides/PCBS	. 4	08/06/84
Inorga	nics 🦠			
	1.	Metals	$p^{p-1/2}$	08/14/84
in the second	2.	Cyanide		Not Requested
	3.	Phenols	4	Not Requested

COMPOUND LIST - VOLATILES ORGANICS

SAMPLE IDENTIFIER: SD-2 COMPUCHEM SAMPLE NUMBER: 32299

						· D	FIFCLI	UN
		•	CONCE	NTRAT	ION	1	LIMIT	
9 3				G/KG)			UG/KG)	
			- (0	<u>u, nu,</u>	'	. •	Ju, 11u,	—
17.	CHLOROMETHANE			BDL	. : :,		10	
							10	
27.	VINYL CHLORIDE			BDL	***	٠.		
3V •	CHLOROETHANE			BDL	. !		10	
	BROMOMETHANE		•	BDL			10	
	ACROLEIN			BDL			100	
· 6V 📲	ACRYLONITRILE			BDL			100	
	METHYLENE CHLORIDE		NDB*			•	10	
8∨ . }	TRICHLOROFLUOROMETHANE			BDL			10	
9V 🎝	1,1-DICHLOROETHYLENE			BDL			10	
100.	1.1-DICHLOROETHANE		. ,	BDL			10	
117.	1,1-DICHLOROETHANE TRANS-1,2-DICHLOROETHYLENE			BDL			10	. 1
12V.	CHLOROFORM		₽.	BDL			10	
	1,2-DICHLOROETHANE			BDL			10	
	1,1,1-TRICHLOROETHANE			BDL			10	
	CARBON TETRACHLORIDE			BDL			10	,
	BROMODICHLOROMETHANE			BDL	,		10	
	1,2-DICHLOROPROPANE			BDL			10	
180	TRANS-1,3-DICHLOROPROPENE			BDL	. ;		10	
190	TRICHLOROETHYLENE			BDL			10	
207	BENZENE			BDL			10	
	CIS-1,3-DICHLOROPROPENE			BDL	Or p		10	
	1,1,2-TRICHLOROETHANE	. '		BDL			10	
237	DIBROMOCHLOROMETHANE			BDL	1,		10	
	BROMOFORM		2	BDL	4.7	45.	10	
	1,1,2,2-TETRACHLOROETHYLENE			BDL		٠.	10	
26V	1,1,2,2-TETRACHLOROETHANE	٠,		BDL			10	
27V	TOLUENE			BDL			10	
	CHLOROBENZENE		• :	BDL		_	10	
	ETHYLBENZENE			BDL			10	
	2-CHLOROETHYL VINYL ETHER			BDL	. •		10	
31V.	DICHLORODIFLUOROMETHANE†		•	BDL			10	
	BIS(CHLOROMETHYL)ETHERT			BDL			•	
	DIO! OHEOVOHE HITE!ETHEN							

BDL=BELOW DETECTION LIMIT
*See Quality Assurance Notice

†See Data Report Notice

QUALITY ASSURANCE NOTICE

CompuChem Sample No. 32299

Although not required by the Federal Register, December 3, 1979 (modified July, 1982) Volatile Method 624 procedure, the laboratory prepares VOA blanks when compositing water samples and preparing low and medium level hazardous waste VOA samples. This is to insure that the glassware used is free from contamination, and to monitor the possibility of cross-contamination from high levels of volatile organic compounds in some samples and the laboratory atmosphere.

The compositing or method blank (# 32330) prepared with this sample contained the compound(s) listed below. Sample data associated with this blank have been adjusted and/or flagged according to the EPA-recommended methods.

Compound(s)	Concentration Found In Sample (ug/kg)	Applicable Qualifier*
Methylene Chloride	44	NDB

The following data qualifiers are used by EPA and adopted by CompuChem® for reporting purposes:

NDB = The concentration of a priority pollutant in the blank is greater than 1/2 the detection limit and is greater than 1/2 the concentration in the sample

*No adjusted sample concentration is reported.

COMPOUND LIST -- ACID EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: SD-2 COMPUCHEM SAMPLE NUMBER: 32299

	CONCENTRATION (UG/KG)	DETECTIONT LIMIT (UG/KG)
1A. PHENOL	BDL	500
2A. 2-CHLOROPHENOL	BDL	500
3A. 2-NITROPHENOL	BDL	500
4A. 2,4-DIMETHYLPHENOL	BDL	500
5A. 2,4-DICHLOROPHENOL	BDL	500
6A. P-CHLORO-M-CRESOL	BD L	500
7A. 2,4,6-TRICHLOROPHENOL	BDL	500
8A. 2,4-DINITROPHENOL	BDL	5000
9A. 4-NITROPHENOL	BDL.	500
LOA. 4,6-DINITRO-O-CRESOL	BDL	5000
LIA. PENTACHLOROPHENOL	BDL.	500

BDL=BELOW DETECTION LIMIT †See Data Report Notice

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: SD-2 COMPUCHEM SAMPLE NUMBER: 32299

	CONCENTRA (UG/KG	ATION I	TECTION [†] LIMIT (UG/KG)
1B. N-NITROSODIMETHYLAMINE		BDL	200
2B. BIS (2-CHLOROETHYL) ETHER	. В	BDL	200
3B. 1,3-DICHLOROBENZENE	В	BDL	200
4B. 1,4-DICHLOROBENZENE	. В	BDL	200
5B. 1,2-DICHLOROBENZENE		DL	200
6B. BIS (2-CHLOROISOPROPYL) ETHER		DL	200
7B. HEXACHLOROETHANE		DL	200
8B. N-NITROSODI-N-PROPYLAMINE		DL	200
9B. NITROBENZENE		DL	200
10B. ISOPHORONE		DL	200
11B. BIS(2-CHLOROETHOXY) METHANE		DL	200
12B. 1,2,4-TRICHLOROBENZENE	_	DL	200
13B. NAPHTHALENE		DL	200
14B. HEXACHLOROBUTADIENE			200
15B. HEXACHLOROCYCLOPENTADIENE		DL	200
16B. 2-CHLORONAPHTHALENE		DL	200.
17B. DIMETHYLPHTHALATE		DL	200
18B. ACENAPHTHYLENE		DL	200
19B. 2,6-DINITROTOLUENE		DL	200
20B. ACENAPHTHENE	_	DL	200
21B. 2,4-DINITROTOLUENE		DL	200
22B. DIETHYLPHTHALATE 23B. FLUORENE		DL	200
24B. 4-CHLOROPHENYL PHENYL ETHER		DL .	200
25B. DIPHENYLAMINE (N-NITROSO)		DL DL	200
26B. 1,2-DIPHENYLHYDRAZINE (AZOBENZENE)		DL DL	200 = 5 200
27B. 4-BROMOPHENYL PHENYL ETHER		DL DL	200
28B. HEXACHLOROBENZENE		DL DL	200
	Di)L	200

BDL=BELOW DETECTION LIMIT TSee Data Report Notice

SAMPLE IDENTIFIER: SD-2 COMPUCHEM SAMPLE NUMBER: 32299

	CONCENTRATION (UG/KG)	DETECTION† LIMIT (UG/KG)
29B. PHENANTHRENE	BDL	200
30B. ANTHRACENE	BDL	200
31B. DI-N-BUTYLPHTHALATE	BDL	200
32B. FLUORANTHENE	BDL	200
33B. BENZIDINE	BDL	200
34B. PYRENE	BDL	200
35B. BUTYLBENZYLPHTHALATE	BDL	200
36B. BENZO(A)ANTHRACENE	BDL	200
37B. 3,3'-DICHLOROBENZIDINE	BDL	200
38B. CHRYSENE	BDL	200
39B. BIS(2-ETHYLHEXYL)PHTHALATE	BDL	200
40B. DI-N-OCTYLPHTHALATE	BDL.	200
41B. BENZO(B)FLUORANTHENE	BDL	200
42B. BENZO(K)FLUORANTHENE	BDL	200
43B. BENZO(A)PYRENE	BDL	200
44B. INDENO(1,2,3-C,D)PYRENE	BDL	500
45B. DIBENZO(A,H)ANTHRACENE	BDL	500
46B. BENZO(G,H,I)PERYLENE	BDL	500

COMPOUND LIST -- PESTICIDES/PCB'S

SAMPLE IDENTIFIER: SD-2 COMPUCHEM SAMPLE NUMBER: 32299

		CONCENTRATION (UG/KG)	LIMIT (UG/KG)
1P.	ALDRIN	BDL	200
2P.	ALPHA-BHC	BDL	200
3P.	BETA-BHC	BDL	200 .
4P.	GAMMA-BHC	BDL	200
5P.	DELTA-BHC	BDL	200
6P.	CHLORDANE	BDL	200
7P.	4,4'-DDT	BDL	200
8P.	4,4'-DDE	BDL	200
9P •	4,4'-DDD	BDL	200
10P.	DIELDRIN	BDL	200
11P.	ALPHA-ENDOSULFAN	BDL	200
12P.	BETA-ENDOSULFAN	BDL .	200
13P.	ENDOSULFAN SULFATE	BDL	200
14P.	ENDRIN	BDL	200
15P.	ENDRIN ALDEHYDE	BDL	200
16P.	HEPTACHLOR	BDL	200
17P •	ha.	BDL	200
18P • · ·	PCB-1242	BDL	200
19P.	PCB-1254	BDL.	200
20P •	PCB-1221	BDL	200
21P.	PCB-1232	BDL	200 200
22P •	PCB-1248	BDL	200
23P •	PCB-1260 PCB-1016	BDL BDL	200
24P •	TOXAPHENE	BDL.	200
201	TONAFILAL	ODL	200

BDL=BELOW DETECTION LIMIT *See Data Report Notice

COMPOUND LIST - INORGANICS (METAL

SAMPLE IDENTIFIER: SD-2 COMPUCHEM SAMPLE NUMBER: 32299

INORGANICS PRIORITY POLLUTANTS		CONCENTRATION (UG/G)	ETECTION LIMITY (UG/G)	
1. CADMIUM, TOTAL 2. CHROMIUM, TOTAL 3. COPPER, TOTAL 4. LEAD, TOTAL* 5. MERCURY, TOTAL 6. NICKEL, TOTAL 7. ZINC, TOTAL		BDL 6.3 8.2 7.0 0.064 8.5	0.20 0.50 1.0 0.50 0.0020 1.0 0.20	

BDL=BELOW DETECTION LIMIT TSee Data Report Notice

*Lead analyzed by Flame AAS because of concentration level found.

3308 East Chapel Hill/Nelson Highway P.O. Box 12652 Research Triangle Park, NC 27709

CompuChem

LABORATORIES

Telephone: 919-549-8263

800-334-8525

August 27, 1984

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

SEP 04 1984

Dear Mr. Schroder:

Say Tr. A

Thank you for selecting CompuChem® Laboratories for your recent sample analysis. We have completed the analysis that you requested and have enclosed a summary of the CompuChem® data for your review. Additional data details are available for purchase if you require them.

As you know, EPA has proposed detection limits for the priority pollutants in the December 3, 1979, Federal Register, and we have reported all priority pollutant concentrations which have exceeded these limits (or their equivalent for solid matrices). In addition, we have permanently stored a complete record of your data on magnetic tape. This includes chromatograms, mass spectra, calibration and quality control data for the organics. Therefore, your original data is readily available for future reference. Should you require additional information from your data base, please contact us at 1/800-334-8525.

In order to expedite data to you, we have forwarded the results for all completed analyses. If you submitted more samples than are included in the enclosed results, the data will be forthcoming upon completion of our final review.

Your confidence in our CompuChem® service is appreciated. We look forward to a continuing association.

Sincerely,

4. 19

Customer Service Dept. CompuChem®

Enclosure:

Report: SD-3 - 32297

SD-1 - 32301

DATA REPORT NOTICE

CompuChem employs Methods 624 and 625 for GC/MS analysis of organics in liquid matrices. These methods were proposed on December 3, 1979 by the U.S.E.P.A. in Volume 44 of the Federal Register. These methods were subsequently revised and reissued in July, 1982 as publication EPA-600/4-82-057. The EPA Environmental Monitoring and Support Laboratory (EMSL-Cincinnati) has subsequently issued method modifications which provide for the analysis of solid matrices. These modifications specify changes in the sample preparation procedures.

Additionally, for solid samples detection limits and any analytical results reported are based on processing the method specified sample size of asreceived material.

The referenced methods are no longer appropriate for several of the original priority pollutant compounds. This is due to either the deletion from the toxic pollutant list (40 CFR Part 401) by EPA or the determination by EPA that the referenced methods may not be optimized for certain compounds (EPA-600/4-82-057) originally incorporated by the methods.

CompuChem® presents these compounds in its sample data report for completeness as many of the government compound list forms continue to display the affected compounds. For consistency, these compounds are reported as "BDL" or "Below Detection Limit" as they are either not likely to exist in the sample or are not likely to be detected by the method. Those compounds which have actually been deleted are listed below with the Federal Register deletion reference.

Compound Name	GC/MS Fraction	Federal Register	<u>Date</u>
Dichlorodifluoromethane	Volatile	46FR2264	1/8/81
*Trichlorofluoromethane	Volatile	46FR2264	1/8/81
Bis(Chloromethyl)Ether	Volatile	46FR10723	2/4/81

^{*}While this compound has been deleted, CompuChem® continues to identify and quantitate for it.

CompuChem LABORATORIES

REPORT OF DATA

SAMPLE IDENTIFIER

COMPUCHEM SAMPLE NUMEBER

SD-3 SD-1 32297 32301

SUBMITTED TO:

Mr. Ernie Schroder Engineering Science, Inc. 57 Executive Park South Suite 590 Atlanta, GA 30329

(h) iana (l. deanmel)
DIANA A. SCAMMELL
TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT

ROBERT E. MEIERER
DIRECTOR OF QUALITY ASSURANCE

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: SD-3 COMPUCHEM SAMPLE NUMBER: 32297

			•
			Date
Received/Refrigerated			7-27-84
Organics			·
Extracted			8-1-84
Analyze	ed) 	
1.	Volatiles	;	7-30-84
2.	Acid		8-8-84
3.	Base/Neutrals	·	8-4-84
4.	Pesticides/PCBS		8-4-84
Inorganics	r.		•
1.	Metals		8-14-84
2.	Cyanide		Not Requested
	Dhonole		Not Doguated

SAMPLE IDENTIFIER: SD-3 COMPUCHEM SAMPLE NUMBER: 32297

		CONCENTRATION (UG/KG)	DETECTION LIMIT (UG/KG)
1٧.	CHLOROMETHANE	BDL	10
	VINYL CHLORIDE	BDL	10
	CHLOROETHANE	BDL	10
	BROMOMETHANE	BDL	10
5V.	ACROLEIN	BDL	100
6V.	ACRYLONITRILE	BDL	100
77.	METHYLENE CHLORIDE	BDL	10
8V.	TRICHLOROFLUOROMETHANE	BDL	10
9 V •	1,1-DICHLOROL HITLLING	BDL	10
10V.	1,1-DICHLOROETHANE	BDL	10
11V.	TRANS-1,2-DICHLOROETHYLENE	BDL	10
120	CHLOROFORM 1,2-DICHLOROETHANE	BDL	10
130.	1,2-DICHLOROETHANE	BDL.	10
	1,1,1-TRICHLOROETHANE	BDL.	. 10
	CARBON TETRACHLORIDE	BDL	10
	BROMODICHLOROMETHANE	BDL	10
	1,2-DICHLOROPROPANE	BDL	10
	TRANS-1,3-DICHLOROPROPENE	BDL	10
190	TRICHLOROETHYLENE	BDL	10
	BENZENE	BDL	10
214	CIS-1,3-DICHLOROPROPENE	BDL	10
	1,1,2-TRICHLOROETHANE	BDL.	10
23V.		BDL BDL	10 10
	BROMOFORM 1,1,2,2-TETRACHLOROETHYLENE	BDL BDL	10
26V	1,1,2,2-TETRACHLOROETHANE	BDL	10
	TOLUENE	BDL	10
	CHLOROBENZENE	BDL	10
	ETHYLBENZENE	BDL	10
	2-CHLOROETHYL VINYL ETHER	BDL	10
31V.	DICHLOROD IF LUOROMETHANE†	BDL	
	BIS(CHLOROMETHYL)ETHER [†]	BDL	4 () ()
7.1	William Control of the Control of th		

BDL=BELOW DETECTION LIMIT

[†]See Data Report Notice

COMPOUND LIST -- ACID EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: SD-3 COMPUCHEM SAMPLE NUMBER: 32297

		CONCENTRATION (UG/KG)	DETECTION* LIMIT (UG/KG)
1A.	PHENOL	BDL.	500
2A.	2-CHLOROPHENOL	BDL	500
3A.	2-NITROPHENOL	BDL.	500
4A.	2,4-DIMETHYLPHENOL	BDL	500
5A.	2,4-DICHLOROPHENOL	BDL	500
6A.	P-CHLORO-M-CRESOL	BDL.	500
	2,4,6-TRICHLOROPHENOL	BDL .	500
		BDL	5000
9A •	4-NITROPHENOL	BDL.	500
10A.	4,6-DINITRO-O-CRESOL	BDL	5000
11A.	PENTACHLOROPHENOL	BDL	500

BDL=BELOW DETECTION LIMIT *Detection limits based on processing 50g of as-received sample.

COMPOUND LIST -- BASE-NEUTRAL EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: SD-3
COMPUCHEM SAMPLE NUMBER: 32297

			CONCENTRATION (UG/KG)		-	DETECTION* LIMIT (UG/KG)
1B.	N-NITROSODIMETHYLAMINE		•	BDL		200
2B.	BIS (2-CHLOROETHYL) ETHER	,		BDL		200
3B.	1,3-DICHLOROBENZENE			BDL		200
~4B.	1,4-DICHLOROBENZENE			BDL		200
5B.	1,2-DICHLOROBENZENE		*	BDL		200
6B.	BIS (2-CHLOROISOPROPYL) ETHER			BDL		200
7B.	HEXACHLOROETHANE			BDL		200
8B.	N-NITROSODI-N-PROPYLAMINE			BDL		200
9B •	NITROBENZENE			BDL		200
10B.	ISOPHORONE			BDL		200
11B.	BIS(2-CHLOROETHOXY) METHANE			BDL		200
12B.	1,2,4-TRICHLOROBENZENE			BDL		200
	NAPHTHALENE			BDL		200
14B.	HEXACHLOROBUTADIENE			BDL		200
	HEXACHLOROCYCLOPENTADIENE			BDL		200
16B.	2-CHLORONAPHTHALENE			BDL		200
17B.	DIMETHYLPHTHALATE			BDL		200
	ACENAPHTHYLENE			BDL		200
	2,6-DINITROTOLUENE			BDL		200
	ACENAPHTHENE			BDL		200
21B.	2,4-DINITROTOLUENE			BDL		200
22B.	DIETHYLPHTHALATE	•		BDL		200
23B.	FLUORENE	7.		BDL		200
24B.	4-CHLOROPHENYL PHENYL ETHER	;		BDL		200
25B.	DIPHENYLAMINE (N-NITROSO)			BDL		200
	1,2-DIPHENYLHYDRAZINE (AZOBENZENE)			BDL		200
	4-BROMOPHENYL PHENYL ETHER			BDL		200
28B.,	HEXACHLOROBENZENE		:	BDL		200

BDL=BELOW DETECTION LIMIT Detection limits based on processing 50g of as-received sample.

SAMPLE IDENTIFIER: SD-3 COMPUCHEM SAMPLE NUMBER: 32297

					CONCENTRATION (UG/KG)		L	ECTION* IMIT UG/KG)	
29B.	PHENANTHRENE					BDL		200	
30B.	ANTHRACENE					BDL		200	
	DI-N-BUTYLPHTHALATE		p			BDL		200	
32B.					•	BDL		200	
33B.	BENZIDINE					BDL		200	
34B.	PYRENE					BDL		200	
35B.	BUTYLBENZYLPHTHALATE					BDL		200	
36B.	BENZO(A)ANTHRACENE					BDL		· 200	
37B.	3,3'-DICHLOROBENZIDINE				. :	BDL	•	200	
38B.	CHRYSENE				• •	BDL		200	
39B.	BIS(2-ETHYLHEXYL)PHTHALAT	Έ				BDL .		200	
40B				•	•	BDL		200	
41B.	BENZO(B)FLUORANTHENE					BDL		200	
42B.	BENZO(K)FLUORANTHENE					BDL		200	
43B.	BENZO(A)PYRENE					BDL		200	
44B.	INDENO(1,2,3-C,D)PYRENE					BDL		5 00	
45B.		r				BDL		500	
46B.	BENZO(G,H,I)PERYLENE	, .	1			BDL		500	

BDL=BELOW DETECTION LIMIT *Detection limits based on processing 50g of as-received sample.

COMPOUND LIST -- PESTICIDES/PCB'S

SAMPLE IDENTIFIER: SD-3 COMPUCHEM SAMPLE NUMBER: 32297

		CONCENTRATION (UG/KG)	LIMIT (UG/KG)
1P.	ALDRIN	BDL , ,	200
2P.	ALPHA-BHC	BDL 1	200
3P.	BETA-BHC	BDL	200
4P.	GAMMA-BHC	BDL	200
5P.	DELTA-BHC	BDL	200
6P.	CHLORDANE	BDL	200
7P • 1	4,4'-DDT	BDL	200
8P.	4,4'-DDE	BDL	200
9P • '	4,41-DDD	BDL	200
10P.	DIELDRIN	BDL	200
	ALPHA-ENDOSULFAN	BDL	200
12P.	BETA-ENDOSULFAN	BDL	200
13P.	ENDOSULFAN SULFATE	BDL	200
14P.	ENDRIN	BDL	200
15P.	ENDRIN ALDEHYDE	BDL	200
16P . :		BDL	200
	HEPTACHLOR EPOXIDE ,	BDL	200
18P.	PCB-1242	BDL	200
	PCB-1254	BDL	200
20P.	PCB-1221	BDL	200
21P.	PCB-1232	BDL	200
22P.	PCB-1248	BDL	200
23P • 3	PCB-1260	BDL	200
24P.	PCB-1016	BDL	200 200
25P.	TOXAPHENE	BDL	200

BDL=BELOW DETECTION LIMIT *Detection limit based on processing 50g of as-received sample.

COMPOUND LIST -- INORGANICS PRIORITY POLLUTANTS

SAMPLE IDENTIFIER: SD-3 COMPUCHEM SAMPLE NUMBER: 32297

i digi. Mari	CONCENTRATION (UG/G)	DETECT	TION LIMIT (UG/G)	
Art.				•
1. CADMIUM	BDL		0.20	
2. CHROMIUM	5.6		0.50	
3. COPPER	10.0		1.0	
4. LEAD *	14		0.50	·
5. MERCURY	0.010		0.0020	
6. NICKEL	9.4		1.0	
7. ZINC	48		0.20	

BDL=BELOW DETECTION LIMIT

*Lead analyzed by Flame AAS because of concentration level found.

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: SD-1 COMPUCHEM SAMPLE NUMBER: 32301

• • • • • • • • • • • • • • • • • • •		<u>Date</u>
Received/Ref	rigerated	7-27-84
Organics		
Extract	ed	8-1-84
Analyze	ed .	
1.	Volatiles	7-31-84
2.	Acid	8-8-84
3.	Base/Neutrals	8-6-84
. 4.	Pesticides/PCBS	8-6-84
Inorganics		
1.	Metals	8-14-84
2.	Cyanide	Not Requested
3.	Phenols	Not Requested

OMPOUND LIST - VOLATILES ORGANICS

SAMPLE IDENTIFIER: SD-1 COMPUCHEM SAMPLE NUMBER: 32301

			CONCENTRATION (UG/KG)	DETECTION LIMIT (UG/KG)
17.	CHLOROMETHANE		BDL	10
2V.	VINYL CHLORIDE		BDL	10
	CHLOROETHANE	•	BDL	10
	BROMOMETHANE		BDL	10
5V.	ACROLEIN		BDL .	100
. 6V .	ACRYLONITRILE		BDL.	100
77.	METHYLENE CHLORIDE		BDL	10
	TRICHLOROFLUOROMETHANE		BDL	10
9٧.	1,1-DICHLOROETHYLENE		BDL.	10
	1,1-DICHLOROETHANE		BDL	10
	TRANS-1,2-DICHLOROETHYLENE		BDL	10
	CHLOROFORM		BDL.	10
	1,2-DICHLOROETHANE		BDL	10
	1,1,1-TRICHLOROETHANE		BDL	10
-	CARBON TETRACHLORIDE		BDL.	10
	BROMODICHLOROMETHANE		BDL	10
	1,2-DICHLOROPROPANE		BDL.	10
18V.	TRANS-1,3-DICHLOROPROPENE		BDL	10
	TRICHLOROETHYLENE		BDL.	10
201.			BDL	10
210.	CIS-1,3-DICHLOROPROPENE		BDL	10
227	1,1,2-TRICHLOROETHANE		BDL	10
	DIBROMOCHLOROMETHANE		BDL	10
	BROMOFORM		BDL	10
	1,1,2,2-TETRACHLOROETHYLENE		BDL.	10
	1,1,2,2-TETRACHLOROETHANE		BDL	10
27V • 3	TOLUENE		BDL.	10
			BDL.	10
	ETHYLBENZENE		BDL	10
30V.	2-CHLOROETHYL VINYL ETHER DICHLORODIFLUOROMETHANE		BDL	10
33A :	DIC/CHIODOMETHAN VETHERT		BDL	
32V.	BIS(CHLOROMETHYL)ETHER [†]		BDL	

BDL=BELOW DETECTION LIMIT

[†]See Data Report Notice

COMPOUND LIST -- ACID EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: SD-1 COMPUCHEM SAMPLE NUMBER: 32301

	CONCENTRATION (UG/KG)	DETECTION* LIMIT (UG/KG)
1A. PHENOL	BDL	500
2A. 2-CHLOROPHENOL	BDL	500
3A. 2-NITROPHENOL	BDL	500
4A. 2,4-DIMETHYLPHENOL	BDL	500
5A. 2.4-DICHLOROPHENOL	BDL	500
6A. P-CHLORO-M-CRESOL	BDL	500
7A. 2,4,6-TRICHLOROPHENOL	BDL	500
8A. 2,4-DINITROPHENOL	BDL	5000
9A. 4-NITROPHENOL	BDL	500
10A. 4,6-DINITRO-O-CRESOL	BDL	5000
11A. PENTACHLOROPHENOL	BDL	500

BDL=BELOW DETECTION LIMIT *Detection limits based on processing 50g of as-received sample.

