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February 3, 1995

Ms. Janice Thomas
United States Environmental Protection Agency
Region IV
345 Courtland Street NE
Atlanta, Georgia 30365

Re: SSC Industries, East Point, Georgia

Dear Ms. Thomas:

As representatives of Chemtech Industries please provide us with a copy of the appendices to the following report:

Site Inspection: SSC Industries, Division of Chemtech
EPA ID No. GAD003284049
WasteLAN No. 05153

Prepared under Contract No. 68-W9-0055
by Jammal & Associates, Inc.
July 24, 1992

Thank you for your cooperation in this matter.

Sincerely,

Douglas S. Arnold

DSA:bmm
[AE950340.015]

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July 28, 1992
NFRAP
Janice Thomas

FINAL REPORT 9-14-93

SITE INSPECTION
SSC INDUSTRIES, DIVISION OF CHEMTECH
EAST POINT, FULTON COUNTY, GEORGIA

EPA ID NO. GAD003284049
WasteLAN No. 05153

PREPARED UNDER
CONTRACT NO. 68-W9-0055

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

PREPARED BY:
STEPHANY FINE

JAMMAL & ASSOCIATES, INC
a division of
PROFESSIONAL SERVICE INDUSTRIES, INC.

JULY 24, 1992

Stephany Fine	David B. Twedell	Hubert Wieland
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psi

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FINAL 4-14-93

Site Inspection Report
SSC Industries, Division of Chemtech
East Point, Fulton, County, Georgia
EPA ID No. GAD003284049
WasteLAN No. 05153

1.0 INTRODUCTION

Under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Jammal & Associates, Inc. (a division of Professional Service Industries, Inc.) in accordance with subcontract Task Order No. 16 with B&V Waste Science and Technology has been tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division, Region IV to conduct a site inspection (SI) at the SSC Industries, Division of Chemtech site in East Point, Fulton County, Georgia. The purpose of this investigation is to collect information concerning conditions at the site sufficient to assess the threat posed to human health and the environment and to determine the need for additional investigation under CERCLA/SARA or other authority. The scope of the investigation included reviewing previous file information, reviewing data generated from the sampling of environmental media to test preliminary assessment (PA) hypotheses and document HRS factor values and scores, collecting additional non-sampling information, and interviewing nearby residents.

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2.0 SITE DESCRIPTION

2.1 Location

SSC Industries, Division of Chemtech is located at 1550 East Taylor Avenue in a mixed industrial/residential area of East Point, Fulton County, Georgia. The geographic coordinates are 33°40'22" North Latitude and 84°26'26" West Longitude (Appendix A). The site location is shown in Figure 1.

Fulton County is characterized by a humid and continental climate. Prevailing wind in the area blows from the northwest to the southeast. The average winter temperature is 45.5°F and the average summer temperature is 78.6°F. The majority of the rainfall occurs in the winter and midsummer (Ref. 1, p. 2). The average annual precipitation is 48 inches, and the average annual lake evaporation is 41 inches. Therefore, the net annual precipitation is seven inches (Ref. 2, pp. 43,63). The two-year, 24-hour rainfall is 3.8 inches (Ref. 3, p. 93).

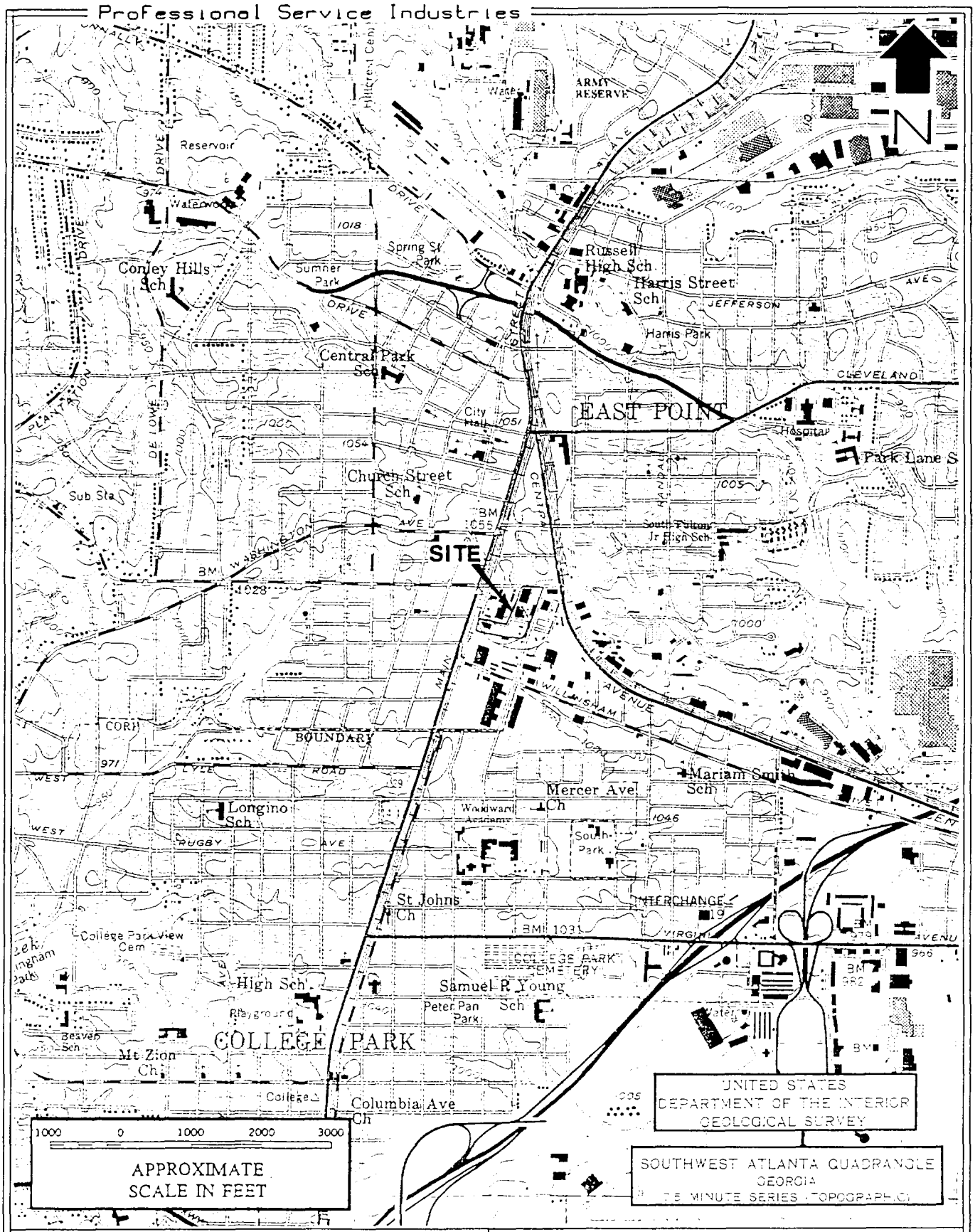
2.2 Site Description

The site is located on approximately 12 acres. The facility consists of five buildings, five tank areas, three loading docks, several parking lots, and an open field. A spur track, owned by SSC, runs through the facility. The property is on terrain that slopes to the east (Ref. 4).

The site is bordered by Battery Way to the west, Taylor Street to the north, Plant Street to the east and open fields to the south (Ref. 4).

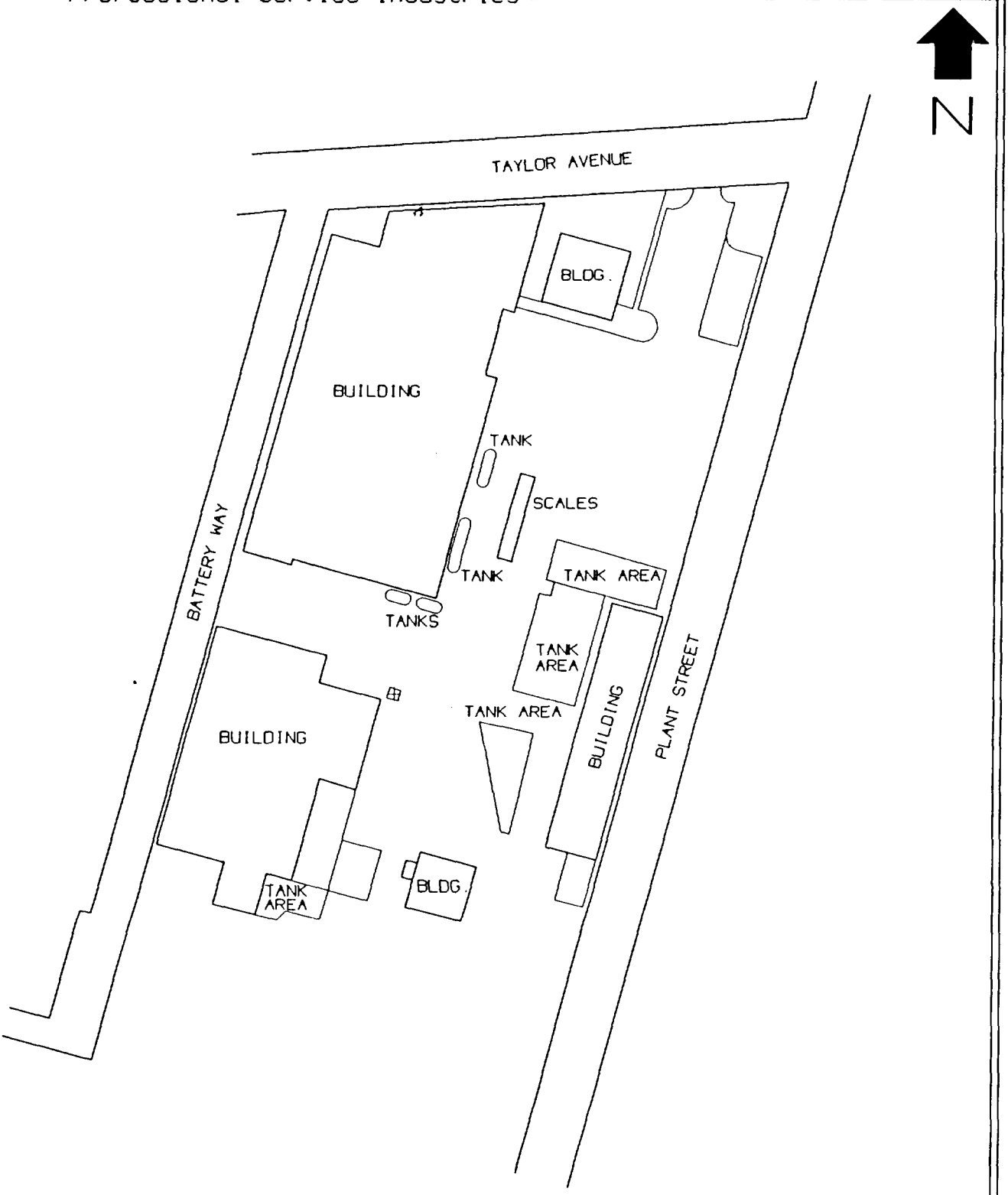
Most facility operations take place in the northern end of the property; the southern end is largely unused. The perimeter of the facility is fenced with several gates barring entrance to the general public. Several visible signs warning of various dangers associated with facility operations are placed in strategic locations on the property (Ref. 5, pp. 4, 6). The site layout is shown in Figure 2.

Professional Service Industries



PROJECT NAME	FIGURE 1	
SSC INDUSTRIES EAST POINT, FULTON COUNTY, GEORGIA	SITE LOCATION MAP	
	PROJECT NO. 513-24072	DATE 5-20-92

Professional Service Industries



0 30'
APPX. SCALE: FEET

PROJECT NAME	FIGURE 2	
SSC INDUSTRIES EAST POINT, FULTON COUNTY, GEORGIA	SITE MAP	
	PROJECT NO. 513-24072	DATE 6-10-92

2.3 Operational History and Waste Characteristics

SSC Industries, Div. of Chemtech has been owned by Chemtech since December 3, 1984. From 1978 to 1984, it was owned by SSC Industries, Inc. From 1968 to 1978, it was owned by Southern Sizing Company (precursor to SSC). From 1939 to 1968, it was owned by Gould National Batteries (Ref. 6). SSC Industries manufactures textile and paper processing chemicals and foam control agents through blending and cooking processes in several reactors located on-site (Ref. 7). The company filed as a hazardous waste generator in 1980 and is currently classified as a small quantity generator (Refs. 8, 9).

Liquid wastes generated at the facility consist of long chain hydrocarbons, fatty acids, fatty esters, polyethylene, and surfactants in water, which are generated by reactor washdowns (Ref. 7). Other chemicals used at the facility include pentachlorophenol, tetrachloroethene, methyl isobutyl ketone, and maleic anhydride (Ref. 8). In 1979, a facility inspection was conducted by the Georgia Environmental Protection Division (GEPD). The inspection was based on a hazardous waste concern from the site liquid waste transporter, O.E. Rylander, when Rolling Hills Sanitary Landfill refused to accept SSC Wastes allegedly containing oils, fats, and greases on November 30, 1979. Because SSC Industries was considering alternate forms of waste disposal, the EPD decided to review these methods including water removal, sewer discharge, incineration, and monitor the disposal practices of the company (Ref. 7).

On October 20, 1983, SSC was notified by the GEPD of the improper disposal of 300 55-gallon drums of homogenated animal fat in Meriwether County, Georgia (Ref. 10).

In February 1986, Jack Westbury, SSC Vice President of Operations, acknowledged to the GEPD a spill event where a white substance (surfactant mixed with water) was observed flowing into a stormwater drainage system (Ref. 11).

In 1988, the city of Atlanta requested a removal of surface soils contaminated with grease and oil from the SSC facility. SSC excavated these soils and had them analyzed prior to disposal. During analysis, it was determined that the soil was heavily contaminated with lead. Work on the removal of the lead contaminated soil began on April 12, 1989 by Applied Engineering Science (AES) a SSC contracted environmental engineering firm. The contaminated soil was taken to the GSX landfill in South Carolina. A total of 66 tons (37 drums) of lead contaminated soil was removed from the SSC property (Ref. 12).

A total of three soil sampling investigations were conducted by AES to fully investigate both the vertical and horizontal extent of lead contamination on the SSC property. SSC initiated this study to present evidence that their facility operations could not have caused the lead contamination and that it was a result of battery manufacturing processes conducted by the previous property owner, Gould National Batteries (Ref. 13).

Gould National Batteries then contracted the services of NTH Consultants to conduct a more inclusive study that involved soil and groundwater testing of inorganic (including lead) compounds present on their former property. The study took place in August and October, 1990 (Ref. 14).

Following the Gould National Battery investigation, SSC contracted O'Brien and Gere to investigate groundwater and soil contamination of organic and inorganic compounds by way of a groundwater monitoring well and soil study. Leachate and drums were also sampled. The study took place in January, 1991 (Ref. 15). Organics such as carbon tetrachloride and tetrachloroethene were detected in the groundwater. Nickel was also detected. In soil samples, inorganics such as arsenic, barium, and lead were detected (Ref. 15).

3.0 WASTE/SOURCE SAMPLING

3.1 Sampling Locations

Table 1 summarizes the locations and rationale for samples collected during the NTH investigation, and Figure 3 shows the sample locations. However, no specific waste/source samples were collected.

3.2 Analytical Results

No formal waste/source sampling program was conducted. Sampling of contaminated soil, which is considered to be a source, will be discussed in the section on the soil exposure and air pathways.

3.3 Conclusions

SSC Industries manufactures paper and textile processing chemicals. Wastes include hydrocarbons, fatty acids, and esters. The former property owner was Gould National Batteries. Sampling investigations have revealed the presence of lead in on-site soils.

TABLE 1
SAMPLE LOCATIONS AND RATIONALE
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

Sample Number	Sample Type	Location and Rationale	Date
NTH-MW-1	Groundwater	Sample collected from monitoring well south of facility to determine background condition	8/21/90
NTH-MW-2	Groundwater	Sample collected from monitoring well east of a tank area near Plant St. to determine presence or absence of contamination	8/21/90
NTH-MW-3	Groundwater	Sample collected from monitoring well northeast of facility to determine presence or absence of contamination	8/21/90
NTH-MW-4	Groundwater	Sample collected from monitoring well southwest of facility to determine presence or absence of contamination	8/21/90
NTH-MW-5	Groundwater	Sample collected from monitoring well near metal building #3 and tank area to determine presence or absence of contamination	8/21/90
NTH-MW-6	Groundwater	Sample collected from monitoring well northwest of facility to determine presence or absence of contamination	8/21/90
NTH-SS-1	Surface Soil	Sample collected east of metal building #3 and south of MW-5 to determine presence or absence of contamination	8/13/90
NTH-SS-2	Surface Soil	sample collected east of metal building #3 and south of SS-1 to determine presence or absence of contamination	8/13/90
NTH-SS-3	Surface Soil	Sample collected east of metal building #3 and north of loading dock to determine presence or absence of contamination	8/13/90

MW - Monitoring Well SS - Surface Soil NTH - NTH Consultants, LTD.

TABLE 1 (cont.)
SAMPLE LOCATIONS AND RATIONALE
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

Sample Number	Sample Type	Location and Rationale	Date
NTH-SS-4	Surface Soil	Sample collected northeast of loading dock to determine presence or absence of contamination	8/13/90
NTH-SS-5	Surface Soil	Sample collected northwest of metal building #7 to determine presence or absence of contamination	8/13/90
NTH-SS-6	Surface Soil	Sample collected north of metal building #7 and east of SS-5 to determine presence or absence of contamination	8/13/90
NTH-SS-7	Surface Soil	Sample collected north of metal building #7 and east of SS-6 to determine presence or absence of contamination	8/13/90
NTH-SS-8	Surface Soil	Sample collected east of metal building #7 to determine presence or absence of contamination	8/13/90
NTH-SS-9	Surface Soil	Sample collected west of metal building #7 to determine presence or absence of contamination	8/13/90
NTH-SS-10	Surface Soil	Sample collected east of loading dock and west of SS-9 to determine presence or absence of contamination	8/13/90
NTH-SS-11	Surface Soil	Sample collected southwest of loading dock to determine presence or absence of contamination	8/13/90
NTH-SS-12	Surface Soil	Sample collected southeast of metal building #3 and south of SS-11 to determine presence or absence of contamination	8/13/90

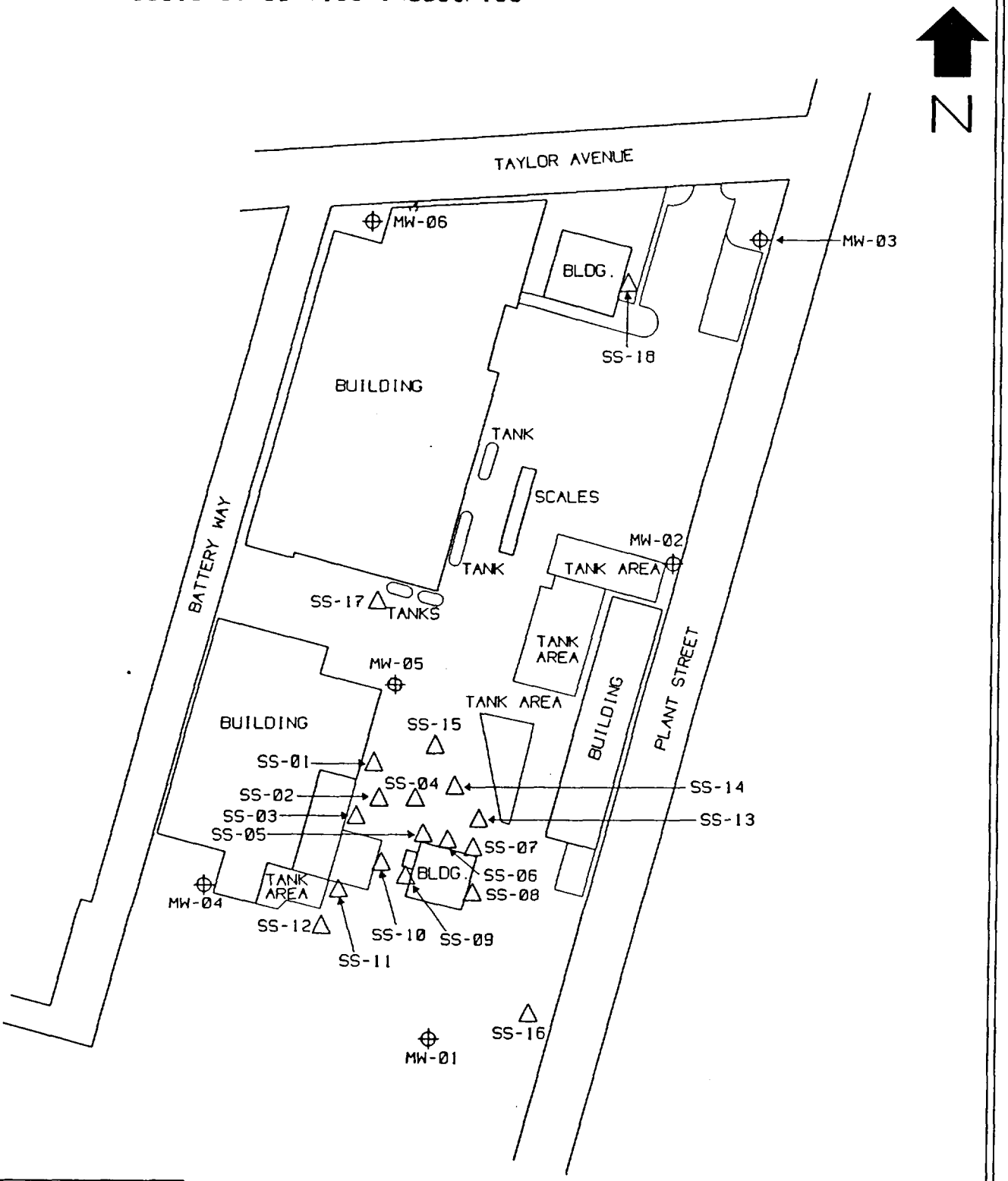
MW - Monitoring Well SS - Surface Soil NTH - NTH Consultants, LTD.

TABLE 1 (cont.)
SAMPLE LOCATIONS AND RATIONALE
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

Sample Number	Sample Type	Location and Rationale	Date
NTH-SS-13	Surface Soil	Sample collected north of metal building #7 and southwest of tank area to determine presence or absence of contamination	8/13/90
NTH-SS-14	Surface Soil	Sample collected north of metal building #7 and west of tank area to determine presence or absence of contamination	8/13/90
NTH-SS-15	Surface Soil	Sample collected west of tank area and northwest of SS-14 to determine presence or absence of contamination	8/13/90
NTH-SS-16	Surface Soil	Sample collected southeast of facility to determine background conditions	8/13/90
NTH-SS-17	Surface Soil	Sample collected southwest of tanks near brick building #2 to determine presence or absence of contamination	8/13/90
NTH-SS-18	Surface Soil	Sample collected east of brick building #1 to determine presence or absence of contamination	8/13/90

MW - Monitoring Well SS - Surface Soil NTH - NTH Consultants, LTD.

Professional Service Industries



LEGEND:

⊕ TEMPORARY WELL

△ SURFACE SOIL

0 30'

APPX. SCALE: FEET

PROJECT NAME	FIGURE 3	
SSC INDUSTRIES EAST POINT, FULTON COUNTY, GEORGIA	SAMPLE LOCATION MAP	
	PROJECT NO. 513-24072	DATE 6-10-92

4.0 GROUNDWATER PATHWAY

4.1 Hydrogeologic Setting

SSC Industries is located in the Piedmont physiographic province and groundwater region of Georgia. This region is characterized by thick regolith over folded and faulted Precambrian and Paleozoic igneous and metamorphic rocks (Ref. 16, plate 28; 17, pp. 251, 252). The bedrock in the southern Piedmont province is generally composed of granite, gabbro, schist, and gneiss (Ref. 18, P. 87). The topography of the area is characterized by rolling hills cut by streams with dendritic drainage patterns to the southeast and rectangular/trellis patterns to the northwest. Elevations within four miles of the facility range from 800 to 1,055 feet above mean seal level (amsl). The elevation of the facility is 1,010 feet amsl (Appendix A). The soil at the facility is unclassified due to the urban area (Ref. 1, p. 41, sheet 31).

The facility is underlain by saprolite which consists of clay-rich, unconsidated material derived from the weathering of the underlying bedrock. It has an average thickness of 32 to 64 feet in the Piedmont region. In areas where the saprolite is found with alluvium from stream valleys or flood plains, the unconsolidated material is called regolith (Ref. 17, p. 252). The bedrock underlying the facility consists of the Tar Creek Member of the Clarkston Formation which is of Precambrian to Paleozoic age. It is composed of sillimanite-garnet-quartz-plagioclase-biotite-muscovite schist interlayered with hornblende, plagioclase amphibolite (Ref. 18, p. 87, plates 1, 1b).

The source of groundwater in the area is the unconfined regolith and crystalline rock aquifer system. Water is found in the pore spaces of weathered rock and soil and in the joints and fractures of the bedrock. The regolith functions as a groundwater resevoir which stores the water, and the fractures in the bedrock function as conduits to transmit the water from recharge areas to discharge areas. Recharge to the aquifer system is through infiltration of rainwater (Ref. 17, p. 252, 253). Based on the interpretation of topographic maps, the depth to the water table beneath the facility is approximately 25 feet below land surface (bls), and the direction of

groundwater flow is to the east (Appendix A). Several factors influence the yield of wells in the soil and crystalline rock aquifer system: rock type, topography, well depth, and fractures in the bedrock. The schist and amphibolite has a moderate yield compared to other rock types (Ref. 19, pp. 8, 9). It has hydraulic conductivity values in the 1.0×10^{-3} to 1.0×10^{-5} cm/sec range (Ref. 20, p. 29). Wells located in draws and valleys have higher yields than wells located on hills or ridges (Ref. 19, p. 43). Deep wells that cross several zones of fractures also have large yields (Ref. 19, p. 16).

Wells near the facility range in depth from 308 to 825 feet bls, with an average depth of 521.7 feet bls. Yields of these wells range from 40 gallons per minute (gpm) to 100 gpm, with an average yield of 67.5 gpm (Ref. 19, pp. 117, 118, 119).

4.2 Targets

There are no private wells within four miles of the facility. The municipal water systems currently use surface water (Refs. 21,24, Appendix A).

4.3 Sample Locations

Six groundwater samples were collected from on-site monitoring wells. One sample, MW-1, was collected from a well located in the field south of the main facility area to determine background conditions. The others were collected from several areas on-site, including the perimeter of the property. These samples were collected to determine the presence or absence of contamination. Sample descriptions and rationale are shown in Table 1, and sample locations are shown in Figure 3.

4.4 Analytical Results

The samples were analyzed for eight different metals (Appendix B). Several were detected at levels three times the background concentration or above the minimum quantitation limit (MQL). Barium was detected in MW-4 at 3.07 ug/l (16 times background) and MW-6 at 1.04 ug/l (6 times background). Lead was detected above the MQL in MW-4 at 1.93 ug/l and MW-5 at 0.70

TABLE 2
ANALYTICAL RESULTS IN GROUNDWATER SAMPLES
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

Parameters ug/l	Background	On-site				
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
Barium	0.19	0.53	0.37	3.07*	0.34	1.04*
Cadmium	0.17	--	--	--	0.07	--
Chromium	0.17	0.13	--	--	--	0.11
Lead	0.29U	--	--	1.93*	0.70*	--
Silver	0.11U	--	--	--	--	0.83*

-- Material analyzed for but not detected
U Material analyzed for but not detected. The number is the Minimum Quantitation Limit (MQL).
* Denotes three times background value or above MQL.

ug/l. Silver was detected above the MQL in MW-6 at 0.83 ug/l. Sample results are shown in Table 2.

4.5 Conclusions

Although sampling of on-site monitoring wells revealed the presence of barium, lead, and silver, the groundwater pathway is not of concern due to a lack of receptors. There are no private wells located within four miles of the facility. Municipal water systems in the area use surface water.

5.0 SURFACE WATER PATHWAY

5.1 Hydrologic Setting

Surface water from the facility flows into storm drains. Water in the drains flow east approximately one mile to the headwaters of the South River. The South River flows east 14 miles and continues past the end of the 15-mile surface water pathway (Ref. 22, Appendix A). There is no information available about flow rates. However, The South River is estimated to have a flow rate of 10 cfs near the headwaters. The site is not located in a flood plain. (Appendix A).

5.2 Targets

There are no surface water intakes located on the South River (Ref. 23). All of the residences within four miles of the facility are supplied by surface water intakes which are not located on the 15-mile surface water pathway. The city of Atlanta has an intake on the Chattahoochee River at river mile 299.6. The city of East Point has an intake on Sweetwater Creek approximately 10 miles northwest of the facility. It also supplies water to the cities of College Park and Hapeville. (Refs. 21, 24; Appendix A). The South River is used for recreational fishing and rafting (Ref. 23). No endangered or threatened species are found on the South River (Ref. 25). There are several small areas of wetlands located along the South River: 500 feet of wetlands at 6.5 miles, 200 feet of wetlands at 9.5 miles, and 800 feet of wetlands at 12 miles (Appendix A).

5.3 Sample Locations and Analytical Results

No surface water or sediment samples were collected for this facility. This was due to the storm drains at the facility. However, in 1986, surfactant from the facility mixed with water was observed flowing into the storm drain (Ref. 11).

5.4 Conclusions

The surface water pathway is of concern because of recreational fishing on the South River, which is part of the surface water pathway. Also, there is evidence of a release to on-site storm drains which channel water to the river. However, there are no intakes located along the surface water pathway.

6.0 SOIL EXPOSURE AND AIR PATHWAYS

6.1 Physical Conditions

The facility is fenced to limit access, but the gates are sometimes left open (Ref. 5, p. 2). Part of the property consists of an open field. The on-site vegetation does not appear to be stressed (Ref. 5, pp. 4, 6).

6.2 Soil and Air Targets

There are 131,125 people living within four miles of the facility. The distribution is 328 between zero and one-quarter mile; 3,235 between one-quarter and one-half mile; 3,135 between one-half and one mile; 25,066 between one and two miles; 45,252 between two and three miles; and 49,109 between three and four miles (Ref. 26). The nearest residence is located approximately 200 feet north of the facility. The nearest school is the Miriam Smith School, which is located 0.6 miles to the southeast (Appendix A). The facility is located in a densely populated, urban area. The land surrounding the facility is a mixture of commercial, industrial, and residential property (Appendix A). The facility is active, but there is no information about the number of workers currently employed (Ref. 27).

The ranges of several endangered and threatened species include the entire State of Georgia. However, none are specifically located in Fulton County (Ref. 24).

6.3 Soil Sample Locations

Eighteen surface soil samples were collected on-site. One sample, SS-16, was collected from the edge of the field south of the main facility area to determine background conditions. The others were collected from several areas on-site, mainly near the tank areas, loading docks, and metal building No. 7. These samples were collected to determine the presence or absence of contamination on-site. Sample descriptions and rationale are shown in Table 1, and sample locations are shown in Figure 3.

TABLE 3
ANALYTICAL RESULTS OF SURFACE SOIL SAMPLES
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

Parameters mg/kg	On-site					
	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6
Arsenic	--	--	--	--	--	--
Barium	38.9	44.3	27.9	38.6	2.3	29.3
Cadmium	1.5*	0.8*	0.9*	1.7*	0.7*	1.2*
Chromium	5.9	1.2	2.7	4.9	5.3	10.4
Lead	666.0	82.0	60.0	2,930.0*	567.0	611.0
Silver	--	--	--	--	--	--
Mercury	0.11*	--	--	0.12*	--	--

-- Material analyzed for but not detected.
* Denotes three times control value or above MQL.

TABLE 3 (cont.)
ANALYTICAL RESULTS OF SURFACE SOIL SAMPLES
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

Parameters mg/kg	On-site			Background	On-site	
	SS-13	SS-14	SS-15	SS-16	SS-17	SS-18
Arsenic	0.8	1.5	2.3	1.7	--	1.1
Barium	45.4	54.4	54.2	50.4	79.6	77.3
Cadmium	--	--	0.6*	0.2	--	--
Chromium	5.9	6.8	35.0*	8.2	9.2	15.9
Lead	321.0	737.0	1,220.0	425.0	328.0	648.0
Silver	--	--	--	0.4U	--	--
Mercury	--	--	--	0.1U	--	--

-- Material analyzed for but not detected.
U Material analyzed for but not detected. The number is the MQL.
* Denotes three times background value or above MQL.

TABLE 3 (cont.)
ANALYTICAL RESULTS OF SURFACE SOIL SAMPLES
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

Parameters mg/kg	On-site					
	SS-7	SS-8	SS-9	SS-10	SS-11	SS-12
Arsenic	--	--	--	91.2*	454.0*	--
Barium	47.8	13.8	37.5	812.0*	457.0*	176.0*
Cadmium	2.3*	1.2*	2.4*	71.1*	30.6*	9.6*
Chromium	8.7	5.2	3.3	53.1*	32.6*	25.8*
Lead	1,680.0*	208.0	4,360.0*	148.0	82,500.0*	14,000.0*
Silver	1.6*	3.1*	1.5*	1.8*	1.2*	1.5*
Mercury	0.31*	--	--	0.28*	0.28*	0.11*

-- Material analyzed for but not detected.
* Denotes three times background value or above MQL.

6.4 Soil Analytical Results

The samples were analyzed for eight different metals (Appendix B.) Arsenic was detected at three times the background level or above the MQL in SS-10 at 91.2 mg/kg (54 times background) and SS-11 at 454.0 mg/kg (255 times background). Several other metals were also detected at significant levels. Barium was detected in SS-10 at 812.0 mg/kg (16 times background) and SS-11 at 475.0 mg/kg (8 times background). Cadmium was detected in SS-1 at 1.5 mg/kg (8 times background), SS-2 at 0.8 mg/kg (4 times background), SS-3 at 0.9 mg/kg (5 times background), SS-4 at 1.7 mg/kg (9 times background), SS-5 at 0.7 mg/kg (4 times background), SS-6 at 1.2 mg/kg (6 times background), SS-7 at 2.3 mg/kg (12 times background), SS-8 at 1.2 mg/kg (6 times background), SS-9 at 2.4 mg/kg (12 times background), SS-10 at 71.1 mg/kg (356 times background), SS-11 at 30.6 mg/kg (153 times background), SS-12 at 9.6 mg/kg (48 times background) and SS-15 at 0.6 mg/kg (3 times background). Chromium was detected in SS-10 at 53.1 mg/kg (7 times background), SS-11 at 32.6 mg/kg (4 times background), SS-12 at 25.8 mg/kg (3 times background), and SS-15 at 35.0 mg/kg (4 times background). Lead was detected in SS-4 at 3,930 mg/kg (7 times background), SS-7 at 1,680.0 mg/kg (4 times background), SS-9 at 4,360.0 mg/kg (10 times background), SS-11 at 82,500 mg/kg (194 times background), and SS-12 at 14,000.00 mg/kg (33 times background). Silver was detected above the MQL in SS-7 at 1.6 mg/kg, SS-8 at 3.1 mg/kg, SS-9 at 1.5 mg/kg, SS-10 at 1.8 mg/kg, SS-11 at 1.2 mg/kg, and SS-12 at 1.5 mg/kg. Mercury was detected above the MQL in SS-1 at 0.11 mg/kg, SS-4 at 0.12 mg/kg, SS-7 at 0.31 mg/kg, SS-10 at 0.28 mg/kg, SS-11 at 0.28 mg/kg, and SS-12 at 0.11 mg/kg. Sample results are shown in Table 3.

6.5 Air Analytical Results

No formal air monitoring program was conducted. Portable air quality monitors (OVA and HNu) were carried on-site during the inspection. No measurements above background were detected.

6.6 Conclusions

The soil pathway is of concern because on-site soils contain high concentrations of lead, and the facility is active. The nearest residence is located 200 feet north of the facility, but the property is fenced to restrict access.

The air pathway is of concern because there are approximately 6,698 people living within one mile of the facility and contaminated surface soils could become airborne.

7.0 SUMMARY AND CONCLUSIONS

The SSC Industries SI attempted to gather the data necessary to evaluate the site as a candidate for the NPL. To accomplish this task, data from previous sampling investigations was analyzed to characterize the types of substances deposited at the site and potential migration pathways. In addition, information was collected to confirm target populations and environments potentially at risk from the site.

SSC Industries has been in operation since 1968 as a manufacturer of chemicals for textile and paper processing. From 1939 to 1968, the property was owned by Gould National Batteries. Sampling results show high concentrations of lead in on-site soils.

The air pathway is the primary concern because 6,698 people live within one mile of the facility, although there is no documentation of a release to this pathway. The soil and surface water pathways are of lesser concern. The nearest residence is 200 feet north of the facility, but the property is fenced to restrict access. The surface water pathway is used for recreational fishing, but there are no intakes. The groundwater pathway is of no concern because of a lack of receptors. Based on this evaluation, no further action is recommended for SSC Industries.

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APPENDIX B

SAMPLING DATA

Client: NTH Consultants, LTD

LSDG: 0285

Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990

Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028501	S-001	<6.1	25.0	1.1	6.3	305.0	<5.5	<1.1	<0.11
028502	S-002	<6.3	75.1	4.2	51.8	249.0	<5.7	<1.2	0.12
028503	S-003	<6.1	42.7	1.6	9.3	132.0	<5.6	<1.1	<0.11
028504	S-015	<5.8	59.1	2.9	15.4	646.0	<5.3	<1.0	<0.10
028505	S-017	<6.7	13.4	4.6	38.8	59.1	<6.1	<1.2	<0.09
028506	S-019	<6.5	8.2	4.0	18.3	41.6	<5.9	<1.2	<0.11
028507	S-030	<6.1	92.0	1.7	10.3	5290.0	<5.5	<1.1	0.31
028508	S-032	<6.5	53.3	2.1	8.5	57.5	<5.9	<1.2	1.11
028509	S-034	<6.8	71.7	2.9	11.8	45.1	<6.1	<1.2	<0.09
028510	S-045	<6.0	85.0	1.3	12.5	159.0	<5.4	<1.1	<0.11
028511	S-046	<5.4	38.9	1.5	5.9	666.0	<4.9	<0.9	0.11
028512	S-047	<5.8	44.3	0.8	1.2	81.6	<5.3	<1.0	<0.08
028513	S-048	<6.1	27.9	0.9	2.7	60.1	<5.6	<1.1	<0.08
028514	S-049	<6.1	38.6	1.7	4.9	2930.0	<5.5	<1.1	0.12
028515	S-050	<5.8	2.3	0.7	5.3	567.0	<5.3	<1.1	<0.04
028516	S-051	<5.6	29.3	1.2	10.4	611.0	<5.1	<1.0	<0.06

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ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028517	* S-052	<6.4	47.8	2.3	8.7	1680.0	<5.8	1.6	0.31
028518	S-053	<5.7	13.8	1.2	5.2	208.0	<5.2	3.1	<0.10
028519	* S-054	<5.6	37.5	2.4	3.3	4360.0	<5.0	1.5	<0.07
028520	S-055	91.2	812.0	71.1	53.1	148.0	<6.2	1.8	0.28
028521	* S-056	454.0	457.0	30.6	32.6	82500.0	<5.7	1.2	0.28
028522	* S-057	<6.3	176.0	9.6	25.8	14000.0	<5.7	1.5	0.11
028523	* S-067 *	<5.9	140.0	3.0	17.8	958.0	<5.4	<1.0	0.53
028524	* S-070	<6.1	177.0	3.2	21.3	6170.0	<5.5	2.6	0.73
028525	S-072	<6.6	3.7	1.1	10.2	5.8	<5.9	<1.2	<0.10
028526	* S-074	<6.7	4.2	<0.6	20.4	1470.0	<6.1	<1.2	<0.09
028527	* S-075	<5.8	36.7	2.8	26.4	11000.0	<5.2	<1.0	0.25
028528	S-076	<5.9	2.3	<0.5	2.1	10.1	<5.3	1.6	<0.09
028529	* S-077	<6.3	43.6	2.6	16.6	1570.0	<5.7	<1.1	<0.10
028530	* S-079	<5.9	116.0	18.0	20.2	1480.0	<5.5	1.7	0.12
028531	* S-080	<6.2	53.6	4.6	22.6	6370.0	<5.6	<1.2	0.14
028532	* S-081	<6.3	43.9	2.1	15.5	3110.0	<5.8	2.4	0.15

RCRA Metals Report.

Poss. hazardous

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(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028533	S-082	85.7	658.0	200.0	59.4	3.3	<6.0	4.5	0.31
028534	S-084	<6.4	51.3	6.9	30.6	496.0	<5.8	<1.1	0.12
028535	S-086	<6.8	30.2	3.5	25.0	51.1	<6.2	<1.2	<0.10
028536	S-087	<6.6	47.1	4.8	32.9	7850.0	<6.0	<1.0	0.14
028538	S-090	<6.1	6.9	3.4	21.9	23.0	<5.5	<1.0	<0.11
028539	S-092	<6.0	2.3	1.5	4.8	52.9	<5.5	<1.1	<0.08
028540	S-093	<6.3	40.2	2.9	7.9	7570.0	<5.7	<1.2	0.09
028541	S-094	<6.5	39.2	2.8	19.9	5750.0	<5.9	<1.2	0.11
028542	S-096	<6.1	277.0	4.1	15.5	21900.0	<5.5	<1.1	0.38
028543	S-097	<6.7	272.0	3.6	17.4	4120.0	7.7	<1.2	0.13
028544	S-099	<7.5	618.0	8.4	14.3	1500.0	7.4	<1.4	<0.12
028545	S-100	<6.8	175.0	10.6	50.0	2300.0	<6.1	<1.2	<0.12
028546	S-102	<6.6	32.2	3.6	33.0	100.0	13.4	<1.2	0.14
028547	S-104	<7.5	178.0	9.3	23.6	23200.0	<6.8	<1.3	0.21
028548	S-106	107.0	620.0	268.0	32.4	95700.0	<6.7	<1.4	0.55
028549	S-107	<6.5	337.0	94.5	20.1	32100.0	<5.9	<1.2	0.31

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ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028550	S-108	<6.0	3.1	<0.6	15.1	76.8	<5.4	<1.0	<0.10
028551	S-110	<6.1	4.3	4.6	22.4	35.4	<5.5	<1.0	<0.10
028552	S-111	<6.3	5.1	2.4	30.0	50.1	<5.7	<1.1	<0.10
028553	S-113	<6.4	35.6	3.9	27.5	599.0	<5.8	<1.1	<0.10
028554	S-123	<6.1	30.6	2.0	11.8	139.0	<5.5	<1.0	<0.10
028555	S-125	<6.3	13.1	1.8	19.2	1380.0	<5.8	<1.1	<0.10
028556	S-138	<6.7	22.7	2.2	22.0	24.8	<6.1	4.8	<0.10
028557	S-140	<6.2	9.2	3.1	7.0	18.4	<5.7	<1.1	<0.10
028558	S-142	<6.0	23.5	3.5	22.9	32.8	<5.5	<1.0	<0.10
028559	S-152	<6.3	74.0	2.4	12.9	303.0	<5.7	<1.1	0.17
028561	S-155	<6.5	26.2	<0.6	1.7	11.2	12.2	2.0	<0.10
028563	S-158	<6.8	30.9	2.1	21.6	15.2	<6.3	<1.2	0.15
028565	S-165	<5.9	67.3	2.1	20.3	121.0	<5.4	10.4	0.12
028566	S-168	<6.7	55.4	2.9	23.2	16.5	<6.1	2.0	0.14
028567	S-171	<6.6	22.4	4.9	47.0	29.9	<6.0	<1.2	<0.12
028568	S-178	<6.1	22.8	2.1	17.9	157.0	16.9	<1.1	0.13

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028569	S-179	<6.4	52.8	2.8	68.0	40.4	<5.9	<1.1	0.11
028570	S-181	<7.3	49.2	16.2	28.4	100.0	<6.6	<1.3	0.18
028571	S-127	<6.1	14.2	2.9	13.2	21.6	<5.5	<1.1	<0.09

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ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028802	S-187	<6.0	40.3	0.7	21.9	35.9	<5.5	<1.1	<0.09
028803	* S-189	<6.9	62.3	1.8	20.6	2880.0	<6.2	<1.3	<0.08
028804	S-191	<6.3	59.3	1.5	10.8	37.9	<5.7	<1.1	<0.11
028805	* S-197	<7.6	52.3	33.6	50.1	26400.0	<6.9	<1.3	2.40
028806	S-199	<6.2	46.8	2.4	20.0	109.0	<5.6	<1.1	<0.09
028807	S-201	<6.7	117.0	2.7	18.0	54.1	<6.0	<1.2	<0.11
028808	* S-207	<6.3	138.0	29.1	16.8	37100.0	<5.7	<1.1	1.80
028809	* S-209	<6.9	66.4	4.9	47.7	1244.0	<6.3	<1.2	<0.09
028810	S-211	<6.3	132.0	3.5	33.9	288.0	<5.7	<1.1	<0.11
028811	S-217	517	328.0	28.6	20.9	2.7	<5.4	<1.1	1.50
028812	* S-219	<6.3	58.8	7.9	16.4	15300.0	<5.8	<1.1	<0.10
028813	* S-221	<6.8	54.7	4.9	18.2	1020.0	<6.2	<1.2	<0.23
028814	* S-227	<7.1	107.0	10.3	25.9	38800.0	<6.5	<1.2	<0.11
028815	* S-229	<6.1	42.0	3.8	16.5	603.0	<5.5	<1.0	<0.11
028816	S-231	<6.5	29.0	2.9	18.7	139.0	<5.9	<1.2	<0.12
028817	* S-237	<7.1	653.0	8.1	42.4	40900.0	<6.5	<1.2	<0.12

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028818	S-239	<7.0	33.7	3.2	23.5	68.7	<6.4	<1.2	<0.10
028819	S-241	<6.6	47.4	1.7	9.2	1230.0	<6.0	<1.1	<0.09
028820	S-247	<6.5	62.9	2.6	9.1	2050.0	<5.9	<1.1	<0.10
028821	S-248	<6.6	39.0	1.4	21.9	6480.0	<6.0	<1.2	<0.11
028822	S-249	<7.0	14.9	2.0	13.3	1910.0	<6.4	<1.2	<0.17
028823	S-250	859	162.0	1.6	8.8	103000.0	<5.7	<1.1	4.2
028824	S-252	<6.6	68.0	2.3	19.8	3720.0	<6.0	<1.1	<0.10
028825	S-254	<6.3	131.0	3.9	25.1	754.0	<5.8	<1.2	<0.10
028826	S-260	<6.3	38.9	1.2	9.5	2710.0	<5.7	<1.2	1.2
028829	S-263	<7.0	21.0	2.6	34.7	110.0	<6.4	<1.2	4.9
028830	S-265	<6.1	39.6	23.6	16.1	37.3	<5.6	<1.1	<0.09
028832	S-271	<5.5	24.8	0.5	0.8	43.7	<5.0	<1.0	<0.10
028835	S-274	<6.5	39.7	1.8	11.0	468.0	<5.9	<1.2	<0.12
028838	S-284	<6.0	34.9	1.6	4.8	1190.0	<5.4	<1.0	<0.09
028839	S-286	<6.6	24.0	1.8	4.4	361.0	<6.0	<1.2	<0.08
028841	S-288	<6.7	76.3	2.5	21.4	1580.0	<6.1	<1.2	<0.10

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028842	S-289	<6.1	74.8	1.5	17.5	1830.0	<5.5	<1.0	2.1
028843	S-291	<6.7	84.1	1.7	14.5	13700.0	<6.1	<1.2	1.3
028844	S-293	<7.0	13.4	0.6	1.0	77.0	<6.4	<1.2	<0.11
028846	S-300	<6.5	22.4	3.6	53.9	1230.0	<5.9	<1.2	<0.11
028847	S-302	<7.0	5.8	2.4	20.4	194.0	<6.4	<1.2	<0.11
028848	S-304	<6.0	1.0	2.2	14.6	22.3	<5.4	<1.0	<0.10
028849	S-310	<6.7	16.8	2.1	13.2	2550.0	<6.1	<1.2	<0.10
028850	S-312	<6.7	4.4	4.3	51.4	47.7	<6.0	<1.2	1.5
028851	S-314	<6.7	1.1	3.1	33.0	35.9	<6.1	<1.2	<0.11
028852	S-320	<6.2	38.6	2.4	27.7	1180.0	<5.6	<1.1	5.0
028853	S-322	<6.7	15.8	2.3	24.7	76.5	<6.1	<1.2	<0.10
028854	S-324	<6.7	8.0	1.1	9.6	43.1	<6.1	<1.2	<0.10
028855	S-325	<6.4	10.8	1.4	12.4	44.2	<5.8	<1.2	<0.11
028856	S-331	<6.9	69.0	3.8	31.6	3930.0	<6.3	<1.2	<0.12
028858	S-333	<7.1	24.4	2.0	17.1	110.8	<6.4	<1.3	<0.10
028859	S-335	<6.7	12.8	0.6	4.7	27.0	<6.1	<1.2	<0.10

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028861	S-342	<6.5	11.1	4.3	0.0	29.1	<5.9	<1.2	<0.11
028862	S-343	<7.0	29.9	4.3	18.2	71.0	<6.4	<1.2	<0.11
028863	S-345	<6.5	38.7	2.5	15.2	102.0	<5.9	<1.2	<0.12
028864	S-351	<5.7	51.7	0.9	2.4	138.0	<5.1	<1.0	<0.10
028865	* S-352	<6.6	70.0	1.5	18.1	3180.0	8.1	<1.2	<0.11
028866	S-353	<5.4	60.5	0.8	2.1	175.0	<4.9	<0.9	<0.10
028867	* S-354	<6.8	84.4	2.1	28.2	6890.0	<6.1	<1.2	3.2
028868	S-355	<6.8	8.1	4.4	55.6	41.3	<6.2	<1.2	1.2
028869	* S-356	<6.2	70.9	1.5	23.2	3320.0	<5.7	<1.2	3.6
028870	* S-276	<6.5	16.7	2.4	6.9	657.0	<5.9	<1.2	<0.12

coTek LSI
Tek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: October 9, 1990

LSDG: 0441

Sample Report Date: October 23, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID Client Sample ID METALS (mg/kg)	044106 S-083 Dup. for S-062	044107 S-084	044108 S-085	044109 S-086	044110 S-088	Detection Limit (mg/kg)
Arsenic	1.19	<0.3	1.14	1.73	3.96	0.3
Barium	47.3	79.6	77.3	58.1	86.6	0.1
Cadmium	<0.1	<0.1	<0.1	1.12	1.87	0.1
Chromium	5.74	9.16	15.9	22.4	11.7	0.1
Lead	205.	328.	648.	2450.	7460.	0.25
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Selenium	<0.4	<0.4	<0.4	<0.4	<0.4	0.4
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	0.1

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 22, 1990

LSDG: 0294

Sample Report Date: October 19, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029401 S-358	029405 S-362	029411 S-368	Detection Limits (mg/l)
Arsenic	<0.056	<0.056	<0.056	0.056
Barium	0.019	0.020	0.034	0.010
Cadmium	0.017	0.019	0.007	0.006
Chromium	0.017	0.017	<0.009	0.009
Lead	<0.029	<0.029	0.070	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0002
Selenium	<0.057	<0.057	<0.057	0.057
Silver	<0.011	<0.011	<0.011	0.011

.coTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 22, 1990

LSDG: 0294

Sample Report Date: October 19, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS

RCRA Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029415 S-372 MW-2	029419 S-376 MW-3	029425 S-380 MW-6	Detection Limits (mg/l)
Arsenic	<0.056	<0.056	<0.056	0.056
Barium	0.053	0.037	0.104	0.010
Cadmium	<0.006	<0.006	<0.006	0.006
Chromium	0.013	<0.009	0.011	0.009
Lead	<0.029	<0.029	<0.029	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0002
Selenium	<0.057	<0.057	<0.057	0.057
Silver	<0.011	<0.011	0.063	0.011

coTek LSI
Tek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: October 9, 1990

LSDG: 0441

Sample Report Date: October 23, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID / Client Sample ID / METALS (mg/kg)	044101 S-058 Dup. for S-057	044102 S-059	044103 S-060	044104 S-061	044105 S-062	Detection Limit (mg/kg)
Arsenic	1.26	0.80	1.52	2.28	1.65	0.3
Barium	178	45.4	54.4	54.2	50.4	0.1
Cadmium	5.92	<0.1	<0.1	0.62	0.15	0.1
Chromium	19.0	5.94	6.82	35.0	8.24	0.1
Lead	23200.	321.	737.	1220.	425.	0.25
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Selenium	<0.4	<0.4	<0.4	<0.4	<0.4	0.4
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	0.1

FIGURE F-2.A

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 23, 1990

LSDG: 0298

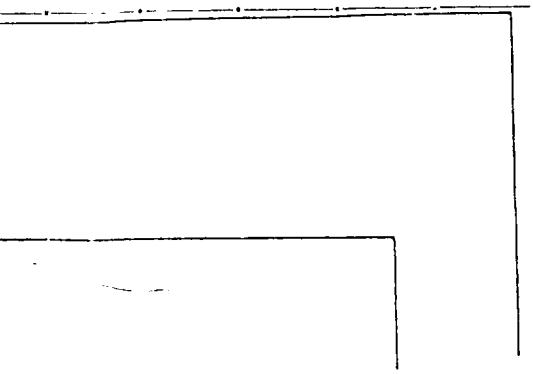
Sample Report Date: October 18, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS
TCLP Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029802 S-392	029803 S-393	029804 S-394	029805 S-395	Detection Limit
Arsenic	0.391	<0.056	<0.056	<0.056	0.056
Barium	0.304	0.307	0.165	0.296	0.010
Cadmium	0.013	<0.006	<0.006	<0.006	0.006
Chromium	0.021	<0.009	<0.009	0.026	0.009
Lead	68.1	0.193	0.148	0.387	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0006	0.0002
Selenium	<0.057	<0.057	0.069	<0.057	0.057
Silver	0.021	<0.011	0.016	<0.011	0.011