COMPOUND LIST BASE-NEUTRAL EXTRACTABLE ORGANICS

SAMPLE IDENTIFIER: SD-1 COMPUCHEM SAMPLE NUMBER: 32301

		CONCENT (UG/		. [TECTIO LIMIT (UG/KG	
1B. N-NITROSODIMETHYLAMINE			BDL	,	200	
2B. BIS (2-CHLOROETHYL) ETHER		4	BDL		200	
3B. 1,3-DICHLOROBENZENE			BDL		200	
4B. 1,4-DICHLOROBENZENE			BDL	,	200	
5B. 1,2-DICHLOROBENZENE			BDL		200	1
6B. BIS (2-CHLOROISOPROPYL) ETHER		•	BDL		200	
7B. HEXACHLOROETHANE			BOL		200	
8B. N-NITROSODI-N-PROPYLAMINE		:	BDL		200	
9B. NITROBENZENE			BDL		200	
10B. ISOPHORONE			BDL		200	
11B. BIS(2-CHLOROETHOXY) METHANE		•	BDL		200	
12B. 1,2,4-TRICHLOROBENZENE			BDL		200	
13B. NAPHTHALENE			BDL		200	
14B. HEXACHLOROBUTADIENE			BDL		200	
15B. HEXACHLOROCYCLOPENTADIENE			BDL.		200	
16B. 2-CHLORONAPHTHALENE			BDL.	:	200	:
17B. DIMETHYLPHTHALATE			BDL		200	
18B · ACENAPHTHYLENE	<i>:</i>		BDL		200	· ·,
19B. 2,6-DINITROTOLUENE			BDL		200	
20B. ACENAPHTHENE	÷.		BDL		200	
21B. 2,4-DINITROTOLUENE			BDL		200	
22B. DIETHYLPHTHALATE			BDL		200	
23B. FLUORENE		4. 1.	BDL		200	.,
24B. 4-CHLOROPHENYL PHENYL ETHER			BDL		200	
25B. DIPHENYLAMINE (N-NITROSO)			BDL		200	.,
26B. 1,2-DIPHENYLHYDRAZINE (AZOBENZENE)			BDL		200	
27B. 4-BROMOPHENYL PHENYL ETHER			BDL		200	:
28B. HEXACHLOROBENZENE			BDL		200	

BDL=BELOW DETECTION LIMIT *Detection limit based on processing 50g of as-received sample.

SAMPLE IDENTIFIER: SD-1 COMPUCHEM SAMPLE NUMBER: 32301

				DETE	CITON	*
		CONC	ENTRATION	LI	MIT	•
. 1		(UG/KG)	(U	G/KG)	
						_
29B.	PHENANTHRENE	•	BDL		200	
30B.	ANTHRACENE		BDL		200	
31B.	DI-N-BUTYLPHTHALATE		BDL		200	
32B.	FLUORANTHENE		BDL		200	
33B.	BENZIDINE		BDL		200	
34B.	PYRENE		BDL		200	
35B.	BUTYLBENZYLPHTHALATE		BDL.		200	
36B.	BENZO(A)ANTHRACENE		BDL	d	200	
37B.	3,3'-DICHLOROBENZIDINE		BDL		200	
38B.	CHRYSENE		BDL		200	
39B.	BIS(2-ETHYLHEXYL)PHTHALATE	• '	BDL.		200	
40B. '	DI-N-OCTYLPHTHALATE	•	BDL		200	
41B.	BENZO(B)FLUORANTHENE		BDL		200	
42B.	BENZO(K)FLUORANTHENE		BDL	٠.	200	
43B.	BENZO(A)PYRENE		BDL		2 00	
44B.	INDENO(1,2,3-C,D)PYRENE		BDL		500	
45B.	DIBENZO(Á, H) ANTHRACENE	,	BDL		500	
46B.	BENZO(G,H,I)PERYLENE		BDL		500	

BDL=BELOW DETECTION LIMIT *Detection limit based on processing 50g of as-received sample.

COMPOUND LIST -- PESTICIDES/PCB'S

SAMPLE IDENTIFIER: SD-1 COMPUCHEM SAMPLE NUMBER: 32301

		CONCENTRATION (UG/KG)	LIMIT (UG/KG)
1P.	ALDRIN	BDL	200 .
2P • *	ALPHA-BHC	BDL	200
3P.	BETA-BHC	BDL	200
4P •	GAMMA-BHC	BDL	200
5P.	DELTA-BHC	BDL	200
6P.		BDL	200
7P 🗼	4,4'-DDT	BDL	200
8P.	4,4'-DDE	BDL	200
9P.	4,4'-DDD	BDL	200
10P.	DIELDRIN	BDL	200
11P.	ALPHA-ENDOSULFAN	BDL	200
12P.	BETA-ENDOSULFAN	BDL	200
13P.	ENDOSULFAN SULFATE	BDL	. 200
14P.	ENDRIN	BDL	200
15P.	ENDRIN ALDEHYDE	BDL	200
16P.	HEPTACHLOR	. BDL	200
17P.	HEPTACHLOR EPOXIDE	BDL	200
	PCB-1242	BDL	200
19P.	PCB-1254	BDL	200
20P.	PCB-1221	BDL	200
21P.	PCB-1232	BDL	200
22P.	PCB-1248	BDL	200
	PCB-1260	BDL	200
24P.	PCB-1016	BDL	200
25P.	TOXAPHENE	BDL	200
			· ·

BDL=BELOW DETECTION LIMIT *Detection limit based on processing 50g of as-received sample.

COMPOUND LIST -- INORGANICS PRIORITY POLLUTANTS

SAMPLE IDENTIFIER: SD-1 COMPUCHEM SAMPLE NUMBER: 32301

		CONCENTRATION (UG/G)	DETECT	ION LIMIT (UG/G)
			· • • ·	
1. CADMIUM, TOTAL		0.30		0.020
2. CHROMIUM, TOTAL		6.8		0.50
3. COPPER, TOTAL		5.7		1.0
4. LEAD, TOTAL *		18		0.50
5. MERCURY, TOTAL	,	0.0084		0.0020
6. NICKEL, TOTAL		6.5		1.0
7. ZINC, TOTAL		40		0.20

BDL=BELOW DETECTION LIMIT

*Lead analyzed by flame AAS because of concentration level found.

6) GROUNDWATER DATA



ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

November 1, 1984

Mr. Rocco Palazolo Engineering Sciences 57 Executive Park S. Atlanta, Georgia 30329

Re: Sample results for OW-1A, OW-1B, OW-2, OW-3, OW-4, OW-5, & OW-6.

Dear Rocco:

Enclosed please find additional copies of the reports for the above referenced samples. As we discussed, they were shipped to RECRA Environmental Laboratories for analysis, since we were unable to meet your turnaround time needs at the time.

Should you have any questions or comments, please do not hesitate to contact me at anytime.

Very truly yours,

H2M CORPORATION

Stanley C. Lewis
Operations Manager - Laboratory

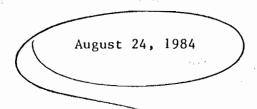
SCL/jes Enclosure





RECRA ENVIRONMENTAL LABORATORIES

Division of Recra Research, Inc.



Mr. Stan Lewis H2M 575 Broadhallow Road Melville, NY 11747

Re: Analytical Results

Dear Mr. Lewis:

Please find enclosed results of the analyses of the samples received at our laboratories on July 30 and August 1, 1984.

If you have any questions concerning these data, do not hesitate to contact our Customer Service Representative at (716) 692-7620.

Sincerely,

RECRA ENVIRONMENTAL LABORATORIES

James A. Ploscyca Laboratory Manager

BJK/JAP/mdc/jhs Enclosure

> I.D. #84-746 84-746 A 84-746 B



Division of Recra Research, Inc.

ANALYTICAL

REPORT



RECRA ENVIRONMENTAL LABORATORIES

Division of Recra Research, Inc.

ANALYTICAL RESULTS

H2M PRIORITY POLLUTANT ANALYSES

Prepared For:

H2M 575 Broadhallow Road Melville, NY 11747

Prepared By:

Recra Environmental Laboratories 4248 Ridge Lea Road Amherst, NY 14226

Report Date:

August 24, 1984

H2M PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

INTRODUCTION:

On July 30, and August 1, 1984 samples were received at Recra Environmental Laboratories. A request was made by H2M to have the samples analyzed for selected fractions of the Environmental Protection Agency decreed priority pollutants, total organic halide, and to determine the pH.

This report will address the results of those analyses.

METHODS:

Priority pollutant analyses were conducted according to Environmental Protection Agency (EPA) methodologies.

Organic priority pollutants were analyzed by Gas Chromatography/Mass Spectrometry (GC/MS).

RESULTS AND DISCUSSION:

Analysis for total organic halide was subcontracted. Sample FT-1 for total organic halide was not received.

Total organic halide values reported as "less than" (<) indicate the working detection limit for the given sample and/or parameter.

Sample OW-2 was analyzed in duplicate for the base neutral compounds but no positive values resulted.

Compounds reported as ND are "not detected". Compounds reported as BDL are confirmed as being present in the sample at a level "below detection limit", and are not subject to reliable quantitation.

Respectfully Submitted,

RECRA ENVIRONMENTAL LABORATORIES

Balaia J Kajewski



GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

BASE/NEUTRALS

DASE	E/NEUTRALS		
SAMPLE IDENTIFICATION			
		\$	
(µg/1)	OW-1	OW-1B	OW-2
1.9	ND	ND	ND '
3.5	ND	ND	ND
1.9	ND	ND	ND
44	ND ND	ND	ND
7.8	ND	ND	ND .
2.5	ND	ND	ND
4.8	ND	ND ND	ND
4.1	ND	ND	ND
2.5	ND	ND	ND
5.3	ND	ND	ND
5.7	ND	ND	ND
5.7	NDND	ND ND	ND
2.5	ND	ND	ND
1.9	ND	ND	ND
2.5	ND	ND	ND
1.9	ND	ND .	ND
4.2	ND	ND	ND
2.5	ND	ND	ND
2.5	ND	ND	ND
1.9	ND	ND	ND
1.9	ND	ND	ND
4.4	ND	ND	ND
16.5	ND ;	ND	ND
22	ND .	ND	ND
1.6	ND	ND	ND
2.5	ND	ND	ND
	DETECTION LIMIT (µg/1) 1.9 3.5 1.9 44 7.8 2.5 4.8 4.1 2.5 5.3 5.7 5.7 2.5 1.9 2.5 1.9 4.2 2.5 2.5 1.9 4.2 2.5 2.5 1.9 1.9 4.2 2.5 2.5 1.9 1.9	DETECTION LIMIT (μg/1) 1.9 ND 3.5 ND 1.9 ND 44 ND 7.8 ND 4.8 ND 4.1 ND 2.5 ND 5.3 ND 5.7 ND 5.7 ND 2.5 ND 1.9 ND 1.9 ND 2.5 ND 1.9 ND	SAMPLE IDENTIFICAL

(Continued)



RECRA ENVIRONMENTAL LABORATORIES

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

BASE/NEUTRALS

	SAMPLE IDENTIFICATION			
дем :	DETECTION			
4	LIMIT			
COMPOUND	(µg/1)	OW-1	OW-1B	OW-2
2,6-dinitrotoluene	1.9	, ND	ND	ND_
2,4-dinitrotoluene	5.7	NDND_	ND_	ND_
di-n-octylphthalate	2.5	ND	ND	ND
1,2-diphenylhydrazine	25	ND	ND	ND
fluoranthene	2.2	ND	! ND	ND_
≈fluorene	1.9	ND	ND	ND
hexachlorobenzene	1.9	ND	ND	ND
hexachlorobutadiene	0.9	ND	ND	ND
hexachlorocyclopentadiene	25	ND	ND	ND
hexachloroethane	1.6	ND	ND	ND
indeno(1,2,3-cd)pyrene	3.7	ND	ND	ND
isophorone	2.2	ND	ND	ND
naphthalene	1.6	ND	ND	ND
nitrobenzene	1.9	ND	ND	ND
N-nitrosodimethylamine	25 .	ND	ND	ND
N-nitrosodi-n-propylamine	25	ND	ND	ND
-N-nitrosodiphenylamine	1.9	ND	ND	ND
phenanthrene	5.4	ND	ND ·	ND
pyrene	1.9	ND	ND	ND
1,2,4-trichlorobenzene	1.9	ND	ND	ND
ADDITIONAL SAMPLE INFORMATION	· · · · · · · · · · · · · · · · · · ·			٠
"Sample Date		7/2/84	7/3/84	7/3/84
Extraction Date		7/31/84	8/22/84	7/31/84
Analysis Date		8/14/84	8/23/84	8/15/84
Internal Standard - Level		20 μg/1	20 μg/l	20 μg/l
deuterated phenanthrene - Rec	overy	102%	82%	130%
Surrogate Standard (SS3) - Le	vel	120 μg/1	120 μg/1	120 µg/1
decafluorobiphenyl - Recovery		54%	62%	65%
Surrogate Standard (SS4) - Le	evel	100 μg/1	100 μg/1	100 μg/1
2-fluorobiphenyl - Recovery		61%	70%	63%

Ø,

FOR RECRA ENVIRONMENTAL LABORATORIES

Bulais & Kisjewle

האידני

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

BASE/NEUTRALS

	BASE	:/NEUTRALSs	AMPLE IDENTIFICAT	ION
- COMPOUND	DETECTION LIMIT (µg/1)	OW-3	OW-4	OW-5
acenaphthene	1.9	ND	ND	ND_
acenaphthylene	3.5	ND	ND	ND
nthracene	1.9	ND	ND	ND ·
benzidine	44	ND	ND	ND
enzo(a)anthracene	7.8	ND _	ND	ND
benzo(a)pyrene	2.5	ND	ND	ND_
enzo(b)fluoranthene	4.8	ND_	ND	ND ND
benzo(g,h,i)perylene	4.1	ND	ND	ND
enzo(k)fluoranthene	2.5	ND	ND	ND
wis(2-chloroethoxy)methane	5.3	ND	ND	ND
his(2-chloroethy1)ether	5.7	ND	ND .	ND
is(2-chloroisopropyl)ether	5.7	ND	ND	ND
bis(2-ethylhexyl)phthalate	2.5	ND	ND	ND
-bromophenylphenylether	1.9	ND	ND	ND_
butylbenzylphthalate	2.5	ND	· ND	ND .
-chloronaphthalene	1.9	ND	ND	ND
4-chlorophenylphenylether	4.2	ND	ND	ND
hrysene	2.5	ND	ND	ND
dibenzo(a,h)anthracene	2.5	ND	ND	ND
2-dichlorobenzene	1.9	ND	ND	ND
, 3-dichlorobenzene	1.9	ND	ND	ND
l,4-dichlorobenzene	4.4	ND	ND	ND
,3'-dichlorobenzidine	16.5	ND	ND	ND
diethylphthalate	22	ND	ND	ND
imethylphthalate	1.6	· ND	ND	ND .
di-n-butylphthalate	2.5	ND	ND	ND





H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

BASE/NEUTRALS

	DROLI	NEUTRALS		
		S	AMPLE IDENTIFICA	TION
	DETECTION			
and a support	LIMIT		011.4	011.5
COMPOUND	(µg/1)	OW-3	OW-4	OW-5
2,6-dinitrotoluene	1.9	ND	ND	ND
2,4-dinitrotoluene	5.7	ND _	ND	ND
di-n-octylphthalate	2.5	ND	ND	ND
1,2-diphenylhydrazine	25	ND	ND ND	ND
fluoranthene	2.2	ND	ND_	ND
fluorene	1.9	ND	, ND	ND
hexachlorobenzene	1.9	ND	ND	ND
hexachlorobutadiene	0.9	ND	. ND	ND
hexachlorocyclopentadiene	25	ND ·	ND_	ND
hexachloroethane	1.6	ND	ND	ND
indeno(1,2,3-cd)pyrene	3.7	ND	ND	ND
isophorone	2.2	ND	ND	ND
naphthalene	1.6	ND	ND	ND
nitrobenzene	1.9	ND	ND	NĐ
N-nitrosodimethylamine	25`	ND	ND	ND
N-nitrosodi-n-propylamine	25	ND	ND	ND
N-nitrosodiphenylamine	1.9	ND	ND	ND
phenanthrene	5.4	ND	ND	ND
pyrene	1.9	ND	ND	ND
1,2,4-trichlorobenzene	1.9	ND	ND	ND
ADDITIONAL SAMPLE INFORMATION	V			
' Sample Date		7/2/84	7/3/84	7/10/84
Extraction Date		7/31/84	7/31/84	7/31/84
Analysis Date		8/15/84	8/15/84	8/15/84
. Internal Standard - Level		20 μg/1	20 μg/l	20 μg/l
deuterated phenanthrene - Rec	covery	110%	130%	135%
Surrogate Standard (SS3) - Le	evel	120 μg/1	120 µg/1	120 µg/1
decafluorobiphenyl - Recovery	<i></i>	65%	58%	59%
Surrogate Standard (SS4) - Le		100 μg/1	100 µg/1	100 µg/l
2-fluorobiphenyl - Recovery		56% ~	47%	45%

FOR RECRA ENVIRONMENTAL LABORATORIES <u>Subara Shaguislu</u>

DATE <u>9/24/94</u>

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

BASE/NEUTRALS

A STATE OF THE STA	SAMPLE IDENTIFICATION			
	DETECTION	:		
COMPOUND	LIMIT (µg/l)	OW-6	OSTERMAN WELL	FT-1
acenaphthene	1.9	ND	ND	ND
Lacenaphthylene	3.5	ND	ND	ND
anthracana	1.9	ND	ND	ND
benzidine	44	ND	ND	ND
henzo(a)anthracene	7.8	ND	ND	ND
benzo(a)pyrene	2.5	ND	ND	ND
benzo(b)fluoranthene	4.8	ND	ND .	ND
benzo(g,h,i)perylene	4.1	ND	ND	ND .
benzo(k)fluoranthene	2.5	ND	ND	ND
bis(2-chloroethoxy)methane	5.3	ND	ND	NDND
bis(2-chloroethy1)ether	5.7	ND	ND	ND
bis(2-chloroisopropyl)ether	5.7	ND	ND	ND
bis(2-chloroisopropyl)ether bis(2-ethylhexyl)phthalate	2.5	ND	ND	ND
4-bromophenylphenylether	1.9-	ND	ND	ND
butylbenzylphthalate	2.5	ND :	ND	ND
2-chloronaphthalene	1.9	ND	ND	ND
4-chlorophenylphenylether	4.2	ND	ND	ND
chrysene	2.5	ND	ND	ND
dibenzo(a,h)anthracene	2.5	ND	ND	ND
1,2-dichlorobenzene	1.9	ND	ND	ND
1,3-dichlorobenzene	1.9	ND	ND	ND
1,4-dichlorobenzene	4.4	ND	ND	ND
3,3'-dichlorobenzidine	16.5	ND	ND	ND
diethylphthalate	22	ND	ND	ND
dimethylphthalate	1.6	ND	ND	ND
di-n-butylphthalate	2.5	ND	ND	ND



(Continued)

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

BASE/NEUTRALS

	JANUA I	SA	MPLE IDENTIFICAT	TON
COMPOUND	DETECTION LIMIT (µg/1)	OW-6	OSTERMAN WELL	FT-1
2,6-dinitrotoluene	1.9	ND	ND_	ND
2,4-dinitrotoluene	5.7	ND	ND_	ND
di-n-octylphthalate	2.5	ND	ND !	ND
1,2-diphenylhydrazine	25	ND	ND	ND
fluoranthene	2.2	ND	ND	ND
fluorene	1.9	ND .	ND	ND
hexachlorobenzene	1.9	ND	ND_	ND
# hexachlorobutadiene	0.9	ND :	ND	ND
, hexachlorocyclopentadiene	25	ND	ND	ND
hexachloroethane	1.6	ND	ND	ND
indeno(1,2,3-cd)pyrene	3.7	ND ·	ND	ND
isophorone	2.2	ND	ND !	ND
naphthalene	1.6	ND	ND	ND
nitrobenzene	1.9	ND	ND	ND
N-nitrosodimethylamine	257	ND	ND	ND
N-nitrosodi-n-propylamine	25	ND	ND	ND
N-nitrosodiphenylamine	1.9	ND	ND	ND
phenanthrene	5.4	ND	ND ·	ND
pyrene	1.9	ND	ND	ND
1,2,4-trichlorobenzene	1.9	ND	ND	ND

ADDITIONAL	CAMPLE	INFORMATION

The state of the s			
Sample Date	7/10/84	7/11/84	7/3/84
Extraction Date	7/31/84	7/31/84	7/31/84
Analysis Date	8/15/84	8/15/84	8/15/84
Internal Standard - Level	20 μg/1	20 μg/l	20 μg/l
deuterated phenanthrene - Recovery	130%	78%	1 35%
Surrogate Standard (SS3) - Level	120 μg/1	120 µg/1	120 μg/l
decafluorobiphenyl - Recovery	71%	50%	64%
Surrogate Standard (SS4) - Level	100 μg/1	100 μg/1	100 μg/l
2-fluorobiphenyl - Recovery	63% -	52%	55%

FOR RECRA ENVIRONMENTAL LABORATORIES <u>Sulface</u> Majeurlie

DATE 8/24/34

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

VOLATILES

11/9		LATILES		
	SAMPLE IDENTIFICATION			
	DETECTION			
COMPOUND	LIMIT (µg/l)	OW-1	OW-1B	OW-2
acrolein	400	ND	ND	ND
~ acrylonitrile	400	ND	ND	ND_
➡ benzene	4.4	ND	ND	ND ,
bromodichloromethane	2.2	ND	ND	ND
bromoform	4.7	ND	ND	ND
bromomethane	10	ND	ND	ND
carbon tetrachloride	2.8	ND_	ND_	ND
chlorobenzene	6.0	ND	ND	ND
chloroethane	10	ND	ND	N <u>D</u>
2-chloroethylvinyl ether	10	ND	ND	ND
chloroform	1.6	ND	ND_	ND_
chloromethane	10	ND	ND	ND
dibromochloromethane	3.1	ND	ND	ND
- 1,1-dichloroethane	4.7-	ND	ND	ND ND
1,2-dichloroethane	2.8	ND	ND	ND
l,1-dichloroethylene	2.8	ND	ND	ND
trans-1,2-dichloroethylene	1.6	ND	ND	ND .
1,2-dichloropropane	6.0	ND	ND	ND ¹
1,3-dichloropropene	5.0	ND	ND	ND
ethylbenzene	7.2	ND	ND	ND ·
methylene chloride	2.8	ND	ND	ND
1,1,2,2-tetrachloroethane	6.9	ND	NDND	ND
tetrachloroethylene	4.1	ND	, ND	ND .

(Continued)



H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

<u></u>	VC	DEWITERS				
		S	SAMPLE IDENTIFICATION			
COMPOUND	DETECTION LIMIT (µg/1)	OW-1	OW-1B	OW-2		
t ***				ND.		
	6.0	<u>ND</u>	ND	ND		
1,1,1-trichloroethane	3.8	NDND	BDL	ND_		
1,1,2-trichloroethane	5.0	ND	ND	ND		
trichloroethylene	1.9	ND	ND	ND_		
vinyl chloride	10	ND	ND	ND		

ADDITIONAL SAMPLE INFORMATION

- IDDITION OF THE PERSON OF TH			
Sample Date	7/2/84	7/3/84	7/3/84
Analysis Date	8/13/84	8/13/84	8/13/84
Internal Standard - Level	40 μg/1	40 µg/1	40 μg/1
bromochloromethane - Recovery	99%	120%	96%
Internal Standard - Level	40 μg/1	40 µg/1	40 μg/1
2-bromo-1-chloropropane - Recovery	99%	110%	96%
Internal Standard - Level	40 μg/1	40 μg/1	40 բg/1
1,4-dichlorobutane - Recovery	99%	120%	100%

FOR RECRA ENVIRONMENTAL LABORATORIES Bulara & Krapudii

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

VOLATILES

- m-		LATILES		
	SAMPLE IDENTIFICATION			
- 6000	DETECTION LIMIT	2		
СОПРОИН	LIMII (μg/l)	_OW-3	OW-4	OW-5
acrolein	400	ND_	ND	ND ND
-acrylonitrile	400	ND_	ND	ND_
– benzene	4.4	ND	ND	ND
bromodichloromethane	2.2	ND	ND	ND
bromoform	4.7	ND	ND	ND
bromomethane	10	ND	ND	ND
carbon tetrachloride	2.8	ND	ND	ND
chlorobenzene	6.0	ND ND	ND_	ND
chloroethane	10	ND	ND _	ND ND
2-chloroethylvinyl ether	10	ND	ND_	ND
chloroform	1.6	ND_	ND_	ND
chloromethane	10	ND	ND	ND
_dibromochloromethane	3.1	ND	ND	ND
l,l-dichloroethane	4.75	ND	ND	ND
1,2-dichloroethane	2.8	ND	ND ND	ND
1,1-dichloroethylene	2.8	ND ND	ND	ND
trans-1,2-dichloroethylene	1.6	ND	ND	ND ·
1,2-dichloropropane	6.0	ND	ND	ND
1,3-dichloropropene	_5.0	ND	ND_	ND .
ethylbenzene	7.2	ND	, ND	ND
methylene chloride	2.8	ND	ND	ND
1,1,2,2-tetrachloroethane	6.9	ND	ND	ND
tetrach <u>loroethylene</u>	4.1	ND	ND	ND

(Continued)



H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

VOLATILES

-		LATILES		
	SAMPLE IDENTIFICATION			CION
	DETECTION LIMIT	OU 2	OU.	011.5
COMPOUND	(µg/1)	OW-3	OW-4	OW-5
toluene	6.0	ND	ND	ND
1,1,1-trichloroethane	3.8	ND_	NDND	ND
1,1,2-trichloroethane	5.0	ND	ND	ND
trichloroethylene	1.9	ND	ND_	ND_
vinyl chloride	10	ND	ND	ND

ADDITIONAL SAMPLE INFORMATION

Sample Date	7/2/84	7/3/84	7/10/84
Analysis Date	8/13/84	8/13/84	8/10/84
*Internal Standard - Level	40 μg/l	40 μg/l	40 μg/l
bromochloromethane - Recovery	120%	97%	99%
Internal Standard - Level	40 μg/1	40 μg/1	40 μg/1
2-bromo-1-chloropropane - Recovery	130%	97%	90%
Internal Standard - Level	40 μg/1	40 μg/1	40 μg/1
1,4-dichlorobutane - Recovery	130%	100%	85%

FOR RECRA ENVIRONMENTAL LABORATORIES <u>Failus</u> Kugeusla

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

VOLATILES

THE STATE OF THE S		LATTEES	SAMPLE IDENTIFICAT	TION
COMPOUND	DETECTION LIMIT (µg/1)	OW-6_	OSTERMAN WELL	FT-1
acrolein	400	ND	ND	ND
acrylonitrile	400	ND_	ND	ND
benzene	4.4	ND_	ND_	ND
bromodichloromethane	2.2	ND	ND_	ND
-bromoform	4.7	ND	ND	ND_
bromomethane	10	ND	ND_	ND ·
carbon tetrachloride	2.8	ND .	ND	ND
chlorobenzene	6.0	ND	ND	ND
chloroethane	10	ND	ND_	ND
2-chloroethylvinyl ether	10	ND	ND	ND
chloroform	1.6	ND	ND	ND
chloromethane	10	ND ;	ND	ND
dibromochloromethane	3.1	ND	ND	ND
1,1-dichloroethane	4.7 °*	ND	ND	ND
-1,2-dichloroethane	2.8_	ND	ND	ND
1,1-dichloroethylene	2.8	ND ·	ND	ND
trans-1,2-dichloroethylene	1.6	ND	ND_	ND
1,2-dichloropropane	6.0	ND	ND	ND
1,3-dichloropropene	5.0	ND	ND	ND_
ethylbenzene	7.2	ND	ND	ND
methylene chloride	2.8	15 μg/1	ND	ND
1,1,2,2-tetrachloroethane	6.9	ND	ND	ND
tetrachloroethylene	4.1	ND	ND	ND Television

(Continued)



H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES

Report Date: 8/24/84

VOLATILES

		SAMPLE IDENTIFICATION		
NEW CONTROLLING	DETECTION LIMIT		OSTERMAN	
COMPOUND	(µg/1)	OW-6	WELL	FT-1
toluene	_6.0	ND	BDL	ND
-l,1,1-trichloroethane	3.8	ND	ND	ND
,1,2-trichloroethane	5.0	ND	ND	ND
trichloroethylene	1.9	ND	ND	ND
vinyl chloride	_10	ND	ND	ND

ADDITIONAL SAMPLE INFORMATION

Sample Date	7/10/84	7/11/84	7/3/84
Analysis Date	8/10/84	8/10/84	8/10/84
Internal Standard - Level	40 µg/1	40 µg/1	40 ug/1
bromochloromethane - Recovery	94%	98%	89%
Internal Standard - Level	40 μg/1	40 µg/1	40_μg/1
-2-bromo-1-chloropropane - Recovery	99%	95%	77%
Internal Standard - Level	40 μg/1	40 μg/1	40 µg/1
1,4-dichlorobutane - Recovery	97%	96%	84%

FOR RECRA ENVIRONMENTAL LABORATORIES

8/24/84

DATE



H2M

Report Date: 8/24/84

		PARAMETER (UNITS OF MEASURE)
SAMPLE IDENTIFICATION	SAMPLE DATE	TOTAL ORGANIC HALIDE (mg/1)
OW-1	7/2/84	<0.02
OW-1B	7/3/84	<0.02
OW-2	7/3/84	0.04
OW-3	7/2/84	0.04
OW-4	7/3/84	0.09
OW-5	7/10/84	<0.02
OW-6	7/10/84	0.12
Osterman Well	7/11/84	0.04

FOR RECRA ENVIRONMENTAL LABORATORIES / Wals / Kayewold

H2M

Report Date: 8/24/84

		PARAMETER (UNITS OF MEASURE)
SAMPLE IDENTIFICATION	SAMPLE DATE	pH (STANDARD UNITS)
OW-1	7/2/84	8.05
OW-1B	7/3/84	8.14
OW-2	7/3/84	8.12
OW-3	7/2/84	8.11
OW-4	7/3/84	8.14
OW-5	7/10/84	8.16
OW-6	7/10/84	8.07
FT-1	7/3/84	6.45
Osterman Well	7/11/84	8.20

FOR RECRA ENVIRONMENTAL LABORATORIES RAS	for Richard V Finn
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
DATE $8/3$	4/34

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES QUALITY CONTROL

Report Date: 8/24/84

BASE NEUTRAL RECOVERY ANALYSIS OF METHOD BLANK

	LLINOD DEM		
COMPOUND	ng OF	ng	7.
IDENTIFICATION	SPIKE	RECOVERED	RECOVERY
1,3-dichlorobenzene	50	25	50
di-n-octylphthalate	50	36	72
fluoranthene	⁻ 50	20	40
naphthalene	50	31	62
nitrobenzene	50	31	62

ADDITIONAL SAMPLE INFORMATION

MDDITIONNE DIBITED INTOIGNITION	
Extraction Date	7/31/84
Analysis Date	8/14/84
Internal Standard (IS) - Level	20 μg/1
deuterated phenanthrene - Recovery	140%
Surrogate Standard (SS3) - Level	120 μg/1
Decafluorobiphenyl - Recovery	61%
Surrogate Standard (SS4) - Level	100 μg/1
2-fluorobiphenyl - Recovery	50%

FOR RECRA ENVIRONMENTAL LABORATORIES

: Rayana J., : 8/24/84

H2M GAS CHROMATOGRAPHY/MASS SPECTROMETRY PRIORITY POLLUTANT ANALYSES QUALITY CONTROL

Report Date: 8/24/84

VOLATILE RECOVERY ANALYSIS OF · SAMPLE OW-3

	THE ON 3		
COMPOUND	ng OF	ng	7
IDENTIFICATION	SPIKE	RECOVERED	RECOVERY
carbon tetrachloride	200	120	60
chlorobenzene	200	160	80
chloroethyl vinyl ether	200	180	90
chloroform	200	160	80
dibromochloromethane	200	110	55
1,1-dichloroethane	200	180	90
1,1-dichloroethylene	200	170	85
1,2-dichloropropane	200	170	85
methylene chloride	200	140	70
tetrachloroethylene	200	180	80
1,1,2-trichloroethane	200	170	85
trichloroethylene	200	160	80

ADDITIONAL SAMPLE INFORMATION

MDDITIONAL DAILED INTOINETION	
Sample Date	7/2/84
Analysis Date	8/13/84
Internal Standard - Level	40 μg/1
Bromochloromethane - Recovery	120%
Internal Standard - Level	40 μg/1
2-bromo-1-chloropropane - Recovery	1 30%
Internal Standard - Level	40 μg/1
1,4-dichlrobutane - Recovery	130%

FOR RECRA ENVIRONMENTAL LABORATORIES Subara | Majeusul

DATE 8/24/84

C) We as MOOD Dale / Time Received by: 15 prowal Received by: Isigname us broken REMARKS IS MO 300 7-2787 25-7 Date / Time 400 V in cooler DA NOT Remarks Relinquished by: 15ignatural Relinquished by: (Signature) Date / Time CHAIN OF CUSTODY RECORD W 3 TAINERS Date / Time Received by: Bimatural 7-5 ÇOŻ ġ bo Ö Received for Laboratory by: Regived by: 15: gnatures \geq Msh Kord Site (Nicopia Savitation Lime M. Baumana STATION LOCATION X WELL Rd. Wlecoffield 1/24 12mm Date / Time Date / Time PROJECT NAME Mud Bauna/a COMP. Relinquithed by: 15. gneture1 Refinquished by: (Signe Wes) Relinquished by: (Signeture) 0W-174 12 3 Bal 600 DATE TIME SAMPLERS: Isignolural 13305 -003 STA. NO.

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	13305 NPOJECT NAME 13305 NPC POJECT NAME	3		STA. NO. DATE TIME S	CW-2-18110am	, ,	,					•	Relinquished by: (Signeture)	Reimquished by: (Signature)	Relinquithed by: (Signeture)	Ontribution

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5			REMARKS		in etoker IV	Do not test whose	Magne	are intach (not broken)								Date / Time Received by; (Signature)	7-27-8 20 John a. ruspect	Date / Time disceived by: 151 manual		
. 4	FINE STATE OF THE	No TOTAL SOLITION OF THE PARTY	1 15/5/50/50/		3 1 3 1	1		. 0				-				Relinquished by: (Signesure)	Stor Minnell	Relinquished by: <i>(Syneture)</i>	Date / Time Remarks	
CHAIN OF CUSTODY RECORD	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	, 187 , of	KOŞ.	STATION LOCATION	Held NY 8	, , ,									:	Rechived by Signatural 7-5	15 / ANC	Referred by: ISignatural	Received for Laboratory by:	s Shipmont; Copy to Coordinator Field Files
	PROJECT NAME	Deposition (2)	HINE TH. HALLMONCH	STAT	X Nash Rd, Whead								•			Date / Time	1/3/8/ 12pm	1 / Date / Time	Date / Time	Distribution: Original Accompanies Shipman
	13305 PROJECT NAME	S: 15.p	. [STA. NO. DATE TIME COMP.	OW-3-44615									•		Relinquished by: (Signature)	Wand. Howard dex	Refinquithed by: [Signature]	Relinquished by: (Signature)	Individual Distriction

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からなる Danies & Date / Time - Received by: 151 philowel Received by: (Signarure) REMARKS With amina MORYRE 400 is himben Date / Time In embr I Remarks Relinquished by: 15ignatural Relinquished by: (Signeture) CHAIN OF CUSTODY RECORD ,C Date /Time Ŝ 3 TAINERS 5,5 ò Ø 9 Received for Laboratory by: Received by: Symonural Received by: 1Signature) X Nosh ed. , wrooddeld, NY STATION LOCATION Have N. Baumakad Date f Time Dete / Time Nash Road Site PROJECT NAME COMP Relinquished by: 15.pnsture) Relinquithed by: (Signature) by: 15:gnotures 50m DATE TIME SAMPLERS: Isignature! 0N-41184 PROJ. NO. STA. NO. 800

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CHAIN OF CUSTODY RECORD (6)

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CHAIN OF COSTOOT RECORD TO	TO THE WORLD	~ °/2	SAME AND	3 1 3 1											3.	Relinquished by: 15ignetures	Strongwill	Relinquished by: 15.preserel		Date /Time Remarks		
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CHA	Nosh Koodsite (Nignara Sawitatien)	umarcia	STATION LOCATION	Noodlield NY	· · · · ·						š	·				Received by: (Signature)	Sterent	Received by: 15:pnetures		Received for Laboratory by:		Distribution: Original Accompanies Shipmani; Copy to Coordinator Field Files
	ite (Nigoga	Lyine M. Fauma		X Nash Ed., Whood!					:			.`				Date / Time	9am 1/11/8/15 Stright	Date / Time	· .	Date / Time		Original Accompanies
			SARD										<u>.</u>				. 8				·	
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Г		i: 15.pm	DATE	\$/01/2	_				,							d by:	M.7	ed by:		Aq pa		:
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MOCERS SEAL IS Date / Time | Received by: (Signown) Received by: 15: manual 500 D. NOT TEST UNLESS REMARKS LABEI 00:2 4-515-T Date / Time DAMES BROKEN n cooler 大田な工 Remarks Relinquished by: (Signatura) Relinquished by: 15ignetures Stankowy Date / Time CHAIN OF CUSTODY RECORD 3 3 1/2/11/84 TAINERS ö Ø ŏ Received for Laboratory by: 7 11 By gas Sta Alemed Received by: 15ignoture) Nosh Road Side (Nicopus Southerhon , Wasalfield, NY Wine D. Burmancia STATION LOCATION Date / Time Date / Time X Nash Rd. PROJECT NAME Munch Baumace COMP Relinquished by: Isimeture! Relinquithed by: (Signeture) OW-6-10/0/49m TIME SAMPLERS: ISignolural DATE PROJ. NO. 13305 -STA. NO.

Distribution: Original Accompanies Shipment; Copy to Coerdinator Field Files

したべまるが行 DAIROR · ASK Received by: 15: pronovol NAC REMARKS MONRY (Ŧ OSTERMAN WELL 12787 120gr DO NOT TEST Date / Time Date / Time DAMES RROFEN v cooker SFAL 15 ŗ Relinquished by: 15:gnesurel Relinquished by: Isignature! Sommell CHAIN OF CUSTODY RECORD M 87) 1/18/8/11 TAINERS ż ġ Ø ö Nash Road Site (Niagara Santation) Date / Time | Received by: ISignature) Date / Time ! Received by: Isignatural WN BISHOOMELL IN 7/12/Ey Spr Stront Lyweld. Baumaras Osterman property STATION LOCATION Nach Rd SARD PROJECT NAME Lywell Bounglas COMP. Refinquithed by: (Signetura) Relinquished by: (Signature) STA. NO. DATE TIME SAMPLERS: Isignatural PROJ. NO. 13305-CSFEEDIM 003 NEW

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

Remarks

Date / Time

Received for Laboratory by:

Date / Time

Relinquished by: (Symeture)

Received by: 15imum) Acceived by: 151mothur REMARKS Dam of & MOONE -1 0x0 1.25 PS15-1 are intro Date / Time Date / Time とりなりな Remerks ٤ Relinquished by: (Signetiges) Relinquished by: Isignature) Sim my innell Date / Time CHAIN OF CUSTODY RECORD 4 ત TAINERS Received by: (Signature) 7 5 1 CON Ğ ğ Received for Laboratory by: Received by: 15ignsture) Nosh Road Site (Nigora Saudation) IMME A. Baumaras STATION LOCATION d Workhall 79/34/12 pm Date / Time Date / Time Date / Time SAAD PROJECT NAME COMP. Relinquished by: Isigneturel Relinquished by (Synaure) Relinquished by: (Signature) 1181 Car Harting Market DW-18 About Con 174 Open TIME SAMPLERS: (Synelan) DATE PROJ. NO. 13305 -STA. NO. 31-M 8 4

Dillistation: Original Accompanies Shipment; Copy to Coordinator Field Files

7) SURFACE WATER DATA

Engineering-science LABORATORY ANALYSIS REPORT

) te: 7/15/83 SDB: NASH ROAD-PRASE I 3 NUMBER: 36330

inne 10. Pive samples received 7/1/83 for volatile organics, but - neutral organics, total organic helosons and pt) analysis

Parameter / sample 10	SW-1,	5M-5	5W-3	5W4	5W-1
Thethyline Chloride (ug/L)	H	410	ID	410	410
Chloroform (ug/L)	410	210	410	410	410
Jerson tetrachloride (ug/L)	< 10	Z10	410	410	10
Benzene (ug/L)	410	<10	210.	<10	410
Tolubre (ug/L)	410	410	410	410	410
alrobenzine (49/L)	410	<10	<10	410	LID
1,1,2-TRICKLOWETPARECUSIA	L10 ·	<1D	410	<10	<10
Tetrack moltrene (us/1)	410	410	410	<10	LID
1,1,2,2-letrachloroemanie	210	410	X10	410	410
- trichlorothere (45/12) (19/12)	210	<10	410	410	<10
- Trichesoumene Gonels	410	410	410	LID.	410
- Dichlowbenzene Bones	LID	410	410	210	L10
- Hexachlorobutatione (noxi)	410	410	210	<10	410
- pH (5.U.)	6.9	8.1	7.1	7.4	7.4
Total Organic halogns(ppn)	0.010	0.005	0.007	0.007	0.008
		e • jag	• *	•	.,

3.L. Thorpe Laboratory Superuson

AND ENVIRONMENTAL SERVICES, INC.

P.O. Box 13842 • Savannah, Ga. 31406 912/354-7858



REPORT OF ANALYSIS

B. L. Thorpe

Engineering-Science

57 Executive Park South, NE

Suite 590

Atlanta, GA. 30329

REPORT NO.

5239

DATE RECEIVED

77/83

SAMPLED BY

Client

NATIFICATION: Samples submitted to laboratory

TETHODS:

lanctic M. Davis

EPA Methods of Analysis (Model 610/0.I. Corp.)

SAMPLE ID.#			TOX	CONTENT	(ppm
07-1000-01		:		0.010	
07-1001-01		1		0.005	
07-1002-01	:		•	0.007	
07-1003-01		ļ		0.007	
07-1004-01	<i>:</i>			0.008	

anth m. Dair

Janette M. Davis

8) BORING LOGS

SHEET I OF E BORING OW-I 907 FRACTURES SAMPLING NASH ROAD SITE ₹ FLCH RO B RUA COUAT TYPE AO WELL SCHEMATICS DEPTH CORE REC ACD DESCRIPTIVE GEOLOGIC NOTES OW-1B 0W-1 PHOTECTIVE CASING SURFACE CONCITIONS: GRASSY, MET. LIGHT BROWN MOIST MEDIUM SILT AND CLAY, TRACE OF SAND, OCCASIONAL BLACK ORGANIC STAINS GHOUND SUNI ACE 1 ,6 - CONCRETE ---15 2 13 - 2" ID STAINLESS -STEEL PIPE PRIMARY -BINTCHITE SEAL GRAY MOIST STIFF LAYERED CLAY AND SILT WITH DECASIONAL SEAMS OF FINE TO MEDIUM SAND, 1/8" IN THICHNESS 3 6 5 SUPPLEMENTARY
BENTONTE SEAL CL 35 4 0 STAINLESE STEEL -O.DIC SLOTTED WELL SCREEN GAADES TO LESS STIFF 15 5 0 FILTER SAND -10-6 M GRAY MOIST MEDIUM LAYERED CLAY, RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT TRREGULAR INTERVALS 10 7 8 GRADES TO VERY SOFT CLAY 8 0 15 - NATURAL BACKFILL 9 0 10 0 20 11 0 GRADES TO SOFT 25 9 18,15 1B120 30 GRADES TO VERY SOFT 35. 38 /6" | 18 | 3 | 3 BROWN, MOIST SILT AND CDARSE TO FINE GRAVEL, LITTLE CLAY, LITTLE FINE SAND (TILL) 55/6"1Bi4 0 40. 18150 16/6 GRADES TO WET 20/6" 1B:60 45 50 GRADES TO MOIST, DENSE SILT, SOME FINE TO COARSE SAND, LITTLE FINE GRAVEL 98 1B | 7 🖪 - PRIMARY BENTONITE SEAL 55 55/6" 10:00 - FILTER SAND 10-ROK 60 GRADES TO WET 5/6"18:90 STAINLESS STEEL 0.010 SLOTTED WELL SCREEN THETH TOP OF BEDROCK SOIL SAMPLING INFORMATION STANDARD PENETRATION TEST ■ UNDISTURBED SAMPLE # DISTURBED SAMPLE FRACTURES KEY TO MELL SCHEMATIC TITE Pene of core loss D NO SAMPLE RECOVERED fird Grout TITE Biercia zone EDD Bentonite Seal ROCE CORE INCOMMATION Pip-silp stirtensides CTD Sand Filter COPE LOSS ZONE fractures shown at approximate angle to core axis 舞号 Well Screen Mineralized fracture c - calcife s - sullide PERCENT CORE. TE fractured some - Vold

82

COSE POD

SHEET 2 DF 2

l			SAA	IPL I	NG.		IRES	IN FEET	907 J	BORING OW-I ; NASH ROAD SITE		
	WELL S	SCHEMATICS	FLOW	AO B	AUN	CORE	CORE NOD	FRACTURES	<i>0</i> <i>EPTH 1</i>	GRAPHIL	DESCRIPTIVE GEOLOGIC WOTES	
				16,11					70]	GM GM	TOP OF REDROCK AT 68.6'. BEDROCK IS DOLOSTONE. BORING TERMINATED AT A DEPTH OF 66.6	

SOIL SAMPLING INFORMATION

- M STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- M DISTURBED SAMPLE
- D NO SAMPLE RECOVERED

ROCY CORD INFORMATION

PEPCINT COPE RICOVERY

FRACTURES

FITT Zene of core loss

Biezzi Breccia zone

Dip-stip silebensides

Fractures-shown at approximate angle to core axis

Mineralized fracture c - calcife a - suitide

Fractured zone

Yord

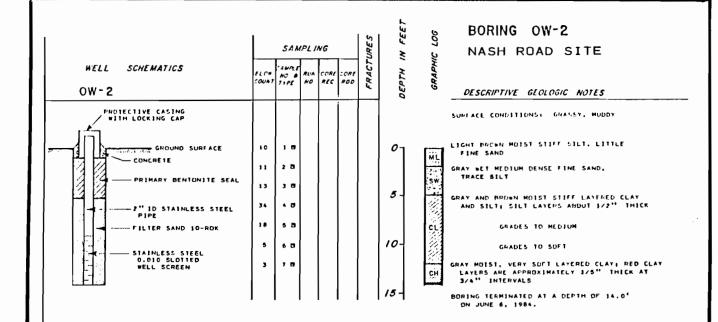
FEA TO WILL SCHEMATIC

FFF Crout

EDD Bentonite Seal

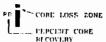
Composed Filter

四月 Well Screen



- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- S DISTURPED SAMPLE
- □ NO SAMPLE RECOVERED

POCE CORE INFORMATION



FRACTURES

TTTE Zene of core loss TEE Brecels zone - Dir-stip stickensides fractures shown at approximate angle to core axis Mineralized fracture c - calcife s - suffide TE fre-tured zone → Vel¢

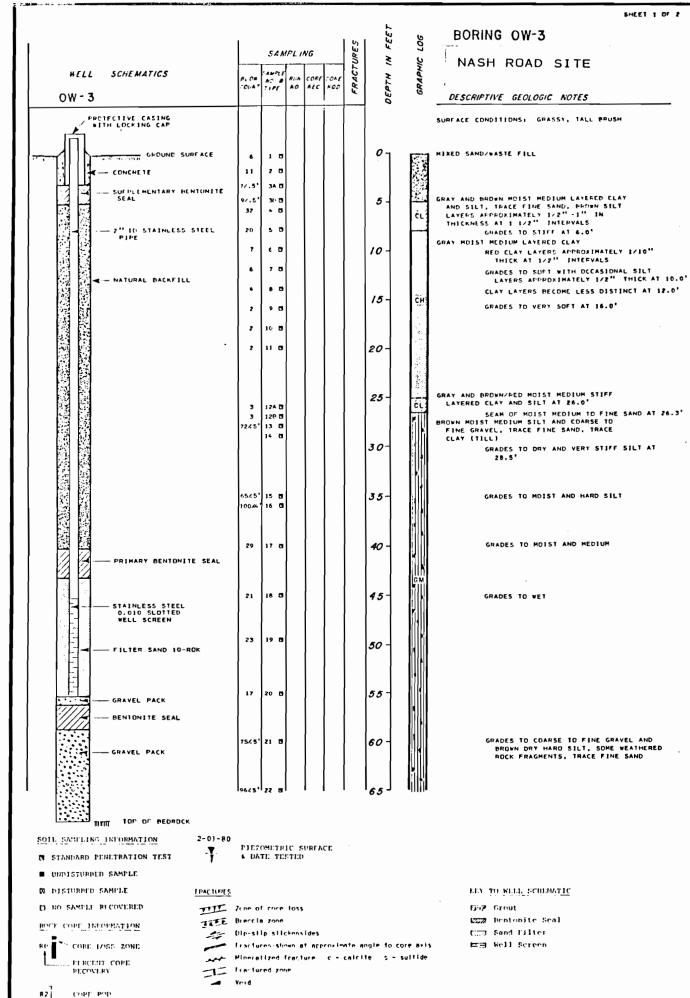
KLY TO WELL SCHEMATIC

村道 Grout

1222 Bentonite Scal

C 5and Filter

⊨= Well Sereen



WELL SCHEMATICS	ALCH COUNT	SAM AMPLE AC B TIPE	Γ	COMP	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	BORING OW-3 NASH ROAD SITE DESCRIPTIVE GEOLOGIC NOTES
						65	GM GM	TOP OF BEDROCK 68.7° BEDROCK 15 DOLOSIONE BOWING ILHMINATED AT A DEPTH OF 68.7° ON JUNE 7, 1984.