FIGURE F-179



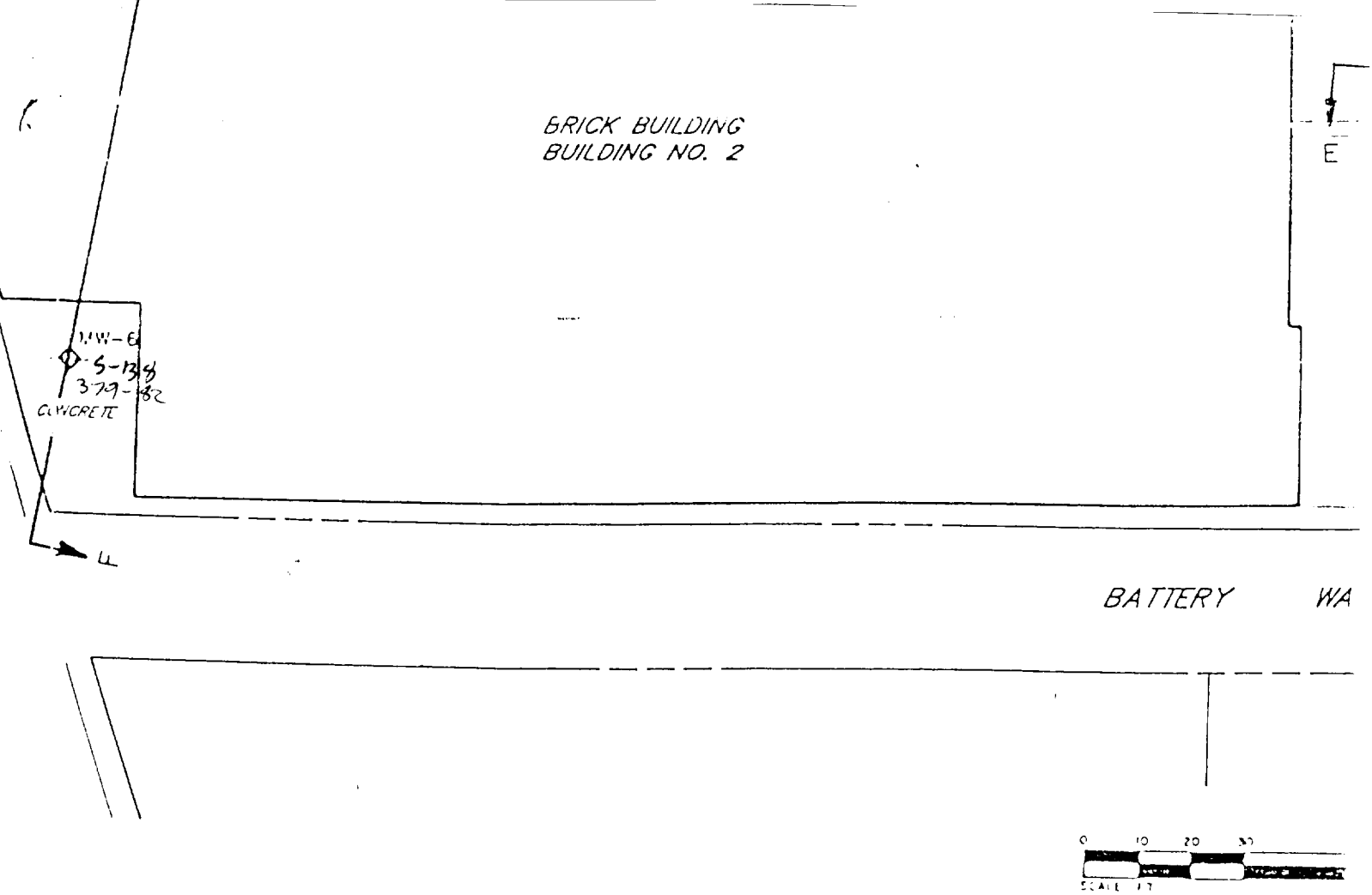
ORMER GOULD BATTERY PLANT

EAST POINT, FULTON COUNTY, GEORGIA

NTH SAMPLE LOCATIONS

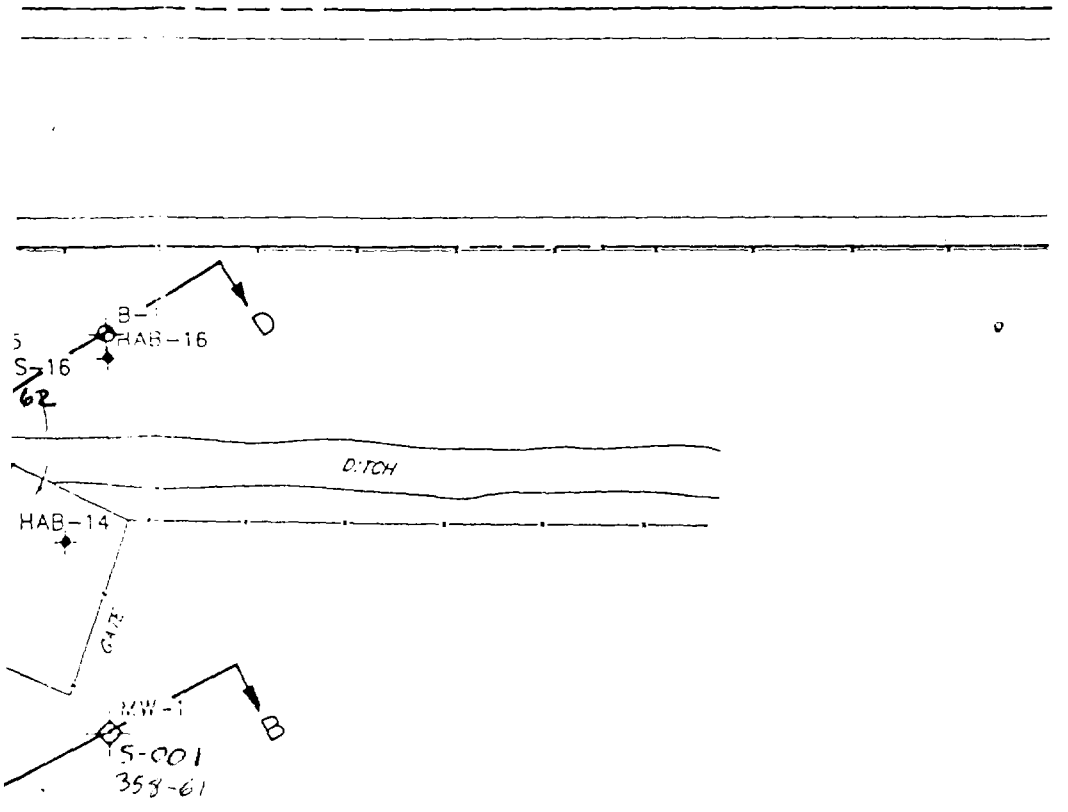
Date: 10-31-90	PLATE I
Scale: 1"=30'	
Drawn By: GPL	
Checked By:	
Project Eng.:	
Project No.: 893320W	
Dwg. No.: 893320W-1	
Issued:	

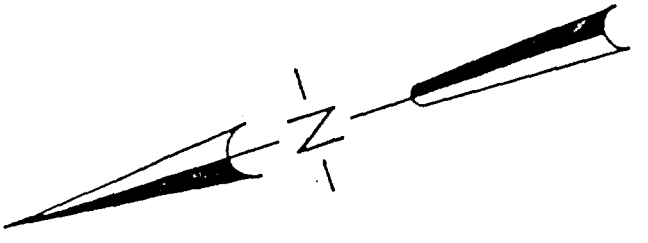
NTH CONSULTANTS, LTD.
Professional Engineering & Environmental Services
38955 HILLS TECH DRIVE, FARMINGTON HILLS, MI. 48331-3432
(313) 553-6300


BRICK BUILDING
BUILDING NO. 2
E
MW-6
S-138
379-82
CONCRETE
BATTERY
WA
0
10
20
30
SCALE FT

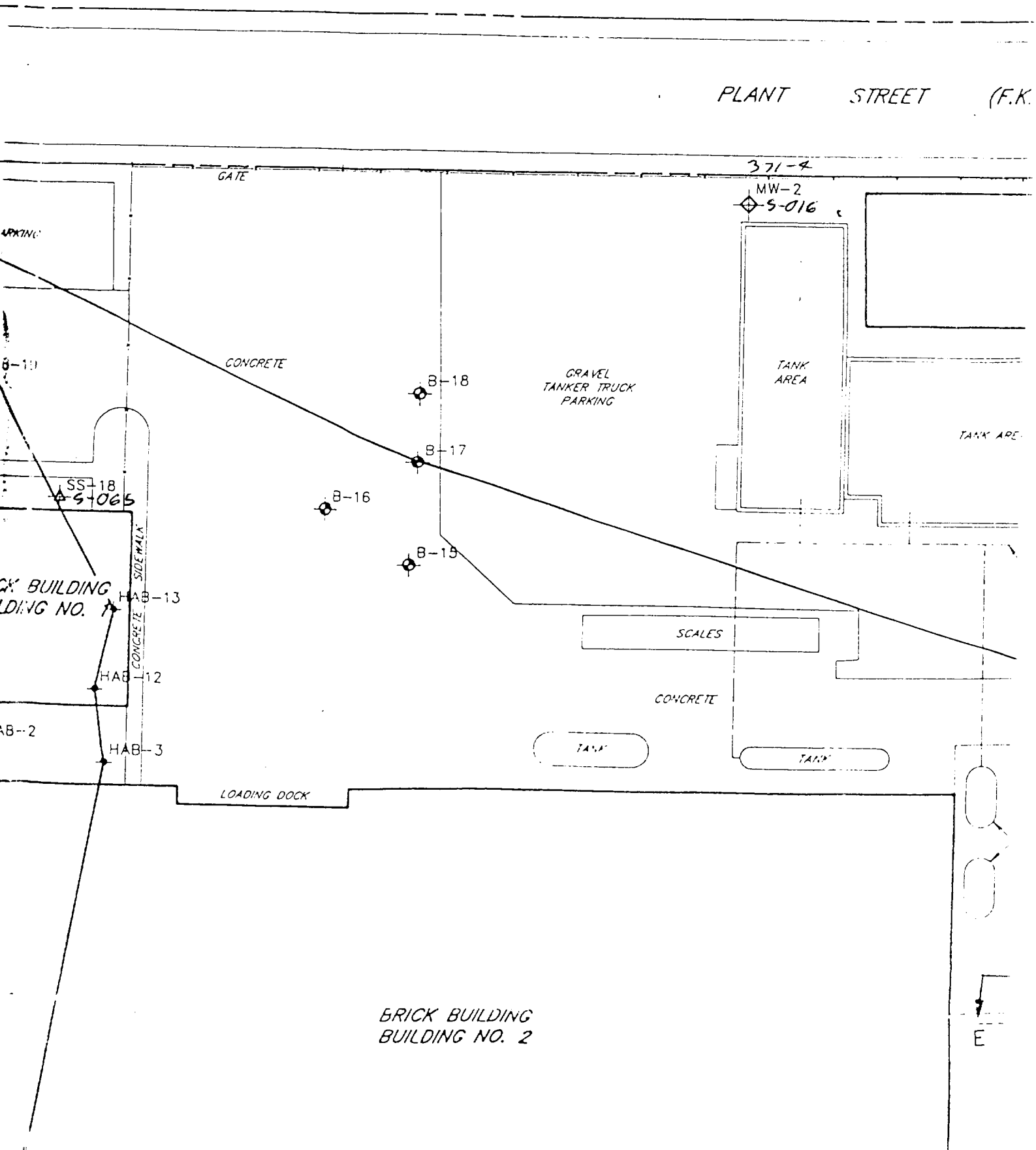
ons

A

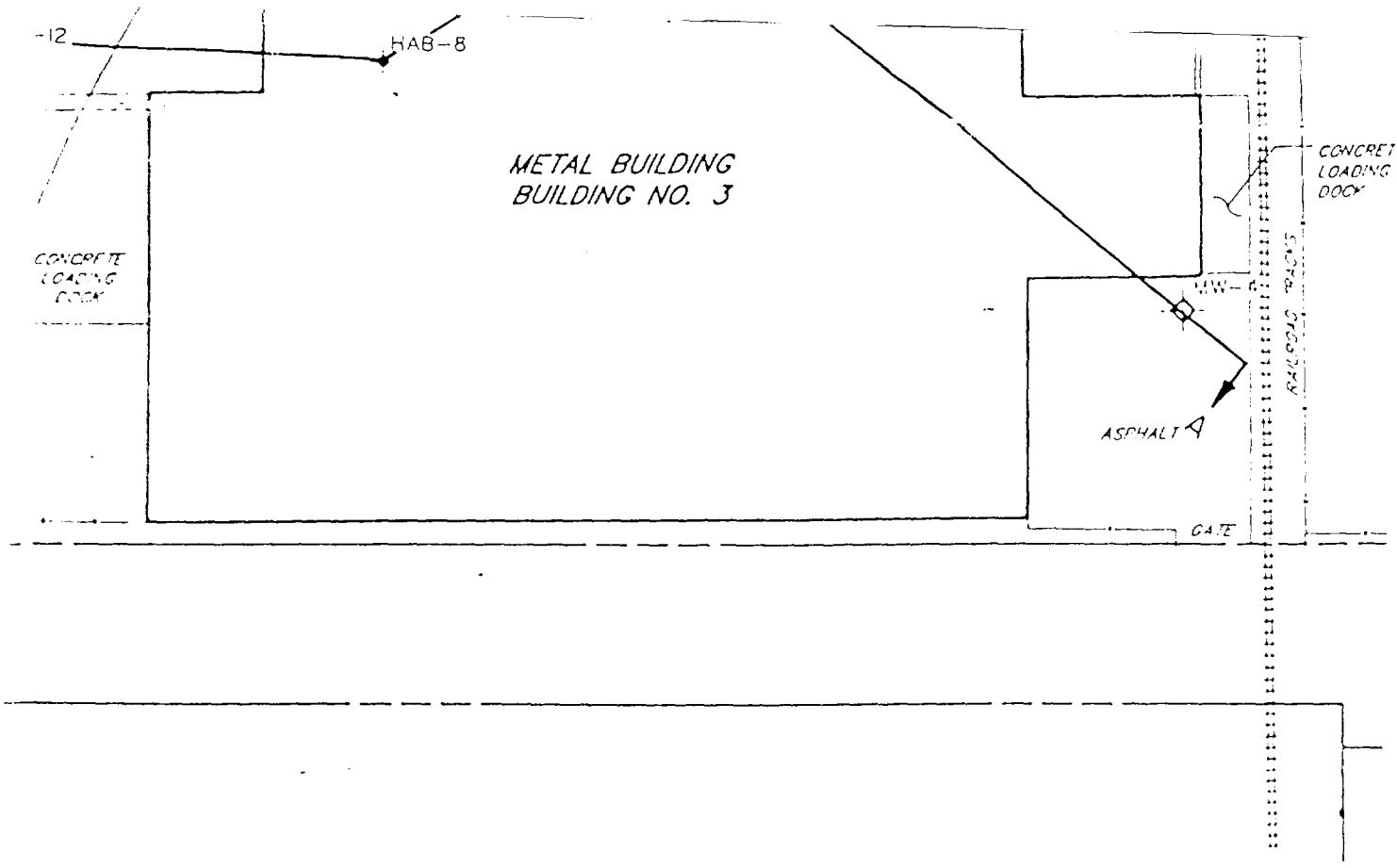




OPEN LOT


PLANT STREET (F.K.
371-4
GATE
MW-2
S-016
CONCRETE
B-18
GRAVEL
TANKER TRUCK
PARKING
TANK
AREA
B-17
B-16
SS-18
S-065
B-19
SIDEWALK
CONCRETE
HAB-13
HAB-12
HAB-3
SCALES
CONCRETE
TANK
TANK
LOADING DOCK
BRICK BUILDING
BUILDING NO. 2
E

SS-17
S-06L



LEGEND

NTH MONITORING WELL LOCATION

NTH TEST BORING LOCATION

NTH HAND AUGER BORING LOCATION

NTH SURFACE SAMPLE LOCATION

NTH TEST PIT LOCATION

GENERALIZED SUBSURFACE PROFILE LINE

NOTES:

1. The existing site features have not been surveyed. Loca
shown are approximate.

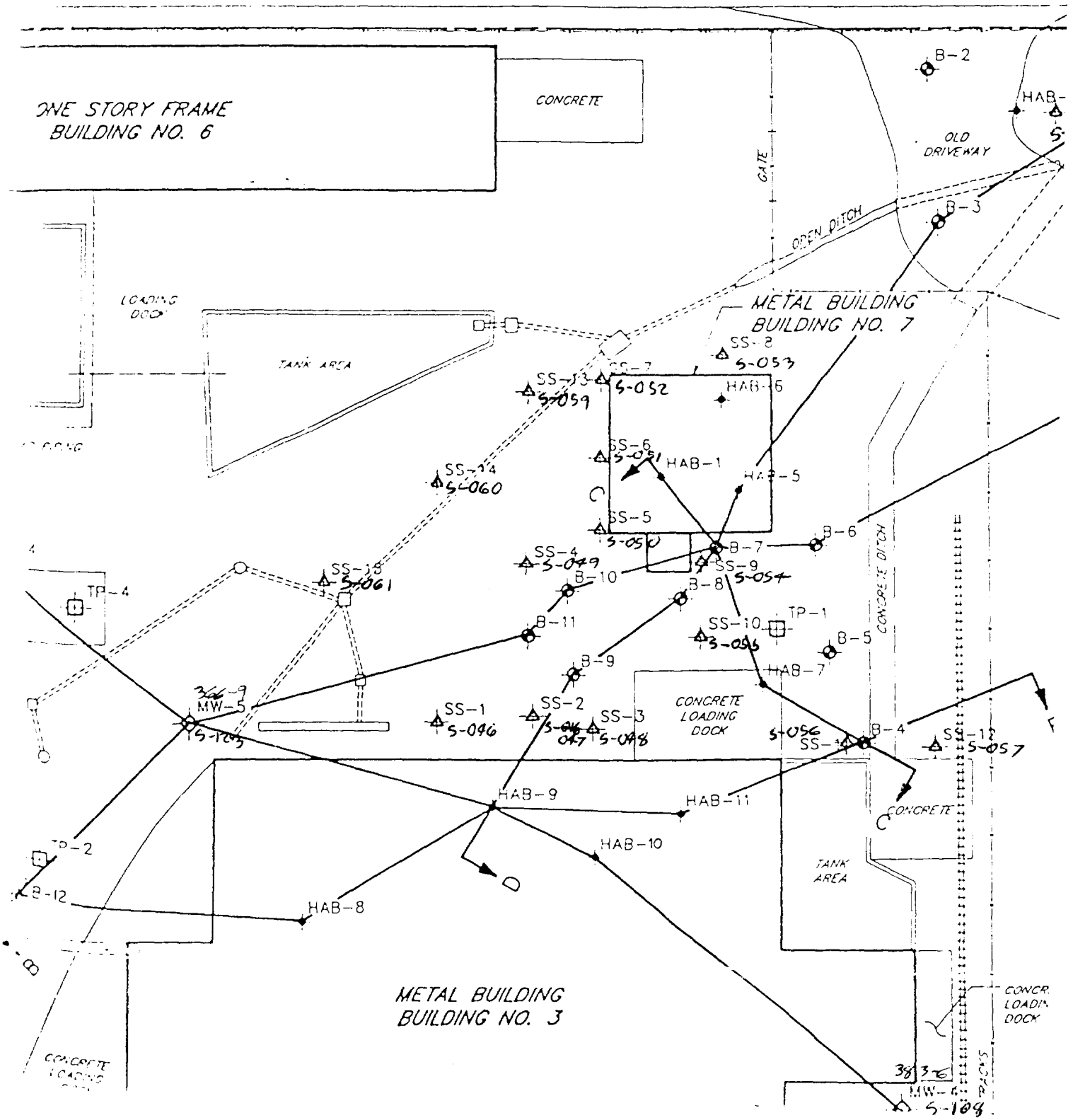
2. The generalized subsurface profiles are shown on Plate

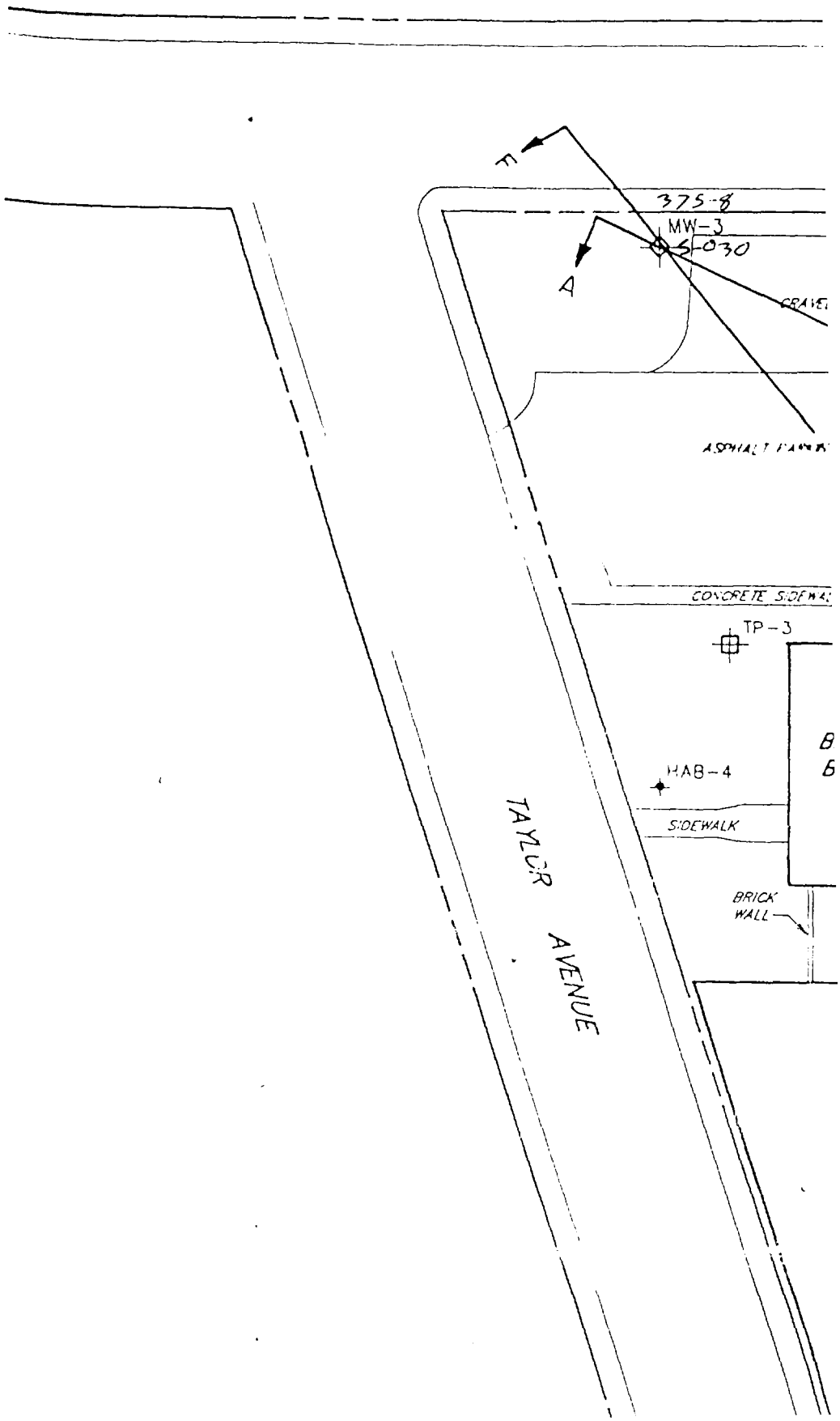
NOTE: THIS PLAN TAKEN FROM:

PLAT FOR NTH CONSULTANTS, Ltd.
LAND LOT 158 – 14th DISTRICT
FULTON COUNTY, GEORGIA
OCTOBER 12, 1990 – SCALE 1"=50'
BY
ALVIN E. VAUGHN & ASSOC.,INC.
PLANNERS–SURVEYORS
P.O. BOX 703
STOCKBRIDGE, GA. 30281
474–1106

REVISED OCT.30,1990 TO SHOW CORRECT LOCATION

ER ST. & SPRING ST.)




E
A
375-8
MW-3
5-030
GRAVEL
ASPHALT PARKING
CONCRETE SIDEWALK
TP-3
HAB-4
SIDEWALK
BRICK WALL
TAYLOR AVENUE

DRAFT

TA F-1

SUMMARY TABULATION OF
RCRA METALS IN SOIL

	A	B	C	D	E	F	G	H	I	J	K	L
1						NTH SOIL SAMPLE RESULTS						
2												
3		SAMPLE	SAMPLE	TIP								
4		LOCATION	NUMBER	DEPTH	ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	SELENIUM	SILVER	MERCURY
5												
6		MW-1	S-001	2.0	BD	25.0	1.1	6.3	305	BD	BD	BD
7		MW-1	S-002	3.0	BD	75.1	4.2	51.8	249	BD	BD	0.12
8		MW-1	S-003	5.0	BD	42.7	1.6	9.3	132	BD	BD	BD
9		MW-2	S-015	1.0	BD	59.1	2.9	15.4	646	BD	BD	BD
10		MW-2	S-017	3.0	BD	13.4	4.6	38.8	59	BD	BD	BD
11		MW-2	S-019	5.0	BD	8.2	4.0	18.3	42	BD	BD	BD
12		MW-3	S-030	1.0	BD	92.0	1.7	10.3	5290	BD	BD	0.31
13		MW-3	S-032	3.0	BD	53.3	2.1	8.5	58	BD	BD	1.11
14		MW-3	S-034	5.0	BD	71.7	2.9	11.8	45	BD	BD	BD
15		MW-3	S-045	1.0	BD	85.0	1.3	12.5	159	BD	BD	BD
16		MW-4	S-108	1.0	BD	3.1	BD	15.1	77	BD	BD	BD
17		MW-4	S-110	3.0	BD	4.3	4.6	22.4	35	BD	BD	BD
18		MW-4	S-111	3.0	BD	5.1	2.4	30.0	50	BD	BD	BD
19		MW-4	S-113	5.0	BD	35.6	3.9	27.5	599	BD	BD	BD
20		MW-5	S-123	1.0	BD	30.6	2.0	11.8	139	BD	BD	BD
21		MW-5	S-125	3.0	BD	13.1	1.8	19.2	1380	BD	BD	BD
22		MW-5	S-127	5.0	BD	14.2	2.9	13.2	22	BD	BD	BD
23		MW-6	S-138	1.0	BD	22.7	2.2	22.0	25	BD	4.8	BD
24		MW-6	S-140	3.0	BD	9.2	3.1	7.0	18	BD	BD	BD
25		MW-6	S-142	5.0	BD	23.5	3.5	22.9	33	BD	BD	BD
26												
27		S-1	S-046	0.3	BD	38.9	1.5	5.9	666	BD	BD	0.11
28		S-2	S-047	0.3	BD	44.3	0.8	1.2	82	BD	BD	BD
29		S-3	S-048	0.3	BD	27.9	0.9	2.7	60	BD	BD	BD
30		S-4	S-049	0.3	BD	38.6	1.7	4.9	2930	BD	BD	0.12
31		S-5	S-050	0.3	BD	2.3	0.7	5.3	367	BD	BD	BD
32		S-6	S-051	0.3	BD	29.3	1.2	10.4	611	BD	BD	BD
33		S-7	S-052	0.3	BD	47.8	2.3	8.7	1680	BD	1.6	0.31
34		S-8	S-053	0.3	BD	13.8	1.2	5.2	208	BD	3.1	BD
35		S-9	S-054	0.3	BD	37.5	2.4	3.3	4360	BD	1.5	BD
36		S-10	S-055	0.3	91.2	812.0	71.1	53.1	148	BD	1.8	0.28
37		S-11	S-056	0.3	454.0	457.0	80.6	32.6	82500	BD	1.2	0.28
38		S-12 ?	S-057	? 0.3	BD	176.0	9.6	25.8	14000	BD	1.5	0.11
39		S-12 ?	S-058	? 0.3	1.3	176.0	5.9	19.0	23200	BD	BD	BD
40		S-13	S-059	0.3	0.8	45.4	BD	5.9	321	BD	BD	BD
41		S-14	S-060	0.3	1.5	54.4	BD	6.8	737	BD	BD	BD
42		S-15	S-061	0.3	2.3	54.2	0.6	35.0	1220	BD	BD	BD
43		S-16	S-062	0.3	1.7	50.4	0.2	8.2	425	BD	BD	BD
44		S-16	S-063	0.3	1.2	47.3	BD	5.7	205	BD	BD	BD
45		S-17	S-064	0.3	BD	79.6	BD	9.2	328	BD	BD	BD

BD = BELOW DETECTION LIMIT
CONCENTRATIONS GIVEN IN MG/KG

TABLE (cont.)
SUMMARY TAL .ATION OF
RCRA METALS IN SOIL

	A	B	C	D	E	F	G	H	I	J	K	L
46		S-18	S-065	0.3	1.1	77.3	BD	15.9	648	BD	BD	BD
47												
48		HAB-1	S-066	1.0	1.7	58.1	1.1	22.4	2450	BD	BD	BD
49		HAB-2	S-067	1.0	BD	140.0	3.0	17.8	958	BD	BD	0.53
50		HAB-2	S-069	3.0	4.0	86.6	1.9	11.7	7460	BD	BD	BD
51		HAB-3	S-070	1.0	BD	177.0	3.2	21.3	6170	BD	2.6	0.73
52		HAB-3	S-072	3.0	BD	3.7	1.1	10.2	6	BD	BD	BD
53		HAB-3	S-074	5.0	BD	4.2	BD	20.4	1470	BD	BD	BD
54		HAB-4	S-075	1.0	BD	36.7	2.8	26.4	11000	BD	BD	0.25
55		HAB-5	S-076	0.5	BD	2.3	BD	2.1	10	BD	1.6	BD
56		HAB-5	S-077	1.0	BD	43.6	2.6	16.6	1570	BD	BD	BD
57		HAB-5	S-079	3.0	BD	116.0	18.0	20.2	1480	BD	1.7	0.12
58		HAB-6	S-080	1.5	BD	53.6	4.6	22.6	6370	BD	BD	0.14
59		HAB-6	S-081	2.5	BD	43.9	2.1	15.5	3110	BD	2.4	0.15
60		HAB-7	S-082	1.0	85.7	658.0	200.0	59.4	3	BD	4.5	0.31
61		HAB-7	S-084	3.0	BD	51.3	6.9	30.6	496	BD	BD	0.12
62		HAB-7	S-086	5.0	BD	30.2	3.5	25.0	51	BD	BD	BD
63		HAB-8	S-087	1.0	BD	47.1	4.8	32.9	7850	BD	BD	0.14
64		HAB-8	S-090	3.0	BD	6.9	3.4	21.9	23	BD	BD	BD
65		HAB-8	S-092	5.0	BD	2.3	1.5	4.8	53	BD	BD	BD
66		HAB-9	S-093	1.0	BD	40.2	2.9	7.9	7570	BD	BD	0.09
67		HAB-9	S-094	1.0	BD	39.2	2.8	19.9	5750	BD	BD	0.11
68		HAB-10	S-096	1.0	BD	277.0	4.1	15.5	21900	BD	BD	0.38
69		HAB-10	S-097	1.0	BD	272.0	3.6	17.4	4120	7.7	BD	0.13
70		HAB-10	S-099	3.0	BD	618.0	8.4	14.3	1500	7.4	BD	BD
71		HAB-10	S-100	4.0	BD	175.0	10.6	50.0	2300	BD	BD	BD
72		HAB-11	S-102	1.0	BD	32.2	3.6	33.0	100	13.4	BD	0.14
73		HAB-11	S-104	3.0	BD	178.0	9.3	23.6	23200	BD	BD	0.21
74		HAB-11	S-106	5.0	107.0	620.0	268.0	32.4	95700	BD	BD	0.55
75		HAB-11	S-107	5.0	BD	337.0	94.5	20.1	32100	BD	BD	0.31
76		HAB-12	S-248	1.0	BD	39.0	1.4	21.9	6480	BD	BD	BD
77		HAB-13	S-249	1.0	BD	14.9	2.0	13.3	1910	BD	BD	BD
78		HAB-14	S-351	1.0	BD	51.7	0.9	2.4	138	BD	BD	BD
79		HAB-14	S-352	2.0	BD	70.0	1.5	18.1	3180	8.1	BD	BD
80		HAB-14	S-353	1.0	BD	60.5	0.8	2.1	175	BD	BD	BD
81		HAB-15	S-354	1.0	BD	84.4	2.1	28.2	6890	BD	BD	3.20
82		HAB-15	S-356	1.0	BD	70.9	1.5	23.2	3320	BD	BD	3.60
83												
84		B-1	S-152	1.0	BD	74.0	2.4	12.9	303	BD	BD	0.17
85		B-1	S-155	3.0	BD	26.2	BD	1.7	11	12.2	2.0	BD
86		B-1	S-158	5.0	BD	30.9	2.1	21.6	15	BD	BD	0.15
87		B-2	S-165	1.0	BD	67.3	2.1	20.3	121	BD	10.4	0.12
88		B-2	S-168	3.0	BD	55.4	2.9	23.2	17	BD	2.0	0.14
89		B-2	S-171	5.0	BD	22.4	4.9	47.0	30	BD	BD	BD
90		B-3	S-178	1.0	BD	22.8	2.1	17.9	157	16.9	BD	0.13

BD= BELOW DETECTION LIMIT
CONCENTRATIONS GIVEN IN MG/KG

TAB r-1 (cont.)
SUMMARY TABULATION OF
RCRA METALS IN SOIL

	A	B	C	D	E	F	G	H	I	J	K	L
91		B-3	S-179	3.0	BD	52.8	2.8	68.0	40	BD	BD	0.11
92		B-3	S-181	5.0	BD	49.2	16.2	28.4	100	BD	BD	0.18
93		B-4	S-187	1.0	BD	40.3	0.7	21.9	36	BD	BD	BD
94		B-4	S-189	3.0	BD	62.3	1.8	20.6	2880	BD	BD	BD
95		B-4	S-191	5.0	BD	59.3	1.5	10.8	38	BD	BD	BD
96		B-5	S-197	1.0	BD	52.3	33.6	50.1	26400	BD	BD	2.40
97		B-5	S-199	3.0	BD	46.8	2.4	20.0	109	BD	BD	BD
98		B-5	S-201	5.0	BD	117.0	2.7	18.0	54	BD	BD	BD
99		B-6	S-207	1.0	BD	138.0	29.1	16.8	37100	BD	BD	1.80
100		B-6	S-209	3.0	BD	66.4	4.9	47.7	1244	BD	BD	BD
101		B-6	S-211	5.0	BD	132.0	3.5	33.9	288	BD	BD	BD
102		B-7	S-217	1.0	517.0	328.0	28.6	20.9	3	BD	BD	1.50
103		B-7	S-219	3.0	BD	58.8	7.9	16.4	15300	BD	BD	BD
104		B-7	S-221	5.0	BD	54.7	4.9	18.2	1020	BD	BD	BD
105		B-8	S-227	1.0	BD	107.0	10.3	25.9	38800	BD	BD	BD
106		B-8	S-229	3.0	BD	42.0	3.8	16.5	603	BD	BD	BD
107		B-8	S-231	5.0	BD	29.0	2.9	18.7	139	BD	BD	BD
108		B-9	S-237	1.0	BD	653.0	8.1	42.4	40900	BD	BD	BD
109		B-9	S-239	3.0	BD	33.7	3.2	23.5	69	BD	BD	BD
110		B-9	S-241	5.0	BD	47.4	1.7	9.2	1230	BD	BD	BD
111		B-9	S-247	5.0	BD	62.9	2.6	9.1	2050	BD	BD	BD
112		B-10	S-250	1.0	859.0	162.0	1.6	8.8	103000	BD	BD	4.20
113		B-10	S-252	3.0	BD	68.0	2.3	19.8	3720	BD	BD	BD
114		B-10	S-254	5.0	BD	131.0	3.9	25.1	754	BD	BD	BD
115		B-11	S-260	1.0	BD	38.9	1.2	9.5	2710	BD	BD	1.20
116		B-11	S-263	3.0	BD	21.0	2.6	34.7	110	BD	BD	4.90
117		B-11	S-265	5.0	BD	39.6	23.6	16.1	37	BD	BD	BD
118		B-12	S-271	1.0	BD	24.8	0.5	0.8	44	BD	BD	BD
119		B-12	S-274	4.0	BD	39.7	1.8	11.0	468	BD	BD	BD
120		B-12	S-276	5.0	BD	16.7	2.4	6.9	657	BD	BD	BD
121		B-13	S-284	1.0	BD	34.9	1.6	4.8	1190	BD	BD	BD
122		B-13	S-286	5.0	BD	24.0	1.8	4.4	361	BD	BD	BD
123		B-14	S-288	1.0	BD	76.3	2.5	21.4	1580	BD	BD	BD
124		B-14	S-289	1.0	BD	74.8	1.5	17.5	1830	BD	BD	2.10
125		B-14	S-291	3.0	BD	84.1	1.7	14.5	13700	BD	BD	1.30
126		B-14	S-293	5.0	BD	13.4	0.6	1.0	77	BD	BD	BD
127		B-15	S-300	1.0	BD	22.4	3.6	53.9	1230	BD	BD	BD
128		B-15	S-302	3.0	BD	5.8	2.4	20.4	194	BD	BD	BD
129		B-15	S-304	5.0	BD	1.0	2.2	14.6	22	BD	BD	BD
130		B-16	S-310	1.0	BD	16.8	2.1	13.2	2550	BD	BD	BD
131		B-16	S-312	3.0	BD	4.4	4.3	51.4	48	BD	BD	1.50
132		B-16	S-355	3.0	BD	8.1	4.4	55.6	41	BD	BD	1.20
133		B-16	S-314	5.0	BD	1.1	3.1	33.0	36	BD	BD	BD
134		B-17	S-320	1.0	BD	38.6	2.4	27.7	1180	BD	BD	5.00
135		B-17	S-322	3.0	BD	15.8	2.3	24.7	77	BD	BD	BD

BD = BELOW DETECTION LIMIT
CONCENTRATIONS GIVEN IN MG/KG

TABLE ' (cont.)
SUMMARY TAB..ATION OF
RCRA METALS IN SOIL

	A	B	C	D	E	F	G	H	I	J	K	L
136		B-17	S-324	5.0	BD	8.0	1.1	9.6	43	BD	BD	BD
137		B-17	S-325	5.0	BD	10.8	1.4	12.4	44	BD	BD	BD
138		B-18	S-331	1.0	BD	69.0	3.8	31.6	3930	BD	BD	BD
139		B-18	S-333	3.0	BD	24.4	2.0	17.1	111	BD	BD	BD
140		B-18	S-335	5.0	BD	12.8	0.6	4.7	27	BD	BD	BD
141		B-19	S-342	2.0	BD	11.1	4.3	0.0	29	BD	BD	BD
142		B-19	S-343	3.0	BD	29.9	4.3	18.2	71	BD	BD	BD
143		B-19	S-345	5.0	BD	38.7	2.5	15.2	102	BD	BD	BD
144										BD		

BD= BELOW DETECTION LIMIT
CONCENTRATIONS GIVEN IN MG/KG

Professional Engineering & Environmental Services
560 SPRINGDALE DRIVE EXTON PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAME.
S-001	mw-1	1.5 - 2'	G	Soil	8/13/90	GC	8/16	RCRA Metals
S-002		2.5 - 3'						RCRA Metals
S-003		4.5 - 5'						RCRA Metals
S-004		5.5 - 6'						Hold
S-005		6.5 - 7'						Hold
S-006		7.5 - 8'						Hold
S-007		8.5 - 9'						Hold
S-008		9.5 - 10'						Hold
S-009		10.5 - 11'						Hold
S-010		16.5 - 17'						Hold
S-011		21.5 - 22'						Hold
S-012		26.5 - 27'						Hold
S-013		28.5 - 29'						Hold
S-014		36.5 - 37'						Hold
S-015	mw-2	.5 - 1'						RCRA Metal
S-016		1.5 - 2						Hold
S-017		2.5 - 3						RCRA Metal
S-018		3.5 - 4						Hold
S-019		4.5 - 5						RCRA Meta
S-020		5.5 - 6						Hold
S-021		6.5 - 7						Hold
S-022		7.5 - 8						Hold
S-023		8.5 - 9						Hold

PROJECT NO. 893320W

FIGURE F-1

360 SPRINGDALE DRIVE EXTON PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-024	MW-2	9.5-10'	G	Soil	8/13/90	GC	8/16	Hold
S-025		16.5-17			"			Hold
S-026		21.5-22			"			Hold
S-027		26.5-27			8/14/90			Hold
S-028		31.5-32			"			Hold
S-029		36.5-37			"			Hold
S-030	MW-3	.5-1 (D)			"			RCRA METALS
S-031		1.5-2			"			Hold
S-032		2.5-3			"			RCRA METALS
S-033		3.5-4			"			Hold
S-034		4.5-5			"			RCRA METALS
S-035		5.5-6			"			Hold
S-036		6.5-7			"			Hold
S-037		7.5-8			"			Hold
S-038		8.5-9			"			Hold
S-039		9.5-10			"			Hold
S-040		16.5-17			"			Hold
S-041		21.5-22			"			Hold
S-042		26.5-27			"			Hold
S-043		31.5-32			"			Hold
S-044		36.5-37			"			Hold
S-045		.5-1' (D)			"			RCRA METALS
S-046	S-1	1-3"			8/13/90	JT		RCRA METALS

PROJECT NO. 893320W

FIGURE F-2

Professional Engineering & Environmental Services
880 SPRINGDALE DRIVE, EXTON, PENNSYLVANIA 19341
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SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-047	S-2	1 - 3"	G	SOIL	8/13/90	JT	8/16	RCRA METAL
S-048	S-3	1-3"			"			
S-049	S-4	1-3"			"			
S-050	S-5	1-3"			"			
S-051	S-6	1-3"			"			
S-052	S-7	1-3"			"			
S-053	S-8	1-3"			"			
S-054	S-9	1-3"			"			
S-055	S-10	1-3"			"			
S-056	S-11	1-3"			"			
S-057	S-12	1-3" (D)			"			
S-058	S-12	1-3" (D)			"			
S-059	S-13	1-3"			"			
S-060	S-14	1-3"			"			
S-061	S-15	1-3"			"			
S-062	S-16	1-3" (D)			"			
S-063	S-16	1-3" (D)			"			
S-064	S-17	1-3"			"			
S-065	S-18	1-3"			"			
S-066	HAB-1	.5-1'			"			RCRA METAL
S-067	HAB-2	.5-1'			"			RCRA METAL
S-068	HAB-2	1.5-2'						HOLD
S-069	HAB-2	2.5-3'						RCRA METAL

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FIGURE F-3

NTH CONSULTANTS, LTD.
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SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-070	HAB-3	.5-1'	G	Soil	8/14/90	JT	8/16	RCRA Metal
S-071	HAB-3	1.5-2'			"			Hold
S-072	HAB-3	2.5-3'			"			RCRA Metal
S-073	HAB-3	3.5-4'			"			Hold
S-074	HAB-3	4.5-5'			"			RCRA Metal
S-075	HAB-4	.5-1'			"			RCRA Metal
S-076	HAB-5	0-0.5'			"			RCRA Metal
S-077	HAB-5	.5-1'			"			RCRA Metal
S-078	HAB-5	1.5-2'			"			HOLD ~~RCRA Metal~~
S-079	HAB-5	2.5-3'			"			RCRA Metal
S-080	HAB-6	1.0-2.5			"			RCRA Metal
S-081	HAB-6	2.0-2.5			"			RCRA Metal
S-082	HAB-7	.5-1'			"			RCRA Metal
S-083	HAB-7	1.5-2'			"			HOLD
S-084	HAB-7	2.5-3'			"			RCRA METAL
S-085	HAB-7	3.5-4'			"			HOLD
S-086	HAB-7	4.5-5'			"			RCRA METAL
S-087	HAB-8	.5-1'			"			RCRA METAL
S-088	HAB-8	1.5-2' (D)			"			VOA
S-089	HAB-8	1.5-2' (D)			"			HOLD
S-090	HAB-8	2.5-3			"			RCRA METALS
S-091	HAB-8	3.5-4			"			HOLD
S-092	HAB-8	4.5-5'			"			RCRA Metals

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FIGURE F-4

NTH CONSULTANTS, LTD.
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SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-093	HAB-9	.5-1(D)	G	SOIL	8/14/90	JT	8/16	RCRA METAL
S-094	HAB-9	.5-1(D)			"			RCRA METAL
S-095	HAB-9	1.5-2'			"			HOLD
S-096	HAB-10	.5-1'(D)	G	SOIL	8/15/90	JT		RCRA METALS
S-097	HAB-10	.5-1'(D)			"			RCRA METAL
S-098	HAB-10	1.5-2			"			HOLD
S-099	HAB-10	2.5-3			"			RCRA METAL
S-100	HAB-10	3.5-4			"			RCRA METAL
S-101	HAB-10	4.5-5			"			HOLD
S-102	HAB-11	.5-1			"			RCRA METAL
S-103	HAB-11	15-2			"			HOLD
S-104	HAB-11	2.5-3			"			RCRA METAL
S-105	HAB-11	3.5-4			"			HOLD
S-106	HAB-11	4.5-5(D)			"			RCRA METAL
S-107	HAB-11	4.5-5(D)			"			RCRA METAL
S-108	MW-4	.5-1			"	GC		RCRA METALS
S-109	MW-4	1.5-2			"			HOLD
S-110	MW-4	2.5-3(D)			"			RCRA METALS
S-111	MW-4	2.5-3(D)			"			RCRA METALS
S-112	MW-4	3.5-4			"			HOLD
S-113	MW-4	4.5-5			"			RCRA METALS
S-114	MW-4	5.5-6'			"			HOLD
S-115	MW-4	6.5-7'			"			HOLD

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FIGURE F-5

NTH CONSULTANTS, LTD.
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SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-116	MW-4	7.5-8	G	SOIL	8/15/90	GC	8/16	Hold
S-117	MW-4	8.5-9	G					Hold
S-118	MW-4	9.5-10						Hold
S-119	MW-4	16.5-17						Hold
S-120	MW-4	21.5-22						Hold
S-121	MW-4	26.5-27						Hold
S-122	MW-4	30.5-31						Hold
S-123	MW-5	.5-1				JT		RCRA METALS
S-124		1.5-2						Hold
S-125		2.5-3						RCRA METALS
S-126		3.5-4						HOLD
S-127		4.5-5						RCRA METAL
S-128		5.5-6						HOLD
S-129		6.5-7						HOLD
S-130		7.5-8						HOLD
S-131		8.5-9						HOLD
S-132		9.5-10						HOLD
S-133		16.5-17						HOLD
S-134		20.5-21						HOLD
S-135		25.5-26						HOLD
S-136		30.5-31						HOLD
S-137		35.5-36						HOLD
S-138	MW-6	.5-1'	G	SOIL	8/16/90	GC		RCRA METALS

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FIGURE F-6

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SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-139	MW-6	1.5-2	G	SOIL	8/16/90	GC	8/16	HOLD
S-140		2.5-3						RCRA METALS
S-141		3.5-4						Hold
S-142		4.5-5						RCRA METALS
S-143		5.5-6						HOLD
S-144		6.5-7						HOLD
S-145		7.5-8						HOLD
S-146		8.5-9						HOLD
S-147		9.5-10						HOLD
S-148		16.5-17						HOLD
S-149		21.5-22						HOLD
S-150		26.5-27						HOLD
S-151		31.5-32						HOLD
S-152	B-1	.5-1						RCRA METALS
S-153		.5-1						VOC
S-154		1.5-2						HOLD
S-155		2.5-3						RCRA METALS
S-156		2.5-3						VOC
S-157		3.5-4						HOLD
S-158		4.5-5						RCRA METALS
S-159		4.5-5						VOC
S-160		5.5-6						HOLD
S-161		6.5-7						HOLD

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FIGURE F-7

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SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-162	~~7.5-8~~ B-1	7.5-8	G	Soil	8/16/90	GC	8/16	HOLD
S-163		8.5-9						HOLD
S-164		9.5-10						HOLD
S-165	B-2	.5-1						RCRA METALS
S-166		.5-1					—	VOC
S-167		1.5-2						HOLD
S-168		2.5-3						RCRA METAL
S-169		2.5-3					—	VOC
S-170		3.5-4						HOLD
S-171		4.5-5						RCRA METAL
S-172		4.5-5					—	VOC
S-173		5.5-6						HOLD
S-174		6.5-7						HOLD
S-175		7.5-8						HOLD
S-176		8.5-9						HOLD
S-177		9.5-10						HOLD
S-178	B-3	.5-1						RCRA METAL
S-179		2.5-3						RCRA METAL
S-180		3.5-4						HOLD
S-181		4.5-5						RCRA METAL
S-182		5.5-6						HOLD
S-183		6.5-7						HOLD
S-184		7.5-8						HOLD

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FIGURE F-8

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NGDALE DRIVE, EXTON, PENNSYLVANIA 19341
(215) 524-2300

8/16 - 15 chain-of-custodyes

SAMPLE TRACKING LOG

AMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-185	B-3	8.5-9	G	SOIL	8/16/90	GC	8/16	HOLD
S-186	"	9.5-10	"	"	"	"	8/16	HOLD
S-187	B-4	.5-1	G	SOIL	8/17/90	GC	8/[illegible]	RCRA METAL
S-188		1.5-2						HOLD
S-189		2.5-3						RCRA METAL
S-190		3.5-4						HOLD
S-191		4.5-5						RCRA METAL
S-192		5.5-6						HOLD
S-193		6.5-7						HOLD
S-194		7.5-8						HOLD
S-195		8.5-9						HOLD
S-196		9.5-10						HOLD
S-197	B-5	.5-1						RCRA METAL
S-198		1.5-2						HOLD
S-199		2.5-3						RCRA METAL
S-200		3.5-4						HOLD
S-201		4.5-5						RCRA METAL
S-202		5.5-6						HOLD
S-203		6.5-7						HOLD
S-204		7.5-8						HOLD
S-205		8.5-9						HOLD
S-206		9.5-10						HOLD
S-207	B-6	.5-1						RCRA METAL

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FIGURE F-9

NTH CONSULTANTS, LTD.
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SAMPLE TRACKING LOG

MPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-208	B-6	1.5-2	G	SOIL	8/17/90	GC		HOLD
S-209		2.5-3						RCRA METAL
S-210		3.5-4						HOLD
S-211		4.5-5						RCRA METAL
S-212		5.5-6						HOLD
S-213		6.5-7						HOLD
S-214		7.5-8						HOLD
S-215		8.5-9						HOLD
S-216		9.5-10						HOLD
S-217	B-7	.5-1						RCRA METAL
S-218		1.5-2						HOLD
S-219		2.5-3						RCRA METAL
S-220		3.5-4						HOLD
S-221		4.5-5						RCRA METAL
S-222		5.5-6						HOLD
S-223		6.5-7						HOLD
S-224		7.5-8						HOLD
S-225		8.5-9						HOLD
S-226		9.5-10						HOLD
S-227	B-8	.5-1						RCRA METALS
S-228		1.5-2						HOLD
S-229		2.5-3						RCRA METALS
-230		3.5-4						HOLD

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FIGURE F-10

ssional Engineering & Environmental Services
SPRINGDALE DRIVE, EXTON, PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-231	B-8	4.5-5	G	SOIL	8/17/90	GC		~~HOLD~~ RCRA METAL
S-232		5.5-6						HOLD
S-233		6.5-7						HOLD
S-234		7.5-8						HOLD
S-235		8.5-9						HOLD
S-236		9.5-10						HOLD
S-237	B-9	.5-1						RCRA METAL
S-238		1.5-2						HOLD
S-239		2.5-3						RCRA METAL
S-240		3.5-4						HOLD
S-241		4.5-5(D)						RCRA METAL
S-242		5.5-6						HOLD
S-243		6.5-7						HOLD
S-244		7.5-8						HOLD
S-245		8.5-9						HOLD
S-246		9.5-10						HOLD
S-247		4.5-5(D)						RCRA METALS
S-248	HAB-12	.5-1	G	SOIL	8/18/90	JT		RCRA METALS
S-249	HAB-13	.5-1	G	SOIL	"	JT		RCRA METALS
S-250	B-10	.5-1	G	SOIL	5/20/90	GC		RCRA METALS
S-251		1.5-2						HOLD
S-252		2.5-3						RCRA METAL
S-253		3.5-4						HOLD