- M STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- T DISTURBLD SAMPLE
- O NO SAMPLE RECOVERED

BOCK COFF INLORMATION



FRACTURES

PTTT Zone of core loss

Breccia zone

Dip-slip slicknesides

Fractures-shown at approximate angle to core axis

Mineralized fracture c - calcite s - sulfide

Fractured zone

Void

KEY TO WELL SCHEWATIC

शिक्ट Grout

CZZZ Bentonite Seal

t"⊐ Sand Filter

舞用 Well Screen

KEY TO WELL, SCHEMATIC

T STANDARD PENETRATION TEST

PENTONITE SEAL

fin∌ Grout

UNDISTURBED SAMPLE

E223 Bentonite Scal

B DISTURBED SAMPLE

Sand Filter

O NO SAMPLE RECOVERED

SHEET 2 OF 2

1				SAMPL	ING		URES	IN FEET	901 JII	BORING OW-4 NASH ROAD SITE
	WELL	SCHEMATICS	F. OH COUAT	ANOLE AU	CORE	CORE	FRACTURES	DEPTH 1	GRAPHI	DESCRIPTIVE GEOLOGIC NOTES
								65	G M	
] [}		70-		TOP OF BEDROCK 70.3' BEDROCK IS DOLOSTONE BURING TERMINATED AT A DEFTH OF 70.3'

SOIL SAMELING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- T DISTURPED SAMPLE
- CI NO SAMPLE RECOVERED

ROCE CORE INFORMATION



FRACTUPES

TTT Zone of rore loss TIE Brerria zone

Dip-slip slickensides

Fractures shown at approximate angle to core axis Mineratized fracture c - calcite s - suffide

I feartured some - Veid

KEY TO WELL SCHEWATIC

Nº2 Grout

E22 Bentonite Scal

Till Sand Filter

舞号 Rell Screen

									SHEET 1 OF
	1					ا <u>د</u>	FEET	907	BORING OW-5
N.C. I CONCULTION			IPL I	1	Ι	FRACTURES	₹	אוכ ו	NASH ROAD SITE
WELL SCHEMATICS OW-5	FLC#	TIPE	RUN	REC	COAE ROD	FRAC	DEPTH IN FEET	GRAPHIC	DESCRIPTIVE GEOLOGIC NOTES
- PROTECTIVE CASING	_	\vdash	 -	_	<u> </u>	\vdash	,		SURFACE CONDITIONS. GRASSY, ATDP FILL
MITH LOCKING CAP									,
GROUND SURFACE	-						07	7.1	GRAY, BET MEDIUM TO FINE SAND, TRACE SILT
SUPPLEHENTARY BENTONITE SEAL									
Si E	17	1 0					5-	SW	
	13/4"				ĺ				GRADES TO FINE SAND GRAT AND FINDER MOIST LATENED CLAY AND SILT.
LOS FON	12	•	ĺ				10-		TRACE FINE SAND SILT LAYERS APPROXIMATELY 1/2" THICK.
	29	5 5	l			ĺ		CL1	DECASIONAL SEARS OF RET FINE TO MEDIUM SAND APPROXIMATELY 178" THICKNESS
PIPE	5	6 8	l			l		1	GRAY WET SOFT LAYERED CLAY RED CLAY LAYERS APPROXIMATELY 1/10"
	6	, "					15-		THICKNESS AT IPREGULAR INTERVALS
	2	8 5					20-		GRADES 10 VERY SOFT
								Ş	
NATURAL BACKFILL	2	, 0					25-	ćн	
								**	
	2	10 8					30	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	2	111 0					35-		RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT 3/4" INTERVALS
									INICARESS AT 374 INTERVACES
	2	12 5					40-	Š	
		l						SP.	BROWN WET LAYERED SILT AND COARSE TO Fine Sand
		13 B					45-	h, i	BROWN WET SILT AND FINE TO COARSE GRAVEL, Some Coarse to Fine Sand, Trace Clay (Till)
	502	" "							SUPE CUARSE TO FINE SAND, TRACE CEAT (TILL)
	5042	15 8	l				50		GRADES TO MOIST
FRIMARY							55-		GRADES 1D MORE GRAVEL, LESS SILT.
BENTONITE SEAL	50%	16 19							DRY
FILTER SAND 19-ROK									
	65%51	17 (1					60-		
STAINLESS STEEL O. DID SLOTTED WELL SCREEN									
	1	16 8	1	1 1			65	15101	GRADES TO WET SILT, SOME MEDIUM TO Fine Gravel, Little Beathered
									BEDROCK FRAGMENTS AT 65.0°

SOIL SAMPLISC INCORMATION

INFORMATION FIX TO SEEL SUBUMATIC

STANDARD PRESERVATION TEST

60€ Grout

■ UNDISTUPBED SAMPLE

EZZ Bentonite Scal

M DISTURBED SAMPLE

. CED Sand Pilter 馬田 Well Screen

D NO SAMELE PECOVERED

SHEET 2 0' 2

WELL SCHEMATICS	SI COUNT	AUA.	CORE	COAL	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	BORING OW-5 NASH ROAD SITE DESCRIPTIVE GEOLOGIC NOTES
						65		TOP OF DOLOSTONE BEDROCK BURING TERMINATED AT A DEPTH OF 70.

5011 PARILING INTORMATION

- STANDARD PENETRATION TEST
- # PROISTURBLE SAMPLE
- C DISTURBED SAMPLE
- D NO SAMPLE RECOVERED

POCE CORE INFORMATION



* CORE LOSE ZONE

PECOVERY

PRACTURES

TITE Brecele zone
Dip-stip stickensides

Dip-stip slick-nsides
Fractures-shown at approximate angle to core Bais
Administration tracture c - calcife s - suitide

I fractured some

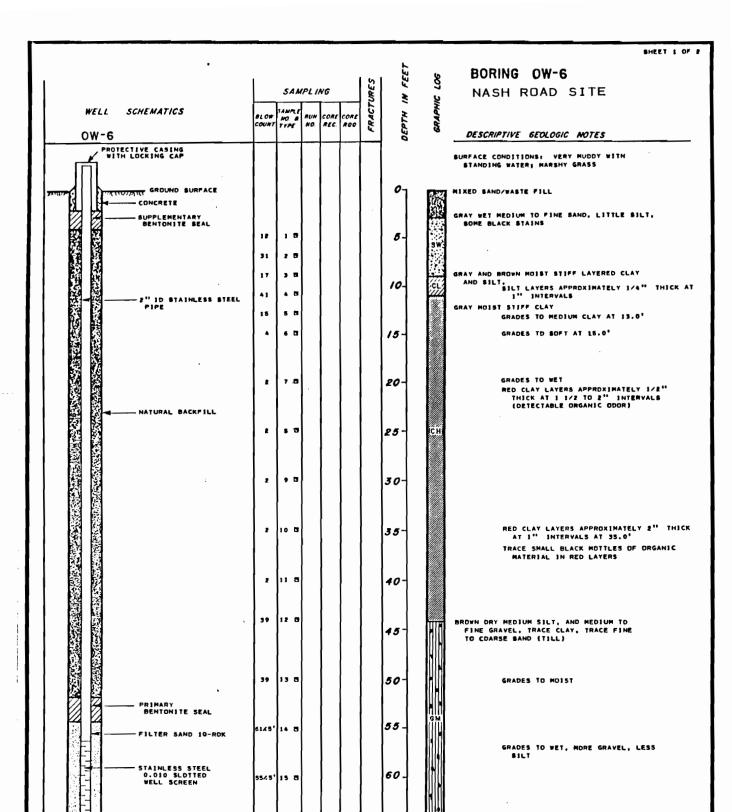
KEY TO WELL BUILDINTIC

from Grout

1222 Bentonite Seal

5 5 and Filter

はヨ Well Screen



STANDARD PENETRATION TEST

HITH TOP OF BEDROCK

- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- I NO SAMPLE RECOVERED

ROCK CORE INFORMATION

PERCENT CORE

FRACTURES

Zene of core loss

TATE Breccia zone

Dip-slip slickensides

Fractures-shown at approximate angle to core exis معتبر Mineralized fracture c = catcite s = suifide

Frentured zone

KEY TO WELL SCHEMATIC

হৈনে Grout

EZZZ Bentonite Scal

Sand Filter

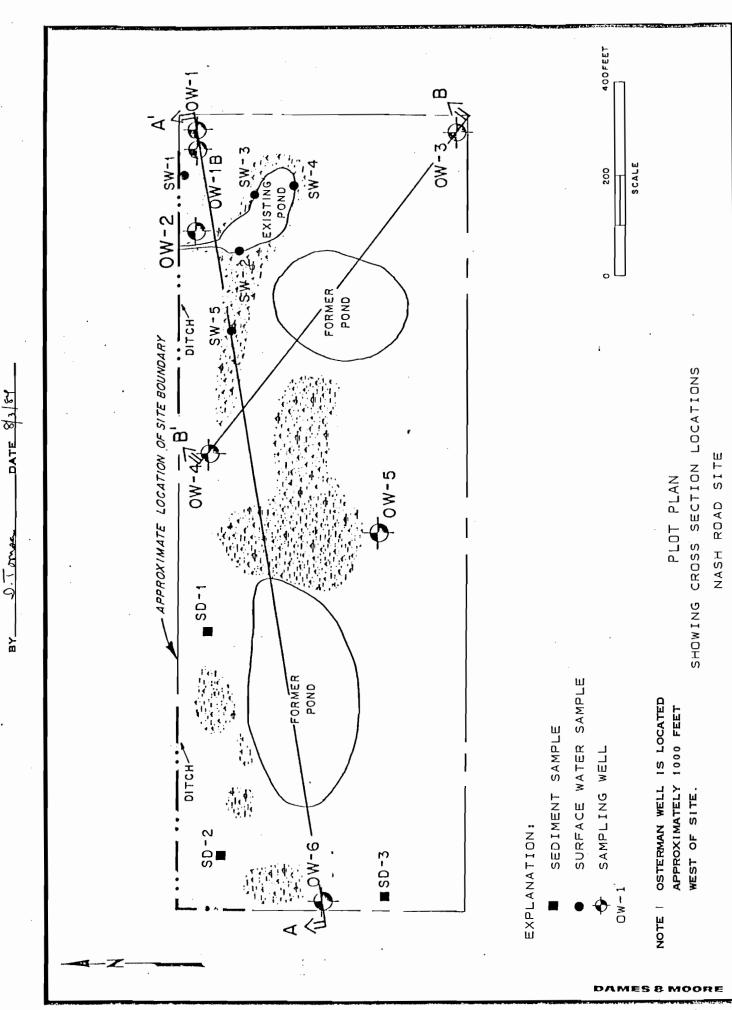
舞園 Well Screen

WELL SCHEMATICS	BL OF COUNT	SAM TIPE		CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	BORING OW-6 NASH ROAD SITE, DESCRIPTIVE GEOLOGIC NOTES	
						70-		10P OF HEUROCK 66.0° Bedrock is dolostone Boring terminated at a depth of 66.0° Dn June 19, 1984.	

- STANDARD FENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURNED SAMPLE
- D NO SAMPLE RECOVERED
- ROCK CORE INFORMATION
- - CORE LOSS ZONE
 - L PERCENT CORE
- FRACTURES
- TTT 2cne of core loss
- TATE Breccie rone
- Dip-slip slickensides
- fractures-shown at approximate angle to core axis Mineralized fracture c - celcite s - suffide ميمير
- fractured zone

- KEY TO WELL SCHEMATIC
- [7] Grout
- EZZZ Bentonite Seal
- □□ Sand Filter
- 舞目 Well Screen

9) SAMPLING LOCATION MAP



FIL 1 (331 103/1

10) PERMEABILITY TEST DATA

umm -5;tu	//	relity	

iskali	,	* Services of	
1400 2	Well	Permeability C	m/20c
Projection of the control of the con	- Οω- <u>1</u>	4,37 ×10-4	5ilt
	οω-2		silt + sand
Lange	_0ω-1β	8.43 ×10 ⁻⁷	1,11/bectrock
Photo Communication of the Com	οω3	1,43 ×10-6	met zove in til
and the second	0w-4	7.88 × 10 -7	toll/bedrock
		7.5 +10-4	till/bedrock
4	Management at a selection		

0 w-4

All being to

CALIBRATION DATA Well 1 0W1 A±-5.6258E 01 B= 6.4516E-02 D= 0.0000E 00 J0= 272 T0= 81493 ET(sec)= 30 WELL DRAWDOWN OW1 -2.96 ET(sec)= 61 WELL DRAWDOWN ом1 5.01 (-3.63 ET(sec)= 90 WELL DRAWDOWN OW1 200 -4.27 ET(sec)= 121 WELL DRAWDOWN OW1 -4.88 ET(sec)= 151

WELL DRAWDOWN

OW1 -5.22

ET(sec)= 180

DRAWDOWN ОИ1 - 5.46 ET(sec)= 211 WELL DRAWDOWN OW1 -5.61 ET(sec) = 241
WELL DRAWDOWN
OW1 // -5.76 EI(sec)= 271 WELL DRAWDOWN OW1 -5.87 ET(sec)= 301 WELL DRAWDOWN OW1 ^.'' -5.93 ET(sec)= 330 WELL DRAWDOWN OW1 -6.00 ET(sec)= 361 WELL DRAWDOWN OW1 -6.06 ET(sec)= 390
WELL DRAWDOWN
OWI 19.57.5.5
0.63 -6.12

ET(sec)= 421 WELL DRAWDOWN

6 ...

Notice 5

ET(sec)= 421 WELL DRAWDOWN OW1 -6.19 ET(sec)= 451 WELL DRAWDOWN OW1 -6.19 ET(sec)= 481 WELL DRAWDOWN EI(sec)= 511
WELL DRAWDOWN

OW1 -6.32

EI(sec)= 540
WELL DRAWDOWN

OW1 -6.32 ET(sec)= 571 WELL DRAWDOWN OW1 -6.32 EI(sec)= 600 WELL DRAWDOWN OW1 10 min -6.38 ET(sec)= 631 WELL DRAWDOWN OW1 ~6.38 ET(sec)= 661 WELL DRAWDOWN OW1 -6.38 ET(sec)= 690 WELL DRAWDOWN OW1 -6.38 EI(sec)= 721 WELL DRAWDOWN OW1 -6.45 EI(sec)= 751 WELL DRAWDOWN OW1 -6.45 ET(sec)= 781 WELL DRAWDOWN OW1 -6.45 ET(sec)= 811 WELL DRAWDOWN OW1 -6.45 ET(sec)= 841 WELL DRAWDOWN OW1 -6.45 ET(sec)= 871 WELL DRAWDOWN CM 1 -6.45

EI(sec)= 901 WELL DRAWDOWN 0W1 -6.49 ET(sec)= 930 WELL DRAWDOWN OW1 -6.51

ET(sec)= 961 WELL DRAWDOWN

OW 1 -6.51

ET(sec)= 990 WELL DRAWDOWN

-6.51 1 40

ET(sec)= 1021 WELL DRAWDOWN

OW1 ~6.51

ET(sec)≈ 1051 WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1000 WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1110 WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1141 WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1121 WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1200 WELL DRAWDOWN

OWI -6.58

ET(sec)= 1231 WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1261 WELL DRAWDOWN OW1 -6.58

ET(sec)= 1291 WELL DRAWDOWN

OWI ~6.58

ET(sec)= 1320 WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1350 WELL DRAWDOWN

-6.58 140

ET(sec)= 1380 WELL DRAWDOWN

-6.58

ET(sec)= 1410 WELL DRAWDOWN

ET(see)= 1380 WELL DRAWDOWN

0W1 -6.58

ET(sec)= 1410 WELL DRAWDOWN

-6,58 0W1

ET(sec)= 1441 WELL DRAWDOWN

-6.58 0W 1

ET(sec)= 1471 WELL DRAWDOWN OW1 -6.58

ET(sec)= 1500 WELL DRAWDOWN OW1 -6.58

ET(sec)= 1530 WELL DRAWDOWN

OW1 ~6.58

ET(sec)= 1561 WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1591 WELL DRAWDOWN

-6.58 0W1

ET(sec)= 1621 WELL DRAWDOWN

-6.62 0W1

ET(sec)= 1651 WELL DRAWDOWN

OW1 -6.62

ET(sec)= 1681 WELL DRAWDOWN OW1 -6.64

ET(sec)= 1711

WELL DRAWDOWN

OW1 -6.64

ET(sec)= 1741

WELL DRAWDOWN

OW1 -6.64

ET(sec)= 1221 WELL DRAWDOWN

-6,64 OWI

ET(sec)= 1800 WELL DRAWDOWN

~6.64

ET(sec)= 1830 WELL DRAWDOWN

```
Y1)×59.6
 LE"CALIBRATION DATA
Well I OWIB

A=-5.6923E 01

B= 6.5279E-02

D= 0.0000E 00
  JØ= 273
TØ= 62293
  ET(sec)= 61 /v // DRAWDOWN )
OWIB -1.58
  ET(sec)= 121
WELL DRAWDOWN
  OW1B -1.26
  ET(sec)= 180
WELL DRAWDOWN
  OW1B ~1.89
  ET(sec)= 241
WELL DRAWDOWN
  OW1B -1.95
  ET(sec)= 301
WELL DRAWDOWN
  OW18 64.4 -2.08 pr
  ET(sec)= 361
WELL DRAWDOWN
  OW1B -2.19
  ET(sec)= 420
WELL DRAWDOWN
 OW1B -2.28
 ET(sec)= 481
WELL DRAWDOWN
  OW1B -2.35
 ET(sec)= 541
WELL DRAWDOWN
 OWIB -2.48

ET(sec)= 601 100"

DRAWDOWN

OWIB -2.54
 ET(sec)= 661
WELL DRAWDOWN
  OW1B -2.61
 ET(sec)= 721
WELL DRAWDOWN
  OW1B -2.74
 ET(sec)= ,780
WELL DRAWDOWN
```

OMTB

ET(sec)= 840 WELL DRAWDOWN

OW1B

-2.82

```
WI LL
          Distribition
```

OWIB

-2.87

ET(sec)= 1200
$$\vartheta^{(i)} e^{i x^{i}}$$
WELL DRAWDOWN
OWIB -3.32

LICSCO)~ 1981 WELL DRAWDOWN

OW1B -4.12

EI(sec)= 2041 WELL DRAWDOWN

OW1B -4.24

ET(sec)= 2101 (... WELL BRAWDOWN

OW1B ., ' · '-4.33

ET(sec)= 2161 WELL DRAWDOWN

OW1B -4.43

ET(sec)= 2220 WELL DRAWDOWN

OW1B -4.46

ET(sec)= 2280 WELL DRAWDOWN

OW1B -4.56

ET(sec)= 2340 WELL DRAWDOWN

OW1B -4.56

ET(sec)= 2400 WELL DRAWDOWN

OW1B -4.65

ET(sec)= 2461 WELL DRAWDOWN

OW1B -4.20

EI(sec)= 2520 WELL DRAWDOWN

OW1B -4.26

ET(sec)= 2580 WELL DRAWDOWN

OW1B -4.83

ET(sec)= 2640 WELL DRAWDOWN

-4.89

OWIB -4.89

EI(sec)= 2701
WELL DRAWOOWN

OWIB , ' -4,96

EI(sec)= 2761 WELL DRAWDOWN

OW1B -5.02

ET(sec)= 2821 WELL DRAWDOWN

OW 1 B

-5,09

EI(sec)= 2880 WELL DRAWDOWN

Elised) ZZDI WELL DRAWDOWN

OWIB -5.02

ET(sec)= 2821 WELL DRAWDOWN

OW1B -5.09

ET(sec)= 2880 WELL DRAWDOWN

OWIB -5.15

ET(sec)= 2941 WELL DRAWDOWN

OWIB -5.22

ET(sec)= 3001 %

OW1B -- -5.28

ET(sec)= 3061 WELL DRAWDOWN

OW1B -5.35

ET(sec)= 3121 WELL DRAWDOWN

OW1B -5.41

ET(sec)= 3181 WELL DRAWDOWN

OW18 -5.46

EI(sec)= 3240 WELL DRAWDOWN

OW1B -5.48

ET(sec)= 3300 ().

OW1B \ \ \ -5.54

ET(sec)= 3361 WELL DRAWDOWN

OW1B -5.61

11.11 ed . 11.

ET(sec)= 1370 (X)
WELL DRAWCOWN

OW2

-3.05

ET(sec)= 1396 WELL DRAWDOWN

0W2

-2.85

ET(sec)= 1422 WELL DRAWDOWN

0W2

-2.69

ET(sec)= 1449 WELL DRAWDOWN

0W2

-2.51

EI(sec)= 1475 WELL BRAWDOWN -2.31

OW2

ET(sec)= 1501 WELL DRAWDOWN

0W2

--2.11

EI(sec)= 1527 WELL DRAWDDWN

0W2

-1.96

ET(sec)= 1554 WELL DRAWDOWN

0W2

-1.78

ET(sec)= 1580 WELL DRAWDOWN

0W2

-1.58

EI(sec)= 1606 WELL DRAWDDWN

0W2

-1.42

ET(sec)= 1633 WELL DRAWDOWN

0W2 -1.24 JØ= 273 TØ= 59355

ET(sec)= 16 WELL DRAWDOWN 16

0W2

-0.57

ET(sec)= 42 WELL DRAWDOWN

OW2 | -0.57

EI(sec) = 68

WELL DRAWDOWN

OW2 -0.52

FI(sec)= 94 WELL DRAWDOWN

```
HICSECO- TO DRAWDOWN
 OW2 -1.15
 ET(sec)= 119
 WELL DRAWDOWN
 OW2 ' -1.23
 FI(sec)= 115

WELL DRAWDOWN

OW2 -2.33
 ET(sec)= 171
WELL DRAWDOWN
 OW2 1 -2.91
 Ef(sec)= 196
 WELL DRAWDOWN
 OW2 1. -3.51
ET(sec)= 222
WELL DRAWDOWN
0W2 -4.12
 ET(sec)= 248
WELL DRAWDOWN
 OW2 -4.72
 ET(sec)= 273
WELL BRAWDDWN
 OW2 -, -5.25
 ET(sec)= 299
WELL DRAWDOWN
 0W2 , . . -5.65
ET(sec)= 325
WELL DRAWDOWN
0W2 −5.99
ET(sec)= 351
WELL DRAWDOWN
OW2 -6.28

EI(sec)= 377

WELL DRAWDOWN
     -6.52
0W2
ET(sec)= 403
WELL DRAWDOWN
           -6.72
0W2
ET(sec)= 429
WELL DRAWDDWN
OW2 -6.86
ET(sec)= 455
WELL DRAWDOWN
OW2 -2.01
+ .
ET(sec)= .481
WELL DRAWDOWN
OW2 --2.12
ET(sec)= 507
WELL DRAWDOWN
OW2 -2.26
```

ET(sec)= 533

WELL DROWDOWN

OW2 -7.26

ET(sec)= 533 WELL DRAWDOWN

OW2 -7,32

EI(sec)= 560 WELL DRAWDOWN

OW2 ~7.39

ET(sec)= 586 WELL DRAWDOWN

OW2 -7.46

ET(sec)= 6!2 WELL DRAWDOWN

0W2 ′, -7.50

ET(sec)= 638 WELL DRAWDOWN

OW2 ~7.52

ET(sec)= 665 WELL DRAWDOWN

OW2 -7.59

ET(sec)= 691 WELL DRAWDOWN

OW2 -7.59

ET(sec)= 717 WELL DRAWDOWN

OW2 -2,66

ET(sec)= 743 WELL DRAWDOWN

OW2 -7.66

ET(sec)= 769 WELL DRAWDOWN

OW2 -7.66

ET(sec)= 796 WELL DRAWDOWN

OW2 -2.20

ET(sec)= 822 WELL DRAWDOWN

OW2 -2.72

ET(sec)≈ 848 WELL DRAWDOWN

OW2 -7.72

EI(sec)= 874 WELL DRAWDOWN

OW2 -7.72

ET(sec)= 900 WELL DRAWDOWN

OW2 -7.72

ET(sec)= 926 WELL DRAWDOWN

OW2 / -7.79

ET(sec)= 952 WELL DRAWDOWN OW2 -7.70

ET(sec)= 822 WELL DRAWDOWN

OW2 -7.72

ET(sec)= 818 WELL DRAWDOWN

OW2 -7.72

ET(sec)= 874 WELL DRAWDOWN

OW2

-7.72

ET(sec)= 900 WELL DRAWDOWN

OW2 -7.72

ET(sec)= 926 WELL DRAWDOWN

OW2 /1 -7.79

ET(sec)= 952 WELL DRAWDOWN

OW2 ~7.79

ET(sec)= 979 WELL DRAWDOWN

OW2 -2.79

CALIBRATION DATA Well 1 0W3 A=-6.7066E 01 B= 8.2644E-02 D= 1.5000E 01 J0= 272 T0= 71820 ET(sec)= 60 WELL DRAWDOWN e0.8/1.1% EWO ET(seo)≒ 121 WELL DRAWDOWN 7.93 0M3 ET(sec)= 180 WELL DRAWDOWN 7.85 0M3 ET(sec)= 241 WELL DRAWDOWN OW3 7.76 ET(sec)= 301 WELL DRAWDOWN ома 🦏 🗀 2.60 ET(sec)= 360 WELL DRAWDOWN OW3 2.52 ET(sec)= 421 WELL DRAWDOWN 2,43 0W3 ET(sec)= 481 WELL DRAWDOWN 7.30 ET(sec)= 541 WELL DRAWDOWN 7.19 DM3 ET(sec)= 600 WELL DRAWDOWN OW3 7.10 ET(sec)= 661 WELL DRAWDOWN 7.02 0M3 ET(sec)= 721 WELL DRAWDOWN OW3 6.94 ET(sec)= 781 WELL DRAWDOWN 6.77 EW0 ET(sec)= 841
DRAWDOWN

OW3 6.69

ET(sec)= 900
DRAWDOWN

owa ,, (6.61

ET(sec)= 961 WELL DRAWDOWN

```
ET(sec)= 1021
WELL DRAWDOWN
 OW3 6.36
 ET(sec)= 1081
WELL DRAWDOWN
 OM3
                6.28
 ET(sec)= 1141
WELL DRAWDOWN
 0W3 6.19
 ET(sec)= 1200
WELL DRAWDOWN
 OM3 · 6.11
 ET(sec)= 1261
WELL DRAWDOWN
 OM3
               6.36
 ET(sec)= 1321
WELL DRAWDOWN
 OW3 6.28
 ET(sec)= 1381
WELL DRAWDOWN
         6.19
 OM3
 ET(sec)= 1441
WELL DRAWDOWN
      6.11
 0M3
 ET(sec)= 1501
WELL DRAWDOWN
 OW3 1 6.03
 ET(sec)= 1561
WELL DRAWDOWN
0W3 5.95
 ET(sec)= 1621
WELL DRAWDOWN
                5.86
 OM3
 ET(sec)= 1681
WELL DRAWDOWN
                5.78
 OM3
 ET(sec)= 1741
WELL DRAWDOWN
 0M3
               5.61
 ET(sec)= 1800
WELL DRAWDOWN
 OW3 , 5.61
 ET(sec)= 1861
WELL DRAWDOWN
 OM3
              5.50
 ET(sec)= 1921
WELL DRAWDOWN
 OW3 5.37
 ET(sec)= 1981
WELL DRAWDOWN
```

OM3

5.37

El(sec)≈ 1971 MELL = 1971 5.37 0M3 ET(sec)= 1981 WELL DRAWDOWN OW3 5.37 EI(sec)= 2041 WELL DRAWDOWN DW3 5.28
EI(sec)= 2101
WELL DRAWOOWN омз , 5.15 ET(sec)= 2160 WELL DRAWDOWN DW3 5.04 ET(sec)= 2220 WELL DRAWDOWN OW3 4.95 ET(sec)= 2280 WELL 0RAWDOWN OW3 4.87 ET(sec)= 2340 WELL DRAWDOWN 4.79 DM3 ET(sec)= 2400 WELL DRAWDOWN OW3 4.71 ET(sec)= 2461 WELL DRAWDOWN OW3 4.62 ET(sec)= 2521 WELL DRAWDOWN 0W3 4.54 ET(seo)= 2581 WELL DRAWDOWN OW3 4.46 ET(sec)= 2641 WELL DRAWDOWN OW3 4.38 ET(sec)= 2700 WELL DRAWDOWN омз ду. 4.29 ET(sec)= 2760 WELL DRAWDOWN CM3 4.21 ET(sec)= 2821 WELL DRAWDOWN OW3 4.13 EI(sec)= 2881 WELL DRAWDOWN

4.04

0M3

El(sec)= ZZHB WELL DRAWDOWN OW3 13 . . . 4.29

ET(sec)= 2760 WELL DRAWDOWN 0W3 4.21

EI(sec)= 2821 WELL DRAWDOWN

0M3 4.13

ET(sec)= 2881 WELL DRAWDOWN

OW3 4.04

ET(sec)= 2941 WELL DRAWDOWN

OW3 3.96

ET(sec)= 3001 WELL DRAWDOWN

OW3 . . . 3.88

ET(sec)= 3061 WELL DRAWDOWN OW3 3.80

ET(sec)= 3121 WELL 0RAWDOWN 0W3 3.71

ET(sec)= 3181 WELL DRAWDOWN

OW3 3.63

ET(sec)= 3241 WELL DRAWDOWN 0W3 3.55

ET(sec)= 3301 WELL DRAWDOWN

рыз 🦏 🖑 з.47

ET(sec)= 3360 WELL DRAWDOWN

OW3 3.38

ET(sec)= 3421 WELL DRAWDOWN

OW3 3.30

ET(sec)= 3481 WELL DRAWDOWN OW3 3.22

ET(sec)= 3541 WELL DRAWDDWN

OW3 3.14

ET(sec)= 3601 WELL DRAWDOWN

OM3 3.08

ET(sec)= 3660 WELL DRAWDOWN

CALIBRATION DATA Well 1 0W4 A=-6.1285E 01 B= 7.1428E-02 D= 0.0000E 00 J0= 273 T0= 81079 ET(sec)= 60 WELL DRAWDOWN OW4 71.7% -14.00 ET(sec)= 121 WELL DRAWDOWN -14.210W4 EI(sec)= 180 WELL DRAWDOWN -14.35 0W4 E[(sec)= 24] WELL DRAWDOWN 0W4 -14.50 ET(sec)= 300 WELL DRAWDOWN 0W4 -14.64 ET(sec.)= 361 WELL DRAWDOWN 0W4 -14.78 ET(sec)= 420 WELL DRAWDOWN -14.85 0W4 ET(sec)= 481 WELL DRAWDOWN 0W4 7% -15.00 ET(sec)≠ 541 WELL DRAWDOWN -15.07 OW4 ET(sec)= 600 WELL DRAWDOWN -15.14 ET(sec)= 661 WELL DRAWDOWN 0W4 -15.21 ET(sec)= 720 WELL DRAWDOWN 0W4 -15.28 ET(sec)= 781 WELL DRAWDOWN -15.35 0W4 ET(sec)= 841 WELL DRAWDOWN 0W4 -15.42

ET(sec)= 900 WELL DRAWDOWN

-15,50

960

0W4

EI(sec)=

-15.50 OW4

ET(sec)= 960 WELL DRAWDOWN

-15.57 0W4

ET(sec)= 1021 WELL DRAWDOWN

-15.64 014

ET(sec)= 1081 WELL DRAWDOWN

-15.64 0W4

ET(sec)= 1141 WELL DRAWDOWN

OW4 -15.71

ET(sec)= 1201 WELL DRAWDOWN

-15.78 0W4

ET(sec)= 1261 WELL DRAWDOWN OW4 -15.85

ET(sec)= 1321 WELL DRAWDOWN

0W4 -15.85

ET(sec)= 1380 WELL DRAWDOWN

--15.92

EI(sec)= 1440 (1974) MELL DRAWDOWN

-16.00 0W4

ET(sec)= 1501 WELL DRAWDOWN

-16.07 0W4

ET(sec)= 1561 WELL DRAWDOWN

0W4 ~16,07

ET(sec)= 1621 WELL DRAWDOWN

~16.14 01/4

ET(sec)= 1600 WELL DRAWDOWN

-16.21 OW4

ET(sec)= 1740 WELL DRAWDOWN

~16.21 QW4

ET(sec)= 1801 WELL DRAWDOWN

-16.28

EI(sec)= 1861 WELL DRAWDOWN

-16,35

FI(sec)= 1920 WELL DRAWDOWN

ET(sec)= 1801 WELL DRAWDOWN -16.28 0W4 ET(sec)= 1861 WELL DRAWDOWN -16.35 0W4 ET(sec)= 1920 WELL DRAWDOWN 0W4 ET(sec)= 1980 WELL DRAWDOWN -16.50 0W4 ET(sec)= 2010 WELL DRAWDOWN 0W4 -16,50 ET(sec)= 2100 WELL DRAWDOWN 0W4 -16.57 ET(sec)= 2161 WELL DRAWDOWN ET(sec)= 2221 WELL DRAWDOWN -1.49 0W4 ET(sec)= 2280 WELL DRAWDOWN -1.35 OW4 ET(sec)= 2341 WELL DRAWDOWN -1.21 0W4 ET(sec)= 2401 WELL DRAWDOWN OW4 -0.99

CONTROL MATERIAL

ET (sec) = 2461

WELL DRAWDOWN

-0.92

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RECOVERY TEST 7/11/84

WATER LEVEL
15 WATER
ABOVE YOU'RE
TRANSTOCKE AT
DEPT! OF 30'

OW-5 TIME WATER LEVEL 17.0556 16.7000 17.0611 16.7000 17.0625 16.7000

SHOOK

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17.1318 16.5709

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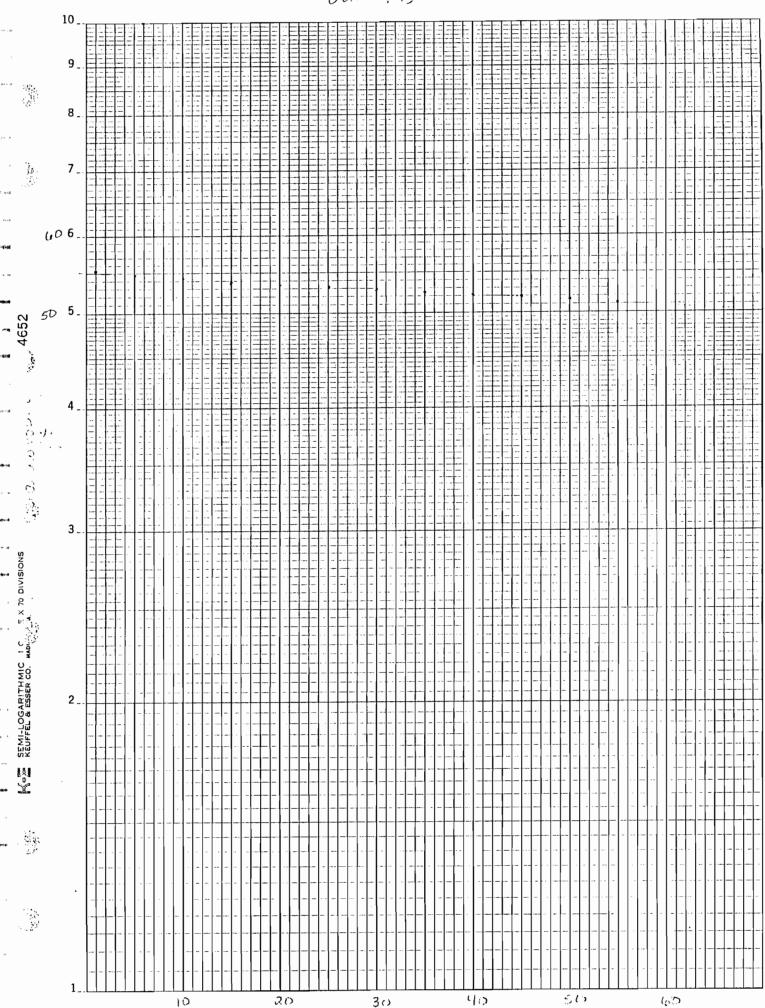
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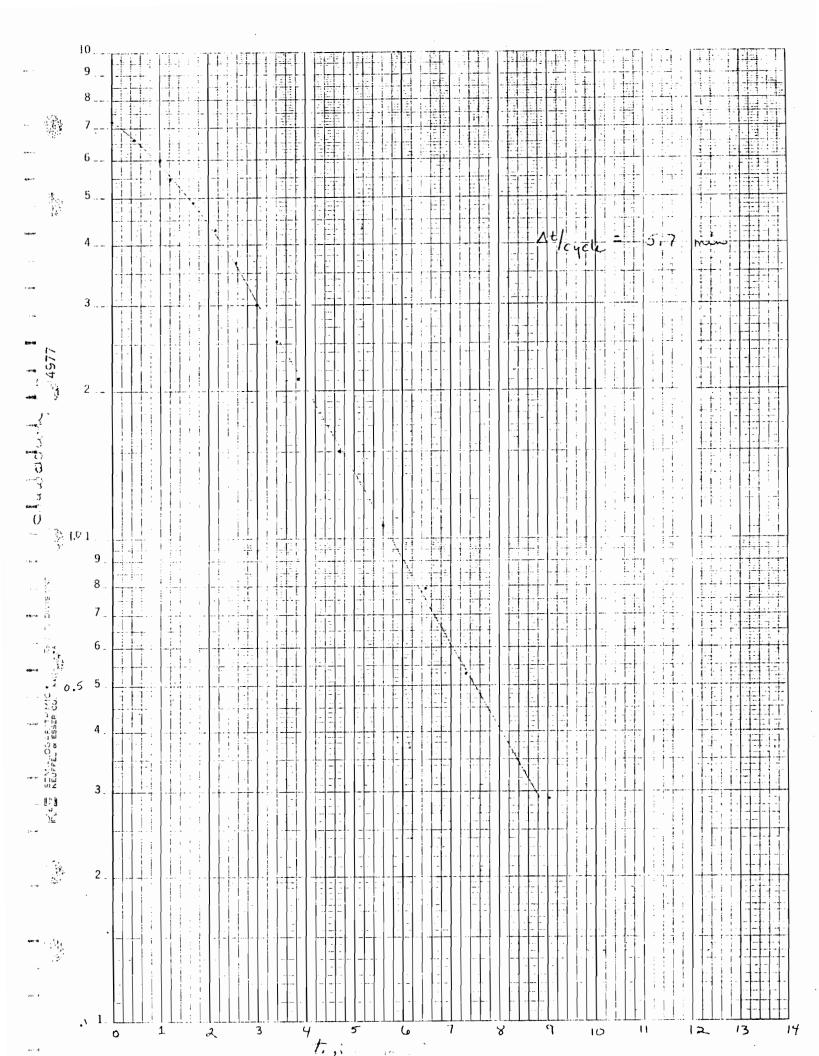
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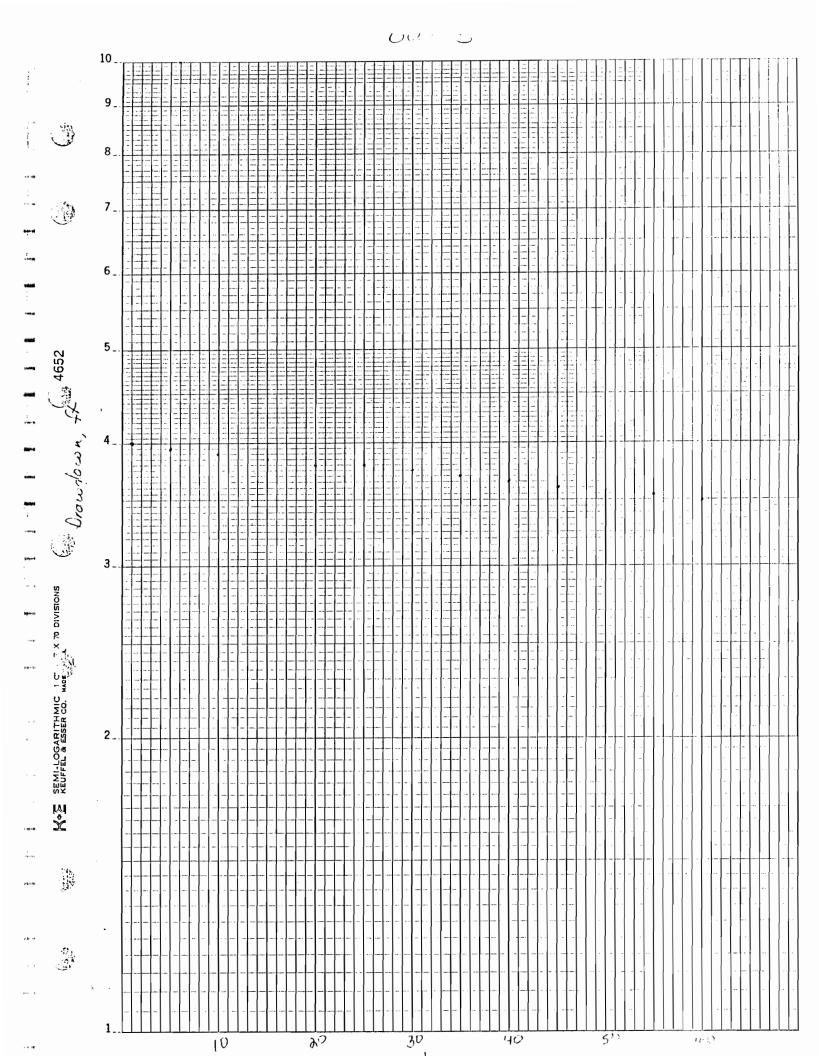
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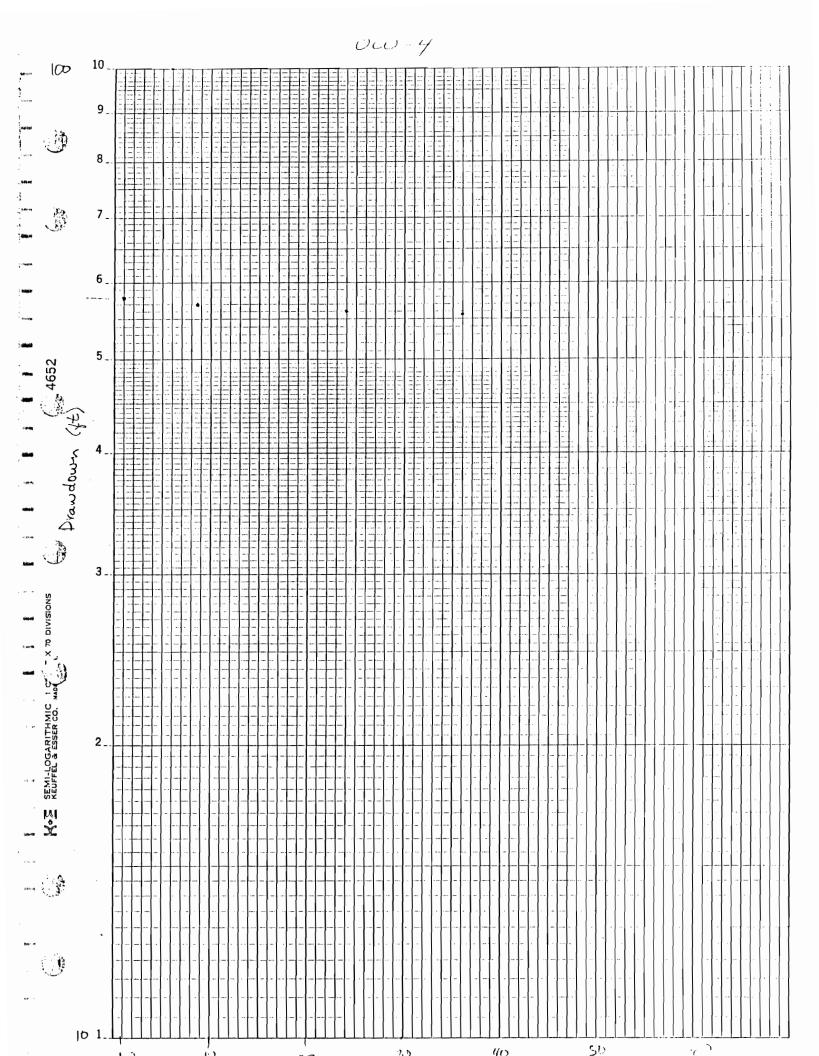
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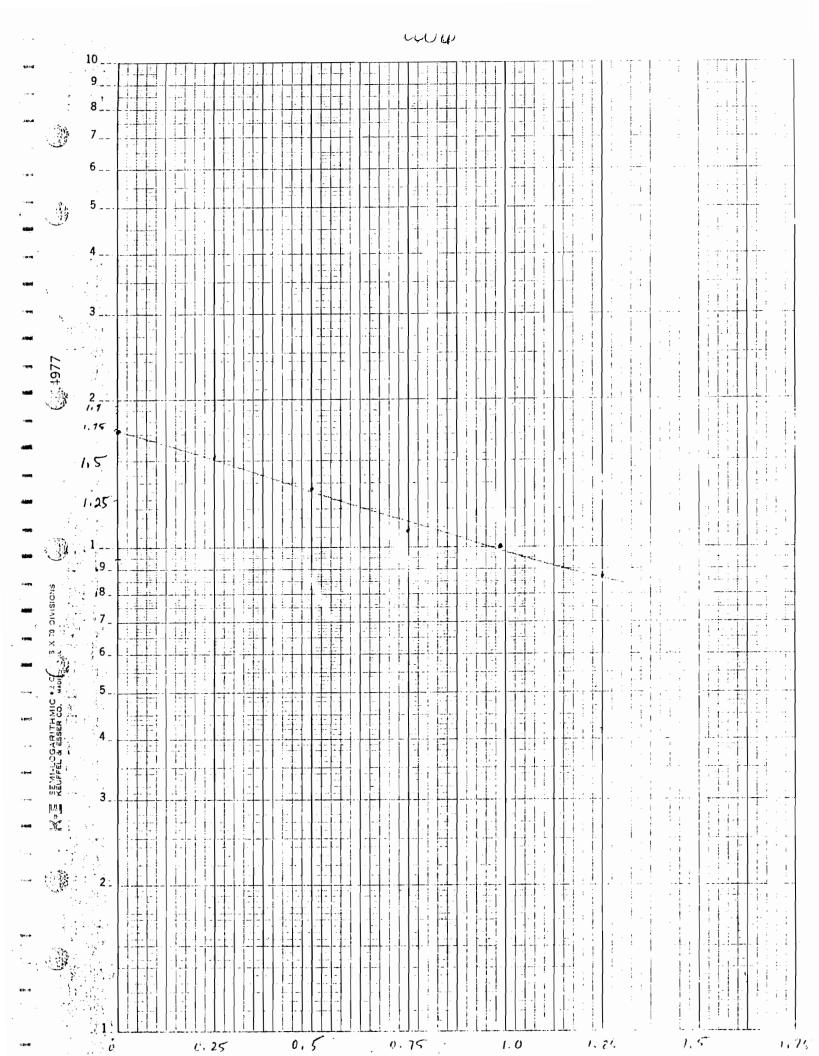








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Care F · 0ω-1 from Atraget line H; = 2.63 pt = 80,2 cm m=1L= 6 ft = 183cm 6, = 60 sec D= 17 cm Hz= 0.34 ft = 10.4 em d= 5 cm t= 360 sec 3 (182,9) > 4 $\frac{1}{8}h = \frac{d^2 \ln\left(\frac{4m^4}{p}\right)}{8 + \left(\frac{4}{2} - 6\right)} \ln \frac{H_1}{H_2}$ $\frac{1}{8} h^{2} = \frac{5^{2} \ln \left(\frac{4(1)(183)}{17}\right)}{8(183)(300)} \ln \left(\frac{80.2}{10.4}\right)$ $hh = \frac{25(3,763)}{439200}(2.04)$

Rh= 4.37 x10 4 cm/sec

assume m = 1 $H_1 = 55.3 \text{ ft} = 1685.5 \text{ cm}$ L = 14 ft = 426.7 cm $t_1 = 60 \text{ sec}$ 0 = 17 cm $H_2 = 51. \text{ ft} = 1554.5 \text{ cm}$ d = 5 cm $t_3 = 3300 \text{ sec}$

h= d= ln (4mL) ln H,

8 L (t,-t,) ln H2

 $hh = \frac{(5^2) \ln \left(\frac{4(.)(426.7)}{17}\right)}{8(426.7)(3300-60)} \ln \left(\frac{1686}{1555}\right)$

hh = 25 (4,609) In 0.08088

h/= 8,43 ×10-7 cm/sec

Assume m=1 $H_1 = 4.4' = 470.6 \text{ en}$ L = 9 ft = 2.74.3 cm $t_2 = 120 \text{ sec}$ D = 17 cm $H_2 = 0.42' = 12.8 \text{ cm}$ d = 5 cm $t_2 = 480 \text{ sec}$

 $\frac{1}{8} = \frac{d^2 \ln \left(\frac{4mL}{0}\right)}{8 L \left(\frac{t_2-t_1}{0}\right)} \ln \frac{H_1}{H_2}$

 $kh = \frac{5^2 \ln \left(\frac{4(1)(274.3)}{5}\right)}{8(274.3)(480-120)} \ln \left(\frac{670.4}{12.8}\right)$

789984

- lh = 6.75 × 10 - 4 cm/oc

assur	ne M=1		· · · · · · // :=	4pt = 1	21,9	C n
	L= 12 ft = 366 cm D= 17 cm d= 5 cm		# =	60 sec 3.5/t = 3600 pec	106.7	
\$h=	d ² ln (4 m L) 8 L (k ₂ -t,)	H ₂			· · · · · · · · · · · · · · · · · · ·	
- Jh =	(5 ²) ln (4(1)(366)) 	ln (106.7			
- 3h-	75 (4.4557) 10365120 (0.133	,2)				
\$\hat{h} =	1.43×10 cm/sec	-	·	· · · · · · · · · · · · · · · · · · ·		٠

2m L 2(1) (396) 46 L = 13 ft = 396 cmA: D = 6.75 in = 17.cm d = 2 in = 5 cm pt2 H = 5.8 /t= 17% t = 60 sec 169
11 = 5.54/t= 120 kh = d2 ln (4mL) ln H,
8 L (to-t) ln H2 E2 = 2160 plc $\frac{-3h}{5} = (5)^{2} \ln \left(\frac{4(1)(396)}{17}\right) \ln \frac{1770}{109} \ln \frac{1770}{109} = \frac{1770}{109}$ 25 (4.53) (.04625) (1652800. 3.685 DX 10 X Sm Dec 0, 7.88 × 10-7 cm/sec

.