OJECT NO. 893320W

FIGURE F-11

H CONSULTANTS, LTD.
...ional Engineering & Environmental Services
...RINGDALE DRIVE, EXTON, PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-254	B-10	4.5-5	G	Soil	8/20/90	GC		RCRA METALS
S-255		5.5-6						HOLD
S-256		6.5-7						HOLD
S-257		7.5-8						HOLD
S-258		8.5-9						HOLD
S-259		9.5-10						HOLD
S-260	B-11	.5-1						RCRA METAL
S-261		1.5-2						TPH 8 "
S-262		1.5-2				JT		VOC \ -
S-263		2.5-3				GC		RCRA METAL
S-264		3.5-4'						HOLD
S-265		4.5-5						RCRA METAL
S-266		5.5-6						HOLD
S-267		6.5-7						HOLD
S-268		7.5-8						HOLD
S-269		8.5-9						HOLD
S-270		9.5-10						HOLD
S-271	B-12	.5-1						RCRA METAL
S-272		1.5-2'				JT		VOC
S-273		1.5-2				GC		~~HOLD~~ TPH
S-274		3.5-4'						RCRA METAL
S-275		~~2.5-3'~~ 7.5-8				JT		VOC
S-276		4.5-5'				GC		RCRA METAL

PROJECT NO. 893320W

FIGURE F-12

H CONSULTANTS, LTD.
sional Engineering & Environmental Services
PRINGDALE DRIVE, EXTON, PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-277	B-12	5.5-6	G	Soil	8/20/90	GC		HOLD
S-278		6.5-7						HOLD
S-279		7.5-8						HOLD
S-280		8.5-9						HOLD
S-281		9.5-10						HOLD
S-282		10.5-11						HOLD
S-283		10.5-11						VOC
S-284	B-13	.5-1						RCRA METAL
S-285		1.5-2						HOLD
S-286		4.5-5' (S)						RCRA METAL
S-287		4.5-5' (S)						VOC
S-288	B-14	.5-1' (D)						RCRA METAL
S-289		.5-1' (D)						RCRA METAL
S-290		1.5-2'						HOLD
S-291		2.5-3						RCRA METAL TPH *
S-292		3.5-4						HOLD
S-293		4.5-5						HOLD
S-294		5.5-6						RCRA METAL
S-295		6.5-7						HOLD
S-296		7.5-8						HOLD
S-297		8.5-9						HOLD
S-298		9.5-10						HOLD
S-299		2.5-3						VOC

PROJECT NO. 893320W

FIGURE F-13

.H CONSULTANTS, LTD.
.sional Engineering & Environmental Services
.PRINGDALE DRIVE, EXTON, PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-300	B-15	.5-1	G	Soil	8/20/90	G C		RCRA METAL
S-301		1.5-2						HOLD
S-302		2.5-3						RCRA METAL
S-303		3.5-4						HOLD
S-304		4.5-5						RCRA METAL
S-305		5.5-6						HOLD
S-306		6.5-7						HOLD
S-307		7.5-8						HOLD
S-308		8.5-9						HOLD
S-309		9.5-10						HOLD
S-310	B-16	.5-1						RCRA METAL
S-311		1.5-2						HOLD
S-312		2.5-3						RCRA METAL
S-313		3.5-4						HOLD
S-314		4.5-5						RCRA METAL
S-315		5.5-6						HOLD
S-316		6.5-7						HOLD
S-317		7.5-8						HOLD
S-318		8.5-9						HOLD
S-319		9.5-10						HOLD
S-320	B-17	.5-1						RCRA METAL
S-321		.5-2						HOLD
S-322		2.5-3						RCRA METAL

PROJECT NO. 893320W

FIGURE F-14

...nal Engineering & Environmental Services
...NGDALE DRIVE, EXTON, PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-323	B-17	3.5-4	G	Soil	8/20/90	GC		HOLD
S-324		4.5-5(D)						RCRA METAL
S-325		4.5-5(D)						RCRA METAL
S-326		5.5-6						HOLD
S-327		6.5-7						HOLD
S-328		7.5-8						HOLD
S-329		8.5-9						HOLD
S-330		9.5-10						HOLD
S-331	B-18	.5-1						RCRA METAL
S-332		1.5-2						HOLD 8270, 410/413
-333		2.5-3						RCRA METAL
S-334		3.5-4						HOLD
S-335		4.5-5						RCRA METAL
S-336		5.5-6						HOLD
S-337		6.5-7						HOLD
S-338		7.5-8						HOLD
S-339		8.5-9						HOLD
S-340		9.5-10						HOLD
S-341		1.5-2'						VOC 8240
S-342	B-19	1.5-2						RCRA METAL
S-343		2.5-3						RCRA METAL
S-344		3.5-4						HOLD
S-345		4.5-5						RCRA METAL

PR ...ECT NO. 893320W

FIGURE F-15

TH CONSULTANTS, LTD.
essional Engineering & Environmental Services
0 SPRINGDALE DRIVE, EXTON, PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-346	B-19	5.5-6	G	SOIL	8/20/90	GC	8/21	HOLD
S-347		6.5-7						HOLD
S-348		7.5-8						HOLD
S-349		8.5-9						HOLD
S-350		9.5-10						HOLD
S-351	HAB-14	.5-1 (D)						RCRA METAL
S-352	"	1.5-2						RCRA METAL
S-353	"	.5-1 (D)						RCRA METAL
S-354	HAB-15	.5-1 (D)						RCRA METAL
S-355	B-16	2.5-3 (D)						RCRA METAL
S-356	HAB-15	.5-1 (D)						RCRA METAL
S-357	HAB-	2.5-3'			8/21/90	JT		TPH
S-358	MW-1		GRAB	AQUEOUS	8/21/90	JT		RCRA METALS - Dissolved
S-359								VOC
S-360								SVOC semi
S-361								TPH
S-362	MW-1 Dupe							RCRA METALS Dissolved
S-363								VOC
S-364								semi
S-365								TPH
S-366	Field Blank							VOA
S-367	MW-5							VOC
S-368								RCRA METALS Dissolved

PROJECT NO. 893320W

FIGURE F-16

NTH CONSULTANTS, LTD.
Professional Engineering & Environmental Services
50 SPRINGDALE DRIVE, EXTON, PENNSYLVANIA 19341
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
~~S-369~~	MW-5		G	Aqueous	8/21/90			Semi
S-370	"							TPH
S-371	MW-2							VOC
S-372	↓							RCRA METAL
S-373	↓							Semi vol
S-374	↓							TPH
S-375	MW-3							VOC
S-376	↓							RCRA METAL
S-377	↓							Semi vol
S-378	↓							TPH
S-379	MW-6							VOC
S-380	↓							RCRA METAL
S-381	↓							Semi vol
S-382	↓							TPH
S-383	MW-4							VOC
S-384	↓							RCRA METAL
S-385	↓							Semi vol
S-386	↓							TPH
S-387	Barrel 1-6							RCRA METALS
S-388	↓							IGN CORR/REACT
S-389	Barrel 7-12							RCRA METALS
S-390	↓							IGN CORR/REACT
S-391								

PROJECT NO. 893320W

FIGURE F-17

CONSULTANTS, LTD.
Professional Engineering & Environmental Services
[illegible] SPRINGDALE DRIVE, EXTON, PENNSYLVANIA [illegible]
(215) 524-2300

SAMPLE TRACKING LOG

SAMPLE ID	LOCATION	DEPTH INTERVAL	COMP/ GRAB	MATRIX	SAMPLE DATE	SAMPLER	LAB DATE	PARAMETER
S-392	Soil Barrels 1, 2, 3		C	Soil	8/21/90	JF	8/22	Ign. Corr. React. TCLP Metals
S-393	Soil Barrels 4, 5, 6							
S-394	Soil Barrels 7, 8, 9							
S-395	Soil Barrels 10, 11, 12							
S-396	Soil Barrels 13, 14, 15							
S-397	Soil Barrels 16, 17, 18							
S-398	Soil Barrels 19, 20, 21							
TP-1	Test pits	.5-1 2.5-3	Comp	Soil	8/18/90	GC	8/22*	
TP-2		"					" *	
TP-3		"					" *	-
TP-4		"					" *	
S-399	NO SAMPLE							
S-400	MW-4		G	Aqueous	9/26/90	DA	9/26	8240, 8270, 418.1, 417.2, RCRA Metals
S-401	Field Blank		G	"	"	"	"	8240, 8270, RCRA Metals (Bis)
S-402	MW-3		G	"	"	"	"	8240, 8270, 418.1, 417.2, RCRA [illegible]
S-403	MW-6		"	"	"	"	"	"
S-404	MW-5		"	"	"	"	"	"
S-405	MW-1		"	"	"	"	"	"
S-406	MW-2		"	"	"	"	"	"
S-407	MW-2 (Dupe)		"	"	"	"	"	"

PROJECT NO. 89332CW

FIGURE F-18

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S291
LAB ID: 028843

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
100027	4-Nitrophenol	<DL	1918	
132649	Dibenzofuran	<DL	384	
121142	2,4-Dinitrotoluene	<DL	384	
84662	Diethylphthalate	<DL	384	
7005723	4-Chlorophenyl-phenylether	<DL	384	
86737	Fluorene	<DL	384	
100016	4-Nitroaniline	<DL	1918	
534521	4,6-Dinitro-2-methylphenol	<DL	1918	
86306	N-Nitrosodiphenylamine	<DL	384	
101553	4-Bromophenyl-phenylether	<DL	384	
118741	Hexachlorobenzene	<DL	384	
87865	Pentachlorophenol	<DL	1918	
85018	Phenanthrene	<DL	384	
120127	Anthracene	<DL	384	
84742	Di-n-butylphthalate	<DL	384	
206440	Fluoranthene	<DL	384	
129000	Pyrene	<DL	384	
856877	Butylbenzylphthalate	<DL	384	
91941	3,3'-Dichlorobenzidine	<DL	767	
56553	Benzo(a)anthracene	<DL	384	
218019	Chrysene	<DL	384	
117817	bis(2-Ethylhexyl)phthalate	<DL	384	
117840	Di-n-octylphthalate	<DL	384	
205992	Benzo(b)fluoranthene	<DL	384	
207089	Benzo(k)fluoranthene	<DL	384	
50328	Benzo(a)pyrene	<DL	384	
193395	Indeno(1,2,3-cd)pyrene	<DL	384	
53703	Dibenzo(a,h)anthracene	<DL	384	
191242	Benzo(g,h,i)perylene	<DL	384	

FIGURE F-84

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD

ANALYTICAL METHOD: 8270

SAMPLE: S332
LAB ID: 028857

DATE RECEIVED: 08/21/90
DATE ANALYZED: 08/29/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
108952	Phenol	<DL	376	
111444	bis(2-Chloroethyl)ether	<DL	376	
95578	2-Chlorophenol	<DL	376	
541731	1,3-Dichlorobenzene	<DL	376	
106467	1,4-Dichlorobenzene	<DL	376	
100516	Benzyl alcohol	<DL	376	
95501	1,2-Dichlorobenzene	<DL	376	
95487	2-Methylphenol	<DL	376	
108601	bis(2-Chloroisopropyl)ether	<DL	376	
106445	4-Methylphenol	<DL	376	
621647	N-Nitroso-di-n-propylamine	<DL	376	
67721	Hexachloroethane	<DL	376	
98953	Nitrobenzene	<DL	376	
78591	Isophorone	<DL	376	
88755	2-Nitrophenol	<DL	376	
105679	2,4-Dimethylphenol	<DL	376	
65850	Benzoic acid	<DL	1879	
111911	bis(2-Chloroethoxy)methane	<DL	376	
120832	2,4-Dichlorophenol	<DL	376	
120821	1,2,4-Trichlorobenzene	<DL	376	
91203	Naphthalene	<DL	376	
106478	4-Chloroaniline	<DL	376	
87683	Hexachlorobutadiene	<DL	376	
59507	4-Chloro-3-methylphenol	<DL	376	
91576	2-Methylnaphthalene	<DL	376	
774474	Hexachlorocyclopentadiene	<DL	376	
88062	2,4,6-Trichlorophenol	<DL	376	
95954	2,4,5-Trichlorophenol	<DL	1879	
91587	2-Chloronaphthalene	<DL	376	
88744	2-Nitroaniline	<DL	1879	
131113	Dimethylphthalate	<DL	376	
208968	Acenaphthylene	<DL	376	
606202	2,6-Dinitrotoluene	<DL	376	
99092	3-Nitroaniline	<DL	1879	
83329	Acenaphthene	<DL	376	
51285	2,4-Dinitrophenol	<DL	1879	

FIGURE F-8

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S332
LAB ID: 028857

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
100027	4-Nitrophenol	<DL	1879	
132649	Dibenzofuran	<DL	376	
121142	2,4-Dinitrotoluene	<DL	376	
84662	Diethylphthalate	<DL	376	
7005723	4-Chlorophenyl-phenylether	<DL	376	
86737	Fluorene	<DL	376	
100016	4-Nitroaniline	<DL	1879	
534521	4,6-Dinitro-2-methylphenol	<DL	1879	
86306	N-Nitrosodiphenylamine	<DL	376	
101553	4-Bromophenyl-phenylether	<DL	376	
118741	Hexachlorobenzene	<DL	376	
87865	Pentachlorophenol	<DL	1879	
85018	Phenanthrene	<DL	376	
120127	Anthracene	<DL	376	
84742	Di-n-butylphthalate	<DL	376	
206440	Fluoranthene	<DL	376	
129000	Pyrene	<DL	376	
856877	Butylbenzylphthalate	<DL	376	
91941	3,3'-Dichlorobenzidine	<DL	752	
56553	Benzo(a)anthracene	<DL	376	
218019	Chrysene	<DL	376	
117817	bis(2-Ethylhexyl)phthalate	<DL	376	
117840	Di-n-octylphthalate	<DL	376	
205992	Benzo(b)fluoranthene	<DL	376	
207089	Benzo(k)fluoranthene	<DL	376	
50328	Benzo(a)pyrene	<DL	376	
193395	Indeno(1,2,3-cd)pyrene	<DL	376	
53703	Dibenzo(a,h)anthracene	<DL	376	
191242	Benzo(g,h,i)perylene	<DL	376	

FIGURE F-86

EcoTek LSI

CLIENT: NTH Consultants,LTD

SAMPLE: Blank
LAB ID: Q1082706

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	72	35-114
2-Fluorobiphenyl	74	43-116
Terphenyl-d14	109	33-141
Phenol-d6	51	10-94
2-Fluorophenol	53	21-100
2,4,6-Tribromophenol	70	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-87

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S261
LAB ID: 028827

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	59	35-114
2-Fluorobiphenyl	68	43-116
Terphenyl-d14	108	33-141
Phenol-d6	46	10-94
2-Fluorophenol	48	21-100
2,4,6-Tribromophenol	60	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

EcoTek LSI

CLIENT: NTH COnsultants, LTD

SAMPLE: S273
LAB ID: 028834

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	63.6	35-114
2-Fluorobiphenyl	98.8	43-116
Terphenyl-d14	107.8	33-141
Phenol-d6	58	10-94
2-Fluorophenol	61	21-100
2,4,6-Tribromophenol	42	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S291
LAB ID: 028843

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	73	35-114
2-Fluorobiphenyl	95	43-116
Terphenyl-d14	130	33-141
Phenol-d6	55	10-94
2-Fluorophenol	50	21-100
2,4,6-Tribromophenol	75	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-90

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S332
LAB ID: 028857

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	88	43-116
Terphenyl-d14	132	33-141
Phenol-d6	61	10-94
2-Fluorophenol	66	21-100
2,4,6-Tribromophenol	80	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-91

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: WANTEC Contract:

Lab Code: WANTEC Case No.: SAS No.: 5574A SDG No.: AT821

Matrix Spike - EPA Sample No.: AT821 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC LIMIT REC.
Phenol	7184.	0.	3389.	47.	26- 90
2-Chlorophenol	7184.	0.	3261.	45.	25-102
1,4-Dichlorobenzene	3592.	0.	1332.	37.	28-104
N-Nitroso-di-n-prop.(1)	3592.	0.	1736.	48.	41-126
1,2,4-Trichlorobenzene	3592.	0.	1842.	51.	38-107
4-Chloro-3-methylphenol	7184.	0.	3808.	53.	26-103
Acenaphthene	3592.	8.	1809.	50.	31-137
4-Nitrophenol	7184.	0.	4411.	61.	11-114
2,4-Dinitrotoluene	3592.	0.	1842.	51.	28- 89
Pentachlorophenol	7184.	0.	4256.	59.	17-109
Pyrene	3592.	99.	2295.	61.	35-142

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	7184.	3306.	46.	2.	35	26- 90
2-Chlorophenol	7184.	3319.	46.	2.	50	25-102
1,4-Dichlorobenzene	3592.	1474.	41.	10.	27	28-104
N-Nitroso-di-n-prop.(1)	3592.	1776.	49.	2.	38	41-126
1,2,4-Trichlorobenzene	3592.	1721.	48.	7.	23	38-107
4-Chloro-3-methylphenol	7184.	3825.	53.	0.	33	26-103
Acenaphthene	3592.	1741.	48.	4.	19	31-137
4-Nitrophenol	7184.	4414.	61.	0.	50	11-114
2,4-Dinitrotoluene	3592.	1840.	51.	0.	47	28- 89
Pentachlorophenol	7184.	4450.	62.	4.	47	17-109
Pyrene	3592.	2448.	65.	7.	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS:

EcoTek LSI

CASE NARRATIVE FOR SEMI-VOLATILE ANALYSIS USING SW-648 METHOD 8270

CLIENT: NTH Consultants, LTD

LSDG: 0298

SAMPLE: S-357

* All semi-volatile organics were analyzed by GC/MS on either or both of the instruments listed below.

Hewlett-Packard MSD	Inst. ID.	7001
Extrel ELQ-400	Inst. ID.	EXTR

* Chromatography was performed on a 30m J & W fused silica DB-5 capillary columns.

* Extraction was performed on a 30 gram fraction.

* Final extract concentration was performed by the nitrogen blowdown technique to a final volume of 1.0 ml.

* The report of the compounds identified and quantified in the sample is contained in the following sections of the data package. Also included are the appropriate calibration and quality control data where applicable.

* Method detection limits or practical quantitation limits (PQL) are as stated in SW-846 8270. The PQLs are factored for initial sample weight and sample % moisture.

* A method blank was extracted along with the sample and found to be free of any target compounds.

* A search for tentatively identified compounds (TICs) was performed on sample S-357. The results indicate the absence of any specific significant compounds. But the chromatogram does reveal a large broad mass characteristic of mid to high boiling petroleum based compounds in the carbon 20 to carbon 35 range.

* A soil matrix spike and matrix spike duplicate from another sample group extracted and analyzed in the same time frame as sample S-088 is included with this report.

FIGURE F-93

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD

ANALYTICAL METHOD: 8270

SAMPLE: S357
LAB ID: 029801

DATE RECEIVED: 08/23/90
DATE ANALYZED: 08/30/90
DATE REPORTED: 09/06/90

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	PQL ug/Kg	NOTE
108952	Phenol	BQL	379	
111444	bis(2-Chloroethyl)ether	BQL	379	
95578	2-Chlorophenol	BQL	379	
541731	1,3-Dichlorobenzene	BQL	379	
106467	1,4-Dichlorobenzene	BQL	379	
100516	Benzyl alcohol	BQL	379	
95501	1,2-Dichlorobenzene	BQL	379	
95487	2-Methylphenol	BQL	379	
108601	bis(2-Chloroisopropyl)ether	BQL	379	
106445	4-Methylphenol	BQL	379	
621647	N-Nitroso-di-n-propylamine	BQL	379	
67721	Hexachloroethane	BQL	379	
98953	Nitrobenzene	BQL	379	
78591	Isophorone	BQL	379	
88755	2-Nitrophenol	BQL	379	
105679	2,4-Dimethylphenol	BQL	379	
65850	Benzoic acid	BQL	1896	
111911	bis(2-Chloroethoxy)methane	BQL	379	
120832	2,4-Dichlorophenol	BQL	379	
120821	1,2,4-Trichlorobenzene	BQL	379	
91203	Naphthalene	BQL	379	
106478	4-Chloroaniline	BQL	379	
87683	Hexachlorobutadiene	BQL	379	
59507	4-Chloro-3-methylphenol	BQL	379	
91576	2-Methylnaphthalene	BQL	379	
774474	Hexachlorocyclopentadiene	BQL	379	
88062	2,4,6-Trichlorophenol	BQL	379	
95954	2,4,5-Trichlorophenol	BQL	1896	
91587	2-Chloronaphthalene	BQL	379	
88744	2-Nitroaniline	BQL	1896	
131113	Dimethylphthalate	BQL	379	
208968	Acenaphthylene	BQL	379	
606202	2,6-Dinitrotoluene	BQL	379	
99092	3-Nitroaniline	BQL	1896	
83329	Acenaphthene	BQL	379	
51285	2,4-Dinitrophenol	BQL	1896	

FIGURE F-94

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S357
LAB ID: 029801

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	PQL ug/Kg	NOTE
100027	4-Nitrophenol	BQL	1896	
132649	Dibenzofuran	BQL	379	
121142	2,4-Dinitrotoluene	BQL	379	
84662	Diethylphthalate	BQL	379	
7005723	4-Chlorophenyl-phenylether	BQL	379	
86737	Fluorene	BQL	379	
100016	4-Nitroaniline	BQL	1896	
534521	4,6-Dinitro-2-methylphenol	BQL	1896	
86306	N-Nitrosodiphenylamine	BQL	379	
101553	4-Bromophenyl-phenylether	BQL	379	
118741	Hexachlorobenzene	BQL	379	
87865	Pentachlorophenol	BQL	1896	
85018	Phenanthrene	111	379	J
120127	Anthracene	24	379	J
84742	Di-n-butylphthalate	BQL	379	
206440	Fluoranthene	132	379	J
129000	Pyrene	124	379	J
856877	Butylbenzylphthalate	BQL	379	
91941	3,3'-Dichlorobenzidine	BQL	759	
56553	Benzo(a)anthracene	77	379	J
218019	Chrysene	79	379	J
117817	bis(2-Ethylhexyl)phthalate	77	379	J
117840	Di-n-octylphthalate	BQL	379	
205992	Benzo(b)fluoranthene	BQL	379	
207089	Benzo(k)fluoranthene	BQL	379	
50328	Benzo(a)pyrene	BQL	379	
193395	Indeno(1,2,3-cd)pyrene	BQL	379	
53703	Dibenzo(a,h)anthracene	BQL	379	
191242	Benzo(g,h,i)perylene	BQL	379	

PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-95

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD

ANALYTICAL METHOD: 8270

SAMPLE: Blank

LAB ID: Q1082706

DATE RECEIVED: 08/27/90
DATE ANALYZED: 08/29/90
DATE REPORTED: 09/06/90

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	PQL ug/Kg	NOTE
108952	Phenol	BQL	333	
111444	bis(2-Chloroethyl)ether	BQL	333	
95578	2-Chlorophenol	BQL	333	
541731	1,3-Dichlorobenzene	BQL	333	
106467	1,4-Dichlorobenzene	BQL	333	
100516	Benzyl alcohol	BQL	333	
95501	1,2-Dichlorobenzene	BQL	333	
95487	2-Methylphenol	BQL	333	
108601	bis(2-Chloroisopropyl)ether	BQL	333	
106445	4-Methylphenol	BQL	333	
621647	N-Nitroso-di-n-propylamine	BQL	333	
67721	Hexachloroethane	BQL	333	
98953	Nitrobenzene	BQL	333	
78591	Isophorone	BQL	333	
88755	2-Nitrophenol	BQL	333	
105679	2,4-Dimethylphenol	BQL	333	
65850	Benzoic acid	BQL	1667	
111911	bis(2-Chloroethoxy)methane	BQL	333	
120832	2,4-Dichlorophenol	BQL	333	
120821	1,2,4-Trichlorobenzene	BQL	333	
91203	Naphthalene	BQL	333	
106478	4-Chloroaniline	BQL	333	
87683	Hexachlorobutadiene	BQL	333	
59507	4-Chloro-3-methylphenol	BQL	333	
91576	2-Methylnaphthalene	BQL	333	
774474	Hexachlorocyclopentadiene	BQL	333	
88062	2,4,6-Trichlorophenol	BQL	333	
95954	2,4,5-Trichlorophenol	BQL	1667	
91587	2-Chloronaphthalene	BQL	333	
88744	2-Nitroaniline	BQL	1667	
131113	Dimethylphthalate	BQL	333	
208968	Acenaphthylene	BQL	333	
606202	2,6-Dinitrotoluene	BQL	333	
99092	3-Nitroaniline	BQL	1667	
83329	Acenaphthene	BQL	333	
51285	2,4-Dinitrophenol	BQL	1667	

FIGURE F-91

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: Blank
LAB ID: Q1082706

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	PQL ug/Kg	NOTE
100027	4-Nitrophenol	BQL	1667	
132649	Dibenzofuran	BQL	333	
121142	2,4-Dinitrotoluene	BQL	333	
84662	Diethylphthalate	BQL	333	
7005723	4-Chlorophenyl-phenylether	BQL	333	
86737	Fluorene	BQL	333	
100016	4-Nitroaniline	BQL	1667	
534521	4,6-Dinitro-2-methylphenol	BQL	1667	
86306	N-Nitrosodiphenylamine	BQL	333	
101553	4-Bromophenyl-phenylether	BQL	333	
118741	Hexachlorobenzene	BQL	333	
87865	Pentachlorophenol	BQL	1667	
85018	Phenanthrene	BQL	333	
120127	Anthracene	BQL	333	
84742	Di-n-butylphthalate	BQL	333	
206440	Fluoranthene	BQL	333	
129000	Pyrene	BQL	333	
856877	Butylbenzylphthalate	BQL	333	
91941	3,3'-Dichlorobenzidine	BQL	667	
56553	Benzo(a)anthracene	BQL	333	
218019	Chrysene	BQL	333	
117817	bis(2-Ethylhexyl)phthalate	33	333	J
117840	Di-n-octylphthalate	BQL	333	
205992	Benzo(b)fluoranthene	BQL	333	
207089	Benzo(k)fluoranthene	BQL	333	
50328	Benzo(a)pyrene	BQL	333	
193395	Indeno(1,2,3-cd)pyrene	BQL	333	
53703	Dibenzo(a,h)anthracene	BQL	333	
191242	Benzo(g,h,i)perylene	BQL	333	

PQL = Practical Quantitation Limit
BQL = Below Quantitation Limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-97

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S357
LAB ID: 029801

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	66	23-120
2-Fluorobiphenyl	71	30-115
Terphenyl-d14	92	18-137
Phenol-d6	49	24-113
2-Fluorophenol	50	25-121
2,4,6-Tribromophenol	59	19-122

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-98

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: Blank
LAB ID: Q1082706

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	72	23-120
2-Fluorobiphenyl	74	30-115
Terphenyl-d14	109	18-137
Phenol-d6	51	24-113
2-Fluorophenol	53	25-121
2,4,6-Tribromophenol	70	19-122

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-99

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: WANTEC Contract:

Lab Code: WANTEC Case No.: SAS No.: 5574A SDG No.: AT821

Matrix Spike - EPA Sample No.: AT821 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC LIMITS REC.
Phenol	7184.	0.	3389.	47.	26- 90
2-Chlorophenol	7184.	0.	3261.	45.	25-102
1,4-Dichlorobenzene	3592.	0.	1332.	37.	28-104
N-Nitroso-di-n-prop.(1)	3592.	0.	1736.	48.	41-126
1,2,4-Trichlorobenzene	3592.	0.	1842.	51.	38-107
4-Chloro-3-methylphenol	7184.	0.	3808.	53.	26-103
Acenaphthene	3592.	8.	1809.	50.	31-137
4-Nitrophenol	7184.	0.	4411.	61.	11-114
2,4-Dinitrotoluene	3592.	0.	1842.	51.	28- 89
Pentachlorophenol	7184.	0.	4256.	59.	17-109
Pyrene	3592.	99.	2295.	61.	35-142

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	7184.	3306.	46.	2.	35	26- 90
2-Chlorophenol	7184.	3319.	46.	2.	50	25-102
1,4-Dichlorobenzene	3592.	1474.	41.	10.	27	28-104
N-Nitroso-di-n-prop.(1)	3592.	1776.	49.	2.	38	41-126
1,2,4-Trichlorobenzene	3592.	1721.	48.	7.	23	38-107
4-Chloro-3-methylphenol	7184.	3825.	53.	0.	33	26-103
Acenaphthene	3592.	1741.	48.	4.	19	31-137
4-Nitrophenol	7184.	4414.	61.	0.	50	11-114
2,4-Dinitrotoluene	3592.	1840.	51.	0.	47	28- 89
Pentachlorophenol	7184.	4450.	62.	4.	47	17-109
Pyrene	3592.	2448.	65.	7.	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 11 outside limits
ike Recovery: 0 out of 22 outside limits

COMMENTS:

EcoTek LSI

CASE NARRATIVE FOR SEMI-VOLATILE ANALYSIS USING SW-648 METHOD 8270

CLIENT: NTH Consultants, LTD

LSDG: 0294

SAMPLES: S360, S364, S369, S373, S377, S381, S385

* All semi-volatile organics were analyzed by GC/MS on either or both of the instruments listed below.

Hewlett-Packard MSD	Inst. ID.	7001
Extrel ELQ-400	Inst. ID.	EXTR

* Chromatography was performed on a 30m J & W fused silica DB-5 capillary columns.

* Extraction was performed on approximately a 1 liter volume of sample.

* Final extract concentration was performed by the nitrogen blowdown technique to a final volume of 2.0 ml unless stated otherwise.

* The reports of the compounds identified and quantified in the samples are contained in the following sections of the data package. Also included are the appropriate calibration and quality control data where applicable.

* Method detection limits or practical quantitation limits (PQL) are as stated in SW-846 8270. The PQLs are factored for initial sample volume, final extract volume and any necessary dilutions.

* The following exceptions and/or considerations should be noted for the sample group contained within.

  - Two blanks were extracted and analyzed along with these samples and found to be free of the target compounds of interest.

  - The acid surrogate recoveries for samples S360, S364, and S369 were below the control limits. These samples were re-extracted and the same occurrence was noted, thus it was determined the matrix interfered with the extraction. The recoveries for all other samples contained within are within QC limits.

  - A matrix spike and matrix spike duplicate were extracted and analyzed along with these samples. The recoveries for the spike compounds were within the QC limits.

  - All of the above samples were screened for tentatively identified compounds (TICs). No evidence of any petroleum based hydrocarbon compounds was found.

FIGURE F-101

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD. ANALYTICAL METHOD: 8270

SAMPLE: S-360 DATE RECEIVED: 08/22/90
LAB ID: 029403 DATE ANALYZED: 08/26/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	10	
111444	bis(2-Chloroethyl)ether	BQL	10	
95578	2-Chlorophenol	BQL	10	
541731	1,3-Dichlorobenzene	BQL	10	
106467	1,4-Dichlorobenzene	BQL	10	
100516	Benzyl alcohol	BQL	10	
95501	1,2-Dichlorobenzene	BQL	10	
95487	2-Methylphenol	BQL	10	
108601	bis(2-Chloroisopropyl)ether	BQL	10	
106445	4-Methylphenol	BQL	10	
621647	N-Nitroso-di-n-propylamine	BQL	10	
67721	Hexachloroethane	BQL	10	
98953	Nitrobenzene	BQL	10	
78591	Isophorone	BQL	10	
88755	2-Nitrophenol	BQL	10	
105679	2,4-Dimethylphenol	BQL	10	
65850	Benzoic acid	BQL	48	
111911	bis(2-Chloroethoxy)methane	BQL	10	
120832	2,4-Dichlorophenol	BQL	10	
120821	1,2,4-Trichlorobenzene	BQL	10	
91203	Naphthalene	BQL	10	
106478	4-Chloroaniline	BQL	10	
87683	Hexachlorobutadiene	BQL	10	
59507	4-Chloro-3-methylphenol	BQL	10	
91576	2-Methylnaphthalene	BQL	10	
774474	Hexachlorocyclopentadiene	BQL	10	
88062	2,4,6-Trichlorophenol	BQL	10	
95954	2,4,5-Trichlorophenol	BQL	48	
91587	2-Chloronaphthalene	BQL	10	
88744	2-Nitroaniline	BQL	48	
131113	Dimethylphthalate	BQL	10	
208968	Acenaphthylene	BQL	10	
606202	2,6-Dinitrotoluene	BQL	10	
99092	3-Nitroaniline	BQL	48	
83329	Acenaphthene	BQL	10	
51285	2,4-Dinitrophenol	BQL	48	

FIGURE F-102

EcoTek LSI

CLIENT: NTH Consultants, LTD.

SAMPLE: S-360
LAB ID: 029403

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	48	
132649	Dibenzofuran	BQL	10	
121142	2,4-Dinitrotoluene	BQL	10	
84662	Diethylphthalate	BQL	10	
7005723	4-Chlorophenyl-phenylether	BQL	10	
86737	Fluorene	BQL	10	
100016	4-Nitroaniline	BQL	48	
534521	4,6-Dinitro-2-methylphenol	BQL	48	
86306	N-Nitrosodiphenylamine	BQL	10	
101553	4-Bromophenyl-phenylether	BQL	10	
118741	Hexachlorobenzene	BQL	10	
87865	Pentachlorophenol	BQL	48	
85018	Phenanthrene	BQL	10	
120127	Anthracene	BQL	10	
84742	Di-n-butylphthalate	BQL	10	
206440	Fluoranthene	BQL	10	
129000	Pyrene	BQL	10	
856877	Butylbenzylphthalate	BQL	10	
91941	3,3'-Dichlorobenzidine	BQL	19	
56553	Benzo(a)anthracene	BQL	10	
218019	Chrysene	BQL	10	
117817	bis(2-Ethylhexyl)phthalate	BQL	10	
117840	Di-n-octylphthalate	BQL	10	
205992	Benzo(b)fluoranthene	BQL	10	
207089	Benzo(k)fluoranthene	BQL	10	
50328	Benzo(a)pyrene	BQL	10	
193395	Indeno(1,2,3-cd)pyrene	BQL	10	
53703	Dibenzo(a,h)anthracene	BQL	10	
191242	Benzo(g,h,i)perylene	BQL	10	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-10

EcoTek LSI

CLIENT: NTH Consultants, LTD.

SAMPLE: S-360
LAB ID: 029403

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	85	43-116
Terphenyl-d14	100	33-141
Phenol-d6	1	10-94
2-Fluorophenol	2	21-100
2,4,6-Tribromophenol	22	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-104

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD.

ANALYTICAL METHOD: 8270

SAMPLE: S-360 Reextraction
LAB ID: 029403R

DATE RECEIVED: 08/22/90
DATE ANALYZED: 08/30/90
DATE REPORTED: 09/05/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	10	
111444	bis(2-Chloroethyl)ether	BQL	10	
95578	2-Chlorophenol	BQL	10	
541731	1,3-Dichlorobenzene	BQL	10	
106467	1,4-Dichlorobenzene	BQL	10	
100516	Benzyl alcohol	BQL	10	
95501	1,2-Dichlorobenzene	BQL	10	
95487	2-Methylphenol	BQL	10	
108601	bis(2-Chloroisopropyl)ether	BQL	10	
106445	4-Methylphenol	BQL	10	
621647	N-Nitroso-di-n-propylamine	BQL	10	
67721	Hexachloroethane	BQL	10	
98953	Nitrobenzene	BQL	10	
78591	Isophorone	BQL	10	
88755	2-Nitrophenol	BQL	10	
105679	2,4-Dimethylphenol	BQL	10	
65850	Benzoic acid	BQL	48	
111911	bis(2-Chloroethoxy)methane	BQL	10	
120832	2,4-Dichlorophenol	BQL	10	
120821	1,2,4-Trichlorobenzene	BQL	10	
91203	Naphthalene	BQL	10	
106478	4-Chloroaniline	BQL	10	
87683	Hexachlorobutadiene	BQL	10	
59507	4-Chloro-3-methylphenol	BQL	10	
91576	2-Methylnaphthalene	BQL	10	
774474	Hexachlorocyclopentadiene	BQL	10	
88062	2,4,6-Trichlorophenol	BQL	10	
95954	2,4,5-Trichlorophenol	BQL	48	
91587	2-Chloronaphthalene	BQL	10	
88744	2-Nitroaniline	BQL	48	
131113	Dimethylphthalate	BQL	10	
208968	Acenaphthylene	BQL	10	
606202	2,6-Dinitrotoluene	BQL	10	
99092	3-Nitroaniline	BQL	48	
83329	Acenaphthene	BQL	10	
51285	2,4-Dinitrophenol	BQL	48	

FIGURE F-105

EcoTek LSI

CLIENT: NTH Consultants, LTD.

SAMPLE: S-360
LAB ID: 029403R

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	48	
132649	Dibenzofuran	BQL	10	
121142	2,4-Dinitrotoluene	BQL	10	
84662	Diethylphthalate	BQL	10	
7005723	4-Chlorophenyl-phenylether	BQL	10	
86737	Fluorene	BQL	10	
100016	4-Nitroaniline	BQL	48	
534521	4,6-Dinitro-2-methylphenol	BQL	48	
86306	N-Nitrosodiphenylamine	BQL	10	
101553	4-Bromophenyl-phenylether	BQL	10	
118741	Hexachlorobenzene	BQL	10	
87865	Pentachlorophenol	BQL	48	
85018	Phenanthrene	BQL	10	
120127	Anthracene	BQL	10	
84742	Di-n-butylphthalate	BQL	10	
206440	Fluoranthene	BQL	10	
129000	Pyrene	BQL	10	
856877	Butylbenzylphthalate	BQL	10	
91941	3,3'-Dichlorobenzidine	BQL	19	
56553	Benzo(a)anthracene	BQL	10	
218019	Chrysene	BQL	10	
117817	bis(2-Ethylhexyl)phthalate	BQL	10	
117840	Di-n-octylphthalate	4	10	J
205992	Benzo(b)fluoranthene	BQL	10	
207089	Benzo(k)fluoranthene	BQL	10	
50328	Benzo(a)pyrene	BQL	10	
193395	Indeno(1,2,3-cd)pyrene	BQL	10	
53703	Dibenzo(a,h)anthracene	BQL	10	
191242	Benzo(g,h,i)perylene	BQL	10	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-

EcoTek LSI

CLIENT: NTH Consultants, LTD.

SAMPLE: S-360
LAB ID: 029403R

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	83	35-114
2-Fluorobiphenyl	79	43-116
Terphenyl-d14	82	33-141
Phenol-d6	1	10-94
2-Fluorophenol	1	21-100
2,4,6-Tribromophenol	18	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-107

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD.

ANALYTICAL METHOD: 8270

SAMPLE: S-364
LAB ID: 029407

DATE RECEIVED: 08/22/90
DATE ANALYZED: 08/27/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	9	
111444	bis(2-Chloroethyl)ether	BQL	9	
95578	2-Chlorophenol	BQL	9	
541731	1,3-Dichlorobenzene	BQL	9	
106467	1,4-Dichlorobenzene	BQL	9	
100516	Benzyl alcohol	BQL	9	
95501	1,2-Dichlorobenzene	BQL	9	
95487	2-Methylphenol	BQL	9	
108601	bis(2-Chloroisopropyl)ether	BQL	9	
106445	4-Methylphenol	BQL	9	
621647	N-Nitroso-di-n-propylamine	BQL	9	
67721	Hexachloroethane	BQL	9	
98953	Nitrobenzene	BQL	9	
78591	Isophorone	BQL	9	
88755	2-Nitrophenol	BQL	9	
105679	2,4-Dimethylphenol	BQL	9	
65850	Benzoic acid	BQL	46	
111911	bis(2-Chloroethoxy)methane	BQL	9	
120832	2,4-Dichlorophenol	BQL	9	
120821	1,2,4-Trichlorobenzene	BQL	9	
91203	Naphthalene	BQL	9	
106478	4-Chloroaniline	BQL	9	
87683	Hexachlorobutadiene	BQL	9	
59507	4-Chloro-3-methylphenol	BQL	9	
91576	2-Methylnaphthalene	BQL	9	
774474	Hexachlorocyclopentadiene	BQL	9	
88062	2,4,6-Trichlorophenol	BQL	9	
95954	2,4,5-Trichlorophenol	BQL	46	
91587	2-Chloronaphthalene	BQL	9	
88744	2-Nitroaniline	BQL	46	
131113	Dimethylphthalate	BQL	9	
208968	Acenaphthylene	BQL	9	
606202	2,6-Dinitrotoluene	BQL	9	
99092	3-Nitroaniline	BQL	46	
83329	Acenaphthene	BQL	9	
51285	2,4-Dinitrophenol	BQL	46	

FIGURE F-1C

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-364
LAB ID: 029407

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	46	
132649	Dibenzofuran	BQL	9	
121142	2,4-Dinitrotoluene	BQL	9	
84662	Diethylphthalate	BQL	9	
7005723	4-Chlorophenyl-phenylether	BQL	9	
86737	Fluorene	BQL	9	
100016	4-Nitroaniline	BQL	46	
534521	4,6-Dinitro-2-methylphenol	BQL	46	
86306	N-Nitrosodiphenylamine	BQL	9	
101553	4-Bromophenyl-phenylether	BQL	9	
118741	Hexachlorobenzene	BQL	9	
87865	Pentachlorophenol	BQL	46	
85018	Phenanthrene	BQL	9	
120127	Anthracene	BQL	9	
84742	Di-n-butylphthalate	BQL	9	
206440	Fluoranthene	BQL	9	
129000	Pyrene	BQL	9	
856877	Butylbenzylphthalate	BQL	9	
91941	3,3'-Dichlorobenzidine	BQL	18	
56553	Benzo(a)anthracene	BQL	9	
218019	Chrysene	BQL	9	
117817	bis(2-Ethylhexyl)phthalate	BQL	9	
117840	Di-n-octylphthalate	BQL	9	
205992	Benzo(b)fluoranthene	BQL	9	
207089	Benzo(k)fluoranthene	BQL	9	
50328	Benzo(a)pyrene	BQL	9	
193395	Indeno(1,2,3-cd)pyrene	BQL	9	
53703	Dibenzo(a,h)anthracene	BQL	9	
191242	Benzo(g,h,i)perylene	BQL	9	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-109

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-364
LAB ID: 029407

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	90	35-114
2-Fluorobiphenyl	88	43-116
Terphenyl-d14	96	33-141
Phenol-d6	1	10-94
2-Fluorophenol	2	21-100
2,4,6-Tribromophenol	18	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-11

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD.

ANALYTICAL METHOD: 8270

SAMPLE: S-364 Reextraction
LAB ID: 029407R

DATE RECEIVED: 08/22/90
DATE ANALYZED: 08/30/90
DATE REPORTED: 09/05/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	9	
111444	bis(2-Chloroethyl)ether	BQL	9	
95578	2-Chlorophenol	BQL	9	
541731	1,3-Dichlorobenzene	BQL	9	
106467	1,4-Dichlorobenzene	BQL	9	
100516	Benzyl alcohol	BQL	9	
95501	1,2-Dichlorobenzene	BQL	9	
95487	2-Methylphenol	BQL	9	
108601	bis(2-Chloroisopropyl)ether	BQL	9	
106445	4-Methylphenol	BQL	9	
621647	N-Nitroso-di-n-propylamine	BQL	9	
67721	Hexachloroethane	BQL	9	
98953	Nitrobenzene	BQL	9	
78591	Isophorone	BQL	9	
88755	2-Nitrophenol	BQL	9	
105679	2,4-Dimethylphenol	BQL	9	
65850	Benzoic acid	BQL	46	
111911	bis(2-Chloroethoxy)methane	BQL	9	
120832	2,4-Dichlorophenol	BQL	9	
120821	1,2,4-Trichlorobenzene	BQL	9	
91203	Naphthalene	BQL	9	
106478	4-Chloroaniline	BQL	9	
87683	Hexachlorobutadiene	BQL	9	
59507	4-Chloro-3-methylphenol	BQL	9	
91576	2-Methylnaphthalene	BQL	9	
774474	Hexachlorocyclopentadiene	BQL	9	
88062	2,4,6-Trichlorophenol	BQL	9	
95954	2,4,5-Trichlorophenol	BQL	46	
91587	2-Chloronaphthalene	BQL	9	
88744	2-Nitroaniline	BQL	46	
131113	Dimethylphthalate	BQL	9	
208968	Acenaphthylene	BQL	9	
606202	2,6-Dinitrotoluene	BQL	9	
99092	3-Nitroaniline	BQL	46	
83329	Acenaphthene	BQL	9	
51285	2,4-Dinitrophenol	BQL	46	

FIGURE F-11

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-364
LAB ID: 029407R

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	46	
132649	Dibenzofuran	BQL	9	
121142	2,4-Dinitrotoluene	BQL	9	
84662	Diethylphthalate	BQL	9	
7005723	4-Chlorophenyl-phenylether	BQL	9	
86737	Fluorene	BQL	9	
100016	4-Nitroaniline	BQL	46	
534521	4,6-Dinitro-2-methylphenol	BQL	46	
86306	N-Nitrosodiphenylamine	BQL	9	
101553	4-Bromophenyl-phenylether	BQL	9	
118741	Hexachlorobenzene	BQL	9	
87865	Pentachlorophenol	BQL	46	
85018	Phenanthrene	BQL	9	
120127	Anthracene	BQL	9	
84742	Di-n-butylphthalate	BQL	9	
206440	Fluoranthene	BQL	9	
129000	Pyrene	BQL	9	
856877	Butylbenzylphthalate	BQL	9	
91941	3,3'-Dichlorobenzidine	BQL	18	
56553	Benzo(a)anthracene	BQL	9	
218019	Chrysene	BQL	9	
117817	bis(2-Ethylhexyl)phthalate	BQL	9	
117840	Di-n-octylphthalate	3	9	J
205992	Benzo(b)fluoranthene	BQL	9	
207089	Benzo(k)fluoranthene	BQL	9	
50328	Benzo(a)pyrene	BQL	9	
193395	Indeno(1,2,3-cd)pyrene	BQL	9	
53703	Dibenzo(a,h)anthracene	BQL	9	
191242	Benzo(g,h,i)perylene	BQL	9	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-11

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-364
LAB ID: 029407R

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	62	35-114
2-Fluorobiphenyl	59	43-116
Terphenyl-d14	56	33-141
Phenol-d6	2	10-94
2-Fluorophenol	3	21-100
2,4,6-Tribromophenol	12	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-113

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD. ANALYTICAL METHOD: 8270

SAMPLE: S-369 DATE RECEIVED: 08/22/90
LAB ID: 029412 DATE ANALYZED: 08/27/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	9	
111444	bis(2-Chloroethyl)ether	BQL	9	
95578	2-Chlorophenol	BQL	9	
541731	1,3-Dichlorobenzene	BQL	9	
106467	1,4-Dichlorobenzene	BQL	9	
100516	Benzyl alcohol	BQL	9	
95501	1,2-Dichlorobenzene	BQL	9	
95487	2-Methylphenol	BQL	9	
108601	bis(2-Chloroisopropyl)ether	BQL	9	
106445	4-Methylphenol	BQL	9	
621647	N-Nitroso-di-n-propylamine	BQL	9	
67721	Hexachloroethane	BQL	9	
98953	Nitrobenzene	BQL	9	
78591	Isophorone	BQL	9	
88755	2-Nitrophenol	BQL	9	
105679	2,4-Dimethylphenol	BQL	9	
65850	Benzoic acid	BQL	47	
111911	bis(2-Chloroethoxy)methane	BQL	9	
120832	2,4-Dichlorophenol	BQL	9	
120821	1,2,4-Trichlorobenzene	5	9	J
91203	Naphthalene	BQL	9	
106478	4-Chloroaniline	BQL	9	
87683	Hexachlorobutadiene	BQL	9	
59507	4-Chloro-3-methylphenol	BQL	9	
91576	2-Methylnaphthalene	BQL	9	
774474	Hexachlorocyclopentadiene	BQL	9	
88062	2,4,6-Trichlorophenol	BQL	9	
95954	2,4,5-Trichlorophenol	BQL	47	
91587	2-Chloronaphthalene	BQL	9	
88744	2-Nitroaniline	BQL	47	
131113	Dimethylphthalate	BQL	9	
208968	Acenaphthylene	BQL	9	
606202	2,6-Dinitrotoluene	BQL	9	
99092	3-Nitroaniline	BQL	47	
83329	Acenaphthene	BQL	9	
51285	2,4-Dinitrophenol	BQL	47	

FIGURE F-114

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-369
LAB ID: 029412

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	47	
132649	Dibenzofuran	BQL	9	
121142	2,4-Dinitrotoluene	BQL	9	
84662	Diethylphthalate	BQL	9	
7005723	4-Chlorophenyl-phenylether	BQL	9	
86737	Fluorene	BQL	9	
100016	4-Nitroaniline	BQL	47	
534521	4,6-Dinitro-2-methylphenol	BQL	47	
86306	N-Nitrosodiphenylamine	BQL	9	
101553	4-Bromophenyl-phenylether	BQL	9	
118741	Hexachlorobenzene	BQL	9	
87865	Pentachlorophenol	BQL	47	
85018	Phenanthrene	BQL	9	
120127	Anthracene	BQL	9	
84742	Di-n-butylphthalate	7	9	J
206440	Fluoranthene	BQL	9	
129000	Pyrene	BQL	9	
856877	Butylbenzylphthalate	BQL	9	
91941	3,3'-Dichlorobenzidine	BQL	19	
56553	Benzo(a)anthracene	BQL	9	
218019	Chrysene	BQL	9	
117817	bis(2-Ethylhexyl)phthalate	BQL	9	
117840	Di-n-octylphthalate	BQL	9	
205992	Benzo(b)fluoranthene	BQL	9	
207089	Benzo(k)fluoranthene	BQL	9	
50328	Benzo(a)pyrene	BQL	9	
193395	Indeno(1,2,3-cd)pyrene	BQL	9	
53703	Dibenzo(a,h)anthracene	BQL	9	
191242	Benzo(g,h,i)perylene	BQL	9	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-115

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-369
LAB ID: 029412

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	78	35-114
2-Fluorobiphenyl	82	43-116
Terphenyl-d14	92	33-141
Phenol-d6	1	10-94
2-Fluorophenol	2	21-100
2,4,6-Tribromophenol	12	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-116

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD.
ANALYTICAL METHOD: 8270

SAMPLE: S-369 Reextraction
LAB ID: 029412R

DATE RECEIVED: 08/22/90
DATE ANALYZED: 08/30/90
DATE REPORTED: 09/05/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	9	
111444	bis(2-Chloroethyl)ether	BQL	9	
95578	2-Chlorophenol	BQL	9	
541731	1,3-Dichlorobenzene	BQL	9	
106467	1,4-Dichlorobenzene	BQL	9	
100516	Benzyl alcohol	BQL	9	
95501	1,2-Dichlorobenzene	BQL	9	
95487	2-Methylphenol	BQL	9	
108601	bis(2-Chloroisopropyl)ether	BQL	9	
106445	4-Methylphenol	BQL	9	
621647	N-Nitroso-di-n-propylamine	BQL	9	
67721	Hexachloroethane	BQL	9	
98953	Nitrobenzene	BQL	9	
78591	Isophorone	BQL	9	
88755	2-Nitrophenol	BQL	9	
105679	2,4-Dimethylphenol	BQL	9	
65850	Benzoic acid	BQL	47	
111911	bis(2-Chloroethoxy)methane	BQL	9	
120832	2,4-Dichlorophenol	BQL	9	
120821	1,2,4-Trichlorobenzene	3	9	J
91203	Naphthalene	BQL	9	
106478	4-Chloroaniline	BQL	9	
87683	Hexachlorobutadiene	BQL	9	
59507	4-Chloro-3-methylphenol	BQL	9	
91576	2-Methylnaphthalene	BQL	9	
774474	Hexachlorocyclopentadiene	BQL	9	
88062	2,4,6-Trichlorophenol	BQL	9	
95954	2,4,5-Trichlorophenol	BQL	47	
91587	2-Chloronaphthalene	BQL	9	
88744	2-Nitroaniline	BQL	47	
131113	Dimethylphthalate	BQL	9	
208968	Acenaphthylene	BQL	9	
606202	2,6-Dinitrotoluene	BQL	9	
99092	3-Nitroaniline	BQL	47	
83329	Acenaphthene	BQL	9	
51285	2,4-Dinitrophenol	BQL	47	

FIGURE F-117

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-369
LAB ID: 029412R

CAS NUMBER	COMPOUND NAME	RESULT ug/L		PQL ug/L	NOTE
100027	4-Nitrophenol	BQL		47	
132649	Dibenzofuran	BQL		9	
121142	2,4-Dinitrotoluene	BQL		9	
84662	Diethylphthalate	BQL		9	
7005723	4-Chlorophenyl-phenylether	BQL		9	
86737	Fluorene	BQL		9	
100016	4-Nitroaniline	BQL		47	
534521	4,6-Dinitro-2-methylphenol	BQL		47	
86306	N-Nitrosodiphenylamine	BQL		9	
101553	4-Bromophenyl-phenylether	BQL		9	
118741	Hexachlorobenzene	BQL		9	
87865	Pentachlorophenol	BQL		47	
85018	Phenanthrene	BQL		9	
120127	Anthracene	BQL		9	
84742	Di-n-butylphthalate		4	9	J
206440	Fluoranthene	BQL		9	
129000	Pyrene	BQL		9	
856877	Butylbenzylphthalate	BQL		9	
91941	3,3'-Dichlorobenzidine	BQL		19	
56553	Benzo(a)anthracene	BQL		9	
218019	Chrysene	BQL		9	
117817	bis(2-Ethylhexyl)phthalate	BQL		9	
117840	Di-n-octylphthalate		4	9	J
205992	Benzo(b)fluoranthene	BQL		9	
207089	Benzo(k)fluoranthene	BQL		9	
50328	Benzo(a)pyrene	BQL		9	
193395	Indeno(1,2,3-cd)pyrene	BQL		9	
53703	Dibenzo(a,h)anthracene	BQL		9	
191242	Benzo(g,h,i)perylene	BQL		9	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-118

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-369
LAB ID: 029412R

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	51	35-114
2-Fluorobiphenyl	53	43-116
Terphenyl-d14	44	33-141
Phenol-d6	1	10-94
2-Fluorophenol	2	21-100
2,4,6-Tribromophenol	2	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-119

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD.