Case F

0W-5

assume m = 1 L = 14 ft = 3 = 426.7 cm D = 17 cm d = 5 cm

 $k_h = \frac{d^2 \ln \left(\frac{4mL}{D}\right)}{8L\left(\frac{4mL}{b-b}\right)} \ln \left(\frac{H_1}{H_2}\right)$

H, = 0.65 = 19.5 t, = 0.5 min = 30

H, = 0=0.09'=2: t = 2 min = 120;

 $k_{h} = 15.0(5^{2}) ln(427)$ 8(427)(120-30) ln(2.7)

307440 (1,99

7.5 × 10 4

	·	H	1.75 = 45.78
M 3			0.25= 455
- 12.1'	= 33 368 8 cm		.87 = 26,5
D = 17 c	195	. -	1.25 75
d = 5 c	m		
		· ······	
k = (25)	In (4.368.8) 17 (360.8)(30)	15.7	
- 0		24.5	···· • · · · · · · · · · · · · · · · ·
8	(365.2)(30)		
14-14		7	66.0
4	(111,5).(.	54	53.9
			12.1
	88512		

6,8 × 10-4

11) BACKGROUND INFORMATION

ACTION	INFO	
To:		File: 13305-00/
		X-Ref:
		Date: 5/2/8-3
From: Eleon Gu	llipan	Reply Required By:
Subject: Concersal	ion with Nea	Para Co DOH- Muke Hopk
Poloronos(s).		
That with	There, wyere	es of Niapara Co DOH
to discuss Ph	are I sliter	s in Niapara Co.
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believes it	could be	Landed.
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		Eleen
•		allen

ROUTING

ACTION	INFO	
To:		File: 13305-00/
		X-Ref:
		Date: 5/2/83
From: Ellen M.	(llipan)	Reply Required By:
From: Ellen Je Subject: Endangered	L' Species / Critic	al Habitat
Reference(s):		
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ROUTING

Person

Peter Buechi, Senior Sanitary Engineer, Region 9 Hartin S. Ferguson, Environmental Chemist, Hazardous Site Control Sample Testing from the Nash Road Site

August 29, 1983

Enclosed is a Laboratory Test Report for the sampling of ponded water taken July 11, 1983 at the Nash Road Site. Diethyl phthalate, Terbutol and Toluene were identified in the extracted sample. The former and latter are hazardous wastes (priority pollutants).

MSF:cl Anclesure

cc: J. Rankin

C. Goddard

NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Solid Waste

Mobile Laboratory

Sample Type: Parde 16.

Date Sampled: 7 11 83

Sampling Site		Roder Hzo.					
		33-191-01					
Parameter	Units				. •.		
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nductivity	oluns						
Cd	mg/1				,.		141
Fe	mg/1		•				100
Zn	mg/l						- 1.
Cr	mg/1	;					· · · ,
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NIAGARA COUNTY HEALTH DEPARTMENT

MEMORANDUM

DATE:

January 27, 1984

TO:

Peter Buechi

FROM:

Michael Hopkins Milligh

SUBJECT:

INFORMATION REGARDING NIAGARA SANITATION

NASH ROAD LANDFILL (REQUESTED IN DECEMBER 1983

TELEPHONE CONVERSATION

Attached are copies of various documents from our files regarding the Niagara Sanitation - Nash Road Site. These documents are provided for your information and may be provided to your consultants for Phase II State Superfund investigation provided this department is properly credited for any information used in the Phase II report or subsequent reports.

This department has various other information regarding this site which is not attached but is available for inspection if desired. This information includes drawings of the Hooker "Brine Line", City of North Tonawanda Sewer maps for nearby areas, original drawings by Krehbiel Engineers showing the proposed location and dimensions of the disposal trench for Love Canal wastes, original letters between DOT and NCHD (1968) and original boring logs and locator drawings for test borings made on site in 1968 prior to digging the disposal trench.

The investigation conducted by this department in June, July and August of 1983 came to the following conclusions:

- There is reasonable evidence in the form of plans, correspondence, etc., which indicates that wastes from the Love Canal were disposed of at this site. It is suspected that disposal occurred in a trench dug specifically for this purpose.
- 2. This department was unable to locate any person who claims to have been present when Love Canal wastes were disposed of or who could provide first-hand information on such disposal.
- 3. Various area residents, former residents, City of North Tonawanda officials and a former equipment operator have reported that industrial wastes were observed in areas of landfill used for municipal disposal. Those wastes are said to include caustics in drums, battery cases, graphite, pallets and laminating compounds, but not the wastes from Love Canal.

Peter Buechi Page 2 January 27, 1984

- 4. It is believed that much of the municipal waste and the industrial wastes listed above were buried in former ponds and borrow pits. Most of the disposal area was always wet and swampy prior to disposal activity. At least one large trench was dug specifically for municipal waste disposal.
- 5. There is no specific evidence indicating that off site migration of contaminants has occurred or that a direct contact hazard is present; however, the available data is not conclusive in this respect.

This department considers follow-up investigation at this site to be necessary. Additional sampling and analysis of soil and groundwater are considered necessary to confirm whether or not residential areas adjacent to the site have been impacted by contaminants from the site. This department is also concerned that adequate data is not available to assess the potential of exposure to persons who may be on site, regardless of whether such persons are on site legally or illegally.

This department requests that we be kept informed of any activities of DEC with respect to this site and that we be kept informed of any additional information your department may have or obtain in the future.

Please feel free to contact me with any questions.

MEH:cs Attachments

cc: M. N. Vaughan

August 9, 1978.

Disposal of Chemical Waste
Contract FAC 67-15; PALSE 67-1
LaSalle Arterial, Mingara Falls, Mingara County ONIGHAL SIGNED BY
D. H. Ketchum, Regional Director - Region 5

W. C. Hennessy, Commissioner of Transportation, Bldg. 5, Foom 507

co Listing M.J. Coppy

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During the course of construction of the LaSalle Arterial in the City of Niagara Falls, buried chemical waste was encountered during excavation for a storm sewer line along Frontier Avenue between 97th and 99th Streets. Further exploration revealed that the chemical waste material extended under the proposed location of relocated Frontier Avenue north of the existing street. The total quantity of chemicals in the proposed roadway was estimated to be 1100 CY. No chemicals were found under, or south of, existing Frontier Avenue.

When the sower line excavation first began, the chemicals were piled to one side along with the other excavated material. This prompted several complaints from adjacent property owners about the offensive odor of the material.

After consulting with Hooker Chemical and the Miagara County . Health Department, some of the chemicals were trucked to an existing dump owned by Hooker off Hyde Park Blvd. near the north city line of Miagara Falls. After approximately 200 CY were disposed of at this location, the contractor was advised by Mooker officials that no more would be accepted at their dump.

After negotiation with the Town of Wheatfield, and with the approval of the Niagara County Health Department, the remainder of the chemical waste was trucked to a Town dump area off Nash Road in the Town of Theatfield.

The following is a chronological summary of events from March 15, 1968, when the chemicals were first encountered to July 15, 1968, when the disposal of the chemicals was completed.

stockpile.

Date	Event	Source
3-15-68	First encountered chemical waste material between 97th and 99th Sts. in relocated Frontier Ave. area.	Engineer's Dirry
3-15-68	Contacted Mooker Chem. Co. requesting information on material makeup.	Joe Cains Diary
3-19-68	Mr. Capong, property owner, complained of stench coming off chemical waste	Engineer's diary Joe Chin's Givey

	•	•
, ē	Event .	Source
) -68	Messrs. Popovici, Maida, Niagara County Health Dept. investigating	Joe Cain's diary
3-22-68	Ken Reitmeier, Supervising Soils and Naterials Engr., investigated and wrote memo this date recommending removal of chemical waste.	Memo dated 3-22-68
3-25-68	Mr. Popovici telephoned ordering chemica waste excavated to date, removed from project site and disposted of at a dump operated by Hooker Chemical Co. located off Hyde Park Blvd. near north city line	
3-27-68	Letter confirming the telephone conversation 3-25-68 from Ernest R. Gedeon, Niagara County Health Dept.	Letter dated 3-27-68
4-1-68	Letter from J.P. Cain, ordering con- tractor to remove chemical waste to the Hooker Dump on Hyde Park Blyd.	Letter dated 4-1-63
4-1-68	Stimm sent letter disputing work to removed chemical waste material.	Letter dated 4-1-63
4-3-68	Removal of chemical waste to Hooker'a dump site off Hyde Park Blvd. began.	Joe Cain's diary
4-8-68	Hooker officials (Fred T. Olotka) ordered a halt to further dumping of chemical waste at their Hyde Park Blvd. dump. Niagara County Health Dept. informed.	Joe Cain's diary.
4-15-68	Letter to Robert W. Sweet, Chief Engineer from A. J. Kopczynski necommending extra payment for work to remove approx. 1,000 CY of chemical waste.	r Letter dated
4-23-68	Letter to J. P. Cain from Stimm requesting permission to use Town of Wheat-field dump site.	Letter dated 4-23-68
4-25-68	Maps and borings received from Krehbiel, Quay, Rugg & Hall, Engr Bel Air Subdivision.	Package dated 4-25-68
5-1-68	Letter to Ernest R. Gedeon, Chief Air Pollution Control, Niagara County Health Dept. from J.P. Cain outlining proposed method of disposing of chemical waste.	Letter dated 5-1-68

Date	Event	Source
5-3-68	Wm. Friedman, Jr., Asst. Comm. of Env. Health, telephoned listing informa- tion he will require before approval of Wheatfield site is given.	Memo to Files dated 5-3-68
5-6-68	Letter from Friedman confirming the above telephone conversation (5-3-68) to Brzeninski (Stimm) requesting permission to use Cheatfield dump.	Letter dated 5-6-68
5-9-68	Letter from Hooker (Fred Olotka), listing makeup of chemical waste from ground samples taken.	Letter dated 5-9-68
5-16-68	Boring taken on Frontier Ave. between 97th and 99th Sts. to determine the limits of chemical waste.	Memo dated 5-15-68, P. Mowadl to J.P.Cain
5-16-68	Borings of proposed Wheatfield dump site sent to Friedman, Miagara County Health.	Letter dated 5-16-58, P. Nowadly to Friedman
5-21-60	Verbal permission received from	J. Cain's diary.
•	Friedman granting permission to use Wheatfield site. Letter ordering Stimm to excavate and remove chemical waste to Wheatfield.	Letter dated 5-21-8 Cain to Stimm.
5-27-68	Began excavating Wheatfield dumpsite.	MURK II dated 5-27-63
5-6-68	Began hauling chemical waste to dump.	MURK II 6-6-68
7-15-68	Complete all work including regrading dump site.	MURK II 7-15-68

The disposal area off Nash Road was visited on August 8, 1978 by J. Powers, Jr., and P. Goodman of my staff. Although they were unable to pin point the exact location of the buried chemicals, the approximate area was examined and no sign of the chemicals was found. The area in which the chemicals were buried was an excavation approximately 100 ft. by 30 ft. by 27 ft. deep. The area is located in a Town of Wheatfield dump just north of the North Tonawanda City Line, approximately 1/2 mile east of Nash Road and 1/2 mile south of Niagara Falls Blvd. There has been no development in the area and no apparent hazard exists at this time.

Our records indicate that the chemicals were placed in the 100' x 30' area to a depth of approximately 15 ft. and covered with at least 12 ft. of the excavated material. A review of Inspectors' reports indicates that the estimate of 1100 CY of chemicals was exceeded by about 50 percent for a total of 1600 CY + placed in this excavation.

Disposal of the chemicals in the Nash Road area was done with the full knowledge and consent of the Town of Wheatfield and the Niagara County Health Dept. Soil exploration was conducted by our Soils Engineer prior to disposal of the chemicals and the area was found to be acceptable for disposal purposes.

Attached are copies of all pertinent correspondence, drawings and boring logs.

DHK:JEP:mh

Attachments

I TEEKET Industrial chemicals oivision

NIAGARA FALLS. NEW YORK 14302, PHONE (716) 285-6555

May 9, 1968

Mr J P Caine Resident Engineer NYS Dept of Transportation 355 - 77th Street Niagara Falls, New York

Subject: LaSalle Expressway - Ground Samples

Dear Mr Caine:

inis letter is written in reply to your phone conversation with us on May 3rd.

Samples of liquors taken from the 97 - 99th Streets excavation on March 15, 1968 analyzed as follows:

 Specific gravity @ 25°C
 = 1.198

 pH
 = 3.0

 Loss on ignition
 = 86.4%

Flash pt °F 130 (Cleveland open cup)

Chlorate, Phosphorous and Fluoride = None

We were able to detect small amounts of chlorotoluenes, trace benzoyl chloride and approximately 5% benzoic acid in this material.

T sample taken represented the worst portion of the excavation. It was obtained from organic puddles in the vicinity of the dirt pile.

Very truly yours

Fred T Olotka

Technical Supervisor

вj

cc W M Friedman - Niagara County Health Department

E R Gedeon - Niagara County Health Department

E Padlo

J N Brogard

NEW YORK STATE GEOLOGICAL ASSOCIATION 54th ANNUAL MEETING October 8-10, 1982 Amherst, New York

GUIDEBOOK FOR FIELD TRIPS IN WESTERN NEW YORK, NORTHERN PENNSYLVANIA AND ADJACENT, SOUTHERN ONTARIO

Edward J. Buehler and Parker E. Calkin Editors

Department of Geological Sciences State University of New York at Buffalo

2

Held in Conjunction with 11th Annual Meeting Eastern Section American Association of Petroleum Geologists

Published by the New York State Geological Association. Guidebook available from the executive secretary: M.P. Wolf, Geology Department, Gittleson Hall, Hofstra University, Hempstead, New York 11550.

NEW YORK STATE GEOLOGICAL ASSOCIATION 38th Annual Meeting April 29 - May 1, 1966

GUIDEBOOK

Geology of Western New York Edward J. Buehler, Editor

Department of Geological Sciences State University of New York at Buffalo

Additional copies are available from the permanent secretary of the New York State Geological Association: Dr. Kurt E. Lowe, Department of Geology, City College of the City University of New York, 139th St. at Convent Ave., New York, N. Y.

Soil Mechanics

T. William Lambe • Robert V. Whitman

Massachusetts Institute of Technology

1969

John Wiley & Sons, Inc.

New York

London

Sydney

Toronto

in which

k = the Darcy coefficient of permeability

 D_{s} = some effective particle diameter

 γ = unit weight of permeant

 $\mu = \text{viscosity of permeant}$

e = void ratio

C =shape factor

The following is an expression for the permeability of porous media, known as the Kozeny-Carman equation since it was proposed by Kozeny and improved by Carman:

$$k = \frac{1}{k_0 S^2} \frac{\gamma}{\mu} \frac{e^3}{(1+e)}$$
 (19.5)

in which

k₀ = factor depending on pore shape and ratio of length of actual flow path to soil bed thickness
 S = specific surface area

Since D_s is defined as the diameter of particle having a specific surface of S_s , Eq. 19.4 can be considered a simplification of the Kozeny-Carman equation.

Table 19.1 Coefficient of Permeability of Common Natural Soil Formations

Formation	Value of k (cm/sec)
River deposits	
Rhone at Genissiat	Up to 0.40
Small streams, eastern Alps	0.02-0.16
Missouri	0.02-0.20
Mississippi	0.02-0.12
Glacial deposits	
Outwash plains	0.05-2.00
Esker, Westfield, Mass.	0.01-0.13
Delta, Chicopee, Mass.	0.0001-0.015
Till	Less than 0.0001
Wind deposits	
Dune sand	0.1-0.3
Loess	0.001 土
Loess loam	0.0001 土
Lacustrine and marine offshore	
deposits	
Very fine uniform sand,	
$U^a = 5-2$	0.0001-0.0064
Bull's liver, Sixth Ave., N.Y.,	
U = 5-2	0.0001 - 0.0050
Bull's liver, Brooklyn, $U = 5$	0.00001 - 0.0001
Clay	Less than 0.0000001

U = uniformity coefficient.
 From Terzaghi and Peck, 1967.

Table 19.2 Classification of Soils According to Their Coefficients of Permeability

Value of k (cm/sec)
Over 10 ⁻¹
$10^{-1} - 10^{-3}$
$10^{-3} - 10^{-5}$
10-5-10-7
· Less than 10-7

From Terzaghi and Peck, 1967.

Equation 19.4 or 19.5 aids considerably in the following examination of the variables affecting permeability. In this examination those characteristics related to the permeant are considered first and then those related to the soil composition are treated.

Permeant

Equations 19.4 and 19.5 show that both the viscosity and the unit weight of the permeant influence the value of permeability. These two permeant characteristics can be eliminated as variables by defining another permeability, the *specific* or *absolute* permeability, as:

$$K = \frac{k\mu}{\gamma} \tag{19.6}$$

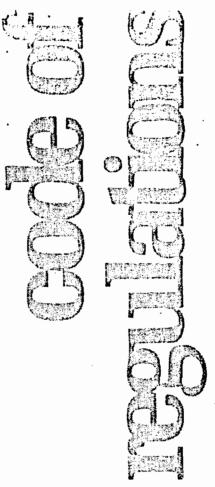
Since k is in units of velocity, K is in units of length²; e.g., if k is in cm/sec, the corresponding unit for K is cm². K is also expressed in terms of darcys; 1 darcy = 0.987 × 10⁻⁸ cm². For water at 20°C, the following two equations permit one to convert k in cm/sec to K in cm² or in darcys:

$$K \text{ in cm}^2 = k \text{ in cm/sec} \times 1.02 \times 10^{-5}$$
 (19.7)

$$K \text{ in darcys} = k \text{ in cm/sec} \times 1.035 \times 10^3$$
 (19.8)

Figure 19.6 is a chart for the conversion of permeability values from one set of units to another. (Conversion factors are given in the appendix.)

While viscosity and unit weight are the only variables of the permeant that influence the permeability of pervious soils, other permeant characteristics can have a major influence on the permeability of relatively impervious soils. The magnitude of influence for characteristics other than viscosity and unit weight are illustrated in Fig. 19.7. In this figure values of permeability of saturated kaolinite are plotted for various permeants. The permeability is expressed in terms of the absolute permeability, thus the influences of viscosity and unit weight have been climinated. The data in Fig. 19.7 show that the nature of the permeant can be very important, with variations of many hundred percent in absolute permeability depending on the actual permeant. The



Protection of Environment

40

PARTS 190 to 399
Revised as of July 1, 1983

CONTAINING
A CODIFICATION OF DOCUMENTS
OF GENERAL APPLICABILITY
AND FUTURE EFFECT

AS OF JULY 1, 1983

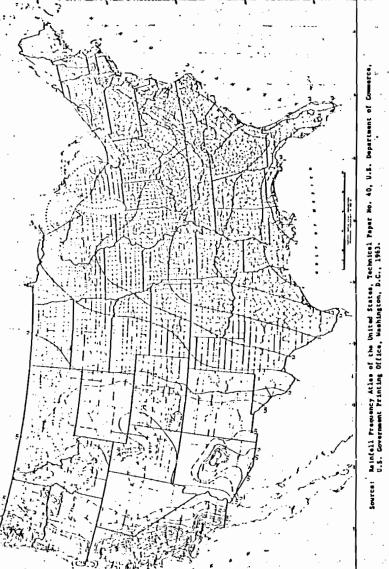
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Published by the Office of the Federal Register National Archives and Records Service General Services Administration

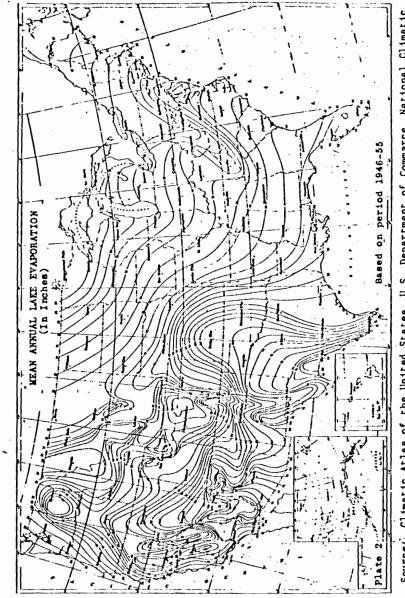
as a Special Edition of the Federal Register







686

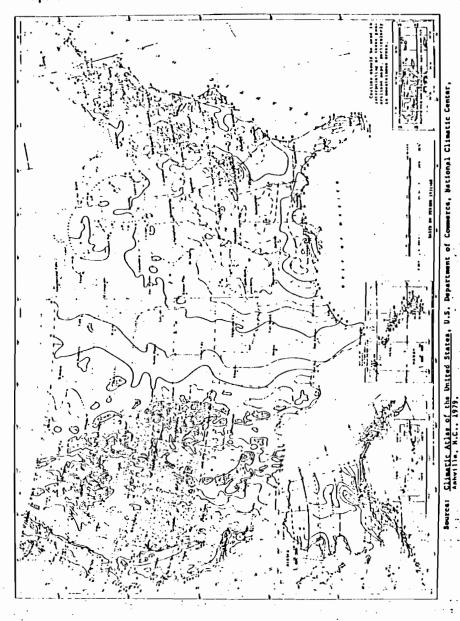


Climatic Atlas of the United States, U.S. Department of Commute, National Climatic Center, Ashville, N.C., 1979.

Mean Annual Lake Evaporation (In Inches)

Figure 4

676



677

Niagara County DOH, 1981

NAME OF LANDFILL

NIAGARA SANITATION COMPANY (DEC #932054)

LOCATION .

Nash Road, Town of Wheatfield

The site is estimated to be about seven acres in size and located north of the Niagara Mohawk easement which straddles the North Tonawanda - Wheatfield town line. The site extends from the eastern end of the access road running from Nash Road approximately 350 yards east to the fork in the power easement (Tower #365). The site is estimated to be 120 yards wide at the western end tapering to about 70 yards wide at the eastern end.

The landfill location and extent are shown on the attached

drawing.

OWNERSHIP

The property is owned by the Town of Wheatfield.

HISTORY

This landfill was used by the Niagara Sanitation Company for waste disposal from 1964 to 1968. The refuse site was used for both industrial and municipal refuse. The site received refuse from Niagara Falls Air Force Base, Bell Aerospace, Carborundum, Frontier Chemical, Graphite Specialties, Continental Can and Grief Bros. Wastes disposed of may include caustics, plating tank sludge and municipal wastes.

Historical information was obtained from Hazardous Waste Disposal Sites in New York State, Volume 3, NYS DEC.

INVESTIGATION

A site visit was made by Mr. M.E. Hopkins of the Niagara County Health Department on June 11, 1981. The site was found to be poorly covered with protruding refuse. Visible items included rubber blocks, tubes and hoses, tires, concrete fragments and other demolition debris, broken glass, ash, wood, rusted cans and pieces of graphite rods. Also found were what appeared to be remnants of steel drums. There was evidence of some unauthorized dumping after the site was closed. Access to the site was not restricted.

Red-brown (rust-colored) stains were found on vegetation and soil in numerous locations around the perimeter of the site, particularly along the northern and western edges. Additional stained areas were found throughout the marshes and other low points within the site. Although most of these stained areas were dry, two areas were found beneath standing water. It was noted that although the ground was stained beneath the water, the water was not discolored. No flowing leachate streams were found. The sampling well was not found on the June 11th visit. A well was found on June19th on a subsequent visit. The well was located 20 feet east of Niagara Mohawk Tower #363. The location is shown on the attached drawing. The well had apparently been

INVESTIGATION (continued)

vandalized. The upper standpipe had been broken off at ground level and the well had, therefore, been left uncovered. The well may still be useable for sampling.

No evidence of landfill activity was noted east of Niagara Mohawk Tower #365. However, USDA aerial photographs (ARE 3V-75;1966) indicate that the landfilled area may extend 300 to 400 ft. east of Tower #365.

S01LS

The soils surrounding the site are Raynham and Canandaigua series soils. The composition of the soil contained with the site itself is not known, although it is expected to be largely composed of refuse. The surface is generally a silty clay material with some sand in spots. Portions of the site are marshy while others appear well drained, indicating that the soil may not be uniform throughout the site. Boring records of the sampling well immediately south of the site, indicate a profile of silty sand and sandy silt to a depth of about 9 feet over clay to an unknown depth. The records also show the water table at 4 feet. This suggests that the water table may be perched. Fluctuations of the water table are not known.

CONCLUSIONS

The potential for the migration of contaminants off-site is present. Visible leachate stains and the odor in the well south of the landfill indicate that material may be leaching in perched groundwater. Permeable soils in some areas could allow lateral migration. The site requires proper closing. The proximity of houses along Forbes Road and potential for migration justify sampling at this site.

SAMPLING

Well and soil samples were taken for THO, heavy metals and phenol analysis. It was noted at the time of sampling, that the water drawn from the well was discolored gray and strongly odorous with an organic odor. A slight oily sheen was present on the surface of the sample. Two soil samples were taken near Towers #364 and #365. These samples were taken from the bottoms of hand augered holes roughly 4 feet deep. The boring near pole #364 indicated a gray silt over a darker gray silty clay layer at the point of sampling. The second boring showed a tan silty clay over clay at about 4 feet. The sample was taken from this interface. Groundwater was encountered slightly below the 4 foot level in both holes.

RECOMMENDATIONS

This site must be properly closed. Additional sampling wells along the Niagara Mohawk easement would be desireable to facilitate future sampling. The existing well should be maintained. Annual inspection and periodic monitoring is recommended. The Town of Wheatfield was notified to submit an abatement plan for the site.

SUMMARY OF SAMPLES TAKEN

•					NEARE ST
SAMPLE	# LOCATION	TYPE	PARAMETER	DATE	HOUR
1	Gratwick # 13	well	Hetals	7/16/81	11:00
. 2	Grativick # 10	well	Metals	7/16/81	11:00
3	Gratwick # 11	well	Hetals	7/16/81	11:00
4	Gratwick # 12	well	Hetals	7/16/81	11:00
5	Gratwick # 13	well	THO	7/16/81	11:00
6	Gratwick # 10	well	THO	7/16/81	11:00
7.	Gratwick # 11	well	THO	7/16/81	11:00 ·
8	Gratwick # 12	well	TH0	7/16/81	11:00
9	Nia: Sanitation	well	Hetals	7/16/81	1:00
10	Nia. Sanitation i	well	THO	7/16/81	1:00
11	, , , · Zimmerman	well	THO	7/16/81	12:00
12	Helidey Old Falls	well	THO	7/16/81	12:00
13	Artpark	Leachate	Metals	7/17/81	12:00
14	Artpark	Leachat e	THO	7/17/81	12:00
15	PASNY _	Soil	Hetals	7/21/81	10:00
16	PASNY	Soil	THO	7/21/81	10:00
17	Nia. Sanitatión	Soil	Metals	7/24/81	12:00
18	Nia. Sanitation:	Soil	THO	7/24/81	12:00
19	Nia. Sanitation	Soil	Metals	7/24/81	12:00
20	Nia. Sanitation	Soil	THO	7/24/81	12:00
21	Walck Road	Soil	THO	7/24/81	12:00
22	Grativick # 13	well	Phenol	8/12/81	10:00
23	Gratwick # 10	well	Phenol	8/12/81	10:00
24	Gratwick # 11	well	Phenol	8/12/81	10:00
25	Grativick # 12	well	Phenol	8/12/81	10:00
26	Zimmerman	well	Phenol	8/12/81	11:00
27	Old Falls	well	Phenol	8/12/81	11:00
28	[Nia: Sanitation	tell	Phenol	8/12/81	12:00
29	Olin-Industrial	Soil	THO,TOC	9/07/81	12:00
	Welding		Lindane		

ANALYTICAL RESULTS FOR SAMPLES TAKEN AT GRATWICK - RIVERSIDE PARK

WELL # 10		
Sample # 2	Sampled 11:00	7/16/81
Cadmium, total Chromium, total Lead; total Mercury, total Nickle, total	L.T. 0.02 HG/L L.T. 0.1 HG/L L.T. 0.1 HG/L L.T. 0.4 MCG/L 0.05 HG/L	
Sample # 6	Sampled 11:00	7/16/81
THO :	35 MCG/L	
Sample #24	Sampled 10:00	8/12/81
Phenol	3 MG/L	
WELL # 11		
Sample # 3	Sampled 11:00	7/16/81
Cadmium, total Chromium, total Lead, total Mercury, total Nickle; total	L.T. 0.1 MG/L	
Sample # 7	Sampled 11:00	7/16/81
THO .	Less than 1 MCG/L	
Sample # 25	Sampled 10:00	8/12/81
Phenol	3 MG/L	•
WELL # 12		
Sample # 4	Sampled 11:00	. 7/16/81
Cadmium, total Chromium, total Lead, total Mercury, total Nickle, total	L.T. 0.02 MG/L L.T. 0.1 MG/L L.T. 0.1 MG/L L.T. 0.4 MCG/L L.T. 0.05 MG/L	
Sample # 8	Sampled 11:00	7/16/81
тно	4 MCG/L	•
Sample # 26	Sampled 10:00	8/12/81
Phenols	0.2 MG/L	

GRATWICK - RIVERSIDE PARK (continued)

WELL # 13

Sample # 1	Sampled 11:00	7/16/81
Cadmium, total Chromium, total Lead, total Mercury, total Nickle, total	L.T. 0.02 MG/L L.T. 0.1 MG/L 0.1 MG/L L.T. 0.4 MCG/L 0.05 MG/L	
Sample # 5	Sampled 11:00	7/16/81
THO	18 MCG/L	
Sample # 22	Sampled 10:00	8/12/81
Phenols	17 MG/L	

RESULTS OF SAMPLES TAKEN AT NIAGARA SANITATION SITE

WELL SAMPLES

Sample # 9	Sampled 1:00	7/16/81
Cadmium, total Chromium, total Lead, total Mercury, total Nickle, total	L.T. 0.02 MG/L L.T. 0.1 MG/L 0.2 MG/L L.T. 0.4 MCG/L 0.12 MG/L	
Sample # 10	Sampled 1:00	7/16/81
ТНО	4 MCG/L	
Sample # 28	Sampled. 12:00	8/12/81
Phenol	0.008 MG/L	

ISOIL SAMPLES ,

Samples # 17,18,19 & 20 all Sampled 10:00 7/24/81 Samples # 17 & 18 Metals - Results not yet available Sample # 19 L.T. 10 PPB THO Sample # 20 L.T. 10 PPB THO

Sound or war

RESULTS OF SAMPLES TAKEN AT ARTPARK

LEACHATE SAMPLES .

Sample # 13	Sampled 1:00	7/17/8 1	
Cadmium, total Chromium, total Lead, total Nickle, total Mercury, total	0.02 MG/L 0.1 MG/L 0.5 MG/L 0.73 MG/L L.T. 0.4 MCG/L		
Sample # 14	Sampled 1:00	7/17/81	
ТНО	47 MCG/L		

RESULTS OF SAMPLES TAKEN AT HOLIDAY PARK

WELL SAMPLES

WELL # 4

Sample # 11(Zimmerman) Sampled 12:00 7/16/81

THO 4 MG/L

Sample # 26 Sampled 11:00 8/12/81

Phenols 2 .008 MG/L

WELL # 8

Sample # 12 (Old Falls) Sampled 12:00 7/16/81

THO 3 MCG/L

Sample # 27 Sampled 11:00 8/12/81

Phenol .01 MG/L

SOIL SAMPLES

Sample # 21 Walch Road Sampled 12:00 7/24/81

THO Less than 10 PPB

NIAGARA SANITATION NASH ROAD SITE (DEC # 932054) Approx. Scale. 1: 3600 (All distances estimated) 200,0 100,0 100yd Morsh Area Treeline Powerling Red - Brown Leachote stuins GARDEN Slope - downword toward SE ((1%) Mapped from field observation only by Mi. Hopkins NCHD Michael Hoplins

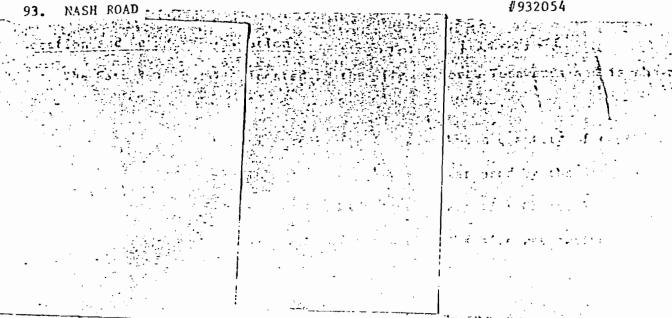
NASH_

ROAD

NIAGARA SANITATION NASH ROAD SITE (DEC # 932054) Approx. Scale. 1: 3600 (All distances astimated) Morsh Area Treeline Powerlines Red - Brown Leachute stuins GARDEN Slope - downward toward SE ((1%) Tank E/J Mapped from field observation only by Mi. Hopkins NCHD Michael Hopkins

NASH

ROAD



Geologic Information

The geology of the site consists of a Holocene lacustrine clay unit overlying a bedrock of Camillus Shale. Four test borings were drilled on the site and their locations are shown in figure 1. The geologic description of the borings is as follows:

Well No.	Depth (ft)	Description
1/	0 - 5.0 5.0 - 6.5	Fill. Clay, pink. WATER SAMPLE: 6.0 ft.
2	0 - 8.0 $8.0 - 10.0$ $10.0 - 11.5$	Clay, tan to light green, sandy, dry. Clay, green. Clay, pink. SOIL SAMPLE: 8 - 10 ft.
3	0 - 1.5 1.5 - 3.5 3.5 - 7.0	Tan and black fill. Clay, greenish, sandy, dry. Clay, greenish, sandy, wet. SOIL SAMPLE: 7 ft.
4	0 - 1.0 1.0 - 3.5 3.5 - 6.5	Topsoil. Clay, sandy, dry. Clay, greenish, wet. SOIL SAMPLE: 6.5 ft.

	•					
 Cię	Church Co Church	Disposal area may			1990 FEET	
2 / / X X X X X X X X X X X X X X X X X	Holy Intent Ehurch	Suspected area of a property o	H 1200	•	074	
		8 - 10 8 // C		વે જે	· Power line	:
				FORBES	Soil boring	Town Line
 ₹D	11244	· · · · · · · · · ·	. 	· ·	-60	1.
24	<u> </u>	. 1	·			

Figure 1. Location of sampling eites on the Nash Road proporty

SEPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT TO SITE I OCATION AND INSPECTION INSPERIATION

	LIDENTIFICATION								
	OI STATE	0000514380							
ı	NY	10000514380							

PART 1-SITE LOCATION AND INSPECTION INFORMATION								
II. SITE HAME AND LOCA	TION .							
01 SITE NAME (Laga: common, or concribere name of sales			02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER					
Nash Road Landfill			Nash Road					
CICIY		,		CB COUNTY	OTCOLINTY DE CONG COCE DIST			
Town of Wheatfi	·		NY	14150	Niagara	63 36		
OF COORDINATES	DICHGITUDE "	O A PRIVATE	PICHERON	ERAL	☐ C, STATE ☐ D, COUNTY	VE MUNICIPAL		
43° 04"10"o"		O F. OTHER: _			G G UNKNOW	N		
IIL INSPECTION INFORM.		DE YEARS OF CREPAT	Y.M					
4/28 /83	- DACTIVE		1964	1968	UNKNOWN	•		
WONTH CAT FEAR	DXINACTIVE		NNING YEAR			•		
04 AGENCY PERFORMING INSP								
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DESTATE OF STATE	CONTRACTOR Dames & M	loore	O, C' OL	HER	So-cary)			
05 CHIEF INSPECTOR		CS TITLE	-	-	07 ORGANIZATION Engineering	OS TELEPHONE NO.		
John Kubarewicz	Z	Chemical	Engin	neer	Science	703/591-7575		
09 OTHER INSPECTORS		10 Table			11 CRGANIZATION	12 TELEPHONE NO.		
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IV. INFORMATION AVAIL	ABLEFROM .	loó as						
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Eile en Gilligan	1	1	Dame	s & Moore	315/638-2572	8 10 84 WCNTH PAY YEAR		
EPA FORM 2070-13 (7-31)					C. Pal John			

SFPA

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

LIDENTIFICATION

OLSTATE 02 STE NUMBER

NY 0000514380

				E INFORMATION				
	TATES, QUANTITIES, AN							
E A SOUD CE SLURRY C S FOWDER, FINES OF FUCUID TO. SLUDGE C G GAS CUBIC YA		TONS _	TATION DE L'ANDRE DE L		SIVE DE INFECTIOUS DU EXPI CTIVE DE FLAMMABLE DE KI FEA TENT DE HURNITABLE DE LINCK			
III. WASTE T	YPE	,	,	!				
CATEGORY	SUBSTANCE N	AME	O1 GROSS AMOUNT	DZ UNIT OF MEASURE	03 COMMENTS			
SLU	SLUDGE .	••						
OLW	OILY WASTE							
201	SOLVENTS							
PSD	. PESTICIDES							
(2003)	OTHER ORGANIC CH	EMICALS	900 cu. y	ds.	Chemical w	aste/ Love Ca	anal	
100	INCREANIC CHEMIC	ALS						
ACD	ACIDS	- policy-h					-	
BAS .	BASES							
(MES	HEAVY METALS				lead, chro	mium, plating	sludge	
IV. HAZARDO	OUS SUBSTANCES (See A.	cends for most frequent	y cred CAS Numberal					
01 CATEGORY	02 SUBSTANCE N	AME	03 CAS NUMBER	94 STORAGE/DISE	POSAL METHOD	05 CONCENTRATION	OR MEASURE OF CONCENTRATION	
MES	lead		999	landfill		67-20,000	ppb	
occ	2,4, dimethy	1 2 penten	e 999	landfill		182,000	ppb	
occ	2-(1,1 dimet	_	999	landfill		183,000	ppb_	
occ	methylfuran			landfill		_	_	
occ	phenol		108-95-2	landfill		1,000	mg/l	
MES	mercury		7439-97-6	landfill		0.5	ppb	
SOL	benzene		71432	landfill				
SOL	toluene		108883	landfill				
SOL	methylene ch	loride	999	<u>landfill</u>				
occ	dichlorobenz		25321-226	landfill	·		<u>-</u>	
occ	tetrachlorid		999	landfill				
occ	trichloroeth		127184	landfill		_	<u> </u>	
occ	trichloroeth	en e	999	landfill				
OCC	<u>hexachlorobu</u>	tadiene	87683	landfi ll				
							<u> </u>	
	,					·		
V. FEEDSTO	CXS ISHA ASSIMILITY CAS NUMBER	•al						
CATEGORY	01 FEEDSTOC	X NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTO	OCK NAME	02 CAS NUMBER	
FDS	mercury		7439-97-6	FDS				
FDS				FDS				
FDS				FDS				
FDS				FDS				
VI. SOURCES	OF INFORMATION IC.	specific references, e.g.,	STALE NOS. SWITCHE MINYOR.	+corts)				
1.) In	vestigation of	Selected	Inactive Tox	cic Landfill	s in conjun	ction with th	e Niagara	

- 1.) Investigation of Selected Inactive Toxic Landfills in conjunction with the Niagara River Study," Aug. 1981, (U.S.G.S.)
- 2,) Memo to Hennesey NYSDOT, 8/9/78
- 3.) Letter to Caine NYSDOT from Hooker, 5/9/68



POTENTIAL	HAZARDOUS WASTE SITE	I. IDENTIFIC	NOITA				
SITEIN SITEIN	89 artilio	00 514 380					
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDEN"							
II. HAZ ARDOUS CONDITIONS AND INCIDENTS							
01 & A GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED:	02 S OBSERVED (DATE: 7/24/81) C4 NARRATIVE DESCRIPTION	E POTENTIAL	C ALLEGED				
·							
Well sampling shows conta	amination by lead and organi	c chemicals.					
01 TO B. SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED:	02 NORSERVED (DATE: 1/83) 04 NARRATIVE DESCRIPTION	O POTE/MAL	C ALLEGED				
Rust colored red stains i	in standing water and soil.	Chemical ana	lyses show				
. low levels of methylene chlori	ide and TOX.						
•	,						
01 G C. CONTAMINATION OF AIR	02 SZESERVED (DATE: 1/84)	O POTENTIAL	☐ ALLEGED				
03 POPULATION POTENTIALLY AFFECTED:	C4 NARRATIVE DESCRIPTION						
None.							
wone.							
at Classification of the Control of	02 E CESERVED (DATE: 7/84	= =====================================	<i>E</i> 111,555				
01 D. FIRE/EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED:	02 M CESERVED (DATE: 1/04) 04 NARRATIVE DESCRIPTION	C POTENTIAL	C ALLEGED				
Small fire of unknown ori							
,							
01 TYE DIRECT CCNTACT	02 STOBSERVED (DATE: 7/84	CA STENTIAL	O ALLEGED				
03 POPULATION POTENTIALLY AFFECTED: 10100	04 NARRATIVE DESCRIPTION		\$ 1. Apr				
Site used by local reside	ents as play area.						
	7/24/21						
Q1 TO F. CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED:	02 GOBSERVED (DATE: 7/24/81) 04 NARRATIVE DESCRIPTION	POTENTIAL	1 ALLEGED				
Annins							
Soil samples show metal a	and organic contaminat(on.						
	.`						
01 D G. DRINKING WATER CONTAMINATION	02 CPSERVED (DATE:)	© POTEMAL	C ALLEGED				
03 POPULATION POTENTIALLY AFFECTED:	04 NARPATIVE DESCRIPTION						
No.							
01 C H. WORKER EXPOSURE/INJURY	D2 CI OCCEDIED IDATE.	T. MOTORIA	C 41,555				
68 WORKERS POTENTIALLY AFFECTED:	02 () OBSERVED IDATE:) 04 NARRATIVE DESCRIPTION	⊇ POTENTIAL	C ALLEGED				
None.							
,							
		. /					
01 C1. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED: ~100	02 C OBSERVED (DATE:)	E POTENTAL	C ALLEGED				
03 POPULATION POTENTIALLY AFFECTED:	04 NARRATIVE DESCRIPTION						
No known injuries.							

SEPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

I. IDENTIFICATION

01.57ATE 02 STE NUMBER

NV 0000514390

COLINA		ZARDOUS CONDITIONS AND INCIDENTS	NY 0000514380
		ZARDOOS COMBITIONS AND INCIDENTS	
	NS AND INCIDENTS (CONTOUND)		
01 13 J. DAMAGE TO FLORA 04 NARRATIVE DESCRIPTION		02 CESERVED (DATE:7/84)	C POTENTIAL C ALLEGED
	None observed.		,
01 G K. DAMAGE TO FAUNA	1	02 12 CBSERVED (DATE: 7/84	EVPOTENTIAL C ALLEGED
04 NARRATIVE DESCRIPTION	I include named at obsciences:	,	The second secon
	Abundant small anima	l wildlife on site. No dama	ige observed.
	•		
01 ☐ L CONTAMINATION OF 04 NARRATIVE DESCRIPTION		02 C CESERVED (DATE:)	TO POTENTIAL DI ALLEGED
A MANUSTIAE DESCUIL DOL		, ,	
	Potential to aquatic	microorganisms in ponds and	l trenches
/	-	,	
01 G M. UNSTABLE CONTAI	NMENT OF WASTES	02 CBSERVED (DATE: _4/28/83)	POTENTIAL C ALLEGED
(SpasiAnian/Shade)	CS, Lesung primal	04 NARRATVE DESCRIPTION 7/83	. TOTOMINE SALES
US PUPULATION POTENTIAL			
		ed standing water observed,	rubbish protruding
from	earth.		
01 D N. DAMAGE TO OFFS! 04 NARRATIVE DESCRIPTION		02 C OBSERVED (DATE:)	C POTENTIAL C ALLEGED
	None.		
•		-	
,			
01 🖸 0. CONTAMINATION C 04 NARRATIVE DESCRIPTION		02 C CBSERVED (DATE:)	C POTEYTIAL C ALLEGED
	None.		
, .			
01 2 P. ILLEGAL'UNAUTHO 04 NARRATIVE DESCRIPTION		02 TOESERVED (DATE: 6/11/81)	© POTENTIAL I ALLEGED
	Niagara County DOH of	bserved "evidence of dumping	" after site closed.
		,	
05 DESCRIPTION OF ANY OT	HER KNOWN, POTENTIAL, OR ALLEC	GED HAZARDS	
•	•		
		•	
IIL TOTAL POPULATION P	OTENTIALLY AFFECTED: un	known	
IV. COMMENTS			·
		on, Phase II study did not a	•
		, total population potential	Ty affected cannot
	etermined.		
V. SOURCES OF INFORMA	TION (Cita specific references, e. g., state (res. s	Limbile entitysis, records	
1.) Niagara Cour	ь+у DOH 1981		
2.) U.S.G.S. Sti			
	during Phase II inve	stigations	
,			

SEPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION

I. IDENTIFICATION							
01 SZ 47E	CZ STE NUMBER						
NY	0000514380						

Co Land 1 T	PART 4 - PERMIT	AND DES	SCRIPT	IVE INFORMATI	ion !	NY 1 0000514380	
II. PERMIT INFORMATION						-	
O1 TYPE OF PERMIT ISSUED	02 FERMIT NUMBER	C3 DATE IS	SSUED (04 EXPIRATION DATE	05 COMMENTS		
(Circs of the 2004)	Not applicable					•	
C.A. NPDES	applicable						
☐ B. UIC							
C. AIR	1						
D. ACRA							
DE RORA INTERIM STATUS					1		
DF. SPCCPLAN							
LIG. STATE (Schooly)			.				
☐ H. LOCAL (Sc+off)		_					
□ I. OTHER (Some)	·						
DJ. NONE-		1				•	
III. SITE DESCRIPTION							
01 STORAGE/DISPOSAL (Check of that acopy) 0	D2 AMOUNT D3 UNIT OF	F MEASURE	04 TRE	ATMENTICIONA MINERAL	204)	05 OTHER	
A. SURFACE IMPOUNDMENT			DAIN	NCENERATION		C. A. SLIVI SAVES ON OTT	
O B. PILES			☐ B. U	INDERGROUND INJE	ECTION	☐ A. BUILDINGS CN SITE	
C. DRUMS, ABOVE GROUND			□ c. c	HEMICALIPHYSICA	L		
D. TANK, ABOVE GROUND		— -	1	IOLOGICAL			
D S TANK, SELCW GROUND	unknown			VASTE CIL PROCESS		06 AREA OF SITE	
GVF LANDFILL	dikilowit		G F. SOLVENT RECOVERY				
D H. OPEN DUMP			© GOTHER RECYCLING/RECOVERY WH. OTHER NONE				
O I. CTHER			(Sovery)				
07 COMMENTS			<u> </u>				
Poorly close	ed; tires, meta	1, oth	er ru	bbish visib	ole		
IV. CONTAINMENT							
DI CONTARMENT OF WASTES (CLEEK COM)	•				/-		
A ADEQUATE, SECURE	C B. MODERATE	C. 11	NADEQUA	ATE, POOR	図D. IHSECL	BUOREDNAD, DANGEROUS	
C2 DESCRIPTION OF CRUMS, DIKING, LINERS, BA	MARIERS, ETC.						
2.) Disposal tro	ed; tires, meta ench for Love C ed barriers ins	anal w	aste	bbish visib excavated i	ole. In soft, I	layered clay.	
V. ACCESSIBILITY							
01 WASTE EASILY ACCESSIBLE: TYES	DNO						
02 СОРМЕНТЯ Unfenced, e	asy access						
VI. SOURCES OF INFORMATION (C20 10-	icific referencies, e.g. stice fiest, serio	IADC	omi				
_	tion, summer 19						
2.) Memo to Hen	nesey NYSDOT, 8	/9/84					

							_	
SEPA	IE	I. IDENTIFICATION 101 STATE 02 SITE NUMBER NY 0000514380						
IL DRINKING WATER SUPPLY	PARTS-WATER,	DEMOGRAPHI	C, AND E		ENTALDATA			
OT TYPE OF DRINKING SUPPLY (Chiece in application)	.	02 STATUS			j	03 0514	NICE TO SITE	
SURFACE	\ MET	ENDANGERE	_		MONITCRED			
COMMUNITY A. C. D	B. 🖸 O. 🗖 👵	A. 🖸 D. 🖸	B. E.	_	C. [] F. []	A B	(mi)	
III. GROUNDWATER								
01 GROUNDWATER USE IN VICINITY (Chair	····							
A. ONLY SOURCE FOR DRINKING	B. DRINKING (COME SCHEEL PRACTOR COMMERCIAL, (NO) (NO other walls source)	USTPIAL IFFIGATION	(L	OMMEPCIAL	INDUSTRIAL IERIGATI Çai energa)	ON BON	OT USED, UNUSE	ABLE
C2 POPULATION SERVED BY GROUND WAT	эн <u>О</u>		03 DISTANC	ETO NEARE	ST DRINKING WATER W	VEIL O.	. 2(mi)	
04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROU	WO JR KSTAWDHI	06 DEPTH TO ACUIFER 07 POTENTIAL YIELD 08 SOLE SOURC OF CONCERN 0F ACUIFER			OLE SOURCE AC	UFER	
4.0 (ft)		~4.0			(bqg)_	C YES C	NO	
09 DESCRIPTION OF WELLS (PELESTO ULABOR	senti, and keation neative to po	ca-ation and busings)			· · · · · · · · · · · · · · · · · · ·			
l e e e e e e e e e e e e e e e e e e e	rk of samplin roughout the		rying :	from	10' to 70' i	n depth		
10 RECHARGE AREA			11 DISCHAR	GE AREA				
DYES COMMENTS			D'NO.					
IV. SURFACE WATER			-					
01 SURFACE WATER USE (Ches and)								
BA. RESERVOIR, RECREATION DRINKING WATER SOURCE		, ECONOMICALLY RESOURCES	<u>п</u> с.(COMMERCIA	AL, INDUSTRIAL	☐ D. NO	T CURPENTLY	used
02 AFFECTED/POTENTIALLY AFFECTED 60	DIES OF WATER							
NAME:					AFFECTED	DIS	TANCE TO SITE	;
small pond on s Sawyer Creek	ite						0.25	(mi)
Bull Creek							1.1	(wi)
Tonawanda Creek							2.3	(mi)
V. DEMOGRAPHIC AND PROPERT	Y INFORMATION							
01 TOTAL POPULATION WITHIN				02	PUSTANCE TO NEARE	ST POPULATIO	ON	
1 000	(O (2) MILES OF SITE 6,100 No of Persons	$c_{\cdot \cdot - 1}$	(2) MILES OF SITE 12,000 350 '					
G3 NUMBER OF BUILDINGS WITHIN TWO (2)	MILES OF SITE		04 DISTANC	E TO NEARES	T OFF-SITE BUILDING			

US POPULATION WITHIN VICINITY OF SITE, Provide nazzedne description of nature of population within vicinity of see, e.g., size, vilage, densety populated victor areas.

Site is located adjacent to a suburban housing development.