ANALYTICAL METHOD: 8270

SAMPLE: S-373
LAB ID: 029416

DATE RECEIVED: 08/22/90
DATE ANALYZED: 08/26/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	11	
111444	bis(2-Chloroethyl)ether	BQL	11	
95578	2-Chlorophenol	BQL	11	
541731	1,3-Dichlorobenzene	BQL	11	
106467	1,4-Dichlorobenzene	BQL	11	
100516	Benzyl alcohol	BQL	11	
95501	1,2-Dichlorobenzene	BQL	11	
95487	2-Methylphenol	BQL	11	
108601	bis(2-Chloroisopropyl)ether	BQL	11	
106445	4-Methylphenol	BQL	11	
621647	N-Nitroso-di-n-propylamine	BQL	11	
67721	Hexachloroethane	BQL	11	
98953	Nitrobenzene	BQL	11	
78591	Isophorone	BQL	11	
88755	2-Nitrophenol	BQL	11	
105679	2,4-Dimethylphenol	BQL	11	
65850	Benzoic acid	BQL	54	
111911	bis(2-Chloroethoxy)methane	BQL	11	
120832	2,4-Dichlorophenol	BQL	11	
120821	1,2,4-Trichlorobenzene	BQL	11	
91203	Naphthalene	BQL	11	
106478	4-Chloroaniline	BQL	11	
87683	Hexachlorobutadiene	BQL	11	
59507	4-Chloro-3-methylphenol	BQL	11	
91576	2-Methylnaphthalene	BQL	11	
774474	Hexachlorocyclopentadiene	BQL	11	
88062	2,4,6-Trichlorophenol	BQL	11	
95954	2,4,5-Trichlorophenol	BQL	54	
91587	2-Chloronaphthalene	BQL	11	
88744	2-Nitroaniline	BQL	54	
131113	Dimethylphthalate	BQL	11	
208968	Acenaphthylene	BQL	11	
606202	2,6-Dinitrotoluene	BQL	11	
99092	3-Nitroaniline	BQL	54	
83329	Acenaphthene	BQL	11	
51285	2,4-Dinitrophenol	BQL	54	

FIGURE F-120

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-373
LAB ID: 029416

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	54	
132649	Dibenzofuran	BQL	11	
121142	2,4-Dinitrotoluene	BQL	11	
84662	Diethylphthalate	BQL	11	
7005723	4-Chlorophenyl-phenylether	BQL	11	
86737	Fluorene	BQL	11	
100016	4-Nitroaniline	BQL	54	
534521	4,6-Dinitro-2-methylphenol	BQL	54	
86306	N-Nitrosodiphenylamine	BQL	11	
101553	4-Bromophenyl-phenylether	BQL	11	
118741	Hexachlorobenzene	BQL	11	
87865	Pentachlorophenol	BQL	54	
85018	Phenanthrene	BQL	11	
120127	Anthracene	BQL	11	
84742	Di-n-butylphthalate	BQL	11	
206440	Fluoranthene	BQL	11	
129000	Pyrene	BQL	11	
856877	Butylbenzylphthalate	BQL	11	
91941	3,3'-Dichlorobenzidine	BQL	22	
56553	Benzo(a)anthracene	BQL	11	
218019	Chrysene	BQL	11	
117817	bis(2-Ethylhexyl)phthalate	BQL	11	
117840	Di-n-octylphthalate	BQL	11	
205992	Benzo(b)fluoranthene	BQL	11	
207089	Benzo(k)fluoranthene	BQL	11	
50328	Benzo(a)pyrene	BQL	11	
193395	Indeno(1,2,3-cd)pyrene	BQL	11	
53703	Dibenzo(a,h)anthracene	BQL	11	
191242	Benzo(g,h,i)perylene	BQL	11	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-121

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-373
LAB ID: 029416

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	95	43-116
Terphenyl-d14	67	33-141
Phenol-d6	19	10-94
2-Fluorophenol	32	21-100
2,4,6-Tribromophenol	64	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-122

EcoTek LSI

CLIENT: NTH Consultants, LTD
LSDG: 0294
SAMPLE: S373

Matrix Spike/Matrix Spike Duplicate Recovery
for Semivolatile Water

Compound Name	MS %Rec	MSD %Rec	QC Limits %Rec	RPD	QC Limits RPD
Phenol	32	33	26- 90	3	0-35
2-Chlorophenol	62	73	25-102	16	0-50
1,4-Dichlorobenzene	58	60	28-104	3	0-27
N-Nitroso-di-n-propylamine	68	66	41-126	2	0-38
1,2,4-Trichlorobenzene	64	64	38-107	0	0-23
4-Chloro-3-methylphenol	53	55	26-103	3	0-33
Acenaphthene	72	64	31-137	11	0-19
4-Nitrophenol	42	35	11-114	18	0-50
2,4-Dinitrotoluene	76	62	28- 89	20	0-47
Pentachlorophenol	60	64	17-109	6	0-47
Pyrene	84	70	35-142	18	0-36

FIGURE F-123

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD. ANALYTICAL METHOD: 8270

SAMPLE: S-373 Matrix Spike DATE RECEIVED: 08/22/90
LAB ID: 029416MS DATE ANALYZED: 08/26/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	98	16	
111444	bis(2-Chloroethyl)ether	BQL	16	
95578	2-Chlorophenol	195	16	
541731	1,3-Dichlorobenzene	BQL	16	
106467	1,4-Dichlorobenzene	90	16	
100516	Benzyl alcohol	BQL	16	
95501	1,2-Dichlorobenzene	BQL	16	
95487	2-Methylphenol	BQL	16	
108601	bis(2-Chloroisopropyl)ether	BQL	16	
106445	4-Methylphenol	BQL	16	
621647	N-Nitroso-di-n-propylamine	104	16	
67721	Hexachloroethane	BQL	16	
98953	Nitrobenzene	BQL	16	
78591	Isophorone	BQL	16	
88755	2-Nitrophenol	BQL	16	
105679	2,4-Dimethylphenol	BQL	16	
65850	Benzoic acid	BQL	78	
111911	bis(2-Chloroethoxy)methane	BQL	16	
120832	2,4-Dichlorophenol	BQL	16	
120821	1,2,4-Trichlorobenzene	98	16	
91203	Naphthalene	BQL	16	
106478	4-Chloroaniline	BQL	16	
87683	Hexachlorobutadiene	BQL	16	
59507	4-Chloro-3-methylphenol	164	16	
91576	2-Methylnaphthalene	BQL	16	
774474	Hexachlorocyclopentadiene	BQL	16	
88062	2,4,6-Trichlorophenol	BQL	16	
95954	2,4,5-Trichlorophenol	BQL	78	
91587	2-Chloronaphthalene	BQL	16	
88744	2-Nitroaniline	BQL	78	
131113	Dimethylphthalate	BQL	16	
208968	Acenaphthylene	BQL	16	
606202	2,6-Dinitrotoluene	BQL	16	
99092	3-Nitroaniline	BQL	78	
83329	Acenaphthene	112	16	
51285	2,4-Dinitrophenol	BQL	78	

FIGURE F-124

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-373 Matrix Spike
LAB ID: 029416MS

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	132	78	
132649	Dibenzofuran	BQL	16	
121142	2,4-Dinitrotoluene	118	16	
84662	Diethylphthalate	BQL	16	
7005723	4-Chlorophenyl-phenylether	BQL	16	
86737	Fluorene	BQL	16	
100016	4-Nitroaniline	BQL	78	
534521	4,6-Dinitro-2-methylphenol	BQL	78	
86306	N-Nitrosodiphenylamine	BQL	16	
101553	4-Bromophenyl-phenylether	BQL	16	
118741	Hexachlorobenzene	BQL	16	
87865	Pentachlorophenol	187	78	
85018	Phenanthrene	BQL	16	
120127	Anthracene	BQL	16	
84742	Di-n-butylphthalate	BQL	16	
206440	Fluoranthene	BQL	16	
129000	Pyrene	131	16	
856877	Butylbenzylphthalate	BQL	16	
91941	3,3'-Dichlorobenzidine	BQL	31	
56553	Benzo(a)anthracene	BQL	16	
218019	Chrysene	BQL	16	
117817	bis(2-Ethylhexyl)phthalate	BQL	16	
117840	Di-n-octylphthalate	BQL	16	
205992	Benzo(b)fluoranthene	BQL	16	
207089	Benzo(k)fluoranthene	BQL	16	
50328	Benzo(a)pyrene	BQL	16	
193395	Indeno(1,2,3-cd)pyrene	BQL	16	
53703	Dibenzo(a,h)anthracene	BQL	16	
191242	Benzo(g,h,i)perylene	BQL	16	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-125

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-373 Matrix Spike
LAB ID: 029416MS

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	91	35-114
2-Fluorobiphenyl	91	43-116
Terphenyl-d14	66	33-141
Phenol-d6	31	10-94
2-Fluorophenol	46	21-100
2,4,6-Tribromophenol	70	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-124

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD. ANALYTICAL METHOD: 8270

SAMPLE: S-373 Matrix Spike Dupl. DATE RECEIVED: 08/22/90
LAB ID: 029416MSD DATE ANALYZED: 08/26/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	105	16	
111444	bis(2-Chloroethyl)ether	BQL	16	
95578	2-Chlorophenol	226	16	
541731	1,3-Dichlorobenzene	BQL	16	
106467	1,4-Dichlorobenzene	92	16	
100516	Benzyl alcohol	BQL	16	
95501	1,2-Dichlorobenzene	BQL	16	
95487	2-Methylphenol	BQL	16	
108601	bis(2-Chloroisopropyl)ether	BQL	16	
106445	4-Methylphenol	BQL	16	
621647	N-Nitroso-di-n-propylamine	102	16	
67721	Hexachloroethane	BQL	16	
98953	Nitrobenzene	BQL	16	
78591	Isophorone	BQL	16	
88755	2-Nitrophenol	BQL	16	
105679	2,4-Dimethylphenol	BQL	16	
65850	Benzoic acid	BQL	78	
111911	bis(2-Chloroethoxy)methane	BQL	16	
120832	2,4-Dichlorophenol	BQL	16	
120821	1,2,4-Trichlorobenzene	100	16	
91203	Naphthalene	BQL	16	
106478	4-Chloroaniline	BQL	16	
87683	Hexachlorobutadiene	BQL	16	
59507	4-Chloro-3-methylphenol	170	16	
91576	2-Methylnaphthalene	BQL	16	
774474	Hexachlorocyclopentadiene	BQL	16	
88062	2,4,6-Trichlorophenol	BQL	16	
95954	2,4,5-Trichlorophenol	BQL	78	
91587	2-Chloronaphthalene	BQL	16	
88744	2-Nitroaniline	BQL	78	
131113	Dimethylphthalate	BQL	16	
208968	Acenaphthylene	BQL	16	
606202	2,6-Dinitrotoluene	BQL	16	
99092	3-Nitroaniline	BQL	78	
83329	Acenaphthene	99	16	
51285	2,4-Dinitrophenol	BQL	78	

FIGURE F-127

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: Blank
LAB ID: q1082401

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	50	
132649	Dibenzofuran	BQL	10	
121142	2,4-Dinitrotoluene	BQL	10	
84662	Diethylphthalate	BQL	10	
7005723	4-Chlorophenyl-phenylether	BQL	10	
86737	Fluorene	BQL	10	
100016	4-Nitroaniline	BQL	50	
534521	4,6-Dinitro-2-methylphenol	BQL	50	
86306	N-Nitrosodiphenylamine	BQL	10	
101553	4-Bromophenyl-phenylether	BQL	10	
118741	Hexachlorobenzene	BQL	10	
87865	Pentachlorophenol	BQL	50	
85018	Phenanthrene	BQL	10	
120127	Anthracene	BQL	10	
84742	Di-n-butylphthalate	BQL	10	
206440	Fluoranthene	BQL	10	
129000	Pyrene	BQL	10	
856877	Butylbenzylphthalate	BQL	10	
91941	3,3'-Dichlorobenzidine	BQL	20	
56553	Benzo(a)anthracene	BQL	10	
218019	Chrysene	BQL	10	
117817	bis(2-Ethylhexyl)phthalate	BQL	10	
117840	Di-n-octylphthalate	BQL	10	
205992	Benzo(b)fluoranthene	BQL	10	
207089	Benzo(k)fluoranthene	BQL	10	
50328	Benzo(a)pyrene	BQL	10	
193395	Indeno(1,2,3-cd)pyrene	BQL	10	
53703	Dibenzo(a,h)anthracene	BQL	10	
191242	Benzo(g,h,i)perylene	BQL	10	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-143

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: Blank
LAB ID: q1082401

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	72	35-114
2-Fluorobiphenyl	75	43-116
Terphenyl-d14	119	33-141
Phenol-d6	22	10-94
2-Fluorophenol	36	21-100
2,4,6-Tribromophenol	58	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-144

EcoTek LSI

CLIENT: NTH Consultants, LTD
LSDG: 0294
SAMPLE: S373

Matrix Spike/Matrix Spike Duplicate Recovery
for Semivolatile Water

Compound Name	MS %Rec	MSD %Rec	QC Limits %Rec	RPD	QC Limits RPD
Phenol	32	33	26- 90	3	0-35
2-Chlorophenol	62	73	25-102	16	0-50
1,4-Dichlorobenzene	58	60	28-104	3	0-27
N-Nitroso-di-n-propylamine	68	66	41-126	2	0-38
1,2,4-Trichlorobenzene	64	64	38-107	0	0-23
4-Chloro-3-methylphenol	53	55	26-103	3	0-33
Acenaphthene	72	64	31-137	11	0-19
4-Nitrophenol	42	35	11-114	18	0-50
2,4-Dinitrotoluene	76	62	28- 89	20	0-47
Pentachlorophenol	60	64	17-109	6	0-47
Pyrene	84	70	35-142	18	0-36

FIGURE F-145

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-359

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029402

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22128

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
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11.				
12.				
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22.				
23.				
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26.				
27.				
28.				
29.				
30.				

FIGURE F-146

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-373 Matrix Spike Duplicate
LAB ID: 029416MSD

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	108	78	
132649	Dibenzofuran	BQL	16	
121142	2,4-Dinitrotoluene	98	16	
84662	Diethylphthalate	BQL	16	
7005723	4-Chlorophenyl-phenylether	BQL	16	
86737	Fluorene	BQL	16	
100016	4-Nitroaniline	BQL	78	
534521	4,6-Dinitro-2-methylphenol	BQL	78	
86306	N-Nitrosodiphenylamine	BQL	16	
101553	4-Bromophenyl-phenylether	BQL	16	
118741	Hexachlorobenzene	BQL	16	
87865	Pentachlorophenol	198	78	
85018	Phenanthrene	BQL	16	
120127	Anthracene	BQL	16	
84742	Di-n-butylphthalate	BQL	16	
206440	Fluoranthene	BQL	16	
129000	Pyrene	108	16	
856877	Butylbenzylphthalate	BQL	16	
91941	3,3'-Dichlorobenzidine	BQL	31	
56553	Benzo(a)anthracene	BQL	16	
218019	Chrysene	BQL	16	
117817	bis(2-Ethylhexyl)phthalate	BQL	16	
117840	Di-n-octylphthalate	BQL	16	
205992	Benzo(b)fluoranthene	BQL	16	
207089	Benzo(k)fluoranthene	BQL	16	
50328	Benzo(a)pyrene	BQL	16	
193395	Indeno(1,2,3-cd)pyrene	BQL	16	
53703	Dibenzo(a,h)anthracene	BQL	16	
191242	Benzo(g,h,i)perylene	BQL	16	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-12

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-373 Matrix Spike Duplicate
LAB ID: 029416MSD

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	90	35-114
2-Fluorobiphenyl	83	43-116
Terphenyl-d14	45	33-141
Phenol-d6	32	10-94
2-Fluorophenol	50	21-100
2,4,6-Tribromophenol	72	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-129

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD.

ANALYTICAL METHOD: 8270

SAMPLE: S-377
LAB ID: 029420

DATE RECEIVED: 08/22/90
DATE ANALYZED: 08/27/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	10	
111444	bis(2-Chloroethyl)ether	BQL	10	
95578	2-Chlorophenol	BQL	10	
541731	1,3-Dichlorobenzene	BQL	10	
106467	1,4-Dichlorobenzene	BQL	10	
100516	Benzyl alcohol	BQL	10	
95501	1,2-Dichlorobenzene	BQL	10	
95487	2-Methylphenol	BQL	10	
108601	bis(2-Chloroisopropyl)ether	BQL	10	
106445	4-Methylphenol	BQL	10	
621647	N-Nitroso-di-n-propylamine	BQL	10	
67721	Hexachloroethane	BQL	10	
98953	Nitrobenzene	BQL	10	
78591	Isophorone	BQL	10	
88755	2-Nitrophenol	BQL	10	
105679	2,4-Dimethylphenol	BQL	10	
65850	Benzoic acid	BQL	51	
111911	bis(2-Chloroethoxy)methane	BQL	10	
120832	2,4-Dichlorophenol	BQL	10	
120821	1,2,4-Trichlorobenzene	BQL	10	
91203	Naphthalene	BQL	10	
106478	4-Chloroaniline	BQL	10	
87683	Hexachlorobutadiene	BQL	10	
59507	4-Chloro-3-methylphenol	BQL	10	
91576	2-Methylnaphthalene	BQL	10	
774474	Hexachlorocyclopentadiene	BQL	10	
88062	2,4,6-Trichlorophenol	BQL	10	
95954	2,4,5-Trichlorophenol	BQL	51	
91587	2-Chloronaphthalene	BQL	10	
88744	2-Nitroaniline	BQL	51	
131113	Dimethylphthalate	BQL	10	
208968	Acenaphthylene	BQL	10	
606202	2,6-Dinitrotoluene	BQL	10	
99092	3-Nitroaniline	BQL	51	
83329	Acenaphthene	BQL	10	
51285	2,4-Dinitrophenol	BQL	51	

FIGURE F-13C

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-377
LAB ID: 029420

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	51	
132649	Dibenzofuran	BQL	10	
121142	2,4-Dinitrotoluene	BQL	10	
84662	Diethylphthalate	BQL	10	
7005723	4-Chlorophenyl-phenylether	BQL	10	
86737	Fluorene	BQL	10	
100016	4-Nitroaniline	BQL	51	
534521	4,6-Dinitro-2-methylphenol	BQL	51	
86306	N-Nitrosodiphenylamine	BQL	10	
101553	4-Bromophenyl-phenylether	BQL	10	
118741	Hexachlorobenzene	BQL	10	
87865	Pentachlorophenol	BQL	51	
85018	Phenanthrene	BQL	10	
120127	Anthracene	BQL	10	
84742	Di-n-butylphthalate	BQL	10	
206440	Fluoranthene	BQL	10	
129000	Pyrene	BQL	10	
856877	Butylbenzylphthalate	BQL	10	
91941	3,3'-Dichlorobenzidine	BQL	20	
56553	Benzo(a)anthracene	BQL	10	
218019	Chrysene	BQL	10	
117817	bis(2-Ethylhexyl)phthalate	BQL	10	
117840	Di-n-octylphthalate	BQL	10	
205992	Benzo(b)fluoranthene	BQL	10	
207089	Benzo(k)fluoranthene	BQL	10	
50328	Benzo(a)pyrene	BQL	10	
193395	Indeno(1,2,3-cd)pyrene	BQL	10	
53703	Dibenzo(a,h)anthracene	BQL	10	
191242	Benzo(g,h,i)perylene	BQL	10	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-131

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-377
LAB ID: 029420

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	101	35-114
2-Fluorobiphenyl	101	43-116
Terphenyl-d14	84	33-141
Phenol-d6	15	10-94
2-Fluorophenol	28	21-100
2,4,6-Tribromophenol	74	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD.

ANALYTICAL METHOD: 8270

SAMPLE: S-381
LAB ID: 029424

DATE RECEIVED: 08/22/90
DATE ANALYZED: 08/27/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	10	
111444	bis(2-Chloroethyl)ether	BQL	10	
95578	2-Chlorophenol	BQL	10	
541731	1,3-Dichlorobenzene	BQL	10	
106467	1,4-Dichlorobenzene	BQL	10	
100516	Benzyl alcohol	BQL	10	
95501	1,2-Dichlorobenzene	BQL	10	
95487	2-Methylphenol	BQL	10	
108601	bis(2-Chloroisopropyl)ether	BQL	10	
106445	4-Methylphenol	BQL	10	
621647	N-Nitroso-di-n-propylamine	BQL	10	
67721	Hexachloroethane	BQL	10	
98953	Nitrobenzene	BQL	10	
78591	Isophorone	BQL	10	
88755	2-Nitrophenol	BQL	10	
105679	2,4-Dimethylphenol	BQL	10	
65850	Benzoic acid	BQL	50	
111911	bis(2-Chloroethoxy)methane	BQL	10	
120832	2,4-Dichlorophenol	BQL	10	
120821	1,2,4-Trichlorobenzene	BQL	10	
91203	Naphthalene	BQL	10	
106478	4-Chloroaniline	BQL	10	
87683	Hexachlorobutadiene	BQL	10	
59507	4-Chloro-3-methylphenol	BQL	10	
91576	2-Methylnaphthalene	BQL	10	
774474	Hexachlorocyclopentadiene	BQL	10	
88062	2,4,6-Trichlorophenol	BQL	10	
95954	2,4,5-Trichlorophenol	BQL	50	
91587	2-Chloronaphthalene	BQL	10	
88744	2-Nitroaniline	BQL	50	
131113	Dimethylphthalate	BQL	10	
208968	Acenaphthylene	BQL	10	
606202	2,6-Dinitrotoluene	BQL	10	
99092	3-Nitroaniline	BQL	50	
83329	Acenaphthene	BQL	10	
51285	2,4-Dinitrophenol	BQL	50	

FIGURE F-133

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-381
LAB ID: 029424

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	50	
132649	Dibenzofuran	BQL	10	
121142	2,4-Dinitrotoluene	BQL	10	
84662	Diethylphthalate	BQL	10	
7005723	4-Chlorophenyl-phenylether	BQL	10	
86737	Fluorene	BQL	10	
100016	4-Nitroaniline	BQL	50	
534521	4,6-Dinitro-2-methylphenol	BQL	50	
86306	N-Nitrosodiphenylamine	BQL	10	
101553	4-Bromophenyl-phenylether	BQL	10	
118741	Hexachlorobenzene	BQL	10	
87865	Pentachlorophenol	BQL	50	
85018	Phenanthrene	BQL	10	
120127	Anthracene	BQL	10	
84742	Di-n-butylphthalate	5	10	J
206440	Fluoranthene	BQL	10	
129000	Pyrene	BQL	10	
856877	Butylbenzylphthalate	BQL	10	
91941	3,3'-Dichlorobenzidine	BQL	20	
56553	Benzo(a)anthracene	BQL	10	
218019	Chrysene	BQL	10	
117817	bis(2-Ethylhexyl)phthalate	BQL	10	
117840	Di-n-octylphthalate	BQL	10	
205992	Benzo(b)fluoranthene	BQL	10	
207089	Benzo(k)fluoranthene	BQL	10	
50328	Benzo(a)pyrene	BQL	10	
193395	Indeno(1,2,3-cd)pyrene	BQL	10	
53703	Dibenzo(a,h)anthracene	BQL	10	
191242	Benzo(g,h,i)perylene	BQL	10	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-1

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-381
LAB ID: 029424

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	89	43-116
Terphenyl-d14	76	33-141
Phenol-d6	18	10-94
2-Fluorophenol	35	21-100
2,4,6-Tribromophenol	84	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-135

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD.

ANALYTICAL METHOD: 8270

SAMPLE: S-385
LAB ID: 029428

DATE RECEIVED: 08/22/90
DATE ANALYZED: 08/27/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	11	
111444	bis(2-Chloroethyl)ether	BQL	11	
95578	2-Chlorophenol	BQL	11	
541731	1,3-Dichlorobenzene	BQL	11	
106467	1,4-Dichlorobenzene	BQL	11	
100516	Benzyl alcohol	BQL	11	
95501	1,2-Dichlorobenzene	BQL	11	
95487	2-Methylphenol	BQL	11	
108601	bis(2-Chloroisopropyl)ether	BQL	11	
106445	4-Methylphenol	BQL	11	
621647	N-Nitroso-di-n-propylamine	BQL	11	
67721	Hexachloroethane	BQL	11	
98953	Nitrobenzene	BQL	11	
78591	Isophorone	BQL	11	
88755	2-Nitrophenol	BQL	11	
105679	2,4-Dimethylphenol	BQL	11	
65850	Benzoic acid	BQL	53	
111911	bis(2-Chloroethoxy)methane	BQL	11	
120832	2,4-Dichlorophenol	BQL	11	
120821	1,2,4-Trichlorobenzene	BQL	11	
91203	Naphthalene	BQL	11	
106478	4-Chloroaniline	BQL	11	
87683	Hexachlorobutadiene	BQL	11	
59507	4-Chloro-3-methylphenol	BQL	11	
91576	2-Methylnaphthalene	BQL	11	
774474	Hexachlorocyclopentadiene	BQL	11	
88062	2,4,6-Trichlorophenol	BQL	11	
95954	2,4,5-Trichlorophenol	BQL	53	
91587	2-Chloronaphthalene	BQL	11	
88744	2-Nitroaniline	BQL	53	
131113	Dimethylphthalate	BQL	11	
208968	Acenaphthylene	BQL	11	
606202	2,6-Dinitrotoluene	BQL	11	
99092	3-Nitroaniline	BQL	53	
83329	Acenaphthene	BQL	11	
51285	2,4-Dinitrophenol	BQL	53	

FIGURE F-

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-385
LAB ID: 029428

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	53	
132649	Dibenzofuran	BQL	11	
121142	2,4-Dinitrotoluene	BQL	11	
84662	Diethylphthalate	BQL	11	
7005723	4-Chlorophenyl-phenylether	BQL	11	
86737	Fluorene	BQL	11	
100016	4-Nitroaniline	BQL	53	
534521	4,6-Dinitro-2-methylphenol	BQL	53	
86306	N-Nitrosodiphenylamine	BQL	11	
101553	4-Bromophenyl-phenylether	BQL	11	
118741	Hexachlorobenzene	BQL	11	
87865	Pentachlorophenol	BQL	53	
85018	Phenanthrene	BQL	11	
120127	Anthracene	BQL	11	
84742	Di-n-butylphthalate	2	11	J
206440	Fluoranthene	BQL	11	
129000	Pyrene	BQL	11	
856877	Butylbenzylphthalate	BQL	11	
91941	3,3'-Dichlorobenzidine	BQL	21	
56553	Benzo(a)anthracene	BQL	11	
218019	Chrysene	BQL	11	
117817	bis(2-Ethylhexyl)phthalate	BQL	11	
117840	Di-n-octylphthalate	BQL	11	
205992	Benzo(b)fluoranthene	BQL	11	
207089	Benzo(k)fluoranthene	BQL	11	
50328	Benzo(a)pyrene	BQL	11	
193395	Indeno(1,2,3-cd)pyrene	BQL	11	
53703	Dibenzo(a,h)anthracene	BQL	11	
191242	Benzo(g,h,i)perylene	BQL	11	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-137

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: S-385
LAB ID: 029428

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	93	43-116
Terphenyl-d14	74	33-141
Phenol-d6	22	10-94
2-Fluorophenol	40	21-100
2,4,6-Tribromophenol	78	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD

ANALYTICAL METHOD: 8270

SAMPLE: Blank

LAB ID: Q1082903

DATE RECEIVED:

DATE ANALYZED: 08/30/90

DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	<BQL	10	
111444	bis(2-Chloroethyl)ether	<BQL	10	
95578	2-Chlorophenol	<BQL	10	
541731	1,3-Dichlorobenzene	<BQL	10	
106467	1,4-Dichlorobenzene	<BQL	10	
100516	Benzyl alcohol	<BQL	10	
95501	1,2-Dichlorobenzene	<BQL	10	
95487	2-Methylphenol	<BQL	10	
108601	bis(2-Chloroisopropyl)ether	<BQL	10	
106445	4-Methylphenol	<BQL	10	
621647	N-Nitroso-di-n-propylamine	<BQL	10	
67721	Hexachloroethane	<BQL	10	
98953	Nitrobenzene	<BQL	10	
78591	Isophorone	<BQL	10	
88755	2-Nitrophenol	<BQL	10	
105679	2,4-Dimethylphenol	<BQL	10	
65850	Benzoic acid	<BQL	50	
111911	bis(2-Chloroethoxy)methane	<BQL	10	
120832	2,4-Dichlorophenol	<BQL	10	
120821	1,2,4-Trichlorobenzene	<BQL	10	
91203	Naphthalene	<BQL	10	
106478	4-Chloroaniline	<BQL	10	
87683	Hexachlorobutadiene	<BQL	10	
59507	4-Chloro-3-methylphenol	<BQL	10	
91576	2-Methylnaphthalene	<BQL	10	
774474	Hexachlorocyclopentadiene	<BQL	10	
88062	2,4,6-Trichlorophenol	<BQL	10	
95954	2,4,5-Trichlorophenol	<BQL	50	
91587	2-Chloronaphthalene	<BQL	10	
88744	2-Nitroaniline	<BQL	50	
131113	Dimethylphthalate	<BQL	10	
208968	Acenaphthylene	<BQL	10	
606202	2,6-Dinitrotoluene	<BQL	10	
99092	3-Nitroaniline	<BQL	50	
83329	Acenaphthene	<BQL	10	
51285	2,4-Dinitrophenol	<BQL	50	

FIGURE F-139

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: Blank
LAB ID: Q1082903

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	<BQL	50	
132649	Dibenzofuran	<BQL	10	
121142	2,4-Dinitrotoluene	<BQL	10	
84662	Diethylphthalate	<BQL	10	
7005723	4-Chlorophenyl-phenylether	<BQL	10	
86737	Fluorene	<BQL	10	
100016	4-Nitroaniline	<BQL	50	
534521	4,6-Dinitro-2-methylphenol	<BQL	50	
86306	N-Nitrosodiphenylamine	<BQL	10	
101553	4-Bromophenyl-phenylether	<BQL	10	
118741	Hexachlorobenzene	<BQL	10	
87865	Pentachlorophenol	<BQL	50	
85018	Phenanthrene	<BQL	10	
120127	Anthracene	<BQL	10	
84742	Di-n-butylphthalate	<BQL	10	
206440	Fluoranthene	<BQL	10	
129000	Pyrene	<BQL	10	
856877	Butylbenzylphthalate	<BQL	10	
91941	3,3'-Dichlorobenzidine	<BQL	20	
56553	Benzo(a)anthracene	<BQL	10	
218019	Chrysene	<BQL	10	
117817	bis(2-Ethylhexyl)phthalate	<BQL	10	
117840	Di-n-octylphthalate	<BQL	10	
205992	Benzo(b)fluoranthene	<BQL	10	
207089	Benzo(k)fluoranthene	<BQL	10	
50328	Benzo(a)pyrene	<BQL	10	
193395	Indeno(1,2,3-cd)pyrene	<BQL	10	
53703	Dibenzo(a,h)anthracene	<BQL	10	
191242	Benzo(g,h,i)perylene	<BQL	10	

PQL = Practical Quantitation llmit
BQL = Below Quantitation Limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-1

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: Blank
LAB ID: Q1082903

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	51	35-114
2-Fluorobiphenyl	51	43-116
Terphenyl-d14	116	33-141
Phenol-d6	15	10-94
2-Fluorophenol	25	21-100
2,4,6-Tribromophenol	53	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-141

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants LTD. ANALYTICAL METHOD: 8270

SAMPLE: Blank DATE RECEIVED:
LAB ID: q1082401 DATE ANALYZED: 08/26/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
108952	Phenol	BQL	10	
111444	bis(2-Chloroethyl)ether	BQL	10	
95578	2-Chlorophenol	BQL	10	
541731	1,3-Dichlorobenzene	BQL	10	
106467	1,4-Dichlorobenzene	BQL	10	
100516	Benzyl alcohol	BQL	10	
95501	1,2-Dichlorobenzene	BQL	10	
95487	2-Methylphenol	BQL	10	
108601	bis(2-Chloroisopropyl)ether	BQL	10	
106445	4-Methylphenol	BQL	10	
621647	N-Nitroso-di-n-propylamine	BQL	10	
67721	Hexachloroethane	BQL	10	
98953	Nitrobenzene	BQL	10	
78591	Isophorone	BQL	10	
88755	2-Nitrophenol	BQL	10	
105679	2,4-Dimethylphenol	BQL	10	
65850	Benzoic acid	BQL	50	
111911	bis(2-Chloroethoxy)methane	BQL	10	
120832	2,4-Dichlorophenol	BQL	10	
120821	1,2,4-Trichlorobenzene	BQL	10	
91203	Naphthalene	BQL	10	
106478	4-Chloroaniline	BQL	10	
87683	Hexachlorobutadiene	BQL	10	
59507	4-Chloro-3-methylphenol	BQL	10	
91576	2-Methylnaphthalene	BQL	10	
774474	Hexachlorocyclopentadiene	BQL	10	
88062	2,4,6-Trichlorophenol	BQL	10	
95954	2,4,5-Trichlorophenol	BQL	50	
91587	2-Chloronaphthalene	BQL	10	
88744	2-Nitroaniline	BQL	50	
131113	Dimethylphthalate	BQL	10	
208968	Acenaphthylene	BQL	10	
606202	2,6-Dinitrotoluene	BQL	10	
99092	3-Nitroaniline	BQL	50	
83329	Acenaphthene	BQL	10	
51285	2,4-Dinitrophenol	BQL	50	

FIGURE F-142

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: Blank
LAB ID: q1082401

CAS NUMBER	COMPOUND NAME	RESULT ug/L	PQL ug/L	NOTE
100027	4-Nitrophenol	BQL	50	
132649	Dibenzofuran	BQL	10	
121142	2,4-Dinitrotoluene	BQL	10	
84662	Diethylphthalate	BQL	10	
7005723	4-Chlorophenyl-phenylether	BQL	10	
86737	Fluorene	BQL	10	
100016	4-Nitroaniline	BQL	50	
534521	4,6-Dinitro-2-methylphenol	BQL	50	
86306	N-Nitrosodiphenylamine	BQL	10	
101553	4-Bromophenyl-phenylether	BQL	10	
118741	Hexachlorobenzene	BQL	10	
87865	Pentachlorophenol	BQL	50	
85018	Phenanthrene	BQL	10	
120127	Anthracene	BQL	10	
84742	Di-n-butylphthalate	BQL	10	
206440	Fluoranthene	BQL	10	
129000	Pyrene	BQL	10	
856877	Butylbenzylphthalate	BQL	10	
91941	3,3'-Dichlorobenzidine	BQL	20	
56553	Benzo(a)anthracene	BQL	10	
218019	Chrysene	BQL	10	
117817	bis(2-Ethylhexyl)phthalate	BQL	10	
117840	Di-n-octylphthalate	BQL	10	
205992	Benzo(b)fluoranthene	BQL	10	
207089	Benzo(k)fluoranthene	BQL	10	
50328	Benzo(a)pyrene	BQL	10	
193395	Indeno(1,2,3-cd)pyrene	BQL	10	
53703	Dibenzo(a,h)anthracene	BQL	10	
191242	Benzo(g,h,i)perylene	BQL	10	

PQL = Practical Quantitation Limit
BQL = Below Quantitation limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

FIGURE F-143

EcoTek LSI

CLIENT: NTH Consultants LTD.

SAMPLE: Blank
LAB ID: q1082401

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	72	35-114
2-Fluorobiphenyl	75	43-116
Terphenyl-d14	119	33-141
Phenol-d6	22	10-94
2-Fluorophenol	36	21-100
2,4,6-Tribromophenol	58	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-144

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: October 9, 1990

LSDG: 0441

Sample Report Date: October 24, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
044101	S-058	9.9
044102	S-059	3.5
044103	S-060	2.4
044104	S-061	1.4
044105	S-062	11.3
044106	S-063	9.4
044107	S-064	1.1
044108	S-065	19.5
044109	S-066	10.6
044110	S-069	39.0

FIGURE F-178

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 23, 1990

LSDG: 0298

Sample Report Date: October 18, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS
TCLP Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029802 S-392	029803 S-393	029804 S-394	029805 S-395	Detection Limit
Arsenic	0.391	<0.056	<0.056	<0.056	0.056
Barium	0.304	0.307	0.165	0.296	0.010
Cadmium	0.013	<0.006	<0.006	<0.006	0.006
Chromium	0.021	<0.009	<0.009	0.026	0.009
Lead	68.1	0.193	0.148	0.387	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0006	0.0002
Selenium	<0.057	<0.057	0.069	<0.057	0.057
Silver	0.021	<0.011	0.016	<0.011	0.011

FIGURE F-179

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028501	S-001	<6.1	25.0	1.1	6.3	305.0	<5.5	<1.1	<0.11
028502	S-002	<6.3	75.1	4.2	51.8	249.0	<5.7	<1.2	0.12
028503	S-003	<6.1	42.7	1.6	9.3	132.0	<5.6	<1.1	<0.11
028504	S-015	<5.8	59.1	2.9	15.4	646.0	<5.3	<1.0	<0.10
028505	S-017	<6.7	13.4	4.6	38.8	59.1	<6.1	<1.2	<0.09
028506	S-019	<6.5	8.2	4.0	18.3	41.6	<5.9	<1.2	<0.11
028507	S-030	<6.1	92.0	1.7	10.3	5290.0	<5.5	<1.1	0.31
028508	S-032	<6.5	53.3	2.1	8.5	57.5	<5.9	<1.2	1.11
028509	S-034	<6.8	71.7	2.9	11.8	45.1	<6.1	<1.2	<0.09
028510	S-045	<6.0	85.0	1.3	12.5	159.0	<5.4	<1.1	<0.11
028511	S-046	<5.4	38.9	1.5	5.9	666.0	<4.9	<0.9	0.11
028512	S-047	<5.8	44.3	0.8	1.2	81.6	<5.3	<1.0	<0.08
028513	S-048	<6.1	27.9	0.9	2.7	60.1	<5.6	<1.1	<0.08
028514	S-049	<6.1	38.6	1.7	4.9	2930.0	<5.5	<1.1	0.12
028515	S-050	<5.8	2.3	0.7	5.3	567.0	<5.3	<1.1	<0.04
028516	S-051	<5.6	29.3	1.2	10.4	611.0	<5.1	<1.0	<0.06

FIGURE F-19

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028517	S-052	<6.4	47.8	2.3	8.7	1680.0	<5.8	1.6	0.31
028518	S-053	<5.7	13.8	1.2	5.2	208.0	<5.2	3.1	<0.10
028519	S-054	<5.6	37.5	2.4	3.3	4360.0	<5.0	1.5	<0.07
028520	S-055	91.2	812.0	71.1	53.1	148.0	<6.2	1.8	0.28
028521	S-056	454.0	457.0	30.6	32.6	82500.0	<5.7	1.2	0.28
028522	S-057	<6.3	176.0	9.6	25.8	14000.0	<5.7	1.5	0.11
028523	S-067	<5.9	140.0	3.0	17.8	958.0	<5.4	<1.0	0.53
028524	S-070	<6.1	177.0	3.2	21.3	6170.0	<5.5	2.6	0.73
028525	S-072	<6.6	3.7	1.1	10.2	5.8	<5.9	<1.2	<0.10
028526	S-074	<6.7	4.2	<0.6	20.4	1470.0	<6.1	<1.2	<0.09
028527	S-075	<5.8	36.7	2.8	26.4	11000.0	<5.2	<1.0	0.25
028528	S-076	<5.9	2.3	<0.5	2.1	10.1	<5.3	1.6	<0.09
028529	S-077	<6.3	43.6	2.6	16.6	1570.0	<5.7	<1.1	<0.10
028530	S-079	<5.9	116.0	18.0	20.2	1480.0	<5.5	1.7	0.12
028531	S-080	<6.2	53.6	4.6	22.6	6370.0	<5.6	<1.2	0.14
028532	S-081	<6.3	43.9	2.1	15.5	3110.0	<5.8	2.4	0.15

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028533	S-082	85.7	658.0	200.0	59.4	3.3	<6.0	4.5	0.31
028534	S-084	<6.4	51.3	6.9	30.6	496.0	<5.8	<1.1	0.12
028535	S-086	<6.8	30.2	3.5	25.0	51.1	<6.2	<1.2	<0.10
028536	S-087	<6.6	47.1	4.8	32.9	7850.0	<6.0	<1.0	0.14
028538	S-090	<6.1	6.9	3.4	21.9	23.0	<5.5	<1.0	<0.11
028539	S-092	<6.0	2.3	1.5	4.8	52.9	<5.5	<1.1	<0.08
028540	S-093	<6.3	40.2	2.9	7.9	7570.0	<5.7	<1.2	0.09
028541	S-094	<6.5	39.2	2.8	19.9	5750.0	<5.9	<1.2	0.11
028542	S-096	<6.1	277.0	4.1	15.5	21900.0	<5.5	<1.1	0.38
028543	S-097	<6.7	272.0	3.6	17.4	4120.0	7.7	<1.2	0.13
028544	S-099	<7.5	618.0	8.4	14.3	1500.0	7.4	<1.4	<0.12
028545	S-100	<6.8	175.0	10.6	50.0	2300.0	<6.1	<1.2	<0.12
028546	S-102	<6.6	32.2	3.6	33.0	100.0	13.4	<1.2	0.14
028547	S-104	<7.5	178.0	9.3	23.6	23200.0	<6.8	<1.3	0.21
028548	S-106	107.0	620.0	268.0	32.4	95700.0	<6.7	<1.4	0.55
028549	S-107	<6.5	337.0	94.5	20.1	32100.0	<5.9	<1.2	0.31

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028550	S-108	<6.0	3.1	<0.6	15.1	76.8	<5.4	<1.0	<0.10
028551	S-110	<6.1	4.3	4.6	22.4	35.4	<5.5	<1.0	<0.10
028552	S-111	<6.3	5.1	2.4	30.0	50.1	<5.7	<1.1	<0.10
028553	S-113	<6.4	35.6	3.9	27.5	599.0	<5.8	<1.1	<0.10
028554	S-123	<6.1	30.6	2.0	11.8	139.0	<5.5	<1.0	<0.10
028555	S-125	<6.3	13.1	1.8	19.2	1380.0	<5.8	<1.1	<0.10
028556	S-138	<6.7	22.7	2.2	22.0	24.8	<6.1	4.8	<0.10
028557	S-140	<6.2	9.2	3.1	7.0	18.4	<5.7	<1.1	<0.10
028558	S-142	<6.0	23.5	3.5	22.9	32.8	<5.5	<1.0	<0.10
028559	S-152	<6.3	74.0	2.4	12.9	303.0	<5.7	<1.1	0.17
028561	S-155	<6.5	26.2	<0.6	1.7	11.2	12.2	2.0	<0.10
028563	S-158	<6.8	30.9	2.1	21.6	15.2	<6.3	<1.2	0.15
028565	S-165	<5.9	67.3	2.1	20.3	121.0	<5.4	10.4	0.12
028566	S-168	<6.7	55.4	2.9	23.2	16.5	<6.1	2.0	0.14
028567	S-171	<6.6	22.4	4.9	47.0	29.9	<6.0	<1.2	<0.12
028568	S-178	<6.1	22.8	2.1	17.9	157.0	16.9	<1.1	0.13

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

LSDG: 0285

Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990

Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028569	S-179	<6.4	52.8	2.8	68.0	40.4	<5.9	<1.1	0.11
028570	S-181	<7.3	49.2	16.2	28.4	100.0	<6.6	<1.3	0.18
028571	S-127	<6.1	14.2	2.9	13.2	21.6	<5.5	<1.1	<0.09

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028802	S-187	<6.0	40.3	0.7	21.9	35.9	<5.5	<1.1	<0.09
028803	S-189	<6.9	62.3	1.8	20.6	2880.0	<6.2	<1.3	<0.08
028804	S-191	<6.3	59.3	1.5	10.8	37.9	<5.7	<1.1	<0.11
028805	S-197	<7.6	52.3	33.6	50.1	26400.0	<6.9	<1.3	2.40
028806	S-199	<6.2	46.8	2.4	20.0	109.0	<5.6	<1.1	<0.09
028807	S-201	<6.7	117.0	2.7	18.0	54.1	<6.0	<1.2	<0.11
028808	S-207	<6.3	138.0	29.1	16.8	37100.0	<5.7	<1.1	1.80
028809	S-209	<6.9	66.4	4.9	47.7	1244.0	<6.3	<1.2	<0.09
028810	S-211	<6.3	132.0	3.5	33.9	288.0	<5.7	<1.1	<0.11
028811	S-217	517	328.0	28.6	20.9	2.7	<5.4	<1.1	1.50
028812	S-219	<6.3	58.8	7.9	16.4	15300.0	<5.8	<1.1	<0.10
028813	S-221	<6.8	54.7	4.9	18.2	1020.0	<6.2	<1.2	<0.23
028814	S-227	<7.1	107.0	10.3	25.9	38800.0	<6.5	<1.2	<0.11
028815	S-229	<6.1	42.0	3.8	16.5	603.0	<5.5	<1.0	<0.11
028816	S-231	<6.5	29.0	2.9	18.7	139.0	<5.9	<1.2	<0.12
028817	S-237	<7.1	653.0	8.1	42.4	40900.0	<6.5	<1.2	<0.12

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028818	S-239	<7.0	33.7	3.2	23.5	68.7	<6.4	<1.2	<0.10
028819	S-241	<6.6	47.4	1.7	9.2	1230.0	<6.0	<1.1	<0.09
028820	S-247	<6.5	62.9	2.6	9.1	2050.0	<5.9	<1.1	<0.10
028821	S-248	<6.6	39.0	1.4	21.9	6480.0	<6.0	<1.2	<0.11
028822	S-249	<7.0	14.9	2.0	13.3	1910.0	<6.4	<1.2	<0.17
028823	S-250	859	162.0	1.6	8.8	103000.0	<5.7	<1.1	4.2
028824	S-252	<6.6	68.0	2.3	19.8	3720.0	<6.0	<1.1	<0.10
028825	S-254	<6.3	131.0	3.9	25.1	754.0	<5.8	<1.2	<0.10
028826	S-260	<6.3	38.9	1.2	9.5	2710.0	<5.7	<1.2	1.2
028829	S-263	<7.0	21.0	2.6	34.7	110.0	<6.4	<1.2	4.9
028830	S-265	<6.1	39.6	23.6	16.1	37.3	<5.6	<1.1	<0.09
028832	S-271	<5.5	24.8	0.5	0.8	43.7	<5.0	<1.0	<0.10
028835	S-274	<6.5	39.7	1.8	11.0	468.0	<5.9	<1.2	<0.12
028838	S-284	<6.0	34.9	1.6	4.8	1190.0	<5.4	<1.0	<0.09
028839	S-286	<6.6	24.0	1.8	4.4	361.0	<6.0	<1.2	<0.08
028841	S-288	<6.7	76.3	2.5	21.4	1580.0	<6.1	<1.2	<0.10

Ecotek LSI
Ecotek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028842	S-289	<6.1	74.8	1.5	17.5	1830.0	<5.5	<1.0	2.1
028843	S-291	<6.7	84.1	1.7	14.5	13700.0	<6.1	<1.2	1.3
028844	S-293	<7.0	13.4	0.6	1.0	77.0	<6.4	<1.2	<0.11
028846	S-300	<6.5	22.4	3.6	53.9	1230.0	<5.9	<1.2	<0.11
028847	S-302	<7.0	5.8	2.4	20.4	194.0	<6.4	<1.2	<0.11
028848	S-304	<6.0	1.0	2.2	14.6	22.3	<5.4	<1.0	<0.10
028849	S-310	<6.7	16.8	2.1	13.2	2550.0	<6.1	<1.2	<0.10
028850	S-312	<6.7	4.4	4.3	51.4	47.7	<6.0	<1.2	1.5
028851	S-314	<6.7	1.1	3.1	33.0	35.9	<6.1	<1.2	<0.11
028852	S-320	<6.2	38.6	2.4	27.7	1180.0	<5.6	<1.1	5.0
028853	S-322	<6.7	15.8	2.3	24.7	76.5	<6.1	<1.2	<0.10
028854	S-324	<6.7	8.0	1.1	9.6	43.1	<6.1	<1.2	<0.10
028855	S-325	<6.4	10.8	1.4	12.4	44.2	<5.8	<1.2	<0.11
028856	S-331	<6.9	69.0	3.8	31.6	3930.0	<6.3	<1.2	<0.12
028858	S-333	<7.1	24.4	2.0	17.1	110.8	<6.4	<1.3	<0.10
028859	S-335	<6.7	12.8	0.6	4.7	27.0	<6.1	<1.2	<0.10

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028861	S-342	<6.5	11.1	4.3	0.0	29.1	<5.9	<1.2	<0.11
028862	S-343	<7.0	29.9	4.3	18.2	71.0	<6.4	<1.2	<0.11
028863	S-345	<6.5	38.7	2.5	15.2	102.0	<5.9	<1.2	<0.12
028864	S-351	<5.7	51.7	0.9	2.4	138.0	<5.1	<1.0	<0.10
028865	S-352	<6.6	70.0	1.5	18.1	3180.0	8.1	<1.2	<0.11
028866	S-353	<5.4	60.5	0.8	2.1	175.0	<4.9	<0.9	<0.10
028867	S-354	<6.8	84.4	2.1	28.2	6890.0	<6.1	<1.2	3.2
028868	S-355	<6.8	8.1	4.4	55.6	41.3	<6.2	<1.2	1.2
028869	S-356	<6.2	70.9	1.5	23.2	3320.0	<5.7	<1.2	3.6
028870	S-276	<6.5	16.7	2.4	6.9	657.0	<5.9	<1.2	<0.12

.coTek LSI
.Tek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: October 9, 1990

LSDG: 0441

Sample Report Date: October 23, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID Client Sample ID ---------- METALS (mg/kg)	044101 S-058	044102 S-059	044103 S-060	044104 S-061	044105 S-062	Detection Limit (mg/kg)
Arsenic	1.26	0.80	1.52	2.28	1.65	0.3
Barium	176	45.4	54.4	54.2	50.4	0.1
Cadmium	5.92	<0.1	<0.1	0.62	0.15	0.1
Chromium	19.0	5.94	6.82	35.0	8.24	0.1
Lead	23200.	321.	737.	1220.	425.	0.25
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Selenium	<0.4	<0.4	<0.4	<0.4	<0.4	0.4
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	0.1

FIGURE F-28

coTek LSI
Tek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: October 9, 1990

LSDG: 0441

Sample Report Date: October 23, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID Client Sample ID METALS (mg/kg)	044106 S-083	044107 S-084	044108 S-085	044109 S-086	044110 S-088	Detection Limit (mg/kg)
Arsenic	1.19	<0.3	1.14	1.73	3.96	0.3
Barium	47.3	79.6	77.3	58.1	86.6	0.1
Cadmium	<0.1	<0.1	<0.1	1.12	1.87	0.1
Chromium	5.74	9.16	15.9	22.4	11.7	0.1
Lead	205.	328.	648.	2450.	7460.	0.25
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Selenium	<0.4	<0.4	<0.4	<0.4	<0.4	0.4
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	0.1

FIGURE F-2

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 22, 1990

LSDG: 0294

Sample Report Date: October 19, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID Client Sample ID METALS (mg/l)	029401 S-358	029405 S-362	029411 S-368	Detection Limits (mg/l)
Arsenic	<0.056	<0.056	<0.056	0.056 — above std
Barium	0.019	0.020	0.034	0.010
Cadmium	0.017	0.019	0.007	0.006
Chromium	0.017	0.017	<0.009	0.009
Lead	<0.029	<0.029	0.070	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0002
Selenium	<0.057	<0.057	<0.057	0.057 — above std
Silver	<0.011	<0.011	<0.011	0.011

FIGURE F-30

.coTek LSI
coTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 22, 1990

LSDG: 0294

Sample Report Date: October 19, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029415 S-372	029419 S-376	029423 S-380	Detection Limits (mg/l)
Arsenic	<0.056	<0.056	<0.056	0.056 above sd
Barium	0.053	0.037	0.104	0.010
Cadmium	<0.006	<0.006	<0.006	0.006
Chromium	0.013	<0.009	0.011	0.009
Lead	<0.029	<0.029	<0.029	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0002
Selenium	<0.057	<0.057	<0.057	0.057 above sd
Silver	<0.011	<0.011	0.063	0.011

FIGURE F-31

EcoTek LSI

CLIENT: NTH Consultants, LTD
LSDG: 0294
SAMPLE: S373

Matrix Spike/Matrix Spike Duplicate Recovery
for Semivolatile Water

Compound Name	MS %Rec	MSD %Rec	QC Limits %Rec	RPD	QC Limits RPD
Phenol	32	33	26- 90	3	0-35
2-Chlorophenol	62	73	25-102	16	0-50
1,4-Dichlorobenzene	58	60	28-104	3	0-27
N-Nitroso-di-n-propylamine	68	66	41-126	2	0-38
1,2,4-Trichlorobenzene	64	64	38-107	0	0-23
4-Chloro-3-methylphenol	53	55	26-103	3	0-33
Acenaphthene	72	64	31-137	11	0-19
4-Nitrophenol	42	35	11-114	18	0-50
2,4-Dinitrotoluene	76	62	28- 89	20	0-47
Pentachlorophenol	60	64	17-109	6	0-47
Pyrene	84	70	35-142	18	0-36

FIGURE F-145

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-359

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029402

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22128

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

FIGURE F-146

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-359

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029402

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22128

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	15.	B
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	28.	
67-66-3	CHLOROFORM	6.	
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	130.	
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	14.	
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-363

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029406

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22129

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	7.	B
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	27.	
67-66-3	CHLOROFORM	6.	
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	110.	
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	11.	
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-363

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029406

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22129

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
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30.					

FIGURE F-149

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-366

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029409

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22130

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	25.	B
67-64-1	ACETONE	10.	U
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-366

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029409

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22130

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
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28.					
29.					
30.					

FIGURE F-151

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-367

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029410

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22131

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	13.	B
67-64-1	ACETONE	16.	B
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	4.	J
67-66-3	CHLOROFORM	3.	J
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	16.	
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	130.	
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-367

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 890320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029410

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22131

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/23/90

Column: (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
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26.					
27.					
28.					
29.					
30.					

FIGURE F-153

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-371

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029414

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22135

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	8.	B
67-64-1	ACETONE	12.	B
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	8.	
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

FIGURE F-1541/87 P

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-371

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029414

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22135

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
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27.					
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29.					
30.					

FIGURE F-155

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-375

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029418

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22136

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	8.	B
67-64-1	ACETONE	44.	B
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-375

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029418

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22136

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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FIGURE F-157

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-379

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029422

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22137

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	7.	B
67-64-1	ACETONE	5.	BJ
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	6.	
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

FIGURE F-158 1/87 R

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-379

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029422

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22137

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
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FIGURE F-159

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-783

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029426

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22138

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	7.	B
67-64-1	ACETONE	50.	B
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	13.	
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	4.	J
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-383

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 029426

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22138

Level: (low/med) LOW Date Received: 8/22/90

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
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FIGURE F-161

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK0A

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: VBLK0A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22122

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	3.	J
67-64-1	ACETONE	14.	
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK0A

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: VBLK0A

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22122

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 8/23/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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FIGURE F-163

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK08

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: VBLK08

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22134

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	11.	
67-64-1	ACETONE	8.	J
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	10.	U
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	10.	U
591-78-6	2-HEXANONE	10.	U
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK0B

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: VBLK0B

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 22134

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 8/24/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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3.					
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FIGURE F-165

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

INST I.D. 10501
B2
8/30

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
1	VBLKOA	98	96	98		0
2	S-359	97	101	96		0
3	S-363	89	90	86		0
4	S-366	97	91	94		0
5	S-367	92	98	95		0
6	VBLKOB	91	95	99		0
7	S-371	96	98	98		0
8	S-375	89	97	96		0
9	S-379	93	106	101		0
10	S-383	97	109	107		0
11						
12						
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		QC LIMITS
S1 (TOL) =	TOLUENE-D8	(88-110)
S2 (BFB) =	BROMOFLUOROBENZENE	(86-115)
S3 (DCE) =	1,2-DICHLOROETHANE-D4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-1 1/87 Re

FIGURE F-166

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Lab File ID: 22122 Lab Sample ID: VBLK0A

Date Analyzed: 8/23/90 Time Analyzed: 12:53

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 10501

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1	S-359	029402	22128	17:31
2	S-363	029406	22129	18:21
3	S-366	029409	22130	19:07
4	S-367	029410	22131	19:57
5				
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7				
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COMMENTS:

FORM IV VOA 1/87 Rev

FIGURE F-167

IA

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: WANTEC Contract: VIAR & CO

Lab Code: WANTEC Case No.: SAS No.: 5571-A SDG No.:

Matrix Spike - EPA Sample No.: AT8??

Date Run - 8/23/90

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
1,1-DICHLOROETHENE	50.	0.	45.	91.	61-14
TRICHLOROETHENE	50.	2.	54.	103.	71-12
BENZENE	50.	0.	48.	96.	76-12
TOLUENE	50.	0.	43.	87.	76-12
CHLOROBENZENE	50.	0.	46.	92.	75-13

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-DICHLOROETHENE	50.	34.	67.	30. *	14	61-14
TRICHLOROETHENE	50.	47.	89.	14. *	14	71-12
BENZENE	50.	43.	86.	11. *	11	76-12
TOLUENE	50.	38.	76.	13. *	13	76-12
CHLOROBENZENE	50.	41.	82.	11.	13	75-13

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 4 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

FORM III VOA-1 1/87 Rev.

FIGURE F-168

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Lab File ID: 22134 Lab Sample ID: VBLK08

Date Analyzed: 8/24/90 Time Analyzed: 10:25

Matrix: (soil/water) WATER Level:(low/med) LOW

Instrument ID: 10501

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1	S-371	029414	22135	11:13
2	S-375	029418	22136	12:06
3	S-379	029422	22137	13:00
4	S-383	029426	22138	13:55
5				
6				
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COMMENTS:

EcoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 17, 1990

LSDG: 0285

Sample Report Date: September 4, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
028501	S-001	9.9
028502	S-002	14.7
028503	S-003	8.3
028504	S-015	8.8
028505	S-017	16.3
028506	S-019	16.9
028507	S-030	7.8
028508	S-032	14.1
028509	S-034	11.7
028510	S-045	6.3
028511	S-046	2.1
028512	S-047	1.8
028513	S-048	8.8
028514	S-049	1.5
028515	S-050	5.2
028516	S-051	4.4
028517	S-052	18.3
028518	S-053	7.7
028519	S-054	8.4
028520	S-055	23.1

FIGURE F-17

EcoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 17, 1990

LSDG: 0285

Sample Report Date: September 4, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
028521	S-056	18.1
028522	S-057	12.4
028523	S-067	12.5
028524	S-070	15.2
028525	S-072	17.0
028526	S-074	18.5
028527	S-075	8.2
028528	S-076	4.6
028529	S-077	12.2
028530	S-079	7.0
028531	S-080	13.2
028532	S-081	10.1
028533	S-082	22.2
028534	S-084	17.4
028535	S-086	17.1
028536	S-087	16.1
028537	S-088	22.0
028538	S-090	13.2
028539	S-092	8.9
028540	S-093	14.1

FIGURE F-171

EcoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 17, 1990

LSDG: 0285

Sample Report Date: September 4, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
028541	S-094	14.2
028542	S-096	15.1
028543	S-097	15.8
028544	S-099	26.7
028545	S-100	20.2
028546	S-102	15.1
028547	S-104	24.9
028548	S-106	21.0
028549	S-107	17.5
028550	S-108	11.1
028551	S-110	13.4
028552	S-111	16.2
028553	S-113	17.5
028554	S-123	13.5
028555	S-125	11.7
028556	S-138	16.4
028557	S-140	11.8
028558	S-142	12.1
028559	S-152	16.4
028560	S-153	23.1

FIGURE F-1

EcoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 17, 1990

LSDG: 0285

Sample Report Date: September 4, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
028561	S-155	15.8
028562	S-156	23.2
028563	S-158	19.3
028564	S-159	20.9
028565	S-165	10.5
028566	S-168	15.9
028567	S-171	17.1
028568	S-178	9.4
028569	S-179	13.0
028570	S-181	28.8
028571	S-127	9.6

FIGURE F-173

EcoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 21, 1990

LSDG: 0288

Sample Report Date: September 4, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
028802	S-187	8.3
028803	S-189	12.9
028804	S-191	11.3
028805	S-197	24.7
028806	S-199	13.0
028807	S-201	8.5
028808	S-207	8.9
028809	S-209	18.8
028810	S-211	10.5
028811	S-217	8.0
028812	S-219	11.5
028813	S-221	13.9
028814	S-227	18.5
028815	S-229	12.7
028816	S-231	13.5
028817	S-237	19.6
028818	S-239	16.7
028819	S-241	13.0
028820	S-247	11.8

EcoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 21, 1990

LSDG: 0288

Sample Report Date: September 4, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
028821	S-248	14.6
028822	S-249	16.8
028823	S-250	9.0
028824	S-252	11.5
028825	S-254	13.2
028826	S-260	14.6
028827	S-261	12.9
028828	S-262	12.1
028829	S-263	16.6
028830	S-265	11.9
028831	S-270	NR
028832	S-271	2.5
028833	S-272	13.9
028834	S-273	10.3
028835	S-274	14.8
028836	S-275	17.7
028837	S-283	16.6
028838	S-284	4.3
028839	S-286	16.7
028840	S-287	17.2

NR = Not Required

FIGURE F-175

EcoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 21, 1990

LSDG: 0288

Sample Report Date: September 4, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
028841	S-288	13.1
028842	S-289	13.0
028843	S-291	13.4
028844	S-293	16.9
028845	S-299	14.4
028846	S-300	17.4
028847	S-302	16.6
028848	S-304	11.7
028849	S-310	15.9
028850	S-312	18.9
028851	S-314	14.8
028852	S-320	12.6
028853	S-322	14.3
028854	S-324	14.9
028855	S-325	15.0
028856	S-331	16.2
028857	S-332	16.8
028858	S-333	15.2
028859	S-335	13.6
028860	S-341	16.0

FIGURE F-176

EcoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 21, 1990

LSDG: 0288

Sample Report Date: September 4, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	% Moisture
028861	S-342	16.5
028862	S-343	17.0
028863	S-345	13.7
028864	S-351	2.9
028865	S-352	16.1
028866	S-353	3.4
028867	S-354	11.5
028868	S-355	18.9
028869	S-356	13.5
028870	S-276	15.8

FIGURE F-1

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 22, 1990

LSDG: 0294

Sample Report Date: October 19, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029427 S-384	029430 S-387	029432 S-389	029434 S-391	Detection Limit
Arsenic	<0.056	<0.056	<0.056	0.056	
Barium	0.024	0.053	0.023	<0.010	0.010
Cadmium	<0.006	0.008	0.013	<0.006	0.006
Chromium	0.017	<0.009	0.011	0.011	0.009
Lead	<0.029	<0.029	<0.029	<0.029	0.029
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	0.0002
Selenium	<0.057	<0.057	<0.057	<0.057	0.057
Silver	<0.011	<0.011	<0.011	<0.011	0.011

FIGURE F-3

LoTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 23, 1990

LSDG: 0298

Sample Report Date: September 14, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Oil & Grease (mg/kg)	TPH, 418.1 (mg/kg)
029801	S-357	ND	ND
Detection Limit		12	12

ND = Not Detected

FIGURE F-33

coTek LSI

Client: NTH Consultants, LTD

Sample Receipt Date: August 21, 1990

LSDG: 0288

Sample Report Date: September 14, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Oil & Grease (mg/kg)	TPH, 418.1 (mg/kg)
028827	S-261	ND	ND
028834	S-273	430	320
028843	S-291	ND	ND
028857	S-332	ND	ND
Detection Limit		12	12

ND = Not Detected

FIGURE F-34

Client: NTH Consultants, LTD

Sample Receipt Date: August 22, 1990

LSDG: 0294

Sample Report Date: September 14, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Oil & Grease (mg/kg)	TPH, 418.1 (mg/kg)
029404	S-361	ND	ND
029408	S-365	ND	ND
029413	S-370	1	ND
029417	S-374	ND	ND
029421	S-378	2	1
029425	S-382	3	2
029429	S-386	ND	ND
Detection Limit		0.25	0.25

ND = Not Detected

FIGURE F-35

EPA-Defined Data Qualifiers

Under the column labeled "Q", a flag appears for each result. The definition of these qualifier flags are listed below:

U - Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and percent moisture as applicable.

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

J - Indicates an estimated value when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

E - Indicates compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

FIGURE F-3

.coTek LSI

CASE NARRATIVE FOR SEMI-VOLATILE ANALYSIS USING SW-648 METHOD 8270
09/06/90 REVISION

CLIENT: NTH Consultants, LTD

LSDG: 0285

SAMPLE: S-088

* All semi-volatile organics were analyzed by GC/MS on either or both of the instruments listed below.

Hewlett-Packard MSD	Inst. ID.	7001
Extrel ELQ-400	Inst. ID.	EXTR

* Chromatography was performed on a 30m J & W fused silica DB-5 capillary columns.

* Extraction was performed on a 30 gram fraction.

* Final extract concentration was performed by the nitrogen blowdown technique to a final volume of 1.0 ml.

* The report of the compounds identified and quantified in the sample is contained in the following sections of the data package. Also included are the appropriate calibration and quality control data where applicable.

* Method detection limits or practical quantitation limits (PQL) are as stated in SW-846 8270. The PQLs are factored for initial sample weight and sample % moisture.

* A method blank was extracted along with the sample and found to be free of any target compounds.

* A search for tentatively identified compounds (TICs) was performed on sample S-088. The results indicate the presence of a number of long change aliphatic hydrocarbon compounds indicative of petroleum distillates. More significantly, the chromatogram reveals a large broad mass characteristic of mid to high boiling petroleum based compounds in the carbon 20 to carbon 35 range.

* A soil matrix spike and matrix spike duplicate from another sample group extracted and analyzed in the same time frame as sample S-088 is included with this report.

* The surrogate recovery report omitted from the initial report is included here.

FIGURE F-3

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD

ANALYTICAL METHOD: 8270

SAMPLE: S-088
LAB ID: 028537

DATE RECEIVED: 08/17/90
DATE ANALYZED: 08/27/90
DATE REPORTED: 08/28/90

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
108952	Phenol	<DL	427	
111444	bis(2-Chloroethyl)ether	<DL	427	
95578	2-Chlorophenol	<DL	427	
541731	1,3-Dichlorobenzene	<DL	427	
106467	1,4-Dichlorobenzene	<DL	427	
100516	Benzyl alcohol	<DL	427	
95501	1,2-Dichlorobenzene	<DL	427	
95487	2-Methylphenol	<DL	427	
108601	bis(2-Chloroisopropyl)ether	<DL	427	
106445	4-Methylphenol	<DL	427	
621647	N-Nitroso-di-n-propylamine	<DL	427	
67721	Hexachloroethane	<DL	427	
98953	Nitrobenzene	<DL	427	
78591	Isophorone	<DL	427	
88755	2-Nitrophenol	<DL	427	
105679	2,4-Dimethylphenol	<DL	427	
65850	Benzoic acid	<DL	2137	
111911	bis(2-Chloroethoxy)methane	<DL	427	
120832	2,4-Dichlorophenol	<DL	427	
120821	1,2,4-Trichlorobenzene	<DL	427	
91203	Naphthalene	<DL	427	
106478	4-Chloroaniline	<DL	427	
87683	Hexachlorobutadiene	<DL	427	
59507	4-Chloro-3-methylphenol	<DL	427	
91576	2-Methylnaphthalene	<DL	427	
774474	Hexachlorocyclopentadiene	<DL	427	
88062	2,4,6-Trichlorophenol	<DL	427	
95954	2,4,5-Trichlorophenol	<DL	2137	
91587	2-Chloronaphthalene	<DL	427	
88744	2-Nitroaniline	<DL	2137	
131113	Dimethylphthalate	<DL	427	
208968	Acenaphthylene	<DL	427	
606202	2,6-Dinitrotoluene	<DL	427	
99092	3-Nitroaniline	<DL	2137	
83329	Acenaphthene	<DL	427	
51285	2,4-Dinitrophenol	<DL	2137	

FIGURE F-38

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S-088
LAB ID: 028537

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
100027	4-Nitrophenol	<DL	2137	
132649	Dibenzofuran	<DL	427	
121142	2,4-Dinitrotoluene	<DL	427	
84662	Diethylphthalate	<DL	427	
7005723	4-Chlorophenyl-phenylether	<DL	427	
86737	Fluorene	<DL	427	
100016	4-Nitroaniline	<DL	2137	
534521	4,6-Dinitro-2-methylphenol	<DL	2137	
86306	N-Nitrosodiphenylamine	<DL	427	
101553	4-Bromophenyl-phenylether	<DL	427	
118741	Hexachlorobenzene	<DL	427	
87865	Pentachlorophenol	<DL	2137	
85018	Phenanthrene	<DL	427	
120127	Anthracene	<DL	427	
84742	Di-n-butylphthalate	<DL	427	
206440	Fluoranthene	<DL	427	
129000	Pyrene	<DL	427	
856877	Butylbenzylphthalate	<DL	427	
91941	3,3'-Dichlorobenzidine	<DL	855	
56553	Benzo(a)anthracene	<DL	427	
218019	Chrysene	<DL	427	
117817	bis(2-Ethylhexyl)phthalate	<DL	427	
117840	Di-n-octylphthalate	<DL	427	
205992	Benzo(b)fluoranthene	<DL	427	
207089	Benzo(k)fluoranthene	<DL	427	
50328	Benzo(a)pyrene	<DL	427	
193395	Indeno(1,2,3-cd)pyrene	<DL	427	
53703	Dibenzo(a,h)anthracene	<DL	427	
191242	Benzo(g,h,i)perylene	<DL	427	

NOTES:

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

J Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

E Indicates compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

FIGURE F-

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S-088
LAB ID: 028537

SURROGATE RECOVERY DATA

Surrogate Compound	% Recovery	QC Limits
Nitrobenzene-d5	100	35-114
2-Fluorobiphenyl	114	43-116
Terphenyl-d14	177	33-141
Phenol-d6	67	10-94
2-Fluorophenol	70	21-100
2,4,6-Tribromophenol	99	10-123

D Surrogate diluted out

Surrogates are compounds added to the sample prior to extraction to monitor the extraction efficiency. Lower surrogate recoveries may indicate possible matrix effect on the extraction procedure.

FIGURE F-4

EcoTek LSI

CLIENT: NTH Consultants, LTD
LSDG: 0285

Matrix Spike/Matrix Spike Duplicate Recovery
for Semivolatile Soil

Compound Name	MS %Rec	MSD %Rec	QC Limits %Rec	RPD	QC Limits RPD
Phenol	47	46	26- 90	2	0-35
2-Chlorophenol	45	46	25-102	2	0-50
1,4-Dichlorobenzene	37	41	28-104	10	0-27
N-Nitroso-di-n-propylamine	48	49	41-126	2	0-38
1,2,4-Trichlorobenzene	51	48	38-107	6	0-23
4-Chloro-3-methylphenol	53	53	26-103	0	0-33
Acenaphthene	50	48	31-137	4	0-19
4-Nitrophenol	62	62	11-114	0	0-50
2,4-Dinitrotoluene	51	51	28- 89	0	0-47
Pentachlorophenol	59	62	17-109	4	0-47
Pyrene	61	65	35-142	6	0-36

FIGURE F-

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

ab Name: WANTEC Contract:

Lab Code: WANTEC Case No.: SAS No.: 5574A SDG No.: AT821

Matrix Spike - EPA Sample No.: AT821 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC LIMITS REC.
Phenol	7184.	0.	3389.	47.	26- 90
2-Chlorophenol	7184.	0.	3261.	45.	25-102
1,4-Dichlorobenzene	3592.	0.	1332.	37.	28-104
N-Nitroso-di-n-prop.(1)	3592.	0.	1736.	48.	41-126
1,2,4-Trichlorobenzene	3592.	0.	1842.	51.	38-107
4-Chloro-3-methylphenol	7184.	0.	3808.	53.	26-103
Acenaphthene	3592.	8.	1809.	50.	31-137
4-Nitrophenol	7184.	0.	4411.	61.	11-114
2,4-Dinitrotoluene	3592.	0.	1842.	51.	28- 89
Pentachlorophenol	7184.	0.	4256.	59.	17-109
Pyrene	3592.	99.	2295.	61.	35-142

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	7184.	3306.	46.	2.	35	26- 90
2-Chlorophenol	7184.	3319.	46.	2.	50	25-102
1,4-Dichlorobenzene	3592.	1474.	41.	10.	27	28-104
N-Nitroso-di-n-prop.(1)	3592.	1776.	49.	2.	38	41-126
1,2,4-Trichlorobenzene	3592.	1721.	48.	7.	23	38-107
4-Chloro-3-methylphenol	7184.	3825.	53.	0.	33	26-103
Acenaphthene	3592.	1741.	48.	4.	19	31-137
4-Nitrophenol	7184.	4414.	61.	0.	50	11-114
2,4-Dinitrotoluene	3592.	1840.	51.	0.	47	28- 89
Pentachlorophenol	7184.	4450.	62.	4.	47	17-109
Pyrene	3592.	2448.	65.	7.	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS:

FIGURE F-42

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-159

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028564

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22105

Level: (low/med) LOW Date Received: 8/17/90

% Moisture: not dec. 21. Date Analyzed: 8/22/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	13.	U
74-83-9	BROMOMETHANE	13.	U
75-01-4	VINYL CHLORIDE	13.	U
75-00-3	CHLOROETHANE	13.	U
75-09-2	METHYLENE CHLORIDE	67.	B
67-64-1	ACETONE	26.	B
75-15-0	CARBON DISULFIDE	6.	U
75-35-4	1,1-DICHLOROETHENE	6.	U
75-34-3	1,1-DICHLOROETHANE	6.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	6.	U
67-66-3	CHLOROFORM	6.	U
107-06-2	1,2-DICHLOROETHANE	6.	U
78-93-3	2-BUTANONE	13.	U
71-55-6	1,1,1-TRICHLOROETHANE	6.	U
56-23-5	CARBON TETRACHLORIDE	6.	U
108-05-4	VINYL ACETATE	13.	U
75-27-4	BROMODICHLOROMETHANE	6.	U
78-87-5	1,2-DICHLOROPROPANE	6.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	6.	U
79-01-6	TRICHLOROETHENE	6.	U
124-48-1	DIBROMOCHLOROMETHANE	6.	U
79-00-5	1,1,2-TRICHLOROETHANE	6.	U
71-43-2	BENZENE	6.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U
75-25-2	BROMOFORM	6.	U
108-10-1	4-METHYL-2-PENTANONE	13.	U
591-78-6	2-HEXANONE	13.	U
127-18-4	TETRACHLOROETHENE	6.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U
108-88-3	TOLUENE	6.	U
108-90-7	CHLOROBENZENE	6.	U
100-41-4	ETHYLBENZENE	6.	U
100-42-5	STYRENE	6.	U
1330-20-7	XYLENE (TOTAL)	6.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-159

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 890320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028964

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22105

Level: (low/med) LOW Date Received: 8/17/90

% Moisture: not dec. 21. Date Analyzed: 8/22/90

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

Number TICs found: 1

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	12.43	8.	J
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

FIGURE F-50

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK0A

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 890320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: VBLK0A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22107

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 8/22/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	
67-64-1	ACETONE	26.	
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	14.	
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	5.	J
591-78-6	2-HEXANONE	7.	J
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK0A

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89[illegible]0W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: VBLK0A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 2210[illegible]

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 8/22/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

Two

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 890320W SAS No.: SDG No.:

Level:(low/med) LOW INST. I.D. 10501

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
1	VBLK0A	95	105	96		0
2	S-088	102	111	99		0
3	S-159	101	107	107		0
4	S-153	94	107	104		0
5	S-156	112	101	95		0
6	S-156MS	100	94	98		0
7	S-156MSD	96	103	105		0
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

	QC LIMITS
S1 (TOL) = TOLUENE-D8	(81-117)
S2 (BFB) = BROMOFLUOROBENZENE	(74-121)
S3 (DCE) = 1,2-DICHLOROETHANE-D4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-2 1/8 Rev

FIGURE 5.52

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89[illegible]20W SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: S-156 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC LIMIT REC.
1,1-DICHLOROETHENE	65.	0.	56.	87.	59-17
TRICHLOROETHENE	65.	0.	62.	95.	62-13
BENZENE	65.	0.	59.	90.	66-14
TOLUENE	65.	0.	45.	68.	59-13
CHLOROBENZENE	65.	0.	63.	97.	60-13

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-DICHLOROETHENE	65.	58.	90.	3.	22	59-17
TRICHLOROETHENE	65.	67.	104.	8.	24	62-13
BENZENE	65.	62.	95.	5.	21	66-14
TOLUENE	65.	44.	68.	1.	21	59-13
CHLOROBENZENE	65.	66.	102.	5.	21	60-13

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

FIGURE F-54

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-262

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 890320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028828

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22111

Level: (low/med) LOW Date Received: 8/21/90

% Moisture: not dec. 12. Date Analyzed: 8/22/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	11.	U
74-83-9	BROMOMETHANE	11.	U
75-01-4	VINYL CHLORIDE	11.	U
75-00-3	CHLOROETHANE	11.	U
75-09-2	METHYLENE CHLORIDE	18.	B
67-64-1	ACETONE	12.	B
75-15-0	CARBON DISULFIDE	6.	U
75-35-4	1,1-DICHLOROETHENE	6.	U
75-34-3	1,1-DICHLOROETHANE	6.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	6.	U
67-66-3	CHLOROFORM	6.	U
107-06-2	1,2-DICHLOROETHANE	6.	U
78-93-3	2-BUTANONE	11.	U
71-55-6	1,1,1-TRICHLOROETHANE	6.	U
56-23-5	CARBON TETRACHLORIDE	6.	U
108-05-4	VINYL ACETATE	11.	U
75-27-4	BROMODICHLOROMETHANE	6.	U
78-87-5	1,2-DICHLOROPROPANE	6.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	6.	U
79-01-6	TRICHLOROETHENE	6.	U
124-48-1	DIBROMOCHLOROMETHANE	6.	U
79-00-5	1,1,2-TRICHLOROETHANE	6.	U
71-43-2	BENZENE	6.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U
75-25-2	BROMOFORM	6.	U
108-10-1	4-METHYL-2-PENTANONE	11.	U
591-78-6	2-HEXANONE	11.	U
127-18-4	TETRACHLOROETHENE	6.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U
108-88-3	TOLUENE	6.	U
108-90-7	CHLOROBENZENE	6.	U
100-41-4	ETHYLBENZENE	6.	U
100-42-5	STYRENE	6.	U
1330-20-7	XYLENE (TOTAL)	6.	U

FIGURE F-55

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-262

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89[illegible]20W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 029828

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22111

Level: (low/med) LOW Date Received: 8/21/90

% Moisture: not dec. 12. Date Analyzed: 8/22/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
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29.					
30.					

FIGURE F-5

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-272

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89332OW SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028833

Sample wt/vol: 4.0 (g/mL) G Lab File ID: 22141

Level: (low/med) MED Date Received: 8/21/90

% Moisture: not dec. 14. Date Analyzed: 8/24/90

Column: (pack/cap) PACK Dilution Factor: 1.0 ~~100.0~~ W 8/31/9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	1500.	U
74-83-9	BROMOMETHANE	1500.	U
75-01-4	VINYL CHLORIDE	1500.	U
75-00-3	CHLOROETHANE	1500.	U
75-09-2	METHYLENE CHLORIDE	2600.	B
67-64-1	ACETONE	7500.	B
75-15-0	CARBON DISULFIDE	730.	U
75-35-4	1,1-DICHLOROETHENE	730.	U
75-34-3	1,1-DICHLOROETHANE	730.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	730.	U
67-66-3	CHLOROFORM	730.	U
107-06-2	1,2-DICHLOROETHANE	730.	U
78-93-3	2-BUTANONE	26000.	
71-55-6	1,1,1-TRICHLOROETHANE	730.	U
56-23-5	CARBON TETRACHLORIDE	730.	U
108-05-4	VINYL ACETATE	1500.	U
75-27-4	BROMODICHLOROMETHANE	730.	U
78-87-5	1,2-DICHLOROPROPANE	730.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	730.	U
79-01-6	TRICHLOROETHENE	730.	U
124-48-1	DIBROMOCHLOROMETHANE	730.	U
79-00-5	1,1,2-TRICHLOROETHANE	730.	U
71-43-2	BENZENE	730.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	730.	U
75-25-2	BROMOFORM	730.	U
108-10-1	4-METHYL-2-PENTANONE	1500.	U
591-78-6	2-HEXANONE	1500.	U
127-18-4	TETRACHLOROETHENE	730.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	730.	U
108-88-3	TOLUENE	500.	J
108-90-7	CHLOROBENZENE	730.	U
100-41-4	ETHYLBENZENE	1900.	
100-42-5	STYRENE	730.	U
1330-20-7	XYLENE (TOTAL)	13000.	

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-272

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028833

Sample wt/vol: 4.0 (g/mL) G Lab File ID: 22141

Level: (low/med) MED Date Received: 8/21/90

% Moisture: not dec. 14. Date Analyzed: 8/24/90

Column: (pack/cap) PACK Dilution Factor: ~~100.00~~ 1.0

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

Number TICs found: 9

JKP 9/5/

CAS NUMBER	COMPOUND NAME JKP 9/5/	RT	EST. CONC.	Q
1. 563-80-4	ETHANE, 1,1,2-TRICHLORO-~~1,2,~~ 1,2,2-TRI FLUORO-	13.00	7000.	J
2. 563-80-4	2-BUTANONE, 3-METHYL-	16.67	1000.	J
3. - -	UNKNOWN	18.37	2000.	J
4. 110-54-3	HEXANE (DOT)	20.13	4000.	J
5. - -	UNKNOWN HYDROCARBON	28.33	9000.	J
6. - -	UNKNOWN	28.70	10000.	J
7. - -	UNKNOWN HYDROCARBON	30.33	4000.	J
8. - -	UNKNOWN HYDROCARBON	33.03	5000.	J
9. - -	UNKNOWN HYDROCARBON	36.37	2000.	J
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12.				
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FIGURE F-5A

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-275

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 890320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028836

Sample wt/vol: 4.0 (g/mL) G Lab File ID: 22140

Level: (low/med) MED Date Received: 8/21/90

% Moisture: not dec. 18. Date Analyzed: 8/24/90

Column: (pack/cap) PACK Dilution Factor: ~~100~~ 10.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	1500.	U
74-83-9	BROMOMETHANE	1500.	U
75-01-4	VINYL CHLORIDE	1500.	U
75-00-3	CHLOROETHANE	1500.	U
75-09-2	METHYLENE CHLORIDE	2600.	B
67-64-1	ACETONE	6700.	B
75-15-0	CARBON DISULFIDE	760.	U
75-35-4	1,1-DICHLOROETHENE	760.	U
75-34-3	1,1-DICHLOROETHANE	760.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	760.	U
67-66-3	CHLOROFORM	760.	U
107-06-2	1,2-DICHLOROETHANE	760.	U
78-93-3	2-BUTANONE	23000.	
71-55-6	1,1,1-TRICHLOROETHANE	760.	U
56-23-5	CARBON TETRACHLORIDE	760.	U
108-05-4	VINYL ACETATE	1500.	U
75-27-4	BROMODICHLOROMETHANE	760.	U
78-87-5	1,2-DICHLOROPROPANE	760.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	760.	U
79-01-6	TRICHLOROETHENE	760.	U
124-48-1	DIBROMOCHLOROMETHANE	760.	U
79-00-5	1,1,2-TRICHLOROETHANE	760.	U
71-43-2	BENZENE	760.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	760.	U
75-25-2	BROMOFORM	760.	U
108-10-1	4-METHYL-2-PENTANONE	1500.	U
591-78-6	2-HEXANONE	1500.	U
127-18-4	TETRACHLOROETHENE	760.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	760.	U
108-88-3	TOLUENE	760.	U
108-90-7	CHLOROBENZENE	760.	U
100-41-4	ETHYLBENZENE	760.	U
100-42-5	STYRENE	760.	U
1330-20-7	XYLENE (TOTAL)	760.	U

where are the 12 voa vials?

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-275

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028836

Sample wt/vol: 4.0 (g/mL) G Lab File ID: 22140

Level: (low/med) MED Date Received: 8/21/90

% Moisture: not dec. 18. Date Analyzed: 8/24/90

Column: (pack/cap) PACK Dilution Factor: ~~100.00~~ 1.0

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

Number TICs found: 12

JB 9/5/

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76-13-1	ETHANE, 1,1,2-TRICHLORO-~~1,2,~~ 1,2,2-TRIFLUORO- JB 9/5/90	12.97	7000.	J
2. - -	UNKNOWN	15.10	800.	J
3. 563-80-4	2-BUTANONE, 3-METHYL-	16.63	1000.	J
4. - -	UNKNOWN	18.30	2000.	J
5. 110-54-3	HEXANE (DOT)	20.07	4000.	J
6. - -	UNKNOWN	24.30	3000.	J
7. - -	UNKNOWN	27.57	1000.	J
8. - -	UNKNOWN	28.13	1000.	J
9. - -	UNKNWON	28.67	3000.	J
10. - -	UNKNOWN	29.43	900.	J
11. - -	UNKNOWN AROMATIC	30.63	1000.	J
12. 620-14-4	BENZENE, 1-ETHYL-3-METHYL	34.37	2000.	J
13.				
14.				
15.				
16.				
17.				
18.				
19.				
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FIGURE F-6C

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-283

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028837

Sample wt/vol: 4.0 (g/mL) G Lab File ID: 22139

Level: (low/med) MED Date Received: 8/21/90

% Moisture: not dec. 17. Date Analyzed: 8/24/90

Column: (pack/cap) PACK Dilution Factor: ~~100.00~~ 110

132
8/31

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	1500.	U
74-83-9	BROMOMETHANE	1500.	U
75-01-4	VINYL CHLORIDE	1500.	U
75-00-3	CHLOROETHANE	1500.	U
75-09-2	METHYLENE CHLORIDE	3400.	B
67-64-1	ACETONE	5100.	B
75-15-0	CARBON DISULFIDE	750.	U
75-35-4	1,1-DICHLOROETHENE	750.	U
75-34-3	1,1-DICHLOROETHANE	750.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	750.	U
67-66-3	CHLOROFORM	750.	U
107-06-2	1,2-DICHLOROETHANE	750.	U
78-93-3	2-BUTANONE	20000.	
71-55-6	1,1,1-TRICHLOROETHANE	750.	U
56-23-5	CARBON TETRACHLORIDE	750.	U
108-05-4	VINYL ACETATE	1500.	U
75-27-4	BROMODICHLOROMETHANE	750.	U
78-87-5	1,2-DICHLOROPROPANE	750.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	750.	U
79-01-6	TRICHLOROETHENE	750.	U
124-48-1	DIBROMOCHLOROMETHANE	750.	U
79-00-5	1,1,2-TRICHLOROETHANE	750.	U
71-43-2	BENZENE	750.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	750.	U
75-25-2	BROMOFORM	750.	U
108-10-1	4-METHYL-2-PENTANONE	1500.	U
591-78-6	2-HEXANONE	1500.	U
127-18-4	TETRACHLOROETHENE	750.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	750.	U
108-88-3	TOLUENE	450.	J
108-90-7	CHLOROBENZENE	750.	U
100-41-4	ETHYLBENZENE	460.	J
100-42-5	STYRENE	750.	U
1330-20-7	XYLENE (TOTAL)	4300.	

Figure C.41

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-287

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 890320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028837

Sample wt/vol: 4.0 (g/mL) G Lab File ID: 22139

Level: (low/med) MED Date Received: 8/21/90

% Moisture: not dec. 17. Date Analyzed: 8/24/90

Column: (pack/cap) PACK Dilution Factor: ~~1.00~~ 1.0 SD 9/5/

Number TICs found: 8 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME SD 9/5/90	RT	EST. CONC.	Q
1.	76-13-1	ETHANE, 1,1,2-TRICHLORO-1,2,2-TRIFLUORO-	13.03	7000.	J
2.	563-80-4	2-BUTANONE, 3-METHYL-	16.73	1000.	J
3.	- -	UNKNOWN	18.40	2000.	J
4.	- -	UNKNOWN	20.17	4000.	J
5.	- -	UNKNOWN	24.40	6000.	J
6.	- -	UNKNOWN HYDROCARBON	28.40	1000.	J
7.	- -	UNKNOWN HYDROCARBON	30.40	1000.	J
8.	696-29-7	CYCLOHEXANE, (1-METHYLETHYL)	34.40	2000.	J
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
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FIGURE F-62

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-287

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028840

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22110

Level: (low/med) LOW Date Received: 8/21/90

% Moisture: not dec. 17. Date Analyzed: 8/22/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	12.	U
74-83-9	BROMOMETHANE	12.	U
75-01-4	VINYL CHLORIDE	12.	U
75-00-3	CHLOROETHANE	12.	U
75-09-2	METHYLENE CHLORIDE	18.	B
67-64-1	ACETONE	69.	B
75-15-0	CARBON DISULFIDE	6.	U
75-35-4	1,1-DICHLOROETHENE	6.	U
75-34-3	1,1-DICHLOROETHANE	6.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	6.	U
67-66-3	CHLOROFORM	6.	U
107-06-2	1,2-DICHLOROETHANE	6.	U
78-93-3	2-BUTANONE	8.	BJ
71-55-6	1,1,1-TRICHLOROETHANE	6.	U
56-23-5	CARBON TETRACHLORIDE	6.	U
108-05-4	VINYL ACETATE	12.	U
75-27-4	BROMODICHLOROMETHANE	6.	U
78-87-5	1,2-DICHLOROPROPANE	6.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	6.	U
79-01-6	TRICHLOROETHENE	6.	U
124-48-1	DIBROMOCHLOROMETHANE	6.	U
79-00-5	1,1,2-TRICHLOROETHANE	6.	U
71-43-2	BENZENE	6.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U
75-25-2	BROMOFORM	6.	U
108-10-1	4-METHYL-2-PENTANONE	12.	U
591-78-6	2-HEXANONE	12.	U
127-18-4	TETRACHLOROETHENE	6.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U
108-88-3	TOLUENE	6.	U
108-90-7	CHLOROBENZENE	6.	U
100-41-4	ETHYLBENZENE	6.	U
100-42-5	STYRENE	6.	U
1330-20-7	XYLENE (TOTAL)	6.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-237

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 897320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028840

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22110

Level: (low/med) LOW Date Received: 8/21/90

% Moisture: not dec. 17. Date Analyzed: 8/22/9

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

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. - -	UNKNOWN HYDROCARBON	28.30	30.	J
2. - -	UNKNOWN	28.63	30.	J
3. - -	UNKNOWN HYDROCARBON	30.30	10.	J
4. - -	UNKNOWN HYDROCARBON	31.30	10.	J
5. - -	UNKNOWN HYDROCARBON	33.00	20.	J
6. - -	UNKNOWN HYDROCARBON	34.33	100.	J
7. - -	UNKNOWN HYDROCARBON	36.30	6.	J
8.				
9.				
10.				
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FIGURE F-64

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-299

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89330W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028845

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22114

Level: (low/med) LOW Date Received: 8/21/90

% Moisture: not dec. 14. Date Analyzed: 8/22/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	12.	U
74-83-9	BROMOMETHANE	12.	U
75-01-4	VINYL CHLORIDE	12.	U
75-00-3	CHLOROETHANE	12.	U
75-09-2	METHYLENE CHLORIDE	3.	BJ
67-64-1	ACETONE	6.	BJ
75-15-0	CARBON DISULFIDE	6.	U
75-35-4	1,1-DICHLOROETHENE	6.	U
75-34-3	1,1-DICHLOROETHANE	6.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	6.	U
67-66-3	CHLOROFORM	6.	U
107-06-2	1,2-DICHLOROETHANE	6.	U
78-93-3	2-BUTANONE	12.	U
71-55-6	1,1,1-TRICHLOROETHANE	6.	U
56-23-5	CARBON TETRACHLORIDE	6.	U
108-05-4	VINYL ACETATE	12.	U
75-27-4	BROMODICHLOROMETHANE	6.	U
78-87-5	1,2-DICHLOROPROPANE	6.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	6.	U
79-01-6	TRICHLOROETHENE	6.	U
124-48-1	DIBROMOCHLOROMETHANE	6.	U
79-00-5	1,1,2-TRICHLOROETHANE	6.	U
71-43-2	BENZENE	6.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U
75-25-2	BROMOFORM	6.	U
108-10-1	4-METHYL-2-PENTANONE	12.	U
591-78-6	2-HEXANONE	12.	U
127-18-4	TETRACHLOROETHENE	6.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U
108-88-3	TOLUENE	6.	U
108-90-7	CHLOROBENZENE	6.	U
100-41-4	ETHYLBENZENE	6.	U
100-42-5	STYRENE	6.	U
1330-20-7	XYLENE (TOTAL)	6.	U

FIGURE F-65

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-299

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89022OW SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 023845

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22114

Level: (low/med) LOW Date Received: 8/21/90

% Moisture: not dec. 14. Date Analyzed: 8/22/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
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30.					

FIGURE F-66

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-341

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89330W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 028860

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22112

Level: (low/med) LOW Date Received: 8/21/90

% Moisture: not dec. 16. Date Analyzed: 8/22/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	12.	U
74-83-9	BROMOMETHANE	12.	U
75-01-4	VINYL CHLORIDE	12.	U
75-00-3	CHLOROETHANE	12.	U
75-09-2	METHYLENE CHLORIDE	13.	B
67-64-1	ACETONE	12.	U
75-15-0	CARBON DISULFIDE	6.	U
75-35-4	1,1-DICHLOROETHENE	6.	U
75-34-3	1,1-DICHLOROETHANE	6.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	6.	U
67-66-3	CHLOROFORM	6.	U
107-06-2	1,2-DICHLOROETHANE	6.	U
78-93-3	2-BUTANONE	12.	U
71-55-6	1,1,1-TRICHLOROETHANE	6.	U
56-23-5	CARBON TETRACHLORIDE	6.	U
108-05-4	VINYL ACETATE	12.	U
75-27-4	BROMODICHLOROMETHANE	6.	U
78-87-5	1,2-DICHLOROPROPANE	6.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	6.	U
79-01-6	TRICHLOROETHENE	6.	U
124-48-1	DIBROMOCHLOROMETHANE	6.	U
79-00-5	1,1,2-TRICHLOROETHANE	6.	U
71-43-2	BENZENE	6.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	6.	U
75-25-2	BROMOFORM	6.	U
108-10-1	4-METHYL-2-PENTANONE	12.	U
591-78-6	2-HEXANONE	12.	U
127-18-4	TETRACHLOROETHENE	6.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	6.	U
108-88-3	TOLUENE	6.	U
108-90-7	CHLOROBENZENE	6.	U
100-41-4	ETHYLBENZENE	6.	U
100-42-5	STYRENE	6.	U
1330-20-7	XYLENE (TOTAL)	6.	U

FIGURE F-67

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S-041

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 023860

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 22112

Level: (low/med) LOW Date Received: 8/21/90

% Moisture: not dec. 16. Date Analyzed: 8/22/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
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FIGURE F-68

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK0A

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89[illegible]20W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: VBLK0A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 2210[illegible]

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 8/22/90

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	10.	U
74-83-9	BROMOMETHANE	10.	U
75-01-4	VINYL CHLORIDE	10.	U
75-00-3	CHLOROETHANE	10.	U
75-09-2	METHYLENE CHLORIDE	5.	
67-64-1	ACETONE	26.	
75-15-0	CARBON DISULFIDE	5.	U
75-35-4	1,1-DICHLOROETHENE	5.	U
75-34-3	1,1-DICHLOROETHANE	5.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	5.	U
67-66-3	CHLOROFORM	5.	U
107-06-2	1,2-DICHLOROETHANE	5.	U
78-93-3	2-BUTANONE	14.	
71-55-6	1,1,1-TRICHLOROETHANE	5.	U
56-23-5	CARBON TETRACHLORIDE	5.	U
108-05-4	VINYL ACETATE	10.	U
75-27-4	BROMODICHLOROMETHANE	5.	U
78-87-5	1,2-DICHLOROPROPANE	5.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	5.	U
79-01-6	TRICHLOROETHENE	5.	U
124-48-1	DIBROMOCHLOROMETHANE	5.	U
79-00-5	1,1,2-TRICHLOROETHANE	5.	U
71-43-2	BENZENE	5.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5.	U
75-25-2	BROMOFORM	5.	U
108-10-1	4-METHYL-2-PENTANONE	5.	J
591-78-6	2-HEXANONE	7.	J
127-18-4	TETRACHLOROETHENE	5.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	5.	U
108-88-3	TOLUENE	5.	U
108-90-7	CHLOROBENZENE	5.	U
100-41-4	ETHYLBENZENE	5.	U
100-42-5	STYRENE	5.	U
1330-20-7	XYLENE (TOTAL)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK0A

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89[illegible]0W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: VBLK0A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 2210[illegible]

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 8/22/90

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
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FIGURE F-70

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK08

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: VBLK08

Sample wt/vol: 4.0 (g/mL) G Lab File ID: 22134

Level: (low/med) MED Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 8/24/90

Column: (pack/cap) PACK Dilution Factor: ~~100.00~~ 1.0

BP 5/31

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	1300.	U
74-83-9	BROMOMETHANE	1300.	U
75-01-4	VINYL CHLORIDE	1300.	U
75-00-3	CHLOROETHANE	1300.	U
75-09-2	METHYLENE CHLORIDE	1400.	
67-64-1	ACETONE	1000.	J
75-15-0	CARBON DISULFIDE	630.	U
75-35-4	1,1-DICHLOROETHENE	630.	U
75-34-3	1,1-DICHLOROETHANE	630.	U
156-60-5	1,2-DICHLOROETHENE (TOTAL)	630.	U
67-66-3	CHLOROFORM	630.	U
107-06-2	1,2-DICHLOROETHANE	630.	U
78-93-3	2-BUTANONE	1300.	U
71-55-6	1,1,1-TRICHLOROETHANE	630.	U
56-23-5	CARBON TETRACHLORIDE	630.	U
108-05-4	VINYL ACETATE	1300.	U
75-27-4	BROMODICHLOROMETHANE	630.	U
78-87-5	1,2-DICHLOROPROPANE	630.	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	630.	U
79-01-6	TRICHLOROETHENE	630.	U
124-48-1	DIBROMOCHLOROMETHANE	630.	U
79-00-5	1,1,2-TRICHLOROETHANE	630.	U
71-43-2	BENZENE	630.	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	630.	U
75-25-2	BROMOFORM	630.	U
108-10-1	4-METHYL-2-PENTANONE	1300.	U
591-78-6	2-HEXANONE	1300.	U
127-18-4	TETRACHLOROETHENE	630.	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	630.	U
108-88-3	TOLUENE	630.	U
108-90-7	CHLOROBENZENE	630.	U
100-41-4	ETHYLBENZENE	630.	U
100-42-5	STYRENE	630.	U
1330-20-7	XYLENE (TOTAL)	630.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK08

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: VBLK08

Sample wt/vol: 4.0 (g/mL) G Lab File ID: 22134

Level: (low/med) MED Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 8/24/90

Column: (pack/cap) PACK Dilution Factor: 100.00

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
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FIGURE F-72

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 893320W SAS No.: SDG No.:

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
1	VBLK0A	95	105	96		0
2	S-287	92	118	100		0
3	S-262	103	119	114		0
4	S-341	96	119	104		0
5	S-299	100	120	80		0
6						
7						
8						
9						
10						
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19						
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27						
28						
29						
30						

		QC LIMITS
S1 (TOL)	= TOLUENE-D8	(81-117)
S2 (BFB)	= BROMOFLUOROBENZENE	(74-121)
S3 (DCE)	= 1,2-DICHLOROETHANE-D4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-2 1/87 Rev

FIGURE F-73

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 890320W SAS No.: SDG No.:

Level:(low/med) MED

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
1	VBLK08	91	95	99		0
2	S-283	95	117	102		0
3	S-275	95	114	100		0
4	S-272	93	116	102		0
5						
6						
7						
8						
9						
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30						

		QC LIMITS
S1 (TOL)	= TOLUENE-D8	(81-117)
S2 (BFB)	= BROMOFLUOROBENZENE	(74-121)
S3 (DCE)	= 1,2-DICHLOROETHANE-D4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-2 1/87 Rev

FIGURE F

TR

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ECOTEK Contract: NTH

Lab Code: ECOTEK Case No.: 89[illegible]20W SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: S-156 Level:(low/med) LOW

Run DAY : 8/22/90 [illegible] 9/14/90

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC LIMITS REC.
1,1-DICHLOROETHENE	65.	0.	56.	87.	59-17
TRICHLOROETHENE	65.	0.	62.	95.	62-13
BENZENE	65.	0.	59.	90.	66-14
TOLUENE	65.	0.	45.	68.	59-13
CHLOROBENZENE	65.	0.	63.	97.	60-13

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-DICHLOROETHENE	65.	58.	90.	3.	22	59-17
TRICHLOROETHENE	65.	67.	104.	8.	24	62-13
BENZENE	65.	62.	95.	5.	21	66-14
TOLUENE	65.	44.	68.	1.	21	59-13
CHLOROBENZENE	65.	66.	102.	5.	21	60-13

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

EcoTek LSI

CASE NARRATIVE FOR SEMI-VOLATILE ANALYSIS USING SW-648 METHOD 8270
09/06/90 REVISION

CLIENT: NTH Consultants, LTD

LSDG: 0288

SAMPLE: S-261, S-273, S-291, S-332

* All semi-volatile organics were analyzed by GC/MS on the instrument listed below.

  Hewlett-Packard MSD Inst. ID. 7001

* Chromatography was performed on a 30m J & W fused silica DB-5 capillary columns.

* Extraction was performed on a 30 gram fraction.

* Final extract concentration was performed by the nitrogen blowdown technique to a final volume of 1.0 ml.

* The report of the compounds identified and quantified in the sample is contained in the following sections of the data package. Also included are the appropriate calibration and quality control data where applicable.

* Method detection limits or practical quantitation limits (PQL) are as stated in SW-846 8270. The PQLs are factored for initial sample weight and sample % moisture.

* A method blank was extracted along with the sample and found to be free of any target compounds.

* A search for tentatively identified compounds (TICs) was performed on all of the above samples. The results are as follows:

  S-261 No specific significant compounds found.
  S-273 Numerous long chain hydrocarbons indicative of petroleum based compounds were found in significant amounts. The chromatogram reveals two distinct patterns characteristic with the first in the carbon C8-C12 range (low to mid boiling petroleum compounds) and the second in the C15-C25 range (mid boiling compounds).
  S-291 No specific significant compounds found but a broad mass of petroleum based compounds in the C20-C35 range(high boiling petroleum compounds).
  S-332 No specific significant compounds found.

* The surrogate compound recovery data omitted in the original report is included here.

* A soil matrix spike and matrix spike duplicate recovery data sheet from another sample group that was extracted and analyzed in the same time frame is also included.

FIGURE F-76

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants,LTD

ANALYTICAL METHOD: 8270

SAMPLE: Blank
LAB ID: Q1082706

DATE RECEIVED:
DATE ANALYZED: 08/29/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
108952	Phenol	<DL	333	
111444	bis(2-Chloroethyl)ether	<DL	333	
95578	2-Chlorophenol	<DL	333	
541731	1,3-Dichlorobenzene	<DL	333	
106467	1,4-Dichlorobenzene	<DL	333	
100516	Benzyl alcohol	<DL	333	
95501	1,2-Dichlorobenzene	<DL	333	
95487	2-Methylphenol	<DL	333	
108601	bis(2-Chloroisopropyl)ether	<DL	333	
106445	4-Methylphenol	<DL	333	
621647	N-Nitroso-di-n-propylamine	<DL	333	
67721	Hexachloroethane	<DL	333	
98953	Nitrobenzene	<DL	333	
78591	Isophorone	<DL	333	
88755	2-Nitrophenol	<DL	333	
105679	2,4-Dimethylphenol	<DL	333	
65850	Benzoic acid	<DL	1667	
111911	bis(2-Chloroethoxy)methane	<DL	333	
120832	2,4-Dichlorophenol	<DL	333	
120821	1,2,4-Trichlorobenzene	<DL	333	
91203	Naphthalene	<DL	333	
106478	4-Chloroaniline	<DL	333	
87683	Hexachlorobutadiene	<DL	333	
59507	4-Chloro-3-methylphenol	<DL	333	
91576	2-Methylnaphthalene	<DL	333	
774474	Hexachlorocyclopentadiene	<DL	333	
88062	2,4,6-Trichlorophenol	<DL	333	
95954	2,4,5-Trichlorophenol	<DL	1667	
91587	2-Chloronaphthalene	<DL	333	
88744	2-Nitroaniline	<DL	1667	
131113	Dimethylphthalate	<DL	333	
208968	Acenaphthylene	<DL	333	
606202	2,6-Dinitrotoluene	<DL	333	
99092	3-Nitroaniline	<DL	1667	
83329	Acenaphthene	<DL	333	
51285	2,4-Dinitrophenol	<DL	1667	

FIGURE F-77

EcoTek LSI

CLIENT: NTH Consultants,LTD

SAMPLE: Blank
LAB ID: Q1082706

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
100027	4-Nitrophenol	<DL	1667	
132649	Dibenzofuran	<DL	333	
121142	2,4-Dinitrotoluene	<DL	333	
84662	Diethylphthalate	<DL	333	
7005723	4-Chlorophenyl-phenylether	<DL	333	
86737	Fluorene	<DL	333	
100016	4-Nitroaniline	<DL	333	
534521	4,6-Dinitro-2-methylphenol	<DL	1667	
86306	N-Nitrosodiphenylamine	<DL	1667	
101553	4-Bromophenyl-phenylether	<DL	333	
118741	Hexachlorobenzene	<DL	333	
87865	Pentachlorophenol	<DL	333	
85018	Phenanthrene	<DL	1667	
120127	Anthracene	<DL	333	
84742	Di-n-butylphthalate	<DL	333	
206440	Fluoranthene	<DL	333	
129000	Pyrene	<DL	333	
856877	Butylbenzylphthalate	<DL	333	
91941	3,3'-Dichlorobenzidine	<DL	333	
56553	Benzo(a)anthracene	<DL	667	
218019	Chrysene	<DL	333	
117817	bis(2-Ethylhexyl)phthalate	<DL	333	
117840	Di-n-octylphthalate	<DL	333	
205992	Benzo(b)fluoranthene	<DL	333	
207089	Benzo(k)fluoranthene	<DL	333	
50328	Benzo(a)pyrene	<DL	333	
193395	Indeno(1,2,3-cd)pyrene	<DL	333	
53703	Dibenzo(a,h)anthracene	<DL	333	
191242	Benzo(g,h,i)perylene	<DL	333	

FIGURE F-78

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD

ANALYTICAL METHOD: 8270

SAMPLE: S261

LAB ID: 028827

DATE RECEIVED: 08/21/90
DATE ANALYZED: 08/29/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
108952	Phenol	<DL	378	
111444	bis(2-Chloroethyl)ether	<DL	378	
95578	2-Chlorophenol	<DL	378	
541731	1,3-Dichlorobenzene	<DL	378	
106467	1,4-Dichlorobenzene	<DL	378	
100516	Benzyl alcohol	<DL	378	
95501	1,2-Dichlorobenzene	<DL	378	
95487	2-Methylphenol	<DL	378	
108601	bis(2-Chloroisopropyl)ether	<DL	378	
106445	4-Methylphenol	<DL	378	
621647	N-Nitroso-di-n-propylamine	<DL	378	
67721	Hexachloroethane	<DL	378	
98953	Nitrobenzene	<DL	378	
78591	Isophorone	<DL	378	
88755	2-Nitrophenol	<DL	378	
105679	2,4-Dimethylphenol	<DL	378	
65850	Benzoic acid	<DL	1888	
111911	bis(2-Chloroethoxy)methane	<DL	378	
120832	2,4-Dichlorophenol	<DL	378	
120821	1,2,4-Trichlorobenzene	<DL	378	
91203	Naphthalene	<DL	378	
106478	4-Chloroaniline	<DL	378	
87683	Hexachlorobutadiene	<DL	378	
59507	4-Chloro-3-methylphenol	<DL	378	
91576	2-Methylnaphthalene	<DL	378	
774474	Hexachlorocyclopentadiene	<DL	378	
88062	2,4,6-Trichlorophenol	<DL	378	
95954	2,4,5-Trichlorophenol	<DL	1888	
91587	2-Chloronaphthalene	<DL	378	
88744	2-Nitroaniline	<DL	1888	
131113	Dimethylphthalate	<DL	378	
208968	Acenaphthylene	<DL	378	
606202	2,6-Dinitrotoluene	<DL	378	
99092	3-Nitroaniline	<DL	1888	
83329	Acenaphthene	<DL	378	
51285	2,4-Dinitrophenol	<DL	1888	

FIGURE F-79

EcoTek LSI

CLIENT: NTH Consultants, LTD

SAMPLE: S261
LAB ID: 028827

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
100027	4-Nitrophenol	<DL	1888	
132649	Dibenzofuran	<DL	378	
121142	2,4-Dinitrotoluene	<DL	378	
84662	Diethylphthalate	<DL	378	
7005723	4-Chlorophenyl-phenylether	<DL	378	
86737	Fluorene	<DL	378	
100016	4-Nitroaniline	<DL	1888	
534521	4,6-Dinitro-2-methylphenol	<DL	1888	
86306	N-Nitrosodiphenylamine	<DL	378	
101553	4-Bromophenyl-phenylether	<DL	378	
118741	Hexachlorobenzene	<DL	378	
87865	Pentachlorophenol	<DL	1888	
85018	Phenanthrene	<DL	378	
120127	Anthracene	<DL	378	
84742	Di-n-butylphthalate	<DL	378	
206440	Fluoranthene	<DL	378	
129000	Pyrene	<DL	378	
856877	Butylbenzylphthalate	<DL	378	
91941	3,3'-Dichlorobenzidine	<DL	755	
56553	Benzo(a)anthracene	<DL	378	
218019	Chrysene	<DL	378	
117817	bis(2-Ethylhexyl)phthalate	<DL	378	
117840	Di-n-octylphthalate	<DL	378	
205992	Benzo(b)fluoranthene	<DL	378	
207089	Benzo(k)fluoranthene	<DL	378	
50328	Benzo(a)pyrene	<DL	378	
193395	Indeno(1,2,3-cd)pyrene	<DL	378	
53703	Dibenzo(a,h)anthracene	<DL	378	
191242	Benzo(g,h,i)perylene	<DL	378	

FIGURE F-80

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH COnsultants, LTD

ANALYTICAL METHOD: 8270

SAMPLE: S273
LAB ID: 028834

DATE RECEIVED: 08/21/90
DATE ANALYZED: 08/30/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
108952	Phenol	<DL	7432	
111444	bis(2-Chloroethyl)ether	<DL	7432	
95578	2-Chlorophenol	<DL	7432	
541731	1,3-Dichlorobenzene	<DL	7432	
106467	1,4-Dichlorobenzene	<DL	7432	
100516	Benzyl alcohol	<DL	7432	
95501	1,2-Dichlorobenzene	<DL	7432	
95487	2-Methylphenol	<DL	7432	
108601	bis(2-Chloroisopropyl)ether	<DL	7432	
106445	4-Methylphenol	<DL	7432	
621647	N-Nitroso-di-n-propylamine	<DL	7432	
67721	Hexachloroethane	<DL	7432	
98953	Nitrobenzene	<DL	7432	
78591	Isophorone	<DL	7432	
88755	2-Nitrophenol	<DL	7432	
105679	2,4-Dimethylphenol	<DL	7432	
65850	Benzoic acid	<DL	7432	
111911	bis(2-Chloroethoxy)methane	<DL	37161	
120832	2,4-Dichlorophenol	<DL	7432	
120821	1,2,4-Trichlorobenzene	<DL	7432	
91203	Naphthalene	<DL	7432	
106478	4-Chloroaniline	<DL	7432	
87683	Hexachlorobutadiene	<DL	7432	
59507	4-Chloro-3-methylphenol	<DL	7432	
91576	2-Methylnaphthalene	<DL	7432	
774474	Hexachlorocyclopentadiene	<DL	7432	
88062	2,4,6-Trichlorophenol	<DL	7432	
95954	2,4,5-Trichlorophenol	<DL	7432	
91587	2-Chloronaphthalene	<DL	37161	
88744	2-Nitroaniline	<DL	7432	
131113	Dimethylphthalate	<DL	37161	
208968	Acenaphthylene	<DL	7432	
606202	2,6-Dinitrotoluene	<DL	7432	
99092	3-Nitroaniline	<DL	7432	
93329	Acenaphthene	<DL	37161	
51285	2,4-Dinitrophenol	<DL	7432	
		<DL	37161	

FIGURE F-81

EcoTek LSI

CLIENT: NTH COnsultants, LTD

SAMPLE: S273
LAB ID: 028834

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
100027	4-Nitrophenol	<DL	37161	
132649	Dibenzofuran	<DL	7432	
121142	2,4-Dinitrotoluene	<DL	7432	
84662	Diethylphthalate	<DL	7432	
7005723	4-Chlorophenyl-phenylether	<DL	7432	
86737	Fluorene	<DL	7432	
100016	4-Nitroaniline	<DL	37161	
534521	4,6-Dinitro-2-methylphenol	<DL	37161	
86306	N-Nitrosodiphenylamine	<DL	7432	
101553	4-Bromophenyl-phenylether	<DL	7432	
118741	Hexachlorobenzene	<DL	7432	
87865	Pentachlorophenol	<DL	37161	
85018	Phenanthrene	<DL	7432	
120127	Anthracene	<DL	7432	
84742	Di-n-butylphthalate	<DL	7432	
206440	Fluoranthene	<DL	7432	
129000	Pyrene	<DL	7432	
856877	Butylbenzylphthalate	<DL	7432	
91941	3,3'-Dichlorobenzidine	<DL	14864	
56553	Benzo(a)anthracene	<DL	7432	
218019	Chrysene	<DL	7432	
117817	bis(2-Ethylhexyl)phthalate	<DL	7432	
117840	Di-n-octylphthalate	<DL	7432	
205992	Benzo(b)fluoranthene	<DL	7432	
207089	Benzo(k)fluoranthene	<DL	7432	
50328	Benzo(a)pyrene	<DL	7432	
193395	Indeno(1,2,3-cd)pyrene	<DL	7432	
53703	Dibenzo(a,h)anthracene	<DL	7432	
191242	Benzo(g,h,i)perylene	<DL	7432	

FIGURE F-82

OVERSIZED

DOCUMENT

EcoTek LSI

***** Semivolatile Organic Analysis Results *****

CLIENT: NTH Consultants, LTD

ANALYTICAL METHOD: 8270

SAMPLE: S291
LAB ID: 028843

DATE RECEIVED: 08/21/90
DATE ANALYZED: 08/30/90
DATE REPORTED: 08/31/90

CAS NUMBER	COMPOUND NAME	RESULT ug/Kg	DET LIMIT ug/Kg	NOTE
108952	Phenol	<DL	384	
111444	bis(2-Chloroethyl)ether	<DL	384	
95578	2-Chlorophenol	<DL	384	
541731	1,3-Dichlorobenzene	<DL	384	
106467	1,4-Dichlorobenzene	<DL	384	
100516	Benzyl alcohol	<DL	384	
95501	1,2-Dichlorobenzene	<DL	384	
95487	2-Methylphenol	<DL	384	
108601	bis(2-Chloroisopropyl)ether	<DL	384	
106445	4-Methylphenol	<DL	384	
621647	N-Nitroso-di-n-propylamine	<DL	384	
67721	Hexachloroethane	<DL	384	
98953	Nitrobenzene	<DL	384	
78591	Isophorone	<DL	384	
88755	2-Nitrophenol	<DL	384	
105679	2,4-Dimethylphenol	<DL	384	
65850	Benzoic acid	<DL	1918	
111911	bis(2-Chloroethoxy)methane	<DL	384	
120832	2,4-Dichlorophenol	<DL	384	
120821	1,2,4-Trichlorobenzene	<DL	384	
91203	Naphthalene	<DL	384	
106478	4-Chloroaniline	<DL	384	
87683	Hexachlorobutadiene	<DL	384	
59507	4-Chloro-3-methylphenol	<DL	384	
91576	2-Methylnaphthalene	<DL	384	
774474	Hexachlorocyclopentadiene	<DL	384	
88062	2,4,6-Trichlorophenol	<DL	384	
95954	2,4,5-Trichlorophenol	<DL	1918	
91587	2-Chloronaphthalene	<DL	384	
88744	2-Nitroaniline	<DL	1918	
131113	Dimethylphthalate	<DL	384	
208968	Acenaphthylene	<DL	384	
606202	2,6-Dinitrotoluene	<DL	384	
99092	3-Nitroaniline	<DL	1918	
83329	Acenaphthene	<DL	384	
51285	2,4-Dinitrophenol	<DL	1918	

FIGURE F-83

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

SSC INDUSTRIES
EPA SITE NUMBER GAD003284049
EAST POINT
FULTON COUNTY, GA
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY JONATHAN HUGHES
OF NUS CORPORATION
ON 08/28/89

DATE OF THIS REPORT: 09/28/89
DATE OF LAST MODIFICATION: 09/28/89

GROUND WATER ROUTE SCORE :	3.67
SURFACE WATER ROUTE SCORE:	4.36
AIR ROUTE SCORE :	0.00
MIGRATION SCORE :	3.29

F.O.I.A.
EXEMPTION 5

Approving Official

6-20-91
Date

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	70 FEET		
DEPTH TO BOTTOM OF WASTE	6 FEET		
DEPTH TO AQUIFER OF CONCERN	64 FEET	2	4
PRECIPITATION	51.0 INCHES		
EVAPORATION	44.0 INCHES		
NET PRECIPITATION	7.0 INCHES	2	2
PERMEABILITY	1.0X10-7 CM/SEC	0	0
PHYSICAL STATE		3	3
TOTAL ROUTE CHARACTERISTICS SCORE:			9
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
GROUND WATER USE		1	3
DISTANCE TO NEAREST WELL	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			3

GROUND WATER ROUTE SCORE (Sgw) = 3.67

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER	NO		
SITE WITHIN CLOSED BASIN	NO		
FACILITY SLOPE	2.0 %		
INTERVENING SLOPE	2.0 %	0	0
24-HOUR RAINFALL	3.3 INCHES	3	3
DISTANCE TO DOWN-SLOPE WATER	13200 FEET	0	0
PHYSICAL STATE	3		3
TOTAL ROUTE CHARACTERISTICS SCORE:			6
3. CONTAINMENT	3		3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
SURFACE WATER USE		2	6
DISTANCE TO SENSITIVE ENVIRONMENTS		0	0
COASTAL WETLANDS	NONE		
FRESH-WATER WETLANDS	15750 FEET		
CRITICAL HABITAT	NONE		
DISTANCE TO STATIC WATER	> 3 MILES		
DISTANCE TO WATER SUPPLY INTAKE	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			6

SURFACE WATER ROUTE SCORE (Ssw) = 4.36

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY:

MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE: N/A

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
- 0 to 0.25 mile
- 0 to 0.50 mile
- 0 to 1.0 mile
- 0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
- COASTAL WETLANDS
- FRESH-WATER WETLANDS
- CRITICAL HABITAT

DISTANCE TO LAND USES
- COMMERCIAL/INDUSTRIAL
- PARK/FOREST/RESIDENTIAL
- AGRICULTURAL LAND
- PRIME FARMLAND
- HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE: N/A

AIR ROUTE SCORE (Sa) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: SSC INDUSTRIES
AS OF 09/28/89

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		9
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	3

= 2106 /57,330 X 100 = 3.67 = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		6
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	6

= 2808 /64,350 X 100 = 4.36 = S_{sw}

AIR ROUTE SCORE

OBSERVED RELEASE 0 /35,100 X 100 = 0.00 = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
GROUND WATER ROUTE SCORE (S_{gw})	3.67	13.47
SURFACE WATER ROUTE SCORE (S_{sw})	4.36	19.01
AIR ROUTE SCORE (S_{air})	0.00	0.00
$S^2_{gw} + S^2_{sw} + S^2_{air}$		32.48
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		5.70
$S_M = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}/1.73$		3.29

REF. 1

Series 1949, No. 7

Issued December 1958

Fulton County Georgia

OUR SOIL ★ OUR STRENGTH

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE

SOIL SURVEY OF FULTON COUNTY, GEORGIA[1]

By J. H. WALKER, in Charge, University of Georgia, College of Agriculture, J. T. MILLER, T. W. GREEN, and R. F. WELLS, Soil Survey,[2] United States Department of Agriculture

Correlation by A. H. HASTY, Soil Survey

United States Department of Agriculture, Soil Conservation Service, in Cooperation with the University of Georgia, College of Agriculture

General Character of the Area

FULTON COUNTY is entirely within the Atlanta Plateau. It is made up principally of rolling to hilly and broad smooth uplands, although some level flood plains occur along the Chattahoochee River and many of its tributaries. Corn, oats, wheat, and hay are important crops. Cotton is the principal cash crop. Vegetables are grown for home use and for market.

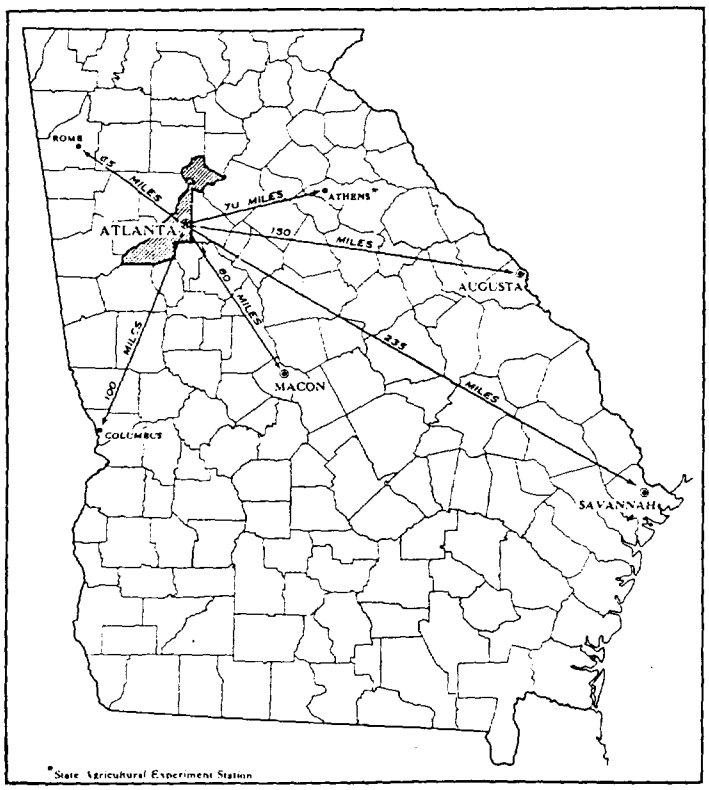


Figure 1.—Location of Fulton County in Georgia.

Dairy cattle, poultry, and some beef cattle and hogs are raised. The county has many industries, mainly in Atlanta and its suburbs.

Location and Extent

Fulton County is in the north-central part of Georgia (fig. 1). Its area is 523 square miles or 334,720 acres. The outline of the county is irregular; the longest dimension is northeast-southwest. Atlanta, the State capital and county seat, is approximately in the center of the county. Distances from Atlanta to well-known places in Georgia are shown in figure 1.

Physiography, Relief, and Drainage

Fulton County lies wholly within the Atlanta Plateau (*8*)[3], which is a part of the Piedmont province (*5*). This province is a major physiographic division of the United States and extends from southern New York to central Alabama. The Atlanta Plateau has a rolling surface characterized by moderate slopes but has no great relief. One of its most striking features is the valley of the Chattahoochee River, ranging from 150 to 400 feet in depth and from 2 to 5 miles in width from rim to rim.

The general surface features of the county are characterized by rolling to hilly and broad smooth uplands. The largest areas of smooth land are in the northern part of the county near Roswell and Alpharetta and on the drainage divide extending southwest from Atlanta to Palmetto. The areas most dissected border the Chattahoochee and Little Rivers and some of their larger tributaries. These areas have steep V-shaped valleys and sharp ridgetops, and their slopes range generally from 20 to 40 percent. The rolling land has low ridges and rounded knobs with deposits of colluvial-alluvial material in depressions and along drainageways.

Level or nearly level flood plains occur along the Chattahoochee River and many of its tributaries. The flood plain is a few yards to nearly half a mile wide along this river and is largest in the northern part near where the river enters the county. Remnants of stream terraces lie above the flood plain at two or possibly more levels. In many places the alluvial deposits making up these terraces are thin and considerably dissected by drainageways.

Where the Chattahoochee River enters the county, the elevation is approximately 900 feet and where it leaves it, about 75 miles to the southwest, the elevation is approximately 700 feet. The stream course is nearly southwesterly and approximately parallel to the trend of the geologic structure (*8*). In the southern part of the county the ridgetops lie at elevations ranging from 1,000 to 1,050 feet. North of Atlanta the higher elevations range from 1,100 to more than 1,200 feet at

[1] This report was revised by R. C. JURNEY, Soil Survey, United States Department of Agriculture.
[2] Fieldwork for this survey was done while Soil Survey was a part of the Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration. Soil Survey was transferred to the Soil Conservation Service on November 15, 1952.
[3] Italic numbers in parentheses refer to Literature Cited, p. 65.

a point about 5 miles west of Alpharetta. Elevations at several places in the county are as follows: Alpharetta, 1,130 feet; Roswell, 1,072; College Park, 1,057; Atlanta, 1,050; Fairburn, 1,041; Stonewall, 1,024; and Ben Hill, 962.

The drainage system of the county is characterized by a dendritic drainage pattern. The pattern is well developed throughout the uplands, and surface drainage nearly everywhere is good to excessive. For much of Fulton County, drainage is into the Gulf of Mexico by way of the Chattahoochee and Little Rivers and tributaries of the Flint River. About 35 square miles, including the southern part of Atlanta and the adjacent area to the south, is drained eastward into the Atlantic Ocean by tributaries of the South River.

Most of the first bottoms of the Chattahoochee River are well drained, yet they are subject to overflow several times during the year. In many places along other streams, however, sediments recently washed from the surrounding uplands have filled the channels and altered drainage. As a result, many areas along small streams are swampy or semiswampy much of the year. In most places this altered drainage has not had sufficient time to change the characteristics of the soil profile, but some areas are too wet for cultivated crops.

Climate

The climate of Fulton County is humid and continental. The winters are mild, but they have very changeable temperature. The prevailing wind during winter is northerly. The weather is largely controlled by movement of areas of high and low barometric pressure and the accompanying winds. In winter these conditions cause frequent alternation of warm moist southerly winds and cold dry northerly winds (*7*). Data on normal monthly, seasonal, and annual temperature and precipitation at Atlanta are given in table 1.

The average winter temperature is 45.5° F. The temperature usually rises rapidly in March and April. The difference between the midwinter (January) average and that of midsummer (July) is 34.9°, which is relatively small compared with a difference of 60° in some of the more northern States. The summers are warm but are comparatively free from oppressive heat, because of the altitude and latitude of the county. The average summer temperature is 78.6°.

The average date of the last killing frost in spring is March 29, and that of the first in fall, November 8. The growing season therefore averages 224 days and is sufficient for the production of all the crops commonly grown. Fruit tree blossoms, especially peach blossoms, are occasionally damaged by late frost.

The winters are mild enough for the growing of fall-sown oats, wheat, rye, clover, and other crops for cover and grazing. Turnips, cabbage, kale, radishes, onions, rape, peas, and spinach can be planted late in fall or in December. Potatoes, beets, carrots, collards, and mustard can be planted in January and February, and other vegetables, during the latter part of March and the first part of April. Small grains and clover, if sown late on poorly drained soils, are damaged by the heaving produced by alternate freezing and thawing. Damage to these crops rarely occurs on the better drained sandy soils.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Atlanta, Fulton County, Ga.*

[Elevation, 977 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1954)	Wettest year (1948)	Average snowfall
	° F.	*° F.*	*° F.*	*Inches*	*Inches*	*Inches*	*Inches*
December	45.2	73	1	4.55	3.00	4.11	0.5
January	44.6	76	−2	4.67	3.73	3.47	1.0
February	46.7	78	−8	4.82	2.70	6.20	.9
Winter	45.5	78	−8	14.04	9.43	13.78	2.4
March	52.7	87	8	5.67	3.07	10.19	.2
April	61.7	93	25	4.42	1.91	2.82	.1
May	70.0	97	38	3.82	3.31	7.83	0
Spring	61.5	97	8	13.91	8.29	20.84	.3
June	77.7	100	39	4.02	2.08	1.32	0
July	79.5	103	58	4.41	6.31	11.26	0
August	78.6	100	55	3.81	1.14	4.20	0
Summer	78.6	103	39	12.24	9.53	16.78	0
September	74.4	102	43	2.96	.26	3.60	0
October	63.4	94	28	2.60	.17	.73	(3)
November	51.9	82	14	3.41	4.12	15.72	.1
Fall	63.2	102	14	8.97	4.55	20.05	.1
Year	62.2	103	−8	49.16	31.80	71.45	2.8

[1] Average temperature based on 21-year record, through 1955; highest and lowest temperatures on a 52-year record, 1879-1930.
[2] Average precipitation based on a 21-year record, through 1955; wettest and driest years based on a 90-year record, 1859-1955; snowfall, based on a 41-year record through 1930.
[3] Trace.

The length of the grazing period depends on the kinds of pasture plants sown and on the amount of fertilizer used. The grazing period for pasture consisting of bermudagrass, broomsedge, crabgrass, common lespedeza, and weeds extends from the latter part of March to the latter part of October. This period can be lengthened by use of proper fertilizers and by seeding with clovers, coastal bermudagrass, tall fescue, orchardgrass, and ryegrass. Permanent pasture should be supplemented with temporary pasture during dry spells and winter.

Rainfall varies somewhat from year to year, but its seasonal distribution is generally favorable for crops. Serious drought is not likely to occur more than once in 10 to 15 years. Wet weather sometimes damages hay during the curing process and small grain at harvesttime. During heavy rains, corn is occasionally drowned out on poorly and somewhat poorly drained soils of first bottoms, and in this kind of weather cotton develops excess foliage and is more

Permeability is moderately rapid to moderate. In the deeper areas the soil retains moisture fairly well.

Although this stony land is prevailingly steep, it includes a total of about 194 acres in which the slopes are very steep, or more than 25 percent. These steeper areas make up only a relatively small part of the total and are included because their use suitability is similar to that of the less steep areas.

Use and management (Group C–1).—The relatively small aggregate area of Stony land, steep, is in forest consisting of a scant mixed stand of pines and hardwoods. This land is not suitable for crops or pasture because of its very strong slopes, high susceptibility to erosion, very poor workability, and very low productivity. It is best used for forest.

UNCLASSIFIED CITY LAND

Unclassified city land (Ua).—This land type occupies a relatively large part of Fulton County. It includes areas within and adjacent to cities (principally Atlanta). It is so altered or obscured by urban works and structures that identifying and mapping the soils is not feasible or would be of no value to the agriculture of the county. Group C–1.

WEHADKEE SERIES

The Wehadkee soils, located on low first bottoms subject to periodic overflow, are poorly drained. They are relatively deep, but the water table is usually high. They are associated with Congaree and Chewacla soils but are unlike them in being mottled throughout their entire depth. Other than color differences, their profile shows very little change from the surface downward.

The soils have a low organic-matter content.

Most of the land cannot be used for cultivated crops because of poor drainage, and in most places adequate drainage is difficult to obtain by artificial means. Productivity for pasture generally is low.

Wehadkee silt loam (0 to 2 percent slopes) (Wb).—This soil has formed from young alluvium consisting of material washed from upland soils. New alluvial material is added in places by floodwaters. Runoff is slow to very slow. In places drainage is so poor that the soil is semiswampy. Erosion is not a factor except possibly for some stream scouring in places during high water. Because of poor drainage, this soil has a narrower use range and lower productivity than the associated Congaree and Chewacla soils.

Profile in a cultivated area:

Surface soil—
- 0 to 11 inches, olive-gray friable silt loam; medium distinct mottles of brown are common; weak fine crumb structure.

Subsurface—
- 11 to 19 inches, light brownish-gray friable silt loam; brown and gray distinct medium mottles in moderate numbers; moderate fine crumb structure.
- 19 to 36 inches, gray friable silt loam; yellow and brown medium mottles are common and easily visible; weak fine crumb structure.

Underlying material—
- 36 inches +, varicolored friable alluvial material composed mainly of a mixture of fine sand, silt, and clay.

The profile layers vary a little in thickness from place to place. The textures also vary, and layers of different alluvial material occur at various depths, especially in the lower part of the profile. The soil is friable when moist but is hard and cloddy when dry.

This soil has comparatively high fertility, but it is poorly supplied with organic matter. It is medium acid throughout the entire profile. Permeability is slow in the surface soil and very slow in the subsurface. The moisture-holding capacity is very high.

Mapped with this soil are about 565 acres of Wehadkee very fine sandy loam, which differs principally in texture. This very fine sandy loam is included because of only slight difference in texture and similar use suitability.

Use and management (Group B–2).—More than half of Wehadkee silt loam is in forest. The trees are chiefly alder, blackgum, and willow, and the undergrowth is mostly reeds and coarse marshgrasses. Pasture is generally confined to the better drained areas. Some of the soil is idle and a small percentage is tilled.

Poor drainage, very poor workability, low productivity, and other unfavorable features limit the use of this soil for crops. Late summer crops can be grown in the better drained places. In areas where adequate drainage can be obtained, corn does fairly well. The better drained areas and those that can be improved by artificial drainage, if properly seeded and otherwise well managed, are moderately well suited to pasture. Even in such places, coarse water-loving grasses that have low grazing value are likely to replace the more desirable pasture plants. Deepening and widening the channels of smaller streams, where practicable, would be necessary to obtain adequate drainage. Suitable engineering improvements along the larger streams would also improve drainage.

Wehadkee fine sandy loam (0 to 2 percent slopes) (Wa).—This soil differs from Wehadkee silt loam principally in containing more sand and in having a coarser texture throughout its profile.

The 12-inch surface soil is an olive-gray friable fine sandy loam, mottled with brown. The subsurface layer is about 26 inches thick. In the upper 9 inches it is a light brownish-gray friable fine sandy loam, mottled with brown and gray, but in the lower 17 inches it is a gray friable fine sandy loam mottled with yellow and brown. The surface soil and subsurface layer vary a little in texture, color, and thickness from place to place. The material underlying the subsurface layer is mottled friable alluvium composed largely of sand, silt, and clay.

Wehadkee fine sandy loam has slow to very slow runoff. In places new alluvial material is deposited during floods. Ordinarily erosion is not a hazard, but in places some stream erosion takes place. The water table is reasonably high. In general, the soil is poorly drained; in places drainage is so poor that swamps occur.

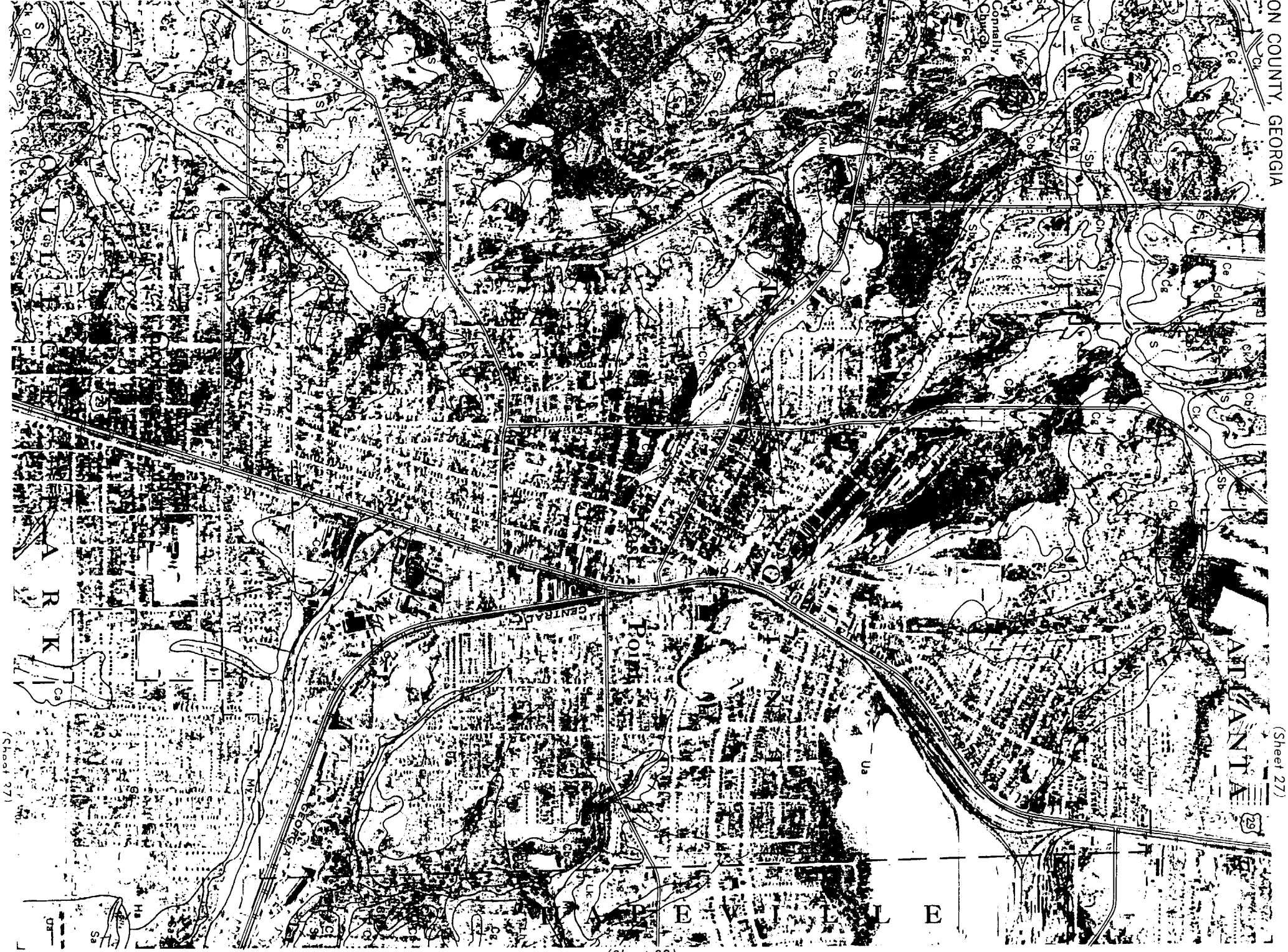
This soil has comparatively high fertility. It is medium acid throughout its entire depth. The surface soil is slowly permeable, and the subsurface material is very slowly permeable. The moisture-holding capacity is very high.

Use and management (Group B–2).—More than half of this soil is forested. Most of the rest is idle or

FULTON

(Sheet 30)

Compiled from aerial photographs flown in 1950



0 ½ 1 Mile Scale 1:20000 0 5000 Feet

[redacted]

REF. 2

CLIMATIC ATLAS OF THE UNITED STATES

RCE • Environmental Science Services Administration • Environmental Data Service

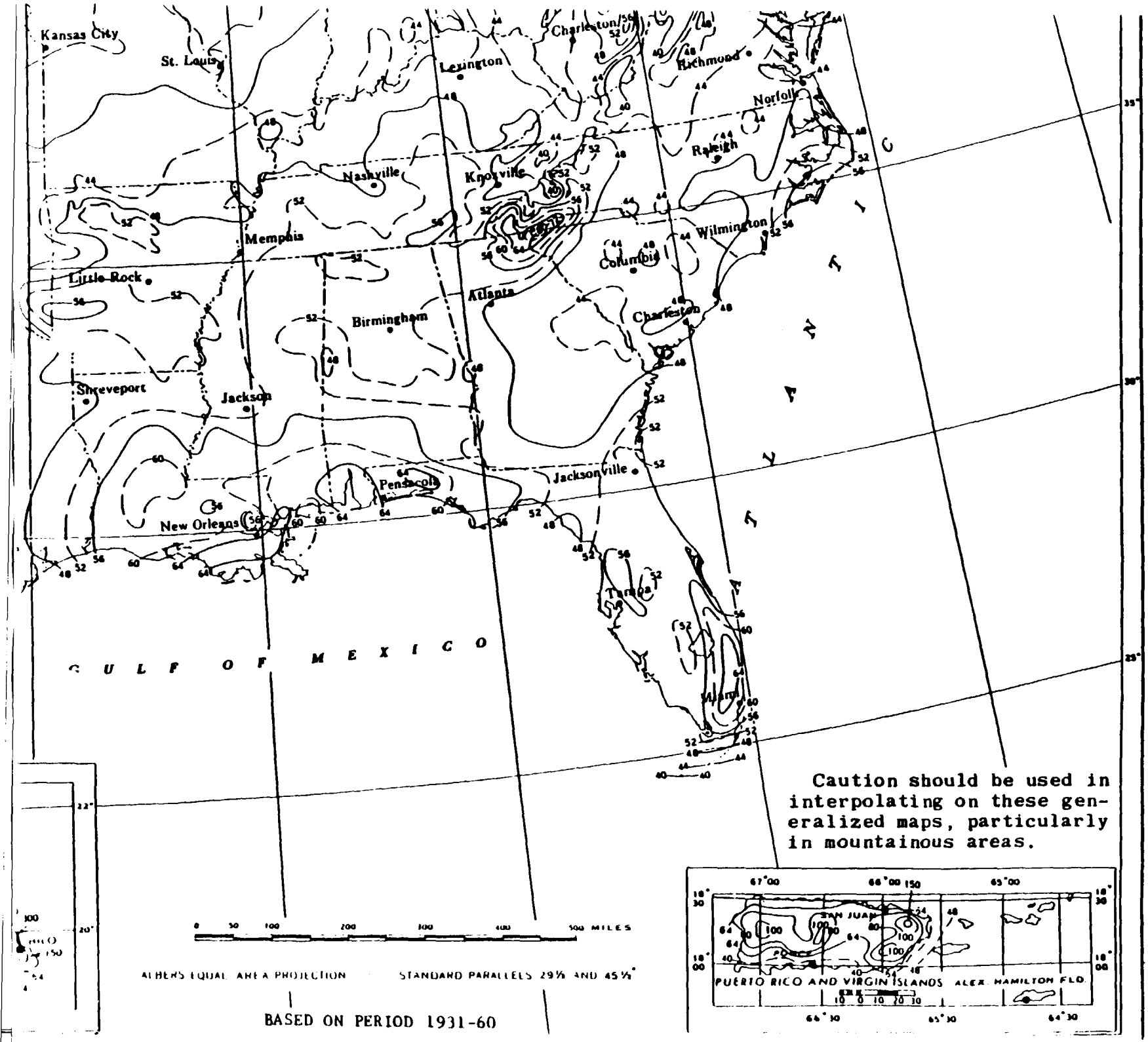
U.S. DEPARTMENT OF COMMERCE
C. R. Smith, Secretary

ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
Robert M. White, Administrator

ENVIRONMENTAL DATA SERVICE
Woodrow C. Jacobs, Director

JUNE 1968

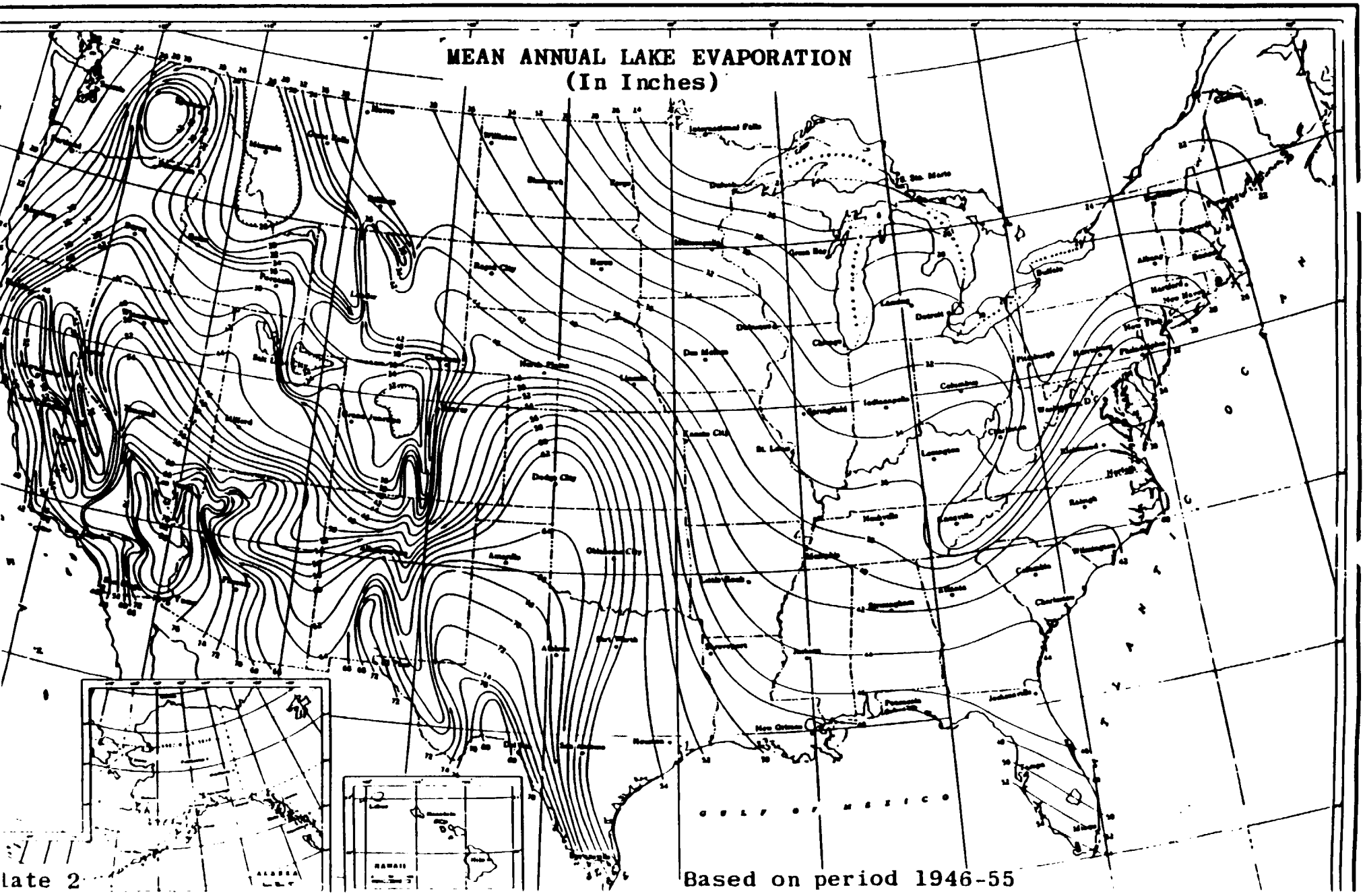
REPRINTED BY THE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
1983



Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.

BASED ON PERIOD 1931-60

KE EVAPORATION



late 2

OF COMMERCE
y

WEATHER
F. W. REED.

REF. 3

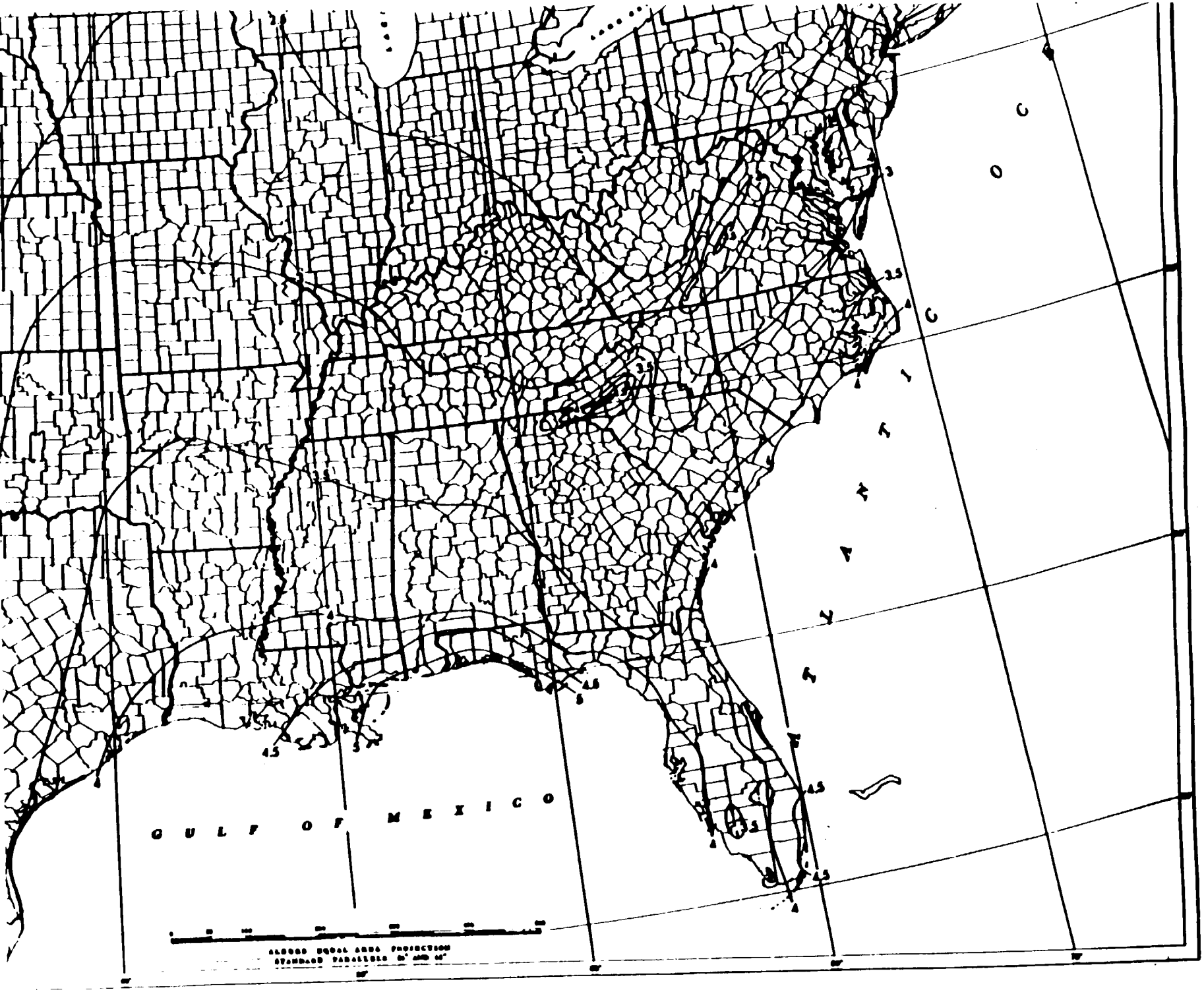
TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Year

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

PROPERTY
FILE


GULF OF MEXICO
ATLANTIC OCEAN
ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS

REF. 4

"Rite in the Rain"®

ALL-WEATHER

LEVEL

Notebook No. 311

F42291

TDD: F4-9003-35
SSC INDUSTRIES, INC.
East Point, Fulton Cty, Georgia
SHERRY DURREN
FASP

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook: TDD No., Site Name, Site Location, Project Manager.
2. All entries are made using ink. Draw a single line through errors. Initial and date corrections.
3. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team members' signatures.
4. Record weather conditions and general site information.
5. Sign and date each page. Project Manager is to review and sign off on each logbook daily.
6. Document all calibration and pre-operational checks of equipment. Provide serial numbers of equipment used onsite.
7. Provide reference to Sampling Field Sheets for detailed sampling information.
8. Describe sampling locations in detail and document all changes from project planning documents.
9. Provide a site sketch with sample locations and photo locations.
10. Maintain photo log by completing the stamped information at the end of the logbook.
11. If no site representative is on hand to accept the receipt for samples, an entry to that effect must be placed in the logbook.
12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.
13. Complete SMO information in the space provided.

I have received and understand the Work Plan, Study Plan and Safety Plan for ~~Eltra Corporation~~ SSC Industries. SD 5/15/90

David Brown
Eric [illegible]
Sherry Duncan
[illegible]

5/22/90

2

1115 FA-101
Arrived at SSC-SS-01
(Grid A-7) Temp 78°F
mostly sunny with
light Breeze Grid #A-7

1140 Eric Tschudi took
sample 1140 within
city property line
2868 Symes Street

Sample taken 3 ft DB off
of the sidewalk

EPA representative
Janice Thomas spoke
with resident as
resident was curious
about the activity.

David Brown
5/21/90

2 S. Durren 5/21/90

1220 DB
~~1320~~
FA-102 D.B.
Arrived at ~~SSC-SS-02~~
Temperature 78°F
mostly sunny with light
Breeze Grid # B-6

Street Corner West Hamilton
and East Point Street

1225 Eric Tschudi took
sample 4' from Rd.

1315 Arrived at SSC-SS-02
FA-103 Grid #C-5
Eric Tschudi took
sample adjacent to site
right outside fence line
Sample appeared
to be silty red clay
mixture

David Brown
5/21/90

S. Durren 5/21/90

3

1335
Arrived at FA-104
Grid# D-4
Street corner
Willingham Dr &
Magnolia St.

Eric Tschudi took
Sample 12' from bus
stop post
5' from Roadside

1350
Arrived At SSC-SS-03
FA-105 Grid# E-3
Eric Tschudi took
Sample
within City property Line
between 1395 and 1403

David Brown
5/21/90

J. Durren 5/21/90

1545
Arrived at FA-106
Grid # F-2
Street Corner
Bachelor Street &
Walker Ave.

1550 Eric Tschudi
Took Sample
Sample taken 3'
from fire plug.

EPA Representative
Janice Thomas
spoke with
Curious Citizen

1600 Arrived at
SSC-SS-04 Grid# G-1
FA-107
Norman Berry Drive
Across from Transmission
facility - large Lumber Jack
statue in front of store

David Brown
J. Durren 5/21/90

1605
Eric Tschudi took sample Across Street from Transmission Store on property within city property line 5' from Road

1620
Arrived FA-108
Grid # A-5

1625
Eric Tschudi took Sample corner of Simmes St and Williams Ave. 5' from Rd.

1630
Arrived FA-109
Grid # B-4
3184 East Point St.
corner of Dunlap Ave and East Point Street.

Eric Tschudi took sample within City property Line

S. Duren 5/21/90 David Brown 5/21/90

1645 Arrived FA-110
SSC-SS-Ole
Corner of Adams St and Myrtle St. by Vesta Villa Apts.
Grid # C-3

1650
Eric Tschudi took sample 8' from Adams & Myrtle Street sign

1700 Arrived FA-111
Walker Ave - Boys Club
Grid # D-2

1705 FA-111, Walker Ave
Eric Tschudi took sample on west side of facility outside of fence in red sandy soil.

David Brown
5/21/90

S. Duren 5/21/90

1710 Arrived FA-112
Corner of Harrison D.B
and Hardin Ave.
3470 Harrison Rd.
Grid# E-1

1715
Eric Tschudi TOOK
Sample 4' from fire
Hydrant.

David Brown 5/21/90
S. Dunen 5/21/90

950 Arrived at SSC-SS-05
FA-113 Grid# A-3

Lyle Ave and Lowe Street
1817 Lyle Ave

955
Eric Tschudi took
Sample in front
of 1817 Lyle Ave
3' from Curb next
to sidewalk within
City Property Line

1010 Arrived at SSC-SS-07
FA-114 Grid# C-1

Hardin Ave at N. Adams
Street

1613 Hardin Ave

David Brown
5/22/90
S. Dunen 5/22/90

1015
Eric Tschudi Took
sample in front of
1613 Hardin Ave
3' from curb next
to sidewalk within
City property line

1025
Arrived at FA-115
East Point Street
and Dorsey Ave.
Grid # C-7

1030
Eric Tschudi took
Sample 2861
East Point St.
3' from Bus Stop Post
7' from Curb
within City Property Line

David Brown

S. Durren 5/22/90 5/22/90

1035 Arrived at FA-116
Grid # D-6
Holcomb Ave and Martin

1040
Eric Tschudi took
Sample 7' ~~from~~ DB
from Road next
to sidewalk
adjacent to playground
within City property Line

1055 Arrived at SSC-SS-09
FA-117 Grid # E-5
Martin Street across
street from George Clifford
Burnett football Stadium

1100 Eric Tschudi took
sample ~~across~~ DB
across street from
Stadium 5' from
road next to fence
within City Property Line

S. Durren 5/22/90 David Brown 5/22/90

1105
City of East Point
employees stopped by
as they were curious
about activities.

1235 Arrived FA-118
Bayard Street-Grid # F-4

in front of Weldon Metal
Fabricating Co.

1240 Eric Tschudi took
Sample 57' from Road
in front of metal
fabricating Co.
within City property line

1250 Arrived FA-119 ~~G-5~~ PB
International Commerce Park Grid ~~G-5~~ PB
(South Norton - Bayard Circle)
SSC-SS-10

David Brown
5/22/90

S. Duncan 5/22/90

1255
Eric Tschudi took
sample in middle of
field - where Bayard
Circle was indicated on
map

Spoke with property
leasing agent who stopped
by and confirmed location
of Bayard Circle

1305 Arrived at SSC-SS-08 PB
FA-120 Grid E7
1407 Lyle Ave
Between Washington + Hendrix
on Lyle Ave

1310 Eric Tschudi took
Sample in front of
1407 Lyle Ave
4' from Street
next to fence

David Brown
5/22/90

S. Duncan 5/22/90

1315 Arrived FA-121
Grid # F-6
Washington Ave & Bayard Street in front of Quillian-East Point Elementary school

Eric Tschudi took sample 5' from street next to sidewalk.

1340 Arrived FA-122
Grid # G-3
Corner Norman Berry Dr. and Willingham Dr.

Eric Tschudi took sample 6' from street.

David Brown
5/22/90

S. Dunnen 5/22/90

1400
Arrived FA-123
Corner of John Freeman Way and Maria Head Terrace
Grid H-4

Eric Tschudi took sample 8' from stop sign at corner of John Freeman Way and Maria Head Terrace - sample taken 9' from street

1415 Arrived FA-124
Grid # I-3
Sylvan Road next to Owens-Illinois factory Adjacent to I-85 Cloverleaf

1420 Eric Tschudi took sample in front of Owens-Illinois Plant 15' from edge of Sylvan Road

David Brown

S. Dunnen 5/22/90 5/22/90

NOTE:
FASP samples labelled FA - 101, etc. are incorrectly labelled due to technical error. Refer to FASP chain of custody sheets for correct sample number. All samples were delivered to Donnie McCurry, labelled with grid number and time. He then assigned FASP numbers and CLP numbers.

Henry Durren 6/7/90

June 21, 1990 0930
Weather: hot, clear, 85-90°+

Sam McIver, Sherry Durren return to East Point to collect additional SSC samples after reviewing data from samples collected 5/21/90.

1000
Driving around SSC which is bordered by Battery Way on the west, Taylor Street on the north, Plant Street on the east and fields to the south. Buildings + tanks are located as shown on site sketches. 4 FASP samples are collected by Sam McIver from the 4 corners of the property. (sample numbers 20-06-21-01, 02, 03, 04)
1030 Drive to area near Bayard and Martin Streets for resampling and supplemental sampling. Weldon Metal Fabricating is located at

Henry Durren 6/21/90

this intersection. Behind Weldon is the Newell Recycling Company (1645 Central Ave) which occupies an area ~ 6 blocks long by 3 blocks wide. One sign at rear Newell reads "Scrap- Batteries, Copper Aluminum, Brass" Another one reads "Scrap cars, appliances, iron, steel, Copper, Brass, aluminum, Lead" so there is potentially an emissions source of lead from Newell that affects identifying plumes from SSC. Two samples are obtained in this vicinity:

20 06 21 05 Martin St, 200' west of Randall

06 Corner of Cherry + Central

1100 Drive to downtown East Point to check on locations of inconsistent samples. The following samples are obtained:

S. Dunen 6/21/90

20 06 21 07 at 1678 Dorsey St., midway between Church + E. Point Street

08 Thompson Ave at Main St. City Hall ~~Index~~ Annex SD 6/21/90

09 Corner of Williams + Park, City Hall Annex

No other obvious sources of lead are noted.

1130 Return to area of Newell Recycling for more confirmation samples. Two samples are obtained:

20 06 21 10 Bayard Circle on Martin (Note: Bayard Circle is now closed off. Sample is obtained from the right

S. Dunen 6/21/90

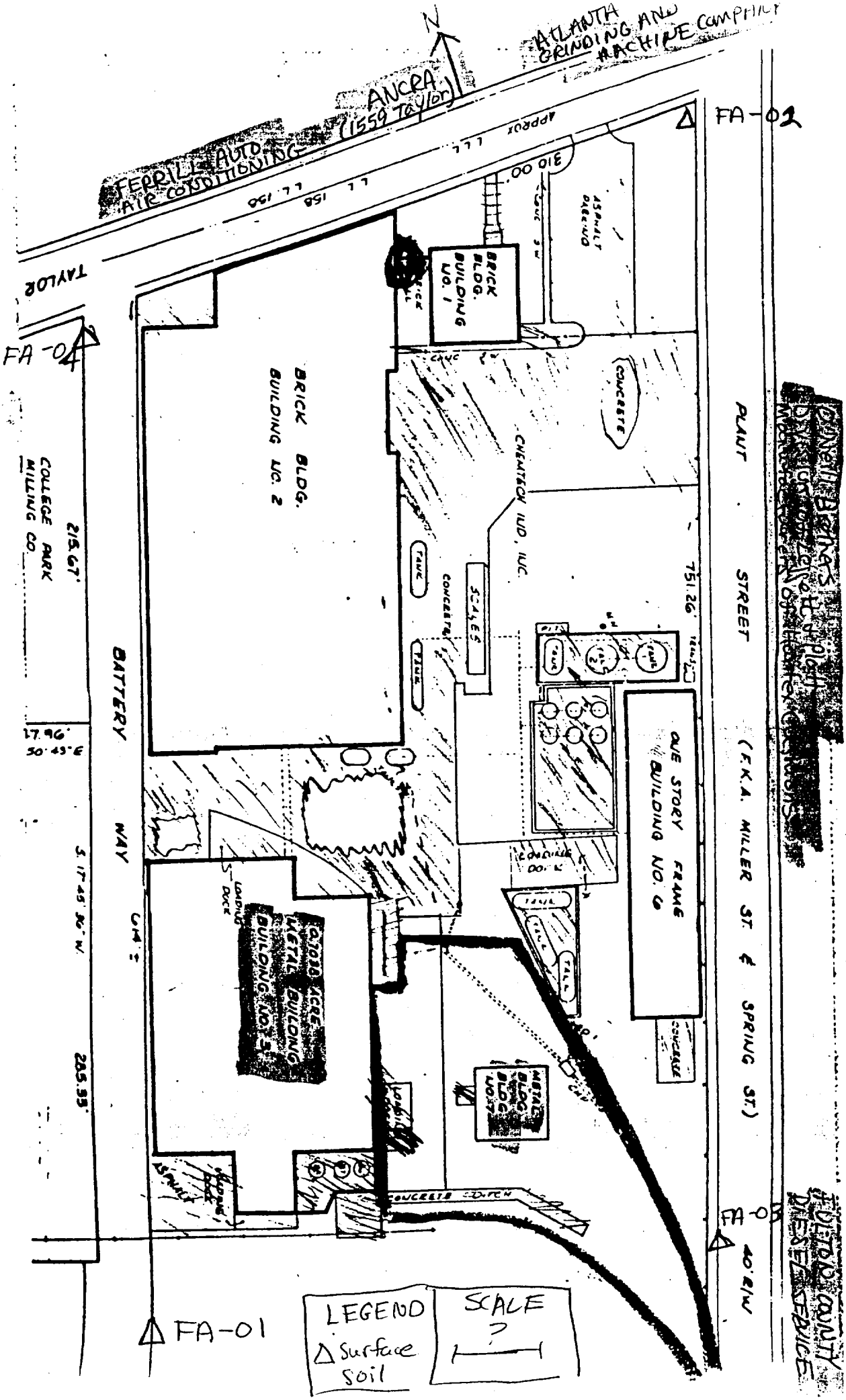
of way on Bayard Circle.

20 06 21 11 Corner of Bayard and Martin, kitty corner to Wekon Fabricating, this is a resample from the first time out to check on very high (800+ ppm lead) reading

1215 Return to office/warehouse

See Field Sampling Sheet for other information on samples such as feet from road, land use, etc.

J. Dumen 6/21/90



N
ATLANTA GRINDING AND MACHINE COMPANY
ANCRA (1559 Taylor)
FERRILL AUTO AIR CONDITIONING
APPROX L.L.L.
L.L. 158
L.L. 158
310.00'
TAYLOR
FA-02
FA-04
FA-03
FA-01
BRICK BLDG. BUILDING NO. 1
BRICK BLDG. BUILDING NO. 2
ASPHALT PARKING
CONCRETE
CHEMTECH IND. INC.
SCALES
TANK
CONCRETE
PLANT STREET (F.K.A. MILLER ST. & SPRING ST.)
751.26'
ONE STORY FRAME BUILDING NO. 6
LOADING DOCK
METAL BLDG. BLDG. NO. 7
METAL BUILDING BUILDING NO. 3
0.7038 ACRE
LOADING DOCK
COLLEGE PARK MILLING CO.
215.67'
17.96'
50°43'E
BATTERY WAY
S. 17°45'36" W.
285.33'
CONCRETE DITCH
40' R/W
LEGEND
Δ Surface soil
SCALE
?

[redacted]

REF. 5

"Rite in the Rain"®

ALL-WEATHER

LEVEL

Notebook No. 311

F4 - 1582
F4-8908-31
SSC Industries
East Point, Fulton Co., GA
Jonathan F. Hughes

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

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12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.
13. Complete SMO information in the space provided.

I have read and understand the Phase I workplan for this facility.

Jonathan Fitzgerald 8/18/89
Elaine Finsley 8/18/89
[illegible] 8-18-89
Solomon Pollard Jr 8-18-89

Equipment serial numbers:
690779 - 35 mm
690780 - Polaroid

C00002

Arrived at site 1:00 PM
Hazy, hot + humid ≈ 90°F

Area is fenced with barbed wire

Across street (East Taylor)
- Ferrill Auto Air Cond.
- Ancra
- Atlanta Grinding and Machine Co.
- B + B Radiator (766-4967)

listed from W-E

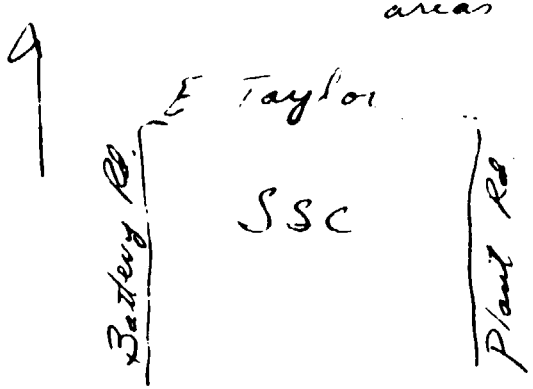
Driving around the facility, there were gates open and unattended.

There are adequate signs expressing danger and flammability.

Gates have chains

Jonathan F. Hughes 8/18/89

Separate, fenced in area located behind facility
Could be part of SSC facility. RR tracks separate these two fenced areas

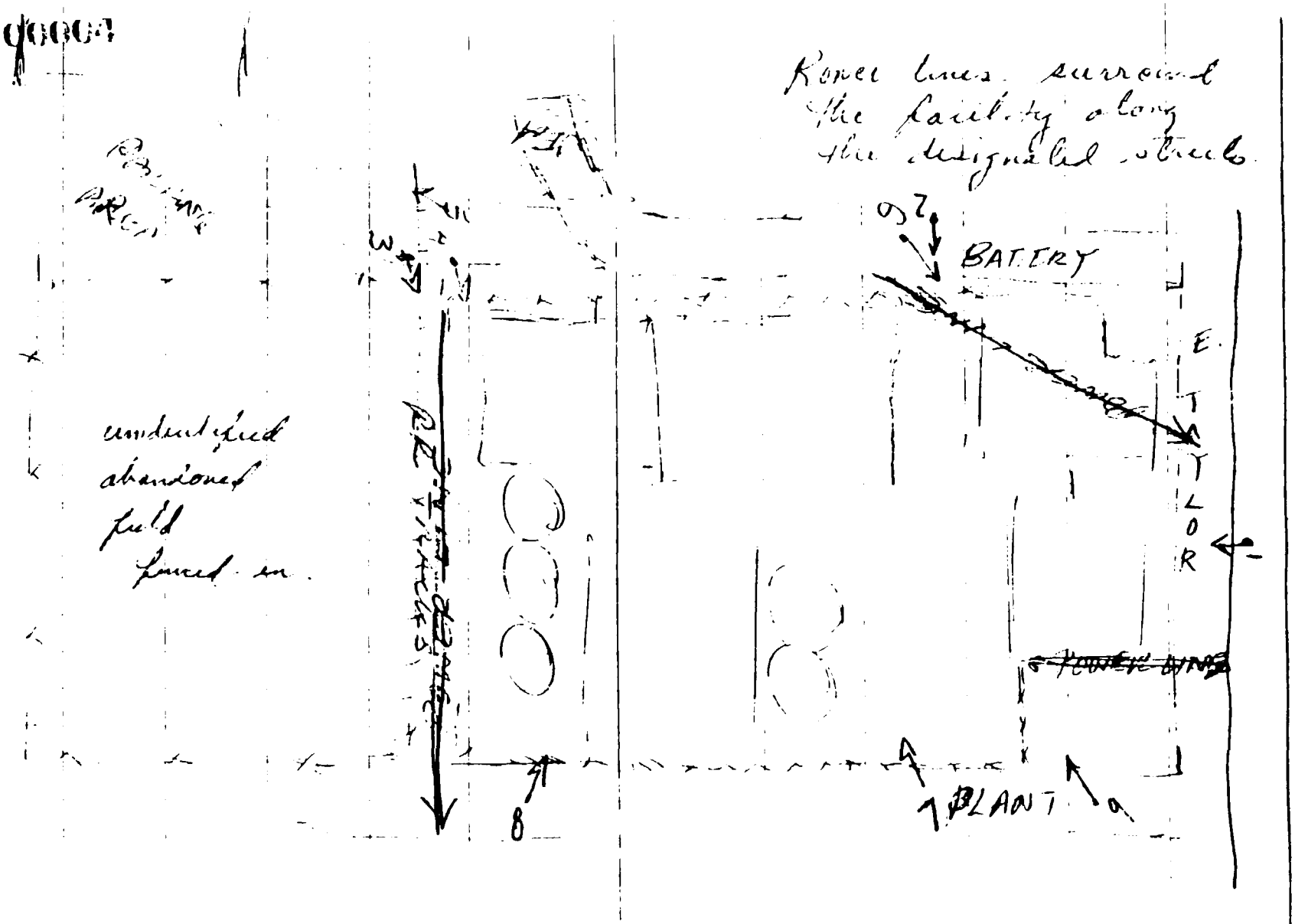


3 large storage tanks at rear of facility

Water Tower is located across Battery Rd from SSC

Jonathan F. Hughes 8/18/89

C00003



Nathan F. Hugh 8/18/89 Nathan F. Hugh 8/18/89

Area is accessible.
Not overgrown

Vegetation seems to be healthy.

There was seen to be no dead fauna on site.

[illegible]

No [illegible] [illegible]

No air emission sources seen on site

playground community [illegible] and [illegible] [illegible] are [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] 8/8/89

[redacted]

REF. 6

MEMO TO FILE

MARCH 20, 1989

FROM: MARIO VILLAMARZO
TO: SSC INDUSTRIES FILE
GAD003284049

The attached SSC Industries letter was received on March 20, 1989

As notification of the existence of the situation, a copy of the letter was provided to Jan Rogers of Region 4 ERCS.

I spoke with Mr. J. Dwight Bell, Jr. (of SSC Industries) per telc of 3/20/89. Mr. Bell provided the following history of the facil at the address where SSC Industries is located:

pre-1968.....owned by Gould National Batteries
1968-1978.....owned by Southern Sizing Company
1978-1984.....owned by SSC Industries Inc.
Dec 3, 1984
to present.....owned by Chemtech and called SSC Industrie

The site is listed in WASTELAN as of 3/20/89.

ENVIRONMENTAL PROTECTION DIVISION
SOLID WASTE MANAGEMENT SECTION
ACTION REPORT [redacted]

REF. 7

1-4-80

FACILITY ID	REGION	COUNTY	HOURS	REVIEWED BY	CODE
	North 4	Fulton 060	4	HK	

FACILITY NAME Southern Sizing Company

ADDRESS Box 90987 CITY East Point ZIP 30344

PERSON(S) CONTACTED Jack Westberry TITLE Plant Engineer

TRIP BY Jennifer Kaduck ACCOMPANIED BY none

INVESTIGATION DATE 11-16-79 FOLLOW-UP DATE 3-1-80

REFERENCE Request by Rylander to evaluate landfilled liquid waste

PROGRAM ACTIVITY Inspection & Compliance - Industrial (03)

ACTIONS	FINDINGS/DECISIONS	NEXT ACTIONS
Office Meeting 43	Insufficient Info 85	Review Plans 42
Facility requested to submit plans 40	--	Telephone call 44

COMMENTS, CONCLUSIONS, AND RECOMMENDATIONS:

1. O. E. Rylander reported this facility has been his customer for hauling 1,000 gal/2 weeks of liquid wastes containing oils, fats, and greases. Previously, the waste has been disp of in Rolling Hills SLF, but has been rejected as of November 30, 1979.

2. Meeting with Mr. Westberry of SSC revealed the company plans to work off most of this liq waste and store "non-work-off" portions in a 4500 gal storage tank. The liquid waste consists of long chain hydrocarbons, fatty acids, fatty esters, polyethylene, and surfactants in water which is generated by reactor washdowns. SSC manufactures textile and paper pro cessing chemicals and foam control agents ~~in a~~ through blending and cooking in several reactors on site.

3. I explained to Mr. Westberry that continuous disposal of liquid wastes at local SLF's was becoming increasingly difficult and SSC needed to develop an alternative disposal method

CONCLUSIONS AND RECOMMENDATIONS CONT.

He indicated that the facility will try a combination of work-off, H_2O removal, sewer discharge, and incineration in their #2 fuel oil boiler. He reported that he will contact this office prior to any future land disposal so the waste can be analyzed and classified as hazardous or non-hazardous.

CONCLUSIONS:

SSC is attempting to discontinue land disposal of this liquid waste.

RECOMMENDATIONS: Review SSC's final solution upon receipt. Telephone Mr. Westberry by 3-1-80 to monitor disposal activities.

Please print or type with ELITE type (12 characters/inch) in the unshaded areas only.

Form Approved OMB No. 158-S70018
GSA No. 0246-EPA-OT

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.

I. NAME OF INSTALLATION

II. INSTALLATION MAILING ADDRESS

III. LOCATION OF INSTALLATION

[redacted]

— REF. 8 —

PLEASE PLACE LABEL IN THIS SPACE

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

FOR OFFICIAL USE ONLY

COMMENTS: C

INSTALLATION'S EPA I.D. NUMBER: F 1

APPROVED:

DATE RECEIVED (yr., mo., & day):

I. NAME OF INSTALLATION

SSC INDUSTRIES, INC

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: PO BOX 90987

CITY OR TOWN: EAST POINT

ST.: GA

ZIP CODE: 30344

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 1550 EAST TAYLOR AVE

CITY OR TOWN: EAST POINT

ST.: GA

ZIP CODE: 30344

IV. INSTALLATION CONTACT

NAME AND TITLE (last, first, & job title): WESTBERY JACK PLANT MANAGER

PHONE NO. (area code & no.): 404-762-9651

V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER: SSC INDUSTRIES, INC

B. TYPE OF OWNERSHIP (enter the appropriate letter into box): M

F = FEDERAL
M = NON-FEDERAL

VI. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

- [X] A. GENERATION
- [ ] B. TRANSPORTATION (complete Item VII)
- [ ] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION (transporters only – enter "X" in the appropriate box(es))

- [ ] A. AIR
- [ ] B. RAIL
- [X] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER (specify):

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

- [X] A. FIRST NOTIFICATION
- [ ] B. SUBSEQUENT NOTIFICATION (complete Item C)

C. INSTALLATION'S EPA I.D. NO.

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

I.D. – FOR OFFICIAL USE ONLY

W

DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

A. HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P090	U210	U147	U161		
37	38	39	40	41	42
43	44	45	46	47	48

D. LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☐ 4. TOXIC (D000)

F. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE (type or print)	DATE SIGNED
Jack G. Westbury	JACK G. WESTBURY PLANT MANAGER	9/10/80

DETACH A

DETACH A

Georgia Department of Natural Resources
205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334
J. Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division

[redacted]

REF. 9

May 31, 1988

Mr. Terry Stewart
[redacted] Industries Inc.
Post Office Box 90987
East Point, Georgia 30344

Re: GAD003284049
~~1530~~ East Taylor Avenue
1550

Dear Mr. Stewart:

Your recent notification of changes in facility information obtained from the Georgia Biennial report form has been processed. The Hazardous Waste Management data files are updated for the above referenced facility(ies) to cover items indicated here under:

/_/ Change of corporate name.

/_/ Change of address:
[ ] Mail address
[ ] Location address - requiring subsequent notification

/_/ Change of ownership:

/X/ Change of facility contact.

/_/ Change in waste streams.

/X/ Change of generator status:
[ ] Generator
[X] SQG
[ ] Conditionally Exempt SQG
[ ] Non-Generator

/_/ Facility has been closed.

Your interest in protecting Georgia's environment is appreciated.

Sincerely,

Sue Matzuras

Sue Matzuras
Environmental Specialist
Hazardous Waste Management Program

SM:mcw(2081R)(006)

REF. 10

JOE D. TANNER
Commissioner

J. LEONARD LEDBETTER
Division Director

Department of Natural Resources

ENVIRONMENTAL PROTECTION DIVISION
270 WASHINGTON STREET S.W.
ATLANTA, GEORGIA 30334

October 20, 1983

Mr. Jack Westbury
Southern Sizing Company
Post Office Box 90987
East Point, Georgia 30364

Dear Mr. Westbury:

This letter references our telephone conversation of October 5, 1983, and the improper disposal of 300 fifty-five gallon drums of homogenated animal fat in Meriwether County.

The method by which these wastes have been placed on this site constitutes "open dumping" as defined in Section .01, paragraph (q) of Georgia's Rules and Regulations for Solid Waste Management. Further, under Section .04, paragraph (4)(c), of the Rules, open dumping is listed as a prohibited act and is consequently a violation of Section 7 of the Solid Waste Management Act.

In an effort to absolve the violation referenced above, this office is requiring that you submit for approval of the Director, a written plan by November 21, 1983, delineating the following:

1. An inventory of the wastes on site to include the name and quantity of each;

2. Disposal plans of non-hazardous wastes in a permitted sanitary landfill;

3. Date for completing all clean-up operations.

Upon approval of the plan by this Division, a staff member will contact you for arrangements to conduct a follow-up inspection.

If you have questions or desire any assistance, please contact Ms. Gwendolyn-Glass at (404) 656-7802.

Sincerely,

Howard Bamford

for John D. Taylor, Jr.
Program Manager
Industrial & Hazardous Waste
Management Program

JDT:gg:rw
Enclosures
cc: Meriwether County File
Mr. James Smith

REF. 11

SSC INDUSTRIES
CHEMTECH

RECEIVED

FEB 13 1986

LAND PROTECTION BRANCH

February 12, 1986

Mr. Terrell C. Rooks
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
270 Washington Street, S.W.
Atlanta, GA 30334

Dear Mr. Rooks:

This correspondence will summarize our knowledge of a spill event detected at our East Point facility on Friday, February 7, 1986.

At approximately 3:00 P.M. on Friday, I was contacted by Mr. Homer Jones of the East Point Inspection Department to discuss a white substance exiting our property to the southeast. He and I went out and examined the liquid and determined that it was, indeed, originating from SSC and was obviously a surfactant type material that was mixing with water to yield the white appearance. We immediately prevented the flow and began clean-up procedures, emptying the liquid content from the storm drainage system. In pumping out an oil separation unit that we have placed in the drainage line, it was apparent that a high percentage of surfactant was contained therein. This was also properly emptied and disposed of.

To this point, we have had no one acknowledge that a spill occurred at our facility; however, the evidence indicates that at some time a spill did occur and that the spilled surfactant was allowed to enter the storm drainage system. We have again spoken with each of our employees and stressed the seriousness of such an event. They have been reminded that in the event of a spill, the proper procedure is to contain the spill and to get up the material, minimizing the entrance of any of the spilled material into any drainage system.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

If we acquire any additional information regarding this spill, we will so inform you and should you have additional questions, please contact us.

Sincerely,

Jack G. Westberry
Vice President - Operations

JGW/jm
cc: Mr. Dwight Bell
Mr. Art Goldmann

Applied Engineering & Science

5404 Peachtree Road
Chamblee, Georgia 30341
Telephone (404) 454-1810
FAX (404) 454-1816

Engineering &
Environmental
Consultants

REF. 12

May 4, 1989

Mr. Dwight Bell
Executive Vice President
SSC Industries
Division of Chemtech
P. O. Box 90987
East Point, GA 30344

6099-L

RE: Lead Contaminated Soil Removal

Dear Mr. Bell:

This letter documents the removal and disposal of lead contaminated soils excavated from and temporarily accumulated on SSC Industries property in East Point, Georgia.

In response to a request by the City of Atlanta to remove surface soils contaminated with grease and oil from its property, SSC excavated these soils and had them analyzed prior to disposal. During the analysis it was determined that the soils were heavily contaminated with lead. The soils were temporarily accumulated between Buildings 3 and 7 (See figure 1) in drums and a small stockpile pending proper transportation to a secure, permitted hazardous waste facility for disposal. The stockpiled soil had been placed on a concrete pad adjacent to the Building 3 loading dock. The stockpile had been covered with plastic sheeting.

Thirty-seven drums of soils were located on wooden flats adjacent to Building 3 and north of the Building 3 loading dock. The drums were also covered with plastic sheeting. Both areas were clearly identified with caution tape.

SSC retained the services of Applied Engineering & Science, Inc., (AES) to manage and direct the soil removal project. MKC Enterprises, Inc., (MKC) was hired by AES as a subcontractor to provide the necessary equipment, coordination and personnel for transportation and disposal of the soil.

All onsite work associated with the removal of the soils was performed in accordance with both the AES Field Quality Assurance/Quality Control Procedures Manual and the AES Safety Manual for Hazardous Waste Site Activities. Onsite personnel performed their duties in Level D Personal Protection equipment with air purifying respirators on standby, if necessary.

Work began the morning of April 12, 1989 by preparing the stockpiled soil and the area between Buildings 3 and 7 for the project. A staging area for personal protective equipment, small handtools and decontamination was established inside Building 7. The stockpiled soil was uncovered and an earthen ramp constructed to allow a backhoe access over the concrete pad and into the stockpile. Once the stockpiled soil was readied for removal, the plastic sheeting covering the drums were removed and the drum lids opened so that the contents could be examined.

Soil transportation was provided by Barton Environmental, Inc., headquartered in Forest Park, Georgia. Truck tare weights were obtained on SSC scales. Trucks were lined with plastic sheeting, loaded with soil from the stockpile, covered, reweighed, manifested, and routed to the GSX Landfill, a permitted hazardous waste disposal facility in South Carolina. Prior to leaving the site, each truck was inspected and cleaned of any loose soil that was present on the outside of the trailer. One truck was loaded with soil and dispatched on April 12, 1989.

The remainder of the day was spent emptying the drummed soil into the remaining stockpile on the concrete pad. The empty drums were stored in the driveway next to the north wall of Building 7. The stockpile was covered with plastic sheeting once the drums were emptied. All thirty-seven drums of contaminated soil were added to the stockpile.

Work continued the morning of April 13, 1989 by loading the remaining soil stockpile into two additional trucks. Weighing, loading, and manifesting of these trucks followed the same procedure as described for April 12, 1989. Both trucks were loaded and departed for the GSX Landfill by mid-morning. Once the trucks had departed, the 37 empty drums were loaded into an MKC truck for transport to the MKC drum crusher in Doraville, Georgia. The crushed drums were then transported to the GSX landfill for disposal.

A total of 66 tons of lead contaminated soil was removed from the SSC Industries property in East Point, Georgia during the two day project. On site activities and transportation of the soil was completed successfully and without incident. Copies of manifests for the three truck-loads of soil are enclosed with this letter.

We are pleased to have been able to serve you with this project and appreciate your business. If we can provide you with any additional details or answer any questions you may have regarding project activities, please feel free to contact me.

Sincerely,

Joseph T. Surowiec
Vice President
Hazardous Waste
Management Services

JTS:mp

Enclosures

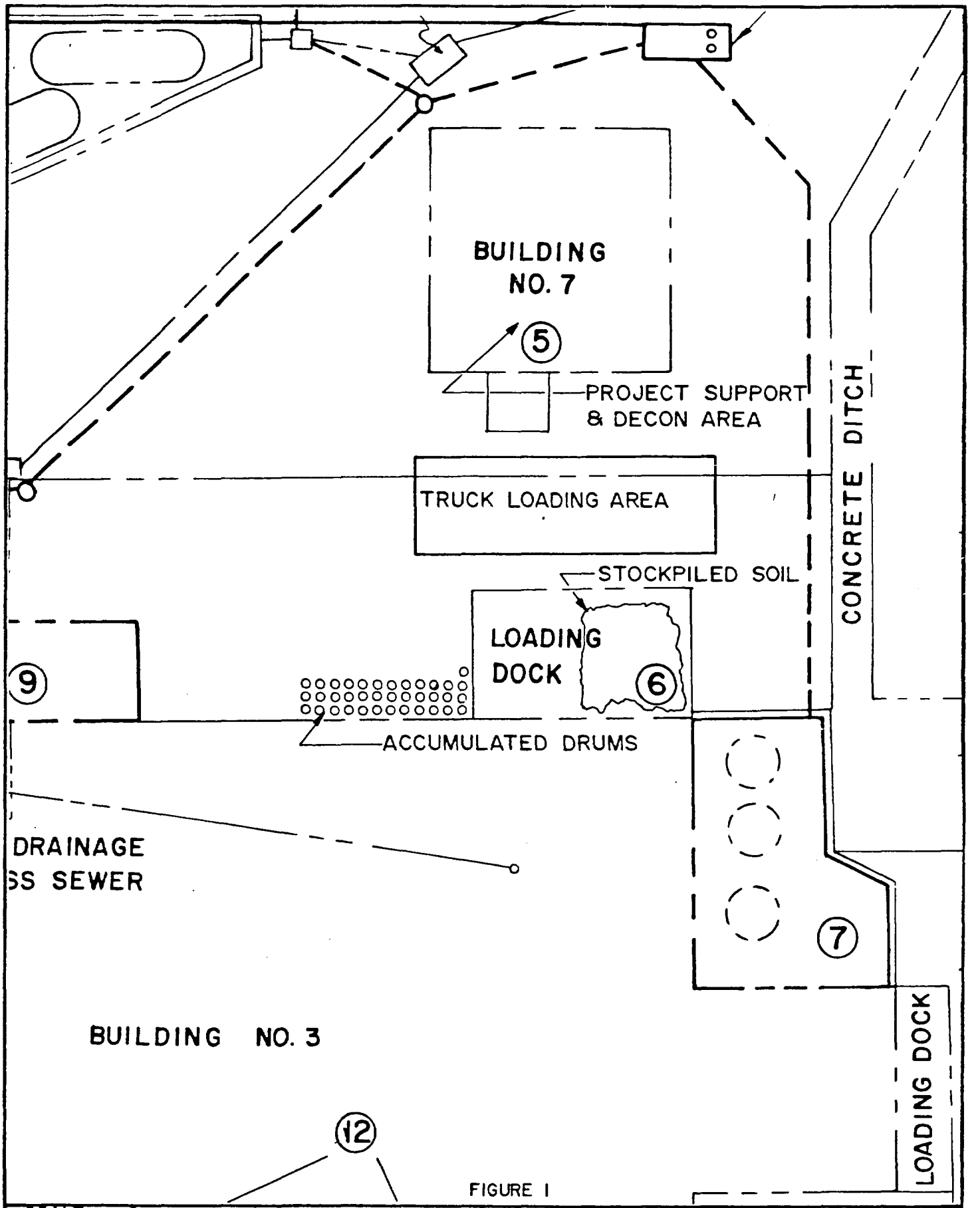


FIGURE 1

SCALE 1"=20'	Applied Engineering & Science	LOCATIONS OF EXCAVATED SOIL & ACCUMULATED DRUMS SSC / CHEMTECH EAST POINT, GA	DATE MAY, 1989
DWN. BY			DWG. NO. 6099L
CHK'D. BY JTS			SHEET NO.
APPR. BY JTS			

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: G.A.D.0.0.3.2.8.4.0.4.9
Manifest Document No.: 8.7.1.9.1
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
SSC Industries, Inc.
1550 E. Taylor Ave., East Point, Ga. 30334
4. Generator's Phone (404) 762-9651

A. State Manifest Document Number: MKC-87191
B. State Generator's ID: GAD003284049

5. Transporter 1 Company Name: Barton Environmental, Inc.
6. US EPA ID Number: G.A.D.0.8.0.1.0.2.5.4.4
C. State Transporter's ID: GAD080102544
D. Transporter's Phone: (404) 363-9801

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
MKC Enterprises, Inc.,
5856 New Peachtree Road,
Doraville, Ga. 30340
10. US EPA ID Number: G.A.D.0.0.0.6.1.6.3.6.7
G. State Facility's ID: GAD000616367
H. Facility's Phone: (404) 457-1341

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) HM		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	Hazardous Waste Solid, N.O.S., ORM-E, NA 9189	0.0.1	D.T	4.3.4.2.0	P	D008
b.							
c.							
d.							

RECEIVED
APR 14 1989
TRAINER CONSTRUCTION, INC.

J. Additional Descriptions for Materials Listed Above:
K. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information
If spill occurs, see Emergency Response Guide Book, Guide 31

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: LaDonna Manning
Signature: LaDonna Manning
Month Day Year: 04 12 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Larry Smith
Signature: [signature]
Month Day Year: 04 12 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: SHARON HODGSON
Signature: Sharon Hodgson
Month Day Year: 04 12 89

ORIGINAL - RETURN TO GENERATOR

#2

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. G·A·D·0·0·3·2·8·4·0·4·9
Manifest Document No. 8·7·1·9·2
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
SSC Industries, Inc.
1550 E. Taylor Ave., East Point, Ga. 30334
4. Generator's Phone (404) 762-9651

A. State Manifest Document Number: MKC-87192
B. State Generator's ID: GAD003284049

5. Transporter 1 Company Name: Barton Environmental, Inc.
6. US EPA ID Number: G·A·D·0·8·0·1·0·2·5·4·4
C. State Transporter's ID: GAD080102544
D. Transporter's Phone: (404) 363-9801

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
MKC Enterprises, Inc.
5856 New Peachtree Road,
Doraville, Ga. 30340
10. US EPA ID Number: G·A·D·0·0·0·6·1·6·3·6·7
G. State Facility's ID: GAD000616367
H. Facility's Phone: (404) 457-1341

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	L Waste No.
a. Hazardous Waste, Solid, N.O.S., ORM-E, NA 9189	X	0·0·1	D·T	4·2·2·0	P	D008
b.						
c.						
d.						

RECEIVED APR 14 1989 LANIER CONSTRUCTION, INC.

J. Additional Descriptions for Materials Listed Above
K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
If spill occurs, see Emergency Response Guide Book, Guide 31

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: LaDonna M Manning
Signature: LaDonna M Manning
Month Day Year: 10 4 13 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Steven B Hart
Signature: Steven B Hart
Month Day Year: 10 4 13 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: SHARON HODGSON
Signature: Sharon Hodgson
Month Day Year: 04 13 89

ORIGINAL - RETURN TO GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. G·A·D·0·0·3·2·8·4·0·4·9
Manifest Document No. 8·7·1·9·3
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
SSC Industries, Inc.
1150 E. Taylor Ave., East Point, Ga. 30334
4. Generator's Phone (404) 762-9651

A. State Manifest Document Number: MKC-87193
B. State Generator's ID: GAD003284049

5. Transporter 1 Company Name: Barton Environmental, Inc.
6. US EPA ID Number: G·A·D·0·8·0·1·0·2·5·4·4
C. State Transporter's ID: GAD080102544
D. Transporter's Phone: (404) 363-9801

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
MKC Enterprises, Inc.
5856 New Peachtree Road,
Doraville, Ga. 30340
10. US EPA ID Number: G·A·D·0·0·0·6·1·6·3·6·7
G. State Facility's ID: GAD000616367
H. Facility's Phone: (404) 457-1341

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	Hazardous Waste, Solid, N.O.S., ORM-E, NA 9189	X	0·0·1	D·T	4·6·84 C	P	D008
b.							
c.							
d.							

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
If spill occurs, see Emergency Response Guide Book, Guide 31

RECEIVED APR 14 1989 CHARTER CONSTRUCTION, INC.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: LaDonna M Anning
Signature: LaDonna M Anning
Month Day Year: 10·4 1·3 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Roger Dale Rodgers
Signature: Roger Dale Rodgers
Month Day Year: 10·4 1·3 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: SHARON HODGSON
Signature: Sharon Hodgson
Month Day Year: 10·4 1·3 89

ORIGINAL - RETURN TO GENERATOR

SSC INDUSTRIES
a division of CHEMTECH

REF. 13

PRIVILEGED AND CONFIDENTIAL

November 3, 1989

Mr. Jonathan F. Hughes
Project Manager
NUS Corporation
1927 Lakeside Parkway
Suite 614
Tucker, GA 30064

RE: SSC Industries, Inc. (SSC) Facility in East Point, GA

Dear Mr. Hughes:

This letter is in response to your correspondence of September 25, 1989, and recent phone conversations concerning the technical work that has been conducted on the above-referenced property. As you know, during routine testing for soil disposal after a small oil spill, SSC discovered that elevated levels of lead were present on the property. Upon discovery of these results, SSC retained the consulting firm Applied Engineering and Science (AES) to conduct further sampling at the facility.

AES gathered additional samples onsite using a grid system spreading out from the source where the original soil samples were taken. These samples were analyzed by IT Corporation's laboratory in Knoxville, Tennessee. The results of this further work are attached for your review.

SSC does not use lead or lead compounds in any of its processes. Thus, the company has investigated the source of the lead on the property and found that, prior to 1968, the property was owned and operated by Gould, Inc. (Gould). Gould apparently operated an automotive battery manufacturing and storage facility for a number of years at the site, a fact confirmed by the presence of numerous battery caps and casings found near sampling points where lead was detected.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

SSC is currently negotiating with Gould to have Gould conduct a cleanup at the facility. Meanwhile, SSC is conducting additional investigatory work so that an appropriate remedial alternative can be selected shortly. We will provide further reports to you and EPA as they become available. In addition, SSC will consult with EPA before a final remedial option is chosen.

Sincerely,

J. Dwight Bell, Jr.

J. Dwight Bell, Jr.
Vice President - General Manager

/jlr

Attach:

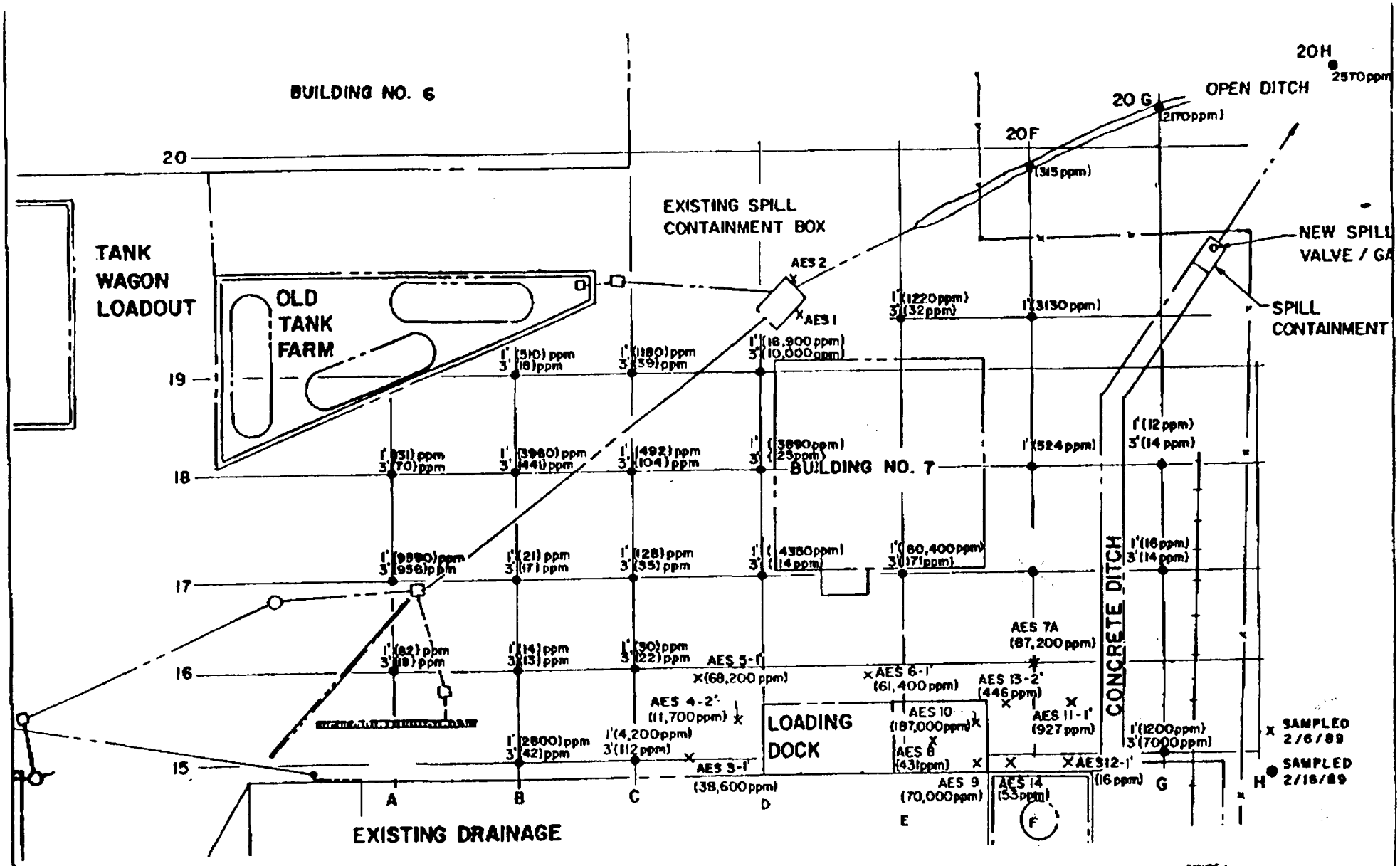


FIGURE 1

Applied Engineering & Science

SSC/CHEMTECH
EAST POINT, GA.

SAMPLING LOCATIONS

OCT 30 '89 16:34 PAGE.001

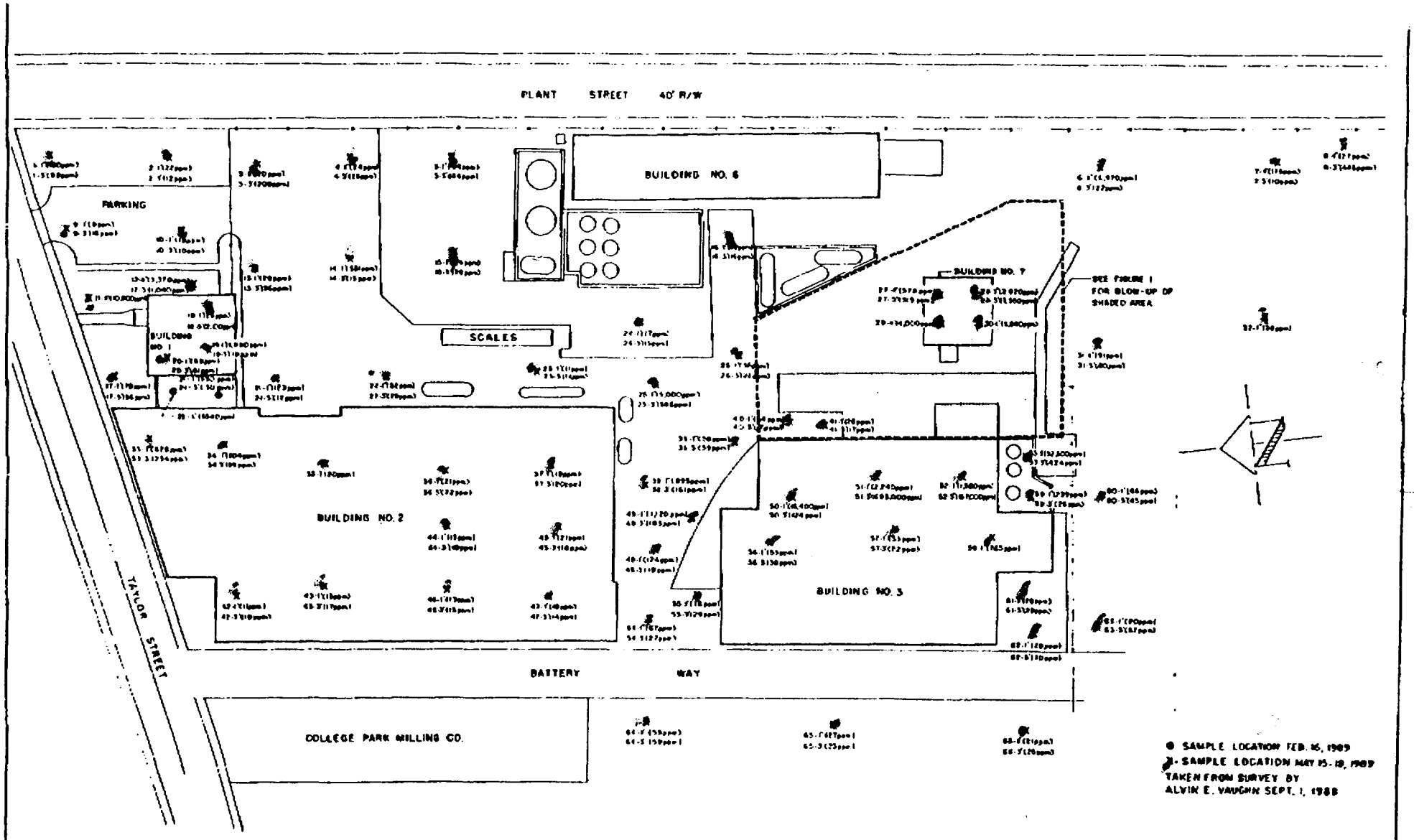


FIGURE 2

Applied Engineering Science	SSC / CHEMTECH EAST POINT, GA	SOIL SAMPLE LOCATIONS	

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 1 through 14
February 6, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 27, 1989
PROJECT CODE: APE 42827
ORDER NUMBER:
PAGE 1 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/kg (ppm)

	AES #1	AES #2
Lead	553	2,600

MAR 1 1989
[illegible] CONSTRUCTION, INC.

Alyce L. Moore
Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93-9-F

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 27, 1989
PROJECT CODE: APE 42827
ORDER NUMBER:
PAGE 2 OF 3

Sample Description: Four (4) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #1	AES #2	AES #3-4	AES #5-4
Lead	0.04	5.6	0.94	0.44

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93-9 6

OCT-30-1989 15:46 FROM SWIDLEPO TO P.08

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 27, 1989
PROJECT CODE: APE 42827
ORDER NUMBER:
PAGE 3 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #11-2	AES #14-3
Lead	3.7	0.12

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93 9

OCT-30-1989 15:46 FROM SWIDLEPO TO P.09

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 10, 1989
PROJECT CODE: APE 42750
ORDER NUMBER
PAGE 1 OF 4

Sample Description: Twenty (20) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #3-1	38,600
AES #3-2	1,520
AES #3-3	57
AES #3-4	452
AES #4-1	2,570
AES #4-2	11,700
AES #5-1	68,200
AES #5-2	4,390
AES #5-3	1,580
AES #5-4	96
AES #6-1	61,400
AES #6-2	5
AES #6-3	211
AES #6-4	4,600
AES #7-1A	87,200
AES #7-4A	645
AES #8-1	58,200
AES #8-2	25,200
AES #8-3	37,700
AES #8-4	5,470

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER:
PAGE 3 OF 4

Sample Description: Seventeen (17) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #3-1	222
AES #3-2	1.7
AES #3-3	1.1
AES #4-1	40.8
AES #4-2	114
AES #5-1	2,900
AES #5-2	69.7
AES #5-3	6.3
AES #6-1	1,210
AES #6-2	53.9
AES #6-3	0.52
AES #7-1A	838
AES #7-4A	0.37
AES #8-1	431
AES #8-2	561
AES #8-3	312
AES #8-4	12.3

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 2 OF 4

Sample Description: Fourteen (14) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #9	70,700
AES #10	187,000
AES #11-1	927
AES #11-2	92
AES #11-3	204
AES #12-1	16
AES #12-2	15
AES #12-3	6
AES #13-1	246
AES #13-2	446
AES #13-3	424
AES #14-1	23
AES #14-2	53
AES #14-3	<3

Alyce L. Moore
Approved by Laboratory Manager
Title

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OCT-30-1989 15:47 FROM SWIDLEPO TO P.12

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 10, 1989
PROJECT CODE: APE 42750
ORDER NUMBER:
PAGE 4 OF 4

Sample Description: Thirteen (13) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #9	381
AES #10	873
AES #11-1	1.4
AES #11-2	0.36
AES #11-3	0.04
AES #12-1	0.15
AES #12-2	0.04
AES #12-3	0.03
AES #13-1	0.54
AES #13-2	0.12
AES #14-1	0.13
AES #14-2	<0.03
AES #14-3	0.10

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 15 through 22
February 16, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED March 8, 1989
PROJECT CODE APE 42826
ORDER NUMBER:
PAGE 1 OF 3

Sample Description: Twenty-four (24) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
15 B-1	2,600
15 B-3	42
15 C-1	4,230
15 C-3	112
15 G-1	1,260
15 G-3	7,000
16 A-1	62
16 A-3	18
16 B-1	14
16 B-3	13
16 C-1	30
16 C-3	22
17 A-1	9,590
17 A-3	956
17 B-1	21
17 B-3	17
17 C-1	128
17 C-3	35
17 D-1	4,350
17 D-3	14
17 E-1	60,400
17 E-3	171
17 F-1	39,500
17 F-3	130

Alice F. Moore
Approved by Laboratory Manager
Title

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93-9

OCT-30-1989 15:48 FROM SWIDLERP TO P.15

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: March 8, 1989
PROJECT CODE: APE 42826
ORDER NUMBER:
PAGE 2 OF 3

Sample Description: Twenty-two (22) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
17 G-1	16
17 G-3	14
18 A-1	131
18 A-3	70
18 B-1	3,960
18 B-3	441
18 C-1	492
18 C-3	104
18 D-1	3,890
18 D-3	25
18 F-1	524
18 G-1	12
18 G-3	9
19 B-1	510
19 B-3	18
19 C-1	1,180
19 C-3	39
19 D-1	16,900
19 D-3	10,000
19 E-1	1,220
19 E-3	32
19 F-1	3,130

Approved by Laboratory Manager

Title

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: March 8, 1989
PROJECT CODE: APE 42826
ORDER NUMBER:
PAGE 3 OF 3

Sample Description: Six (6) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
20 F	315
20 G	2,170
20 H	2,570
21-1	550
21-3	30
22-1	5,540

Approved by: Laboratory Manager

Title

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93-9

OCT-30-1989 15:49 FROM SWIDLEPO TO P.17

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 1 through 66
May 15, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 1 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

RECEIVED
JUN 20 1989
MANAGER CONSTRUCTION, INC.

	Total Lead
1-1'	100
1-3'	98
2-1'	22
2-3'	12
3-1'	20
3-3'	209
4-1'	24
4-3'	23
5-1'	34
5-3'	84
6-1'	6,920
6-3'	22
7-1'	178
7-3'	10
8-1'	21
8-3'	488
9-1'	8
9-3'	18
10-1'	19
10-3'	10
11-1'	10,800
12-1'	3,370
12-3'	1,040

Approved by: Laboratory Manager

Title

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93-6

OCT-30-1989 15:49 FROM SWIDLERD TO P.19

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO: AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 2 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
13-1'	29
13-3'	26
14-1'	551
14-3'	15
15-1'	24
15-3'	28
16-1'	17
16-3'	16
17-1'	78
17-3'	36
21-1'	123
21-3'	12
22-1'	22
22-3'	29
23-1'	11
23-3'	11
24-1'	17
24-3'	15
25-1'	5,000
25-3'	386
26-1'	36
26-3'	26
27-1'	378

Alyce R. Moore
Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93-9

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 3 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
27-3'	319
28-1'	3,920
28-3'	7,350
30-1'	3,660
38-1'	895
38-3'	161
39-1'	38
39-3'	39
40-1'	34
40-3'	17
41-1'	25
41-3'	17
48-1'	124
48-3'	18
49-1'	1,120
49-3'	183
52-1'	1,580
52-3'	167,000
53-1'	82,500
53-3'	424
54-1'	67
54-3'	27
55-1'	18

Approved by Laboratory Manager

Title

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93-9

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO: Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43407
ORDER NUMBER:
PAGE 1 OF 3

Sample Description: Twenty-three (23) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

RECEIVED
JUN 19 1989
URBAN CONSTRUCTION INC.

	Total Lead
18-1'	25
18-2'	2,100
19-1'	1,990
19-3'	19
20-1'	69
20-3'	81
29-1'	4,000
31-1'	91
31-3'	80
32-1'	28
33-1'	328
33-3'	234
34-1'	604
34-3'	89
35-1'	20
36-1'	21
36-3'	72
37-1'	19
37-3'	20
42-1'	11
42-3'	10
43-1'	15
43-3'	17

Approved by: Alyce K. Moore
Laboratory Manager
Title

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S3-9-

OCT-30-1989 15:51 FROM SWIDLEPO TO P.23

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO: Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43407
ORDER NUMBER:
PAGE 2 OF 3

Sample Description: Twenty-three (23) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

	Total Lead
44-1'	12
44-3'	10
45-1'	21
45-3'	18
46-1'	13
46-3'	13
47-1'	18
47-3'	14
50-1'	16,400
50-3'	124
51-1'	2,240
51-3'	698,000
56-1'	55
56-3'	38
57-1'	33
57-3'	22
59-1'	239
59-3'	26
60-1'	66
60-3'	45
61-3'	29
62-1'	28
62-3'	30

Approved by: Laboratory Manager

Title

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93-9-6

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43407
ORDER NUMBER:
PAGE 3 OF 3

Sample Description: Eight (8) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

	Total Lead
63-1'	20
63-3'	52
64-1'	59
64-3'	59
65-1'	27
65-3'	23
66-1'	21
66-3'	25

Approved by Laboratory Manager

Title

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93-9-6

OCT-30-1989 15:52 FROM SWIDLERO TO P.25

EcoTek LSI
Ecotek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

REF. 14

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028501	S-001	<6.1	25.0	1.1	6.3	305.0	<5.5	<1.1	<0.11
028502	S-002	<6.3	75.1	4.2	51.8	249.0	<5.7	<1.2	0.12
028503	S-003	<6.1	42.7	1.6	9.3	132.0	<5.6	<1.1	<0.11
028504	* S-015	<5.8	59.1	2.9	15.4	646.0	<5.3	<1.0	<0.10
028505	S-017	<6.7	13.4	4.6	38.8	59.1	<6.1	<1.2	<0.09
028506	S-019	<6.5	8.2	4.0	18.3	41.6	<5.9	<1.2	<0.11
028507	* S-030	<6.1	92.0	1.7	10.3	5290.0	<5.5	<1.1	0.31
028508	S-032	<6.5	53.3	2.1	8.5	57.5	<5.9	<1.2	1.11
028509	S-034	<6.8	71.7	2.9	11.8	45.1	<6.1	<1.2	<0.09
028510	S-045	<6.0	85.0	1.3	12.5	159.0	<5.4	<1.1	<0.11
028511	* S-046	<5.4	38.9	1.5	5.9	665.0	<4.9	<0.9	0.11
028512	S-047	<5.8	44.3	0.8	1.2	81.6	<5.3	<1.0	<0.08
028513	S-048	<6.1	27.9	0.9	2.7	60.1	<5.6	<1.1	<0.08
028514	* S-049	<6.1	38.6	1.7	4.9	2930.0	<5.5	<1.1	0.12
028515	* S-050	<5.8	2.3	0.7	5.3	567.0	<5.3	<1.1	<0.04
028516	* S-051	<5.6	29.3	1.2	10.4	611.0	<5.1	<1.0	<0.06

EcoTek LSI
Ecotek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028517	* S-052	<6.4	47.8	2.3	8.7	1680.0	<5.8	1.6	0.31
028518	S-053	<5.7	13.8	1.2	5.2	208.0	<5.2	3.1	<0.10
028519	* S-054	<5.6	37.5	2.4	3.3	4360.0	<5.0	1.5	<0.07
028520	S-055	91.2	812.0	71.1	53.1	148.0	<6.2	1.8	0.28
028521	* S-056	454.0	457.0	30.6	32.6	82500.0	<5.7	1.2	0.28
028522	* S-057	<6.3	176.0	9.6	25.8	14000.0	<5.7	1.5	0.11
028523	* S-067 *	<5.9	140.0	3.0	17.8	958.0	<5.4	<1.0	0.53
028524	* S-070	<6.1	177.0	3.2	21.3	6170.0	<5.5	2.6	0.73
028525	S-072	<6.6	3.7	1.1	10.2	5.8	<5.9	<1.2	<0.10
028526	* S-074	<6.7	4.2	<0.6	20.4	1470.0	<6.1	<1.2	<0.09
028527	* S-075	<5.8	36.7	2.8	26.4	11000.0	<5.2	<1.0	0.25
028528	S-076	<5.9	2.3	<0.5	2.1	10.1	<5.3	1.6	<0.09
028529	* S-077	<6.3	43.6	2.6	16.6	1570.0	<5.7	<1.1	<0.10
028530	* S-079	<5.9	116.0	18.0	20.2	1480.0	<5.5	1.7	0.12
028531	* S-080	<6.2	53.6	4.6	22.6	6370.0	<5.6	<1.2	0.14
028532	* S-081	<6.3	43.9	2.1	15.5	3110.0	<5.8	2.4	0.15

RCRA Metals Report.

Poss. background?

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

poss. bkgd

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028533	* S-082	85.7	658.0	200.0	59.4	3.3	<6.0	4.5	0.31
028534	* S-084	<6.4	51.3	6.9	30.6	496.0	<5.8	<1.1	0.12
028535	S-086	<6.8	30.2	3.5	25.0	51.1	<6.2	<1.2	<0.10
028536	* S-087	<6.6	47.1	4.8	32.9	7850.0	<6.0	<1.0	0.14
028538	S-090	<6.1	6.9	3.4	21.9	23.0	<5.5	<1.0	<0.11
028539	S-092	<6.0	2.3	1.5	4.8	52.9	<5.5	<1.1	<0.08
028540	* S-093	<6.3	40.2	2.9	7.9	7570.0	<5.7	<1.2	0.09
028541	* S-094	<6.5	39.2	2.8	19.9	5750.0	<5.9	<1.2	0.11
028542	* S-096	<6.1	277.0	4.1	15.5	21900.0	<5.5	<1.1	0.38
028543	* S-097	<6.7	272.0	3.6	17.4	4120.0	7.7	<1.2	0.13
028544	* S-099	<7.5	618.0	8.4	14.3	1500.0	7.4	<1.4	<0.12
028545	* S-100	<6.8	175.0	10.6	50.0	2300.0	<6.1	<1.2	<0.12
028546	S-102	<6.6	32.2	3.6	33.0	100.0	13.4	<1.2	0.14
028547	* S-104	<7.5	178.0	9.3	23.6	23200.0	<6.8	<1.3	0.21
028548	* S-106	107.0	620.0	268.0	32.4	95700.0	<6.7	<1.4	0.55
028549	* S-107	<6.5	337.0	94.5	20.1	32100.0	<5.9	<1.2	0.31

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028550	S-108	<6.0	3.1	<0.6	15.1	76.8	<5.4	<1.0	<0.10
028551	S-110	<6.1	4.3	4.6	22.4	35.4	<5.5	<1.0	<0.10
028552	S-111	<6.3	5.1	2.4	30.0	50.1	<5.7	<1.1	<0.10
028553	S-113	<6.4	35.6	3.9	27.5	599.0	<5.8	<1.1	<0.10
028554	S-123	<6.1	30.6	2.0	11.8	139.0	<5.5	<1.0	<0.10
028555	S-125	<6.3	13.1	1.8	19.2	380.0	<5.8	<1.1	<0.10
028556	S-138	<6.7	22.7	2.2	22.0	24.8	<6.1	4.8	<0.10
028557	S-140	<6.2	9.2	3.1	7.0	18.4	<5.7	<1.1	<0.10
028558	S-142	<6.0	23.5	3.5	22.9	32.8	<5.5	<1.0	<0.10
028559	S-152	<6.3	74.0	2.4	12.9	303.0	<5.7	<1.1	0.17
028561	S-155	<6.5	26.2	<0.6	1.7	11.2	12.2	2.0	<0.10
028563	S-158	<6.8	30.9	2.1	21.6	15.2	<6.3	<1.2	0.15
028565	S-165	<5.9	67.3	2.1	20.3	121.0	<5.4	10.4	0.12
028566	S-168	<6.7	55.4	2.9	23.2	16.5	<6.1	2.0	0.14
028567	S-171	<6.6	22.4	4.9	47.0	29.9	<6.0	<1.2	<0.12
028568	S-178	<6.1	22.8	2.1	17.9	157.0	16.9	<1.1	0.13

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0285
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 17, 1990
Sample Report Date: October 18, 1990

ANALYTICAL RESULTS

(Dry Weight Basis)

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028569	S-179	<8.4	52.8	2.8	68.0	40.4	<5.9	<1.1	0.11
028570	S-181	<7.3	49.2	16.2	28.4	100.0	<6.6	<1.3	0.18
028571	S-127	<8.1	14.2	2.9	13.2	21.6	<5.5	<1.1	<0.09

EcoTek LSI
Ecotek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028802	S-187	<6.0	40.3	0.7	21.9	35.9	<5.5	<1.1	<0.09
028803	* S-189	<6.9	62.3	1.8	20.6	2880.0	<6.2	<1.3	<0.08
028804	S-191	<6.3	59.3	1.5	10.8	37.9	<5.7	<1.1	<0.11
028805	* S-197	<7.6	52.3	33.6	50.1	26400.0	<6.9	<1.3	2.40
028806	S-199	<6.2	46.8	2.4	20.0	109.0	<5.6	<1.1	<0.09
028807	S-201	<6.7	117.0	2.7	18.0	54.1	<6.0	<1.2	<0.11
028808	* S-207	<6.3	138.0	29.1	16.8	37100.0	<5.7	<1.1	1.80
028809	* S-209	<6.9	66.4	4.9	47.7	1244.0	<6.3	<1.2	<0.09
028810	S-211	<6.3	132.0	3.5	33.9	288.0	<5.7	<1.1	<0.11
028811	S-217	517	328.0	28.6	20.9	2.7	<5.4	<1.1	1.50
028812	* S-219	<6.3	58.8	7.9	16.4	15300.0	<5.8	<1.1	<0.10
028813	* S-221	<6.8	54.7	4.9	18.2	1020.0	<6.2	<1.2	<0.23
028814	* S-227	<7.1	107.0	10.3	25.9	38800.0	<6.5	<1.2	<0.11
028815	* S-229	<6.1	42.0	3.8	16.5	603.0	<5.5	<1.0	<0.11
028816	S-231	<6.5	29.0	2.9	18.7	139.0	<5.9	<1.2	<0.12
028817	* S-237	<7.1	653.0	8.1	42.4	40900.0	<6.5	<1.2	<0.12

Ecotek LSI
Ecotek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028818	S-239	<7.0	33.7	3.2	23.5	68.7	<6.4	<1.2	<0.10
028819	* S-241	<6.6	47.4	1.7	9.2	1230.0	<6.0	<1.1	<0.09
028820	* S-247	<6.5	62.9	2.6	9.1	2050.0	<5.9	<1.1	<0.10
028821	* S-248	<6.6	39.0	1.4	21.9	6480.0	<6.0	<1.2	<0.11
028822	* S-249	<7.0	14.9	2.0	13.3	1910.0	<6.4	<1.2	<0.17
028823	* S-250	859	162.0	1.6	8.8	103000.0	<5.7	<1.1	4.2
028824	* S-252	<6.6	68.0	2.3	19.8	3720.0	<6.0	<1.1	<0.10
028825	* S-254	<6.3	131.0	3.9	25.1	754.0	<5.8	<1.2	<0.10
028826	* S-260	<6.3	38.9	1.2	9.5	2710.0	<5.7	<1.2	1.2
028829	S-263	<7.0	21.0	2.6	34.7	110.0	<6.4	<1.2	4.9
028830	S-265	<6.1	39.6	23.6	16.1	37.3	<5.6	<1.1	<0.09
028832	S-271	<5.5	24.8	0.5	0.8	43.7	<5.0	<1.0	<0.10
028835	* S-274	<6.5	39.7	1.8	11.0	468.0	<5.9	<1.2	<0.12
028838	* S-284	<6.0	34.9	1.6	4.8	1190.0	<5.4	<1.0	<0.09
028839	S-286	<6.6	24.0	1.8	4.4	361.0	<6.0	<1.2	<0.08
028841	* S-288	<6.7	76.3	2.5	21.4	1580.0	<6.1	<1.2	<0.10

Ecotek LSI
Ecotek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028842	S-289	<8.1	74.8	1.5	17.5	1830.0	<5.5	<1.0	2.1
028843	S-291	<6.7	84.1	1.7	14.5	13700.0	<6.1	<1.2	1.3
028844	S-293	<7.0	13.4	0.6	1.0	77.0	<6.4	<1.2	<0.11
028846	S-300	<8.5	22.4	3.6	53.9	1230.0	<5.9	<1.2	<0.11
028847	S-302	<7.0	5.8	2.4	20.4	194.0	<6.4	<1.2	<0.11
028848	S-304	<8.0	1.0	2.2	14.6	22.3	<5.4	<1.0	<0.10
028849	S-310	<6.7	16.8	2.1	13.2	2550.0	<6.1	<1.2	<0.10
028850	S-312	<6.7	4.4	4.3	51.4	47.7	<6.0	<1.2	1.5
028851	S-314	<6.7	1.1	3.1	33.0	35.9	<6.1	<1.2	<0.11
028852	S-320	<8.2	38.6	2.4	27.7	1180.0	<5.6	<1.1	5.0
028853	S-322	<6.7	15.8	2.3	24.7	76.5	<6.1	<1.2	<0.10
028854	S-324	<6.7	8.0	1.1	9.6	43.1	<6.1	<1.2	<0.10
028855	S-325	<6.4	10.8	1.4	12.4	44.2	<5.8	<1.2	<0.11
028856	S-331	<6.9	69.0	3.8	31.6	3930.0	<6.3	<1.2	<0.12
028858	S-333	<7.1	24.4	2.0	17.1	110.8	<6.4	<1.3	<0.10
028859	S-335	<6.7	12.8	0.6	4.7	27.0	<6.1	<1.2	<0.10

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD
LSDG: 0288
Client Reference No.: Gould Atlanta / 893320W

Sample Receipt Date: August 21, 1990
Sample Report Date: October 19, 1990

ANALYTICAL RESULTS

Lab Sample ID	Client Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Mercury (mg/kg)
028861	S-342	<6.5	11.1	4.3	0.0	29.1	<5.9	<1.2	<0.11
028862	S-343	<7.0	29.9	4.3	18.2	71.0	<6.4	<1.2	<0.11
028863	S-345	<6.5	38.7	2.5	15.2	102.0	<5.9	<1.2	<0.12
028864	S-351	<5.7	51.7	0.9	2.4	138.0	<5.1	<1.0	<0.10
028865	* S-352	<6.6	70.0	1.5	18.1	3180.0	8.1	<1.2	<0.11
028866	S-353	<5.4	60.5	0.8	2.1	175.0	<4.9	<0.9	<0.10
028867	* S-354	<6.8	84.4	2.1	28.2	6890.0	<6.1	<1.2	3.2
028868	S-355	<6.8	8.1	4.4	55.6	41.3	<6.2	<1.2	1.2
028869	* S-356	<6.2	70.9	1.5	23.2	3320.0	<5.7	<1.2	3.6
028870	* S-276	<6.5	16.7	2.4	6.9	657.0	<5.9	<1.2	<0.12

coTek LSI
Tek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: October 9, 1990

LSDG: 0441

Sample Report Date: October 23, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID / Client Sample ID / METALS (mg/kg)	044106 S-063 Dup. for S-062	044107 S-064	044108 S-065	044109 S-066	044110 S-067	Detection Limit (mg/kg)
Arsenic	1.19	<0.3	1.14	1.73	3.96	0.3
Barium	47.3	79.6	77.3	58.1	86.6	0.1
Cadmium	<0.1	<0.1	<0.1	1.12	1.87	0.1
Chromium	5.74	9.16	15.9	22.4	11.7	0.1
Lead	205.	328.	648.	2460.	7460.	0.25
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Selenium	<0.4	<0.4	<0.4	<0.4	<0.4	0.4
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	0.1

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 22, 1990

LSDG: 0294

Sample Report Date: October 19, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029401 S-358 MW-1	029405 S-362 MW-1 D	029411 S-368 MW-5	Detection Limits (mg/l)
Arsenic	<0.056	<0.056	<0.056	0.056 — above std
Barium	0.019	0.020	0.034	0.010
Cadmium	0.017	0.019	0.007	0.006
Chromium	0.017	0.017	<0.009	0.009
Lead	<0.029	<0.029	0.070	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0002
Selenium	<0.057	<0.057	<0.057	0.057 — above std
Silver	<0.011	<0.011	<0.011	0.011

.coTek LSI
.Tek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 22, 1990

LSDG: 0294

Sample Report Date: October 19, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029415 S-372 MW-2	029419 S-376 MW-3	029423 S-380 MW-6	Detection Limits (mg/l)
Arsenic	<0.056	<0.056	<0.056	0.056
Barium	0.053	0.037	0.104	0.010
Cadmium	<0.006	<0.006	<0.006	0.006
Chromium	0.013	<0.009	0.011	0.009
Lead	<0.029	<0.029	<0.029	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0002
Selenium	<0.057	<0.057	<0.057	0.057
Silver	<0.011	<0.011	0.063	0.011

above sd

above sd

coTek LSI
Tek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: October 9, 1990

LSDG: 0441

Sample Report Date: October 23, 1990

Client Reference No.: 893320W

ANALYTICAL RESULTS
RCRA Metals

Lab Sample ID Client Sample ID METALS (mg/kg)	044101 S-058 Dup. for S-057	044102 S-059	044103 S-060	044104 S-061	044105 S-062	Detection Limit (mg/kg)
Arsenic	1.28	0.80	1.52	2.28	1.65	0.3
Barium	176	45.4	54.4	54.2	50.4	0.1
Cadmium	5.92	<0.1	<0.1	0.62	0.15	0.1
Chromium	19.0	5.94	6.82	35.0	8.24	0.1
Lead	23200.	321.	737.	1220.	425.	0.25
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Selenium	<0.4	<0.4	<0.4	<0.4	<0.4	0.4
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	0.1

FIGURE F-2

EcoTek LSI
EcoTek Laboratory Services Incorporated

Client: NTH Consultants, LTD

Sample Receipt Date: August 23, 1990

LSDG: 0298

Sample Report Date: October 18, 1990

Client Reference No.: Gould Atlanta / 893320W

ANALYTICAL RESULTS
TCLP Metals

Lab Sample ID / Client Sample ID / METALS (mg/l)	029802 S-392	029803 S-393	029804 S-394	029805 S-395	Detection Limit
Arsenic	0.391	<0.056	<0.056	<0.056	0.056
Barium	0.304	0.307	0.165	0.296	0.010
Cadmium	0.013	<0.006	<0.006	<0.006	0.006
Chromium	0.021	<0.009	<0.009	0.026	0.009
Lead	68.1	0.193	0.148	0.387	0.029
Mercury	<0.0002	<0.0002	<0.0002	0.0006	0.0002
Selenium	<0.057	<0.057	0.069	<0.057	0.057
Silver	0.021	<0.011	0.016	<0.011	0.011

FIGURE F-179

ATEC Environmental Consultants
Division of ATEC Associates, Inc.
1300 Williams Drive, Suite A
Marietta, Georgia 30066-6299
[404] 427-9456, FAX # [404] 427-1907

REF. 15

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Solid & Hazardous Waste Site Assessments
Remedial Design & Construction
Underground Tank Management
Asbestos Surveys & Analysis
Hydrogeologic Investigations & Monitoring
Analytical Testing / Chemistry
Industrial Hygiene / Hazard Communication
Environmental Audits & Permitting
Exploratory Drilling & Monitoring Wells

CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15187	15188	15189
			STATION:	MW-1	MW-2	MW-3
Antimony	204.2	20		ND	ND	ND
Arsenic	206.2	20		ND	ND	ND
Barium	208.1	100		ND	ND	ND
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	ND	ND
Mercury	245.2	2		ND	ND	ND
Nickel	249.1	100		170	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND

ND-None Detected

Randy Brown

Reviewed by:
Kim Humphries KH

RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

ATEC Environmental Consultants
Division of ATEC Associates, Inc.
1300 Williams Drive, Suite A
Marietta, Georgia 30066-6299
[404] 427-9456, FAX # [404] 427-1907

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15190	15191	15192
			STATION:	MW-4	MW-5	MW-6
Antimony	204.2	20		ND	ND	ND
Arsenic	206.2	20		ND	ND	ND
Barium	208.1	100		ND	ND	ND
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	ND	ND
Mercury	245.2	2		ND	ND	ND
Nickel	249.1	100		ND	210	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND

ND-None Detected

Randy Brown

RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

Reviewed by:
Kim Humphries KH

ATEC Environmental Consultants
Division of ATEC Associates, Inc.
1300 Williams Drive, Suite A
Marietta, Georgia 30066-6299
[404] 427-9456, FAX # [404] 427-1907

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15193 MW-7	15194 MW-8	15195 MW-9
Antimony	204.2	20		ND	ND	ND
Arsenic	206.2	20		ND	ND	ND
Barium	208.1	100		ND	ND	ND
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	ND	ND
Mercury	245.2	2		ND	ND	ND
Nickel	249.1	100		ND	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND

ND-None Detected

Randy Brown
RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

Reviewed by: KH
Kim Humphries

ATEC Environmental Consultants
Division of ATEC Associates, Inc.
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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15196 MW-10	15197 MW-11	15198 BLIND DUP
Antimony	204.2	20		ND	ND	ND
Arsenic	206.2	20		ND	ND	ND
Barium	208.1	100		ND	ND	ND
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	ND	ND
Mercury	245.2	2		ND	ND	ND
Nickel	249.1	100		ND	405	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND

ND-None Detected

Randy Brown

RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

Reviewed by:
Kim Humphries KH

ATEC Environmental Consultants
Division of ATEC Associates, Inc.
1300 Williams Drive, Suite A
Marietta, Georgia 30066-6299
(404) 427-9456, FAX # (404) 427-1907

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15199 FIELD BK
Antimony	204.2	20		ND
Arsenic	206.2	20		ND
Barium	208.1	100		ND
Cadmium	213.1	50		ND
Chromium	218.1	50		ND
Lead	239.1	100		ND
Mercury	245.2	2		ND
Nickel	249.1	100		ND
Selenium	270.2	20		ND
Silver	272.1	20		ND

ND-None Detected

Randy Brown

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Exploratory Drilling & Monitoring Wells

CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15187 MW-1	15188 MW-2	15189 MW-3
Dichlorodifluoromethane	1		ND	ND	ND
Chloromethane	1		ND	ND	ND
Vinyl Chloride	10		ND	ND	ND
Bromomethane	10		ND	ND	ND
Chloroethane	1		ND	ND	ND
Trichlorofluoromethane	10		ND	ND	ND
1,1-Dichloroethene	1		ND	ND	ND
Methylene Chloride	1		ND	ND	ND
Trans 1,2-Dichloroethene	1		ND	ND	ND
1,1-Dichloroethane	1		ND	ND	ND
Chloroform	1		6.7	ND	ND
1,1,1-Trichloroethane	1		ND	ND	ND
Carbon Tetrachloride	1		ND	ND	ND
1,2-Dichloroethane	1		ND	ND	ND
Trichloroethene	1		116	ND	ND
1,2-Dichloropropane	1		5.8	ND	ND
Bromodichloromethane	1		ND	ND	ND
cis 1,3-Dichloropropene	1		ND	ND	ND
trans 1,3-Dichloropropene	1		ND	ND	ND
1,1,2-Trichloroethene	1		ND	ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15187 MW-1	15188 MW-2	15189 MW-3
Tetrachloroethene	1		10.9	17.3	1.6
Dibromochloromethane	1		ND	ND	ND
Chlorobenzene	1		ND	ND	ND
Bromoform	10		ND	ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15190 MW-4	15191 MW-5	15192 MW-6
Dichlorodifluoromethane	1		ND	ND	ND
Chloromethane	1		ND	ND	ND
Vinyl Chloride	10		ND	ND	ND
Bromomethane	10		ND	ND	ND
Chloroethane	1		ND	ND	ND
Trichlorofluoromethane	10		ND	ND	ND
1,1-Dichloroethene	1		ND	ND	ND
Methylene Chloride	1		ND	ND	ND
Trans 1,2-Dichloroethene	1		ND	ND	ND
1,1-Dichloroethane	1		ND	ND	ND
Chloroform	1		1.8	3.8	4.7
1,1,1-Trichloroethane	1		ND	ND	ND
Carbon Tetrachloride	1		ND	ND	ND
1,2-Dichloroethane	1		ND	ND	ND
Trichloroethene	1		13.6	33.9	ND
1,2-Dichloropropane	1		2.3	2.8	ND
Bromodichloromethane	1		ND	ND	ND
cis 1,3-Dichloropropene	1		ND	ND	ND
trans 1,3-Dichloropropene	1		ND	ND	ND
1,1,2-Trichloroethene	1		ND	ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15190 MW-4	15191 MW-5	15192 MW-6
Tetrachloroethene	1		2.2	156	ND
Dibromochloromethane	1		ND	ND	ND
Chlorobenzene	1		ND	ND	ND
Bromoform	10		ND	ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND

ND-None Detected

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LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15193 MW-7	15194 MW-8	15195 MW-9
Dichlorodifluoromethane	1		ND	ND	ND
Chloromethane	1		ND	ND	ND
Vinyl Chloride	10		ND	ND	ND
Bromomethane	10		ND	ND	ND
Chloroethane	1		ND	ND	ND
Trichlorofluoromethane	10		ND	ND	ND
1,1-Dichloroethene	1		ND	ND	ND
Methylene Chloride	1		ND	ND	ND
Trans 1,2-Dichloroethene	1		ND	ND	ND
1,1-Dichloroethane	1		ND	ND	ND
Chloroform	1		ND	5.3	ND
1,1,1-Trichloroethane	1		ND	ND	ND
Carbon Tetrachloride	1		ND	3.3	ND
1,2-Dichloroethane	1		ND	ND	ND
Trichloroethene	1		ND	ND	73.5
1,2-Dichloropropane	1		ND	ND	2.9
Bromodichloromethane	1		ND	ND	ND
cis 1,3-Dichloropropene	1		ND	ND	ND
trans 1,3-Dichloropropene	1		ND	ND	ND
1,1,2-Trichloroethene	1		ND	ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15193 MW-7	15194 MW-8	15195 MW-9
Tetrachloroethene	1		ND	ND	ND
Dibromochloromethane	1		ND	ND	ND
Chlorobenzene	1		ND	ND	ND
Bromoform	10		ND	ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND

ND-None Detected

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ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: 15196 STATION: MW-10	15197 MW-11	15198 BLIND DUP
Dichlorodifluoromethane	1	ND	ND	ND
Chloromethane	1	ND	ND	ND
Vinyl Chloride	10	ND	ND	ND
Bromomethane	10	ND	ND	ND
Chloroethane	1	ND	ND	ND
Trichlorofluoromethane	10	ND	ND	ND
1,1-Dichloroethene	1	ND	ND	ND
Methylene Chloride	1	ND	ND	ND
Trans 1,2-Dichloroethene	1	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND
Chloroform	1	ND	ND	ND
1,1,1-Trichloroethane	1	ND	ND	ND
Carbon Tetrachloride	1	ND	ND	ND
1,2-Dichloroethane	1	ND	ND	ND
Trichloroethene	1	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND
Bromodichloromethane	1	ND	ND	ND
cis 1,3-Dichloropropene	1	ND	ND	ND
trans 1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethene	1	ND	ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: 15196 STATION: MW-10	15197 MW-11	15198 BLIND DUP
Tetrachloroethene	1	5.1	ND	14.0
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	ND	ND	ND
Bromoform	10	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15199 FIELD BLANK	15200 TRIP BLANK
Dichlorodifluoromethane	1		ND	ND
Chloromethane	1		ND	ND
Vinyl Chloride	10		ND	ND
Bromomethane	10		ND	ND
Chloroethane	1		ND	ND
Trichlorofluoromethane	10		ND	ND
1,1-Dichloroethene	1		ND	ND
Methylene Chloride	1		ND	ND
Trans 1,2-Dichloroethene	1		ND	ND
1,1-Dichloroethane	1		ND	ND
Chloroform	1		1.5	ND
1,1,1-Trichloroethane	1		ND	ND
Carbon Tetrachloride	1		ND	ND
1,2-Dichloroethane	1		ND	ND
Trichloroethene	1		ND	ND
1,2-Dichloropropane	1		ND	ND
Bromodichloromethane	1		ND	ND
cis 1,3-Dichloropropene	1		ND	ND
trans 1,3-Dichloropropene	1		ND	ND
1,1,2-Trichloroethene	1		ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15199 FIELD BLANK	15200 TRIP BLANK
Tetrachloroethene	1		ND	ND
Dibromochloromethane	1		ND	ND
Chlorobenzene	1		ND	ND
Bromoform	10		ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND
1,3-Dichlorobenzene	1		ND	ND
1,4-Dichlorobenzene	1		ND	ND
1,2-Dichlorobenzene	1		ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 18002

INVOICE PROJECT #: 1621 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 602 DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	DETECTION LIMIT	SAMPLE I.D. LAB:	15187	15188	15189	15190
		STATION:	MW-1	MW-2	MW-3	MW-4
Benzene	1		ND	ND	ND	ND
Toluene	1		ND	ND	ND	ND
Ethylbenzene	1		ND	ND	ND	ND
Total Xylenes	1		ND	ND	ND	ND
Chlorobenzene	1		ND	ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND	ND

ND-None Detected

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 18002

INVOICE PROJECT #: 1621 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 602 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	DETECTION LIMIT	SAMPLE I.D. LAB:	15191	15192	15193	15194
		STATION:	MW-5	MW-6	MW-7	MW-8
Benzene	1		ND	ND	ND	ND
Toluene	1		ND	ND	ND	ND
Ethylbenzene	1		ND	ND	ND	ND
Total Xylenes	1		ND	ND	ND	ND
Chlorobenzene	1		ND	ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND	ND

ND-None Detected

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 18002

INVOICE PROJECT #: 1621 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 602 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	DETECTION LIMIT	SAMPLE I.D. LAB:	15195	15196	15197	15198
		STATION:	MW-9	MW-10	MW-11	BLIND DUP
Benzene	1		ND	ND	ND	ND
Toluene	1		ND	ND	ND	ND
Ethylbenzene	1		ND	ND	ND	ND
Total Xylenes	1		ND	ND	ND	ND
Chlorobenzene	1		ND	ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND	ND

ND-None Detected

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LAB PROJECT #: 18002

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MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 602 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15199 FIELD BLK	15200 TRIP BLK
Benzene	1		ND	ND
Toluene	1		ND	ND
Ethylbenzene	1		ND	ND
Total Xylenes	1		ND	ND
Chlorobenzene	1		ND	ND
1,3-Dichlorobenzene	1		ND	ND
1,4-Dichlorobenzene	1		ND	ND
1,2-Dichlorobenzene	1		ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Solid DATE SAMPLE ANALYZED: 02/05/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15175	15176	15177
			STATION:	S-1	S-2	S-3
Arsenic	206.2	0.5		2.45	1.15	9.53
Barium	208.2	5.0		84.3	22.6	66.7
Cadmium	213.1	1.0		ND	ND	ND
Chromium	218.1	3.0		14.8	10.1	12.5
Lead	239.1	5.0		34.3	18.9	28.3
Mercury	245.2	0.2		ND	ND	ND
Selenium	270.2	0.5		0.55	ND	1.3
Silver	272.1	1.0		1.1	ND	1.1
Antimony	204.2	1.0		ND	ND	ND
Nickel	249.1	5.0		5.9	ND	8.3

ND-None Detected

Randy Brown
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CHEMISTRY DIVISION

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Exploratory Drilling & Monitoring Wells

CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Solid DATE SAMPLE ANALYZED: 02/05/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15178 S-4	15179 S-5	15180 S-6
Arsenic	206.2	0.5		2.20	0.53	0.52
Barium	208.2	5.0		19.6	25.2	8.9
Cadmium	213.1	1.0		ND	ND	ND
Chromium	218.1	3.0		8.25	17.4	ND
Lead	239.1	5.0		31.1	12.5	5.4
Mercury	245.2	0.2		ND	ND	ND
Selenium	270.2	0.5		ND	ND	ND
Silver	272.1	1.0		ND	ND	ND
Antimony	204.2	1.0		ND	ND	ND
Nickel	249.1	5.0		ND	5.2	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Soil DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 418.1 DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	DETECTION LIMIT	PARAMETER TOTAL PETROLEUM HYDROCARBONS
15175	S-1	5	ND
15176	S-2	5	ND
15177	S-3	5	ND
15178	S-4	5	ND
15179	S-5	5	ND
15180	S-6	5	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 02/01/91

MATRIX: % SOLIDS DATE SAMPLE ANALYZED: 02/05/91

METHOD: EPA 160.3 DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	PARAMETER % SOLIDS
15175	S-1	97.9%
15176	S-2	96.9%
15177	S-3	96.8%
15178	S-4	95.4%
15179	S-5	97.2%
15180	S-6	99.9%

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)-1311

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15171	15172	15173
			STATION:	H-1	H-2	H-3
Arsenic	206.2	20		24	ND	ND
Barium	208.2	100		196	495	370
Cadmium	213.1	50		ND	802	489
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		10,500	329,000	116,000
Mercury	245.2	2		ND	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND
Antimony	204.2	20		ND	665	57
Nickel	249.1	100		ND	ND	ND

ND-None Detected

Randy Brown

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ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)-1311

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15174	15181	15182
			STATION:	H-4	DRUM-1	DRUM-2
Arsenic	206.2	20		ND	ND	ND
Barium	208.2	100		ND	464	227
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		6,200	11,000	ND
Mercury	245.2	2		ND	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND
Antimony	204.2	20		ND	ND	ND
Nickel	249.1	100		ND	ND	ND

ND-None Detected

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ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)-1311

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15183	15184	15185
			STATION:	DRUM-3	DRUM-4	DRUM-5
Arsenic	206.2	20		ND	ND	ND
Barium	208.2	100		181	172	143
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	181	ND
Mercury	245.2	2		ND	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND
Antimony	204.2	20		ND	ND	ND
Nickel	249.1	100		ND	ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)-1311

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15186 DRUM-6
Arsenic	206.2	20		ND
Barium	208.2	100		184
Cadmium	213.1	50		ND
Chromium	218.1	50		ND
Lead	239.1	100		148
Mercury	245.2	2		ND
Selenium	270.2	20		ND
Silver	272.1	20		ND
Antimony	204.2	20		ND
Nickel	249.1	100		134

ND-None Detected

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CLIENT: O'Brien & Gere

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE(TCLP)-1311

PARAMETER TCLP VOLATILES	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15181 DRUM-1	15182 DRUM-2
Benzene	602	5		ND	ND
Carbon tetrachloride	601	5		ND	ND
Chlorobenzene	601	5		ND	ND
Chloroform	601	5		ND	ND
1,2-Dichloroethane	601	5		ND	ND
2-Butanone	602	10		ND	ND
1,1-Dichloroethylene	601	5		ND	ND
Tetrachloroethene	601	5		ND	ND
Trichloroethene	601	5		ND	ND
Vinyl chloride	601	10		ND	ND

ND-None Detected

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LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE(TCLP)-1311

PARAMETER TCLP VOLATILES	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15183 DRUM-3	15184 DRUM-4
Benzene	602	5		ND	ND
Carbon tetrachloride	601	5		ND	ND
Chlorobenzene	601	5		ND	ND
Chloroform	601	5		ND	ND
1,2-Dichloroethane	601	5		ND	ND
2-Butanone	602	10		ND	ND
1,1-Dichloroethylene	601	5		ND	ND
Tetrachloroethene	601	5		ND	ND
Trichloroethene	601	5		ND	ND
Vinyl chloride	601	10		ND	ND

ND-None Detected

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CLIENT PROJECT #: SSC

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE(TCLP)-1311

PARAMETER TCLP VOLATILES	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15185 DRUM-5	15186 DRUM-6
Benzene	602	5		ND	ND
Carbon tetrachloride	601	5		ND	ND
Chlorobenzene	601	5		ND	ND
Chloroform	601	5		ND	ND
1,2-Dichloroethane	601	5		ND	ND
2-Butanone	602	10		ND	ND
1,1-Dichloroethylene	601	5		ND	ND
Tetrachloroethene	601	5		ND	17.3
Trichloroethene	601	5		ND	24.2
Vinyl chloride	601	10		ND	ND

ND-None Detected

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Soil DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 9045 DATE SAMPLE ANALYZED: 01/30/91

UNITS: pH UNITS DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	PARAMETER pH
15181	DRUM-1	5.0
15182	DRUM-2	4.6
15183	DRUM-3	5.5
15184	DRUM-4	5.4
15185	DRUM-5	5.4
15186	DRUM-6 (Water)	4.3

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Soil DATE SAMPLE ANALYZED: 02/01/91

METHOD: Pensky Martens DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	PARAMETER IGNITABILITY
15181	DRUM-1	>220°F
15182	DRUM-2	>220°F
15183	DRUM-3	>220°F
15184	DRUM-4	>220°F
15185	DRUM-5	>220°F
15186	DRUM-6 (Water)	>220°F

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Soil DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 9010 DATE SAMPLE ANALYZED: 02/04/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	DETECTION LIMIT	PARAMETER REACTIVITY CYANIDE
15181	DRUM-1	0.100	ND
15182	DRUM-2	0.100	ND
15183	DRUM-3	0.100	ND
15184	DRUM-4	0.100	ND
15185	DRUM-5	0.100	ND
15186	DRUM-6 (Water)	0.100	ND

ND-None Detected

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Soil DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 9030 DATE SAMPLE ANALYZED: 02/04/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	DETECTION LIMIT	PARAMETER REACTIVITY SULFIDE
15181	DRUM-1	5.0	ND
15182	DRUM-2	5.0	ND
15183	DRUM-3	5.0	ND
15184	DRUM-4	5.0	ND
15185	DRUM-5	5.0	ND
15186	DRUM-6 (Water)	5.0	ND

ND-None Detected

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REF. 16

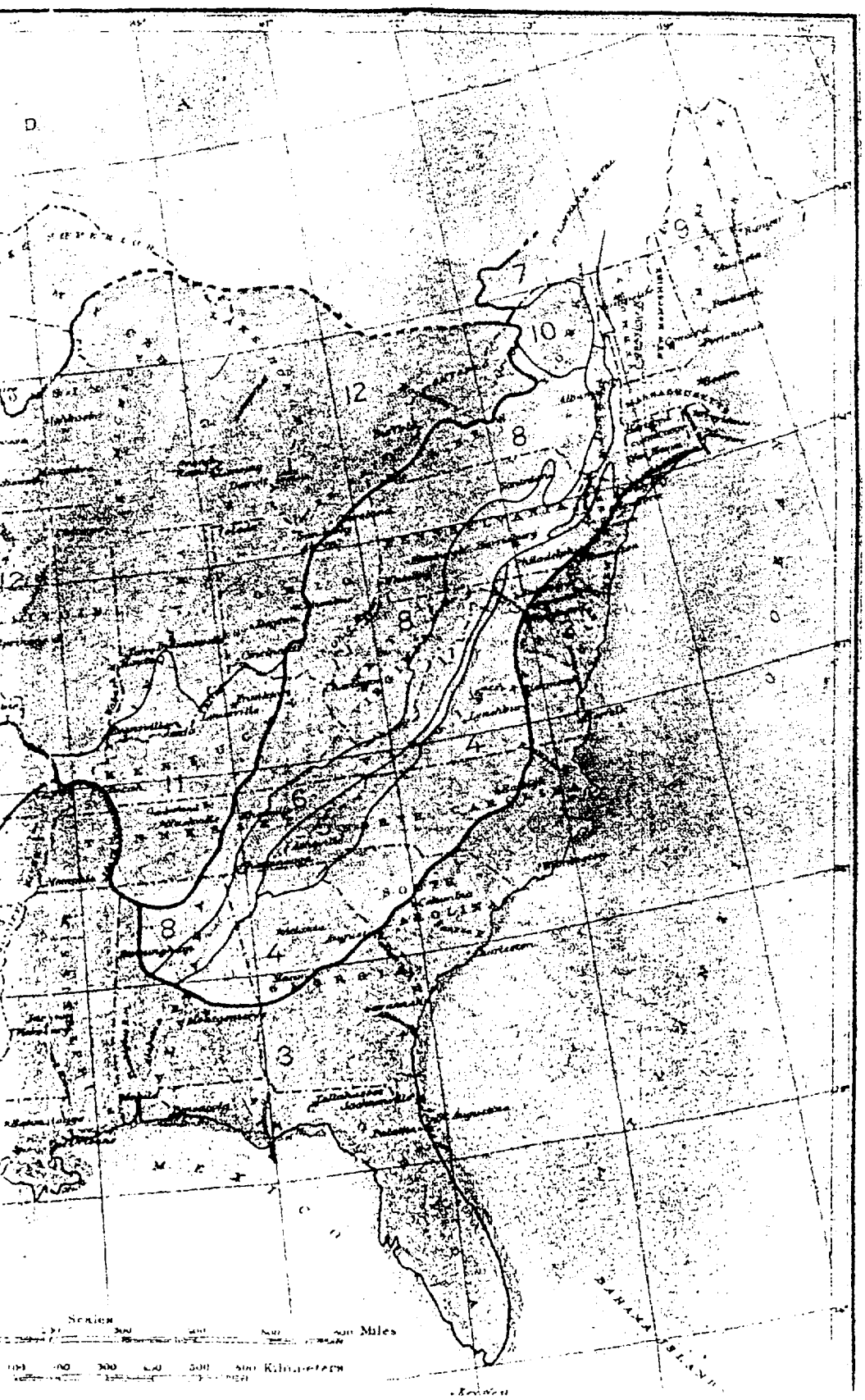
The Occurrence of Ground Water in the United States

With a Discussion of Principles

By OSCAR EDWARD MEINZER

GEOLOGICAL WATER-SUPPLY PAPER 489

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON 1923



PHYSIOGRAPHIC DIVISIONS

MAJOR DIVISION	PROVINCE
Laurentian Upland	1. Superior Upland
Atlantic Plain	2. Continental Shelf (submerged)
	3. Atlantic Coastal Plain
Appalachian Highlands	4. Piedmont province
	5. Blue Ridge province
	6. Appalachian Valley province
	7. St. Lawrence Valley
	8. Appalachian Plateaus
	9. New England province
	10. Adirondack province
Interior Plains	11. Interior Low Plateaus
	12. Central Lowland
	13. Great Plains
Interior Highlands	14. Ozark Plateaus
	15. Ouachita province
Rocky Mountain region	16. Southern Rocky Mountains
	17. Wyoming Basin
	18. Northern Rocky Mountains
Intermontane Plateaus	19. Columbia Plateaus
	20. Colorado Plateaus
	21. Basin and Range province
Pacific Mountain region	22. Sierra Nevada and Cascade Mountains
	23. Pacific Border province
	24. Lower Californian province

REF. 17

EPA-600/2-87-035
April 1987

DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings

by

Linda Aller
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Cooperative Agreement CX-810715-01

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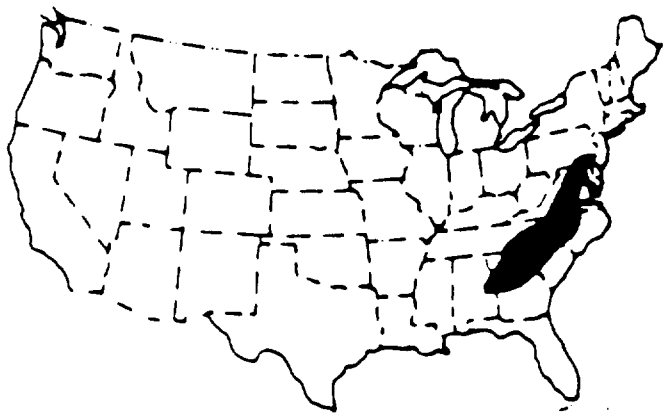
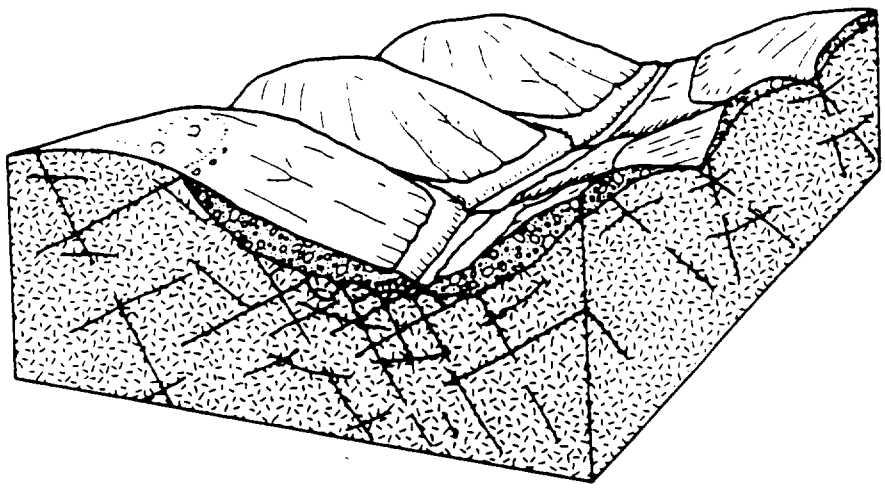
ADA, OKLAHOMA 74820

8. PIEDMONT BLUE RIDGE GROUND-WATER REGION





8A	Mountain Slopes
8B	Alluvial Mountain Valleys
8C	Mountain Flanks
8D	Regolith
8E	River Alluvium
8F	Mountain Crests
8G	Swamp/Marsh

8. PIEDMONT BLUE RIDGE REGION

(Thick regolith over fractured crystalline and metamorphosed sedimentary rocks)

The Piedmont and Blue Ridge region is an area of about 247,000 km^2 extending from Alabama on the south to Pennsylvania on the north. The Piedmont part of the region consists of low, rounded hills and long, rolling, northeast-southwest trending ridges whose summits range from about a hundred meters above sea level along its eastern boundary with the Coastal Plain to 500 to 600 m along its boundary with the Blue Ridge area to the west. The Blue Ridge is mountainous and includes the highest peaks east of the Mississippi. The mountains, some of which reach altitudes of more than 2,000 m, have smooth-rounded outlines and are bordered by well-graded streams flowing in relatively narrow valleys.

The Piedmont and Blue Ridge region is underlain by bedrock of Precambrian and Paleozoic age consisting of igneous and metamorphosed igneous and sedimentary rocks. These include granite, gneiss, schist, quartzite, slate, marble, and phyllite. The land surface in the Piedmont and Blue Ridge is underlain by clay-rich, unconsolidated material derived from in situ weathering of the underlying bedrock. This material, which averages about 10 to 20 m in thickness and may be as much as 100 m thick on some ridges, is referred to as saprolite. In many valleys, especially those of larger streams, flood plains are underlain by thin, moderately well-sorted alluvium deposited by the streams. When the distinction between saprolite and alluvium is not important, the term regolith is used to refer to the layer of unconsolidated deposits.

The regolith contains water in pore spaces between rock particles. The bedrock, on the other hand, does not have any significant intergranular porosity. It contains water, instead, in sheetlike openings formed along fractures (that is, breaks in the otherwise "solid" rock). The hydraulic conductivities of the regolith and the bedrock are similar and range from about 0.001 to 1 m day^{-1}. The major difference in their water-bearing characteristics is their porosities, that of regolith being about 20 to 30 percent and that of the bedrock about 0.01 to 2 percent. Small supplies of water adequate for domestic needs can be obtained from the regolith through large-diameter bored or dug wells. However, most wells, especially those where moderate supplies of water are needed, are relatively small in diameter and are cased through the regolith and finished with open holes in the bedrock. Although, as noted, the hydraulic conductivity of the bedrock is similar to that of the regolith, bedrock wells generally have much larger yields than regolith wells because, being deeper, they have a much larger availble drawdown.

All ground-water systems function both as reservoirs that store water and as pipelines (or conduits) that transmit water from recharge areas to discharge areas. The yield of bedrock wells in the Piedmont and Blue Ridge region depends on the number and size of fractures penetrated by the open hole and on the replenishment of the fractures by seepage into them from the overlying regolith. Thus, the ground-water system in this region can be viewed, from the standpoint of ground-water development, as a terrane in which the reservoir and pipeline functions are effectively separated. Because of its larger porosity, the regolith functions as a reservoir which slowly feeds water downward into the fractures in the bedrock. The fractures serve as an intricate interconnected network of pipelines that transmit water either to springs or streams or to wells.

Recharge of the ground-water system occurs on the areas above the flood plains of streams, and natural discharge occurs as seepage springs that are common near the bases of slopes and as seepage into streams. With respect to recharge conditions, it is important to note that forested areas, which include most of the Blue Ridge and much of the Piedmont, have thick and very permeable soils overlain by a thick layer of forest litter. In these areas, even on steep slopes, most of the precipitation seeps into the soil zone, and most of this moves laterally through the soil in a thin, temporary, saturated zone to surface depressions or streams to discharge. The remainder seeps into the regolith below the soil zone, and much of this ultimately seeps into the underlying bedrock.

Because the yield of bedrock wells depends on the number of fractures penetrated by the well, the key element in selecting well sites is recognizing the relation between the present surface topography and the location of fractures in the bedrock. Most of the valleys, draws, and other surface depressions indicate the presence of more intensely fractured zones in the bedrock which are more susceptible to weathering and erosion than are the intervening areas. Because fractures in the bedrock are the principal avenues along which ground water moves, the best well sites appear to be in draws on the sides of the valleys of perennial streams where the bordering ridges are underlain by substantial thicknesses of regolith. Wells located at such sites seem to be most effective in penetrating open water-bearing fractures and in intercepting ground water draining from the regolith. Chances of success seem to be somewhat less for wells on the flood plains of perennial streams, possibly because the alluvium obscures the topographic expression of bedrock fractures. The poorest sites for wells are on the tops of ridges and mountains where the regolith cover is thin or absent and the bedrock is sparsely fractured.

As a general rule, fractures near the bedrock surface are most numerous and have the largest openings, so that the yield of most wells is not increased by drilling to depths greater than about 100 m. Exceptions to this occur in Georgia, South Carolina and North Carolina and some other areas where water-bearing, low-angle faults or fractured zones are present at depths as great as 200 to 300 m.

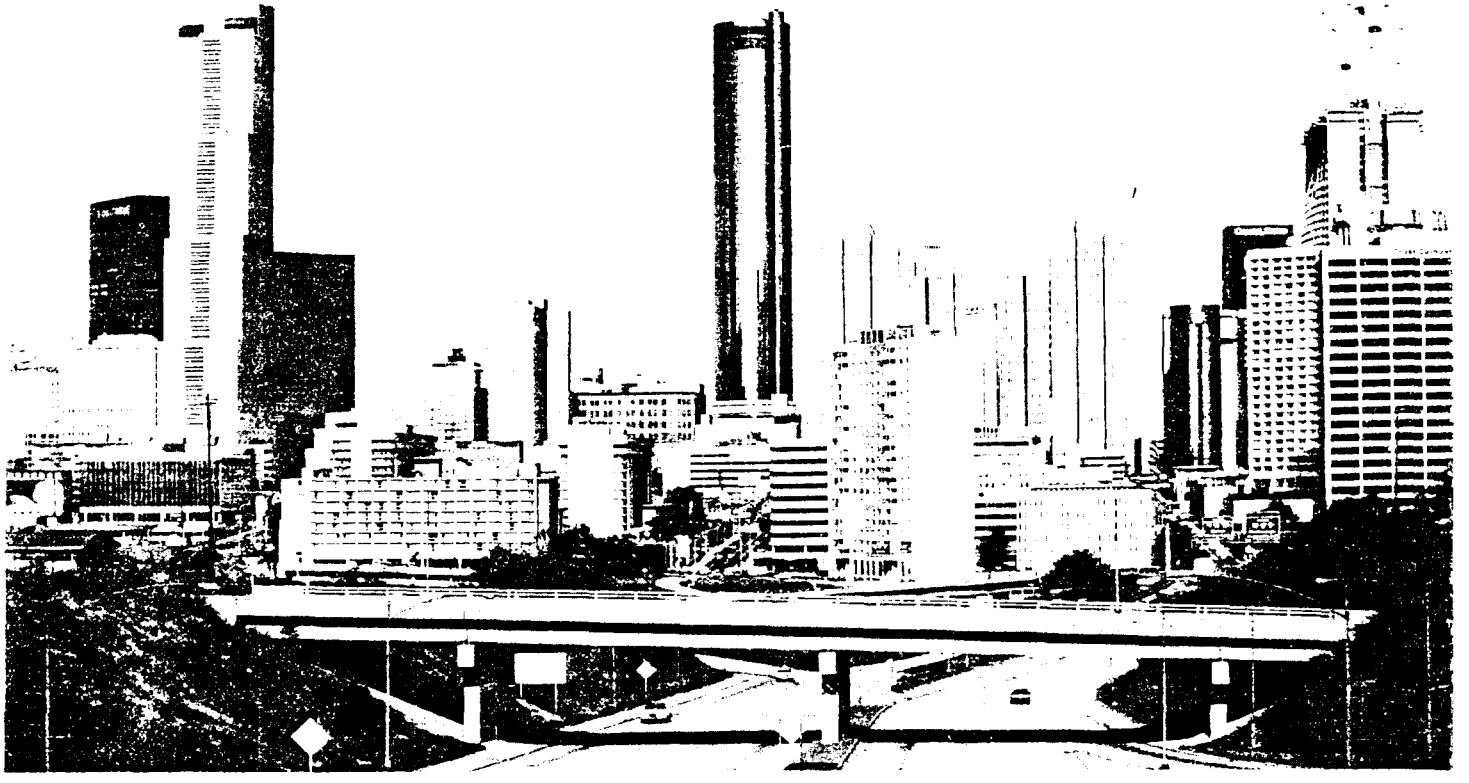
The Piedmont and Blue Ridge region has long been known as an area generally unfavorable for ground water development. This reputation seems to have resulted both from the small reported yields of the numerous domestic wells in use in the region that were, generally, sited as a matter of convenience and from a failure to apply existing technology to the careful selection of well sites where moderate yields are needed. As water needs in the region increase and as reservoir sites on streams become increasingly more difficult to obtain, it will be necessary to make more intensive use of ground water.

REF. 18

STEPHEN VAN JOHNSON

GEOLOGY OF THE GREATER ATLANTA REGION

Keith I. McConnell and Charlotte E. Abrams



Department of Natural Resources
J. Leonard Ledbetter, Commissioner

Environmental Protection Division
Harold F. Reheis, Assistant Director

Georgia Geologic Survey
William H. McLemore, State Geologist

Atlanta
1984

BULLETIN 96

GEOLOGY OF THE GREATER ATLANTA REGION

Keith I. McConnell and Charlotte E. Abrams

ABSTRACT

The oldest rocks present in the Greater Atlanta Region (i.e., Corbin Gneiss Complex) are exposed in the crest of the Salem Church anticlinorium, a major northeast trending fold in the Blue Ridge portion of the study area. Nonconformably overlying these 1 b.y.-old Grenville gneisses are metasedimentary rocks of the Pinelog and Wilhite Formations. These two formations are interpreted as lithostratigraphic equivalents of units within the late Precambrian Snowbird and Walden Creek Groups of the Ocoee Supergroup. Stratigraphically above the Wilhite Formation is a metamorphosed clastic sequence that is interpreted as a lithostratigraphic equivalent of the Great Smoky Group as defined to the northeast of the study area. Rocks of the Murphy belt group are exposed in the Murphy synclinorium conformably above the Great Smoky Group. The Murphy belt group is composed predominantly of a metamorphosed succession of clastic rocks and also includes the Murphy Marble. The Murphy belt group does not extend southwest of the Murphy synclinorium east of Cartersville; however, rocks of the Great Smoky Group trend around the reentrant in the Cartersville fault into what is referred to as the Talladega belt. Units of the Talladega belt in this area are at least partially equivalent to the Ocoee Supergroup and therefore are late Precambrian in age.

Lithologic units of the Blue Ridge are separated from the rocks of the northern Piedmont by the Allatoona fault. The northern Piedmont can be divided into two major lithologic units, New Georgia and Sandy Springs Groups. The New Georgia Group is interpreted to contain the oldest units in this portion of the northern Piedmont and is characterized by a metamorphosed sequence of predominantly felsic and mafic volcanic and plutonic lithologies. The Sandy Springs Group is interpreted to conformably overlie the New Georgia Group and is composed dominantly of interlayered metavolcanic and metasedimentary rocks with a decreasing metavolcanic component upward in the stratigraphic sequence. Eastern and western belts of the Sandy Springs Group are separated by the Chattahoochee fault, a major tectonic boundary in the northern Piedmont.

Northern Piedmont rocks are separated from similar lithologies and stratigraphic