350 **'**

1620_

POTENTIAL HAZARDOUS WASTE SITE

I. IDENTIFICATION O1 STATE O2 SITE NUMBER

WEIT	PART 5 - WATE	STE INSPECT R, DEMOGRAPHIC		NMENTAL DA	TA N	Y 000514 380
VI. ENVIRONMENTAL INFORM	ATION					***************************************
DI PERMEABILITY OF UNSATURATED	ZONE (Check she)		,			
⊒ A. 10 ⁻⁶ – 10	crivised B. 10-4	- 10-€ cm/sec	. 10 ⁻⁴ – 10 ⁻³ cm	/sec 🖸 D. GRE	EATER THAN 1	0~3 cm/sec
02 FERMEABILITY OF BEDHOCK (CHECK	cne) .					
C A. IMPER	MEABLE D.B. RELAT	TVELY IMPERMEABLE	C. RELATIVE	Y PERMEABLE	C D. VERY F	PERMEABLE on 10 ⁻² consect
DEPTH TO BEDROOK	04 DEFTH OF CONTAMINA	TED SOIL ZONE	05 SOIL pl	1		
~ 70 (H)	unkn	OWN(#)	5.6	5-7.3		
DE NET PRECIPITATION	07 ONE YEAR 24 HOUR RA	UNFALL	8 SLOPE SITE SLOPE	DIRECTION OF	SITE SLOPE	TERRAIN AVERAGE SLOPE
$40 - 27 = 13_{(ln)}$	2.1	(in)	10 %	~ F		1.0
S FLOOD FOTENTIAL	10					
SITE IS IN 7,500 YEAR FLO	OODPLAIN	O SITE IS ON BARRIEF	I ISLAND, COASTA	L HIGH HAZARD	AREA, RIVERI	NE FLOODWAY
11 DISTANCE TO WETLANDS (5'00'0 TW-	TUM)	1	2 DISTANCE TO CAT	KAL HABITAT IN M	HOLLING HE SCHOOL	
ESTUARINE	OTHER				3.5 ·	(mi)
A(mi)	в3.5	(mi)	ENDANGERE	D SPECIES: PE	eregrine	Falcon, Golden
13 LAND USE IN VIC:NITY						
DISTANCE TO:	DECIDEN		I ICTATE DARKE		AGRICULTU	SALLANDS
COMMERCIAL/INDUST		TIAL AREAS; NATIONA RESTS, OR WILDLIFE		PRIME	AG LAND	AG LAND
		0.01				0.01
A(mi)		_(mi)	C	(mi)	D(ml)
14 DESCRIPTION OF SITE IN RELATION	TO SURROUNDING TOPOGR	APHY				
**	-					
	ite is located				. Prior	to dumping,
site w	as a swamp, wi	th drainage	to the Nort	Ln.		
	٠, ٠	•				
					_	
•						
			•			
			•			
VII. SOURCES OF INFORMATIC	N ICIs specific references e.g.,	SIME IFME, SETTIONS ANHYSIE, INC	огру			
1.) U.	S.G.S. Study					
	EC site Dossier					
· ·	nase II Investi					

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

I, IDENTIFICATION
OF STATE (OZ STE NUMPER
NY 0000514380

IL SAMPLES TAKEN	٧			
SAMPLE TYPE		01 NUMBER OF SAMPLES TAKEN	02 SIMPLES SENT TO	CS ESTIMATED CATE EXAMPLE STARTER EXAM
GROUNDIVATER		8	Compu Chem	8/84
SURFACE WATER		5	ES laboratory	presently available
WASTE			·	
AIR		'		
RUNOFF				
SPILL				
SOIL				
VEGETATION				
OTHER sedi	ment	3	Compu Chem	8/84
IIL FIELD MEASURE	EMENTS TAN	KEN		
on TYPE Downhole gam	ima	02 COMMENTS		
logging		Performed	in wells to define soil stratigraphy	
Geophysical	survey	Performed	to locate disposal trench boundaries	
Permeability	test-		in wells to evaluate rate of contaminant move	ment
• .				
-		era Straga		
IV. PHOTOGRAPHS	AND MAPS			
OI TYPE O GROUND) [AERIAL		02 IN CUSTODY OF DAMES & MOORE OFFICE (Name of organization of include)	
DYES ONO	04 LOCATION		Moore office	
V. OTHER FIELD DA	TA COLLEC	CTED (Provide namedy) desc	Prodon)	
			•	

Soil samples were collected during the drilling of the seven sampling wells. Grain size analyses of selected samples were performed in the laboratory.

VI. SOURCES OF INFORMATION (C18 specific references, e.g., sizes files, service energials, reports)

Phase II investigation

		POT	ENTIAL HAZ	ARDOUS WASTE SITE	I. IDENTIFICATION			
SEPA			SITE INSPE	ICCCCTION CCCOOR			2 SITE	0514380
II. CURRENT OWNER(S)				PARENT COMPANY (KALALAN)				
on NAME Town of Wheatfield		C2 D-	- в мимзея	C8 N≟ME	090	+BNUMBER		
2800 Church Road		1	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RED erc.		11 SIC CODE		
os ciry N. Tonawanda	OB STATE NY	1	4120	12 CITY		13 STATE	14 Z	P CCD€
O1 NUME		C2 D-	E NUME A	OS NAME			09 D	+6 NUMBER
03 STREET ADDRESS (P. O. Box, AFD P. HC.)		.:	DA SKI COCE .	10 STREET ADDRESS (P O. AGE AND P. MC				115KC CODE
os city	08 STATE	E 07 Z	P CODE	12 017		13 STATE	14 Z	IP CODE
O1 NAME		02 0	+8 NUMEER	C8 NAME			C9 D	+ & NUMBE R
03 STREET ADDRESS (P Q 501, AFD), erc.)			04 SKC CODE	10 STREET ADDRESS IP O. BOX, RED #. +IC.)	,		11 SIC CODE
05 CTY	06 STATE	E 07 Z	PCODE	12 CITY		13 STATE	142	IP CODE
O1 NAME		02 D-	RESMUN 8	08 NAME .			C9D	+ 8 NUMBER
03 STREET ADDRESS (P & BOL RFD P. arc.)	•. ;:		D4 SIC CODE	10 STREET ADDRESS (P. Q. SCL. RFD P. MC.)	,-		11 SIC CODE
OS CITY	08 STATE	07 2	P COCE	12 CTY		13 STATE	142	IP CODE
IIL PREVIOUS OWNER(S) (Lest most recent from).				IV. REALTY OWNER(S) IF ADDITIONS	and turing t⊶c ≡	ut least		
01 NAME.	• • • •	lo2 D+	BNUMBER	S SMAN 10	_		02 D	+6 NUMBER
O3 STREET ADORESS IP.O. SOL AFD P. ME.			04 SIC CODE	C3 STREET ADDRESS IP Q SQL RFD #, MC	1 .			04 SXC CODE
OS CITY	08 STATE	07 71	CODE	05 CITY		OB STATE		
O1 NAME		·	B NUMBER .	ON NAME			92 0	R38MUN 8+C
03 STREET ADDRESS (P.O. 501, AFD 4, etc.)		_	04 SIC CODE	03 STREET ADDRESS IP 0. FOL AFD 4. FE		1		04 SIC CODE
05 CITY	OB STATE	<u> </u>		os c:ry ·		OB STATE		
			- B NUMBER	O1 NAME'		RABMUN 6+0 20		
03 STREET ADDRESS (P.O. dar. AFD P. erc.)	00 5 1 7			03 STREET ADDRESS (P 0. 504. RFO #, erc.)		ica etarni	0.7.3	C4 SXC CODE
•	OBSTATE		IP COD€	05 CITY		GB STATE	0/2	JP CODE
V. SOURCES OF INFORMATION (CO. BOOK	references.	₹ 6., 13	LO FRIEL SATISTICO ANALYSISE.	recorned				
Nov. York State	Mare I	D = = =						

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

	TEICATION
OI STATE	02 SITE NUMBER
14 1	0000514380

			PAHI & - OPERA	TOR INFORMATION	-			
II. CURRENT OPERATO	OR immediatement	2 -mer)		OPERATOR'S PARENT COMPANY TEXTOR				
O1 NAME			02 D+8 NUMBER	10 NAME			110-6 NUMBER	
None.								
C3 STREET ADDRESS IP O. A	SA. FFD V. ORL)		04 SAC CODE	12 STREET ADDRESS (P.O. S	13 SIC CODE			
05 City		GE STATE	67 ZIF CODE	14 CITY	15 STATE	16 ZIP CODE		
OB YEARS OF OFERATION	MANNE OF OWNER		!					
:								
	1	-		607404000				
III. PREVIOUS OPERAT	Or(2) (Latera hera h	at promos or		FREVIOUS OPERATOR	RS' PARENT COMP	ANIES	11 D+B NUMBER	
			C2 D+8 NUMSER	TC NAME			11 D+B NUMBER	
Niagara Sani	tation Co.		1				1.0.202.2005	
OBSTREET ADDRESS IN O. A.	A. AFD P. NC.)		04 SIC CODE	12 STREET ADDRESS (P.O. &	ox, RFD I, MC.)		13 SIC CODE	
		00 07 117						
05 CTY		l	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE	
N. Tonawanda		NY						
08 YEARS OF OPERATION	09 NAME OF CWINER D	IHT DMIRUK	S PERICO					
. 1964-1968								
DI NAME			02 D+B NUMEER	10 NAME			11 D+3 NUMBER	
			,					
03 STREET ADDRESS (P O. 50	x, RFD #, HC.)		C4 SIC CODE	12 STREET ADDRESS (P.O. &	x. RFD #. etc.)		13 SIC CODE	
		;		·				
CS CITY		CO STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE	
OB YEARS OF OPERATION	CO NAME OF OWNER	L	I IS PERIO O			l		
	·		•					
01 NAME			02 D+B NUMBER	10 NAME			11 D+8 NUMBER	
03 STREET ADDRESS (2.0. &c.	x, RFD Ø, erc.)		04 SIC CODE	12 STREET ADDRESS (P.O. A	ox, AFD #. HC.J		13 SIC CODE	
	•							
05 CITY		DB STATE	07 ZP CODE	14 CITY		115 STATE	16 ZIP CODE	
			0.000	1.55,77		1		
08 YEARS OF OPERATION	09 NAME OF OWNER	NIEWS 72	SPERIOD			<u> </u>	L	
US TEXAS OF OPERATION	STAME OF OWNER	WHITE IN	SPERIO					
IV. SOURCES OF INFO	HMATION (CI so-con	10/2000.00	i.g., stale ffet, samole analys	al, records				

Niagara County Department of Health, 1981

	T STA
VA	- Table 1
~ D	Arresta & J.

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

	1. IDEN	TIFICATION
1	G1 57478	C2 SITE SUMBER
	MA	0000514380

II. ON-SITE GENERATOR					
O1 NAME		02 D+8 NUMBER			
None.					
D3 STREET ADDRESS IP O. ROZ RED P. HC.)		04 S/C CODE			
cs ary	CE STATE	07 ZIP CCDE			
III. OFF-SITE GENERATOR(S)					
O1 NAME		02 D-5 NUMBER	O1 NAME		C2 D+8 NUMBER
Hooker Chemical			Niagara Falls Air For	ce Base	
C3 STREET ADDRESS (P.D BOL AFD F, NC.)		04 SIC CODE	03 STREET ADDRESS (P.O. BOX, PFD A, enc.)		04 S/C CODE
os cmy Niagara Falls	06 STATE NY	07 ZIP CODE	oscin Niagara Falls	OB STATE NY	O7 ZIP CODE
O1 NAME		G2 D+6 NUMBER	O1 NAME		C2 D+6 NUMBER
Bell Aerospace			Camborumdum		
03 STREET ACCREES IP O. SOL AFD F. HC.)		04 SKI CODE	03 STREET ADDRESS (P.O. 504, AFD #, em.) Buffalo Ave		94 SIC CODE
cs aty	OB STATE	07 ZIP CODE	oscny Niagara Falls	CE STATE NY	07 ZIP CODE
IV. TRANSPORTER(S)			•		
OINAME Niagara Sanitation Co	o .	02 D+8 NUMBER	01 NAME		02 D+6 NUMBER
O3 STREET ADDRESS (P.Q. Sol. RFD 4, erc.)		04 SKC CODE	C3 STREET ADDRESS (P.O. Sex AFD P. sic.)		C4 SIC CODE
05 CITY	OB STATE	07 ZF CODE	o <u>s</u> any	OB STATE	07 ZP CODE
N. Tonawanda	ИУ				7
01 NAME		02 D+6 NUMBER	O1 NAME		C2 D+8 NUMBER
O3 STREET ADDRESS (P.O. BOL, RFD #, HC.)		C4 SIC CODE	03 STREET ADDRESS IP D. SOL APD F. YIC.)		04 SIC CODE
05 CITY	OB STATE	07 ZIP CODE	05 CITY	OB STATE	07 ZIP CODE

Other off-site generator: Frontier Chemical

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

L IDENTIFICATION

G1.State1 c2 STE NUMBER

NY 0000514380

		PAST RESPONSE ACTIV	·	NY 0000514380
IL PAST RESPONSE ACTIVITIES			and the grade of t	
01 D A WATER SUPPLY CLOSED		C2 DATE	03 AGENCY	
04 DESCRIPTION	No.			
01 [] B. TEMPORARY WATER SUPPLY R	ROVIDED	O2 DATE	03 AGENCY	
04 DESCRIPTION	No.			
01 [] C. PERMANENT WATER SUPPLY F	ROVICED	C2 DATE	03 AGENCY	
04 DESCRIPTION	No.	and the second		
01 () D. SPILLED MATERIAL REMOVED 04 DESCRIPTION		C2 DATE	03 AGENCY	
UN DESCRIPTION	No.			
01 C E CONTAMINATED SOIL REMOVES 04 DESCRIPTION	D	02 DATE	03 AGENCY	
•	No.	•		
01 [] F. WASTE REPACKAGED 04 DESCRIPTION		02 DATE	03 AGENCY	
	No.			
01 [] G. WASTE DISPOSED ELSEWHERE 04 DESCRIPTION		02 DATE	03 AGENCY	
5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -	No.			
01 C H. CN SITE BURIAL 04 DESCRIPTION		02 DATE	03 AGENCY	
O4 DECEMBERIQUE	No.		·	•
01 CLL IN SITU CHEMICAL TREATMENT 04 DESCRIPTION		C2 DATE		
OF DESCRIPTION	NO.			
01 (1) L IN STU BIOLOGICAL TREATMEN	<u>τ</u>	02 DATE	03 AGENCY	
	No.	•	•	
01 C K. IN SITU PHYSICAL TREATMENT 04 DESCRIPTION		C2 DATE	D3 AGENCY	
	No.			•
01 CL ENCAPSULATION 04 DESCRIPTION		02 DATE	03 AGENCY	_
·	No.			
01 ID M. EMERGENCY WASTE TREATMED 04 DESCRIPTION	NT	02 DATE	03 AGENCY	
	No.		_	
01 □ N. CUTOFF WALLS 04 DESCRIPTION	No.	02 DATE	03 AGENCY	
01 0 D. EMERGENCY DIKING/SURFACE 04 DESCRIPTION	WATER DIVERSION	02 DATE	03 AGENCY	
	No.			
01 C P. CUTOFF TRENCHES/SUMP 04 DESCRIPTION	•	02 DATE	03 AGENCY	
	No.			
01 [] Q. SUBSURFACE CUTOFF WALL. 04 DESCRIPTION		O2 DATE	03 AGENCY	
· .	No.			

SEPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 10 - DAST DESPONSE ACTIVITIES

L IDENTIFICATION

O1 STATE 02 STE MINES

NY 0000514380

Car Louis A	PART 10 - PAST RESPONSE ACTIVITIES	
II PAST RESPONSE ACTIVITIES (Correct)		
01 D. R. BARRIER WALLS CONSTRUCTED 04 DESCRIPTION	02 DATE	03 AGENCY
No.		
01 CES. CAPPINE/COVERING 04 DESCRIPTION	02 DATE	03 AGENCY
Incomplete	cover of waste (trash)	
01 G.T. BULK TANKAGE REPAIRED 04 DESCRIPTION	02 DATE	
No.		
01 () U. GROUT CURTAIN CONSTRUCTED 04 DESCRIPTION	. 02 DATE	O3 AGENCY
No.		
01 CLV. BOTTOM SEALED. 04 DESCRIPTION	02 DATE	03 AGENCY
No.		
01 E W. GAS CONTROL 04 DESCRIPTION	02 DATE	03 AGENCY
No.		
01 C X, FIRE CONTROL 04 DESCRIPTION	02 DATE	03 AGENCY
No.		
01 G Y, LEACHATE TREATMENT 04 DESCRIPTION	-02 DATE	03 AGENCY
No.		
01 U Z AREA EVACUATED 04 DESCRIPTION NO.	02 DATE	03 AGENCY
04 DESCRIPTION NO.		
	02 DATE	
04'DESCRIFTION No. Site i	s surrounded by incomplete (alt	
01 [] 2. POPULATION RELOCATED	02 DATE	03 AGENCY
04 DESCRIPTION NO.	•	
01 G 3. OTHER REMEDIAL ACTIVITIES.	02 DATE	03 AGENCY
04 DESCRIPTION None.		

IIIL SOURCES OF INFORMATION (Cité souché references, e.g., stere fina, samole analysis, recors)

Site visits during Phase II investigation



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

IL ENFORCEMENT INFORMATION

OI PAST REGULATORY/ENFORCEMENT ACTION TO YES 1040

02 DESCRIPTION OF FEDERAL STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

IIL SOURCES OF INFORMATION (CLE SONOTO PRINTINGS, E.G., SINGE FIRE, SETTING MAYOR, PROOTE)

SECTION VI

PRELIMINARY REMEDIAL ALTERNATIVES AND COST

Introduction

The purpose of this conceptual remedial alternative evaluation is to identify potential remedial action technologies and prepare a conceptual cost estimate for the most likely remedial alternative for the Nash Road site. Due to the preliminary nature of the data available, any remedial alternative evaluation must be considered very preliminary and, hence, would be conservative. A more detailed remedial investigation and feasibility study would be required to better define design criteria and costs for remedial alternatives.

Identification of Remedial Methods

The conceptual remedial alternatives considered for the Nash Road site were subjected to a three-tiered screening process. First, remedial action methods were screened to determine applicability to the site. The methods were selected to conform with the onsite actions for remediation of hazardous material releases, as presented in the National Contingency Plan. Remedial action methods were eliminated if they were considered unnecessary at the Nash Road landfill. The screening process and rationale for selection of engineering methods is summarized in Table VI.1. Based on this screening only surface water and ground water controls were retained for the second screening process.

Second Screening of Remedial Actions

In the second screening process, the engineering methods identified in the first screening process were further evaluated. The results of the second screening of remedial actions are presented in Table VI.2.

Remedial actions for surface water controls which were retained after this screening process include capping, grading, revegetation and perimeter fencing. Although no on-site surface water contamination or migration of contaminants was indicated during the Phase II investigation, these actions are considered to be applicable since they will 1) reduce the potential for future releases to surface water, 2) protect the public health by eliminating exposure to hazardous substances by direct contact and 3) minimize the risk of fires.

Actions for containment and/or pumping of ground water were eliminated during this phase of the screening process because, although some analytical results of ground water samples collected as part of the Phase II investigation indicated slight metals contamination, the migration of significantly contaminated ground water from the site was not found. Furthermore, due to the geology of the site, these remedial actions would be technically difficult and/or expensive to implement. Only continued monitoring of ground water was retained for further consideration. Collection and analysis of ground water samples from on-site wells will confirm or deny the existence of significant heavy metals contamination.

Evaluation of Remedial Alternatives

The third screening process involved a more detailed evaluation of several combinations of remedial actions that had passed the first two screening steps. Alternatives were scored in a general sense (unfavorable, fair, favorable) in each of five categories: technical feasibility, environmental impact, public health risk, and regulatory compliance. The total score for an alternative is not necessarily an indication of overall acceptability.

For example, alternatives may score high in all categories except regulatory compliance, and therefore would be eliminated. Conversely, the monitoring alternative is retained throughout, regardless of its rating, to act as the baseline (i.e., lowest) level of effort for comparison.

The basic elements of each of the five criterion are as follows:

Technical Applicability

The technical applicability of a remedial action technology refers to its ability to achieve performance standards such as:

a) protection of the groundwater aquifer, and b) minimization of emissions. In addition, the ease of implementation is important. This criterion provides an effective means of reducing a very large number of alternatives to only those that are applicable from an engineering standpoint.

Environmental Impact

The most important environmental impacts are the potentials for surface water, ground water and air emission contamination. Each alternative was screened in consideration of its ability to prevent contamination of these three media.

Public Health Risk

The key concern of the Superfund program is protection of the public health. Potential areas of risk are: contamination of ground water supplies and surface water supplies, emissions of volatile hazardous compounds to the atmosphere, spills of hazardous substances during transportation to acceptable disposal sites, exposure of the public or workers to toxic substances during cleanup operations, accidental or purposeful entry by unauthorized personnel into the sites and subsequent contact with hazardous wastes.

Regulatory Compliance/Acceptability

The involved regulatory agencies and their means of responsibility are as follows:

New York Department of Environmental Conservation (Albany)

New York Department of Environmental Conservation, Region 9 (Bufffalo)

U.S. Environmental Protection Agency, Region II (New York)

Preferred alternatives must comply with all regulatory requirements and have regulatory agency support.

The evaluation of potential remedial alternatives for surface

water controls and ground water controls is presented in Table VI.3. Capping, grading, revegetation and limiting site access by erection of a fence around the perimeter of the site is judged to be an appropriate remedial alternative for controlling migration of contaminants off-site, preventing human contact with hazardous substances and reducing the possibility of fires or explosions.

Collection and analysis of additional ground water samples is considered to be an appropriate remedial alternative, to determine whether or not significant contamination of ground water exists on the site. Although this remedial alternative scored only fair for environmental impact and regulatory compliance, since slight lead contamination (concentration in excess of state standards) was detected in one of two ground water samples; the public health risk is low since the ground water is not used for drinking water. This alternative is judged to be the appropriate level of response, based on existing data.

Conceptual Cost Estimate

A conceptual cost estimate was prepared for the alternatives which were developed for surface water controls and ground water controls. The following are assumptions which were made to generate a preliminary cost estimate for capping the landfill. The area of the landfill is estimated to be approximately 25 acres in size. The former disposal trench would have to be dewatered and filled prior to capping. Vegetation would need to be cleared and the site would have to be graded and recontoured prior to capping. The cap would consist of a one-foot layer of

compacted clay. The drainage ditch north of the site would require reconstruction after capping of the site. Revegetation would consist of a layer of topsoil, covered with grass seed and mulch. The perimeter fence will surround the 25-acre site and be six feet high. Using the above assumptions, published cost information, a contingency of 30% and engineering of 20%, the preliminary capital cost for this alternative is 2 million dollars. (Table VI.4).

The cost of the ground water monitoring alternative considers the collection of two rounds of samples from the monitoring wells and from the Osterman well. These samples would be filtered in the field to reduce variability in the analytical results. The estimated cost for collection and analysis for heavy metals of two rounds of samples is \$11,100.

TABLE VI.1
IDENTIFICATION OF REMEDIAL ACTION METHODS (FIRST SCREENING)

	COMMENTS	No air contamination detected.	No surface water detected, however, site capping would eliminate ponding and reduce leachate generation. Also reduces public health risk for exposure by direct contact and fire and explosion hazard.	Ground water contamination not confirmed. Additional sampling and analysis of monitoring wells is required.	No susceptible municipal sewer or water lines.	No treatment of air, water, wastes, sediment or soil required. Highest concentrations of metals detected in ground water samples are low enough for discharge to public sewer systems.
REMEDIAL ACTION METHODS (FIRST SCREENING)	NOT APPLICABLE	×			×	×
IDENTIFICATION OF REME	APPLICABLE		×	×		
	METHOD	Air Emissions Controls	Surface Water Controls	Ground Water Controls	Comtaminated Water and Sewer Lines	Treatment

TABLE VI.2
PRELIMINARY SCREENING OF REMEDIAL ACTIONS (SECOND SCREENING)

ALTERNATIVE	APPLICABLE	NOT APPLICABLE	COMMENTS
Surface Water Controls			
Containment (capping)	×		Conventional, demonstrated relatively low cost technology for reducing leachate generation and minimizing public health risk by direct contact.
Grading	×		Site should be graded to promote surface runoff to drainage ditch north of landfill. Drainage ditch should be regraded and maintained to convey runoff away from site.
Revegetation	×		Revegetation stabilizes the surface of the site, and controls erosion of the cap.
Perimeter Fencing	×		Limits access to site to minimize public health risk and damage to the cap.
Ground Water Controls			
Monitoring	×		Ground water contamination not confirmed, additional sampling and analysis of samples for metals is required.
Impermeable Barriers -Slurry Walls -Grout Curtains -Sheet Piling		×××	Depth to bedrock reduces technical feasibility and increases cost. Fractures in dolomite bedrock may be flow path.
Permeable Treatment Bed		×	No practical means available to divert ground water to treat- ment bed. Synthetic ion exchange resins for metals removal may plug. Maintenance costly and difficult. Capital cost extremely high.
Ground Water Pumping		×	Ground water pumping is not feasible due to low permeability of soils above bedrock. Bedrock may yield water from fractures, but may not contain contaminant plume.
Leachate Control -Subsurface Drains -Drainage Ditches -Liners		×××	Not practical as extensive soil excavation would be required for leachate control systems.

TABLE VI.3 ELEVATION OF POTENTIAL REMEDIAL ALTERNATIVES (THIRD SCREENING)

RY ENGINEERING JUDGEMENT CE COMMENTS RETAIN OPTION	Provides effective means for control of migration of contaminants off-site and reduces public health risk and fire and explosion hazard.	Additional sampling and analysis for heavy metals would confirm or deny the existence of contamination. Present analytical results are inconclusive, however no significant contamination was found.
REGULATORY ACCEPTANCE	м	4
PUBLIC HEALTH RISK	м	m
ENVIRONMENTAL IMPACT	м	
TECHNOLOGY	М	m
ALTERNATIVE	Surface Water Controls Capping, Grading, Revegetation and Perimeter Fencing	Ground Water Controls Monitoring

l = Unfavorable (i.e., high cost, severe environmental impacts, high health risks, poor regulatory compliance, unproven or difficult technology) regend:

2 = Fair

3 = Favorable

Table VI.4 Summary of Conceptual Remedial Cost Estimate Nash Road Landfill

Item No.	Description	Ap	proximate Cost (1)
I.	Site dewatering and preliminary site work prior to grading, capping, revegetation and perimeter fencing	\$	290,000
II.	Site grading and drainage	\$	327,000
III.	Surface sealing and capping (1' thick clay cap)	\$	592,000
IV.	Revegetation Topsoil (1'), seed and mulch	\$	67,000
v.	Perimeter fence (4600') with two gates (6' high)	\$ _	47,000
Subtotal			,323,000
Contigency (30%) Engineering (20%)			397,000 265,000
Total Capital Cost			,985,000

⁽¹⁾ Costs are in 1984 \$

⁽²⁾ These costs are considered preliminary conceptual costs.

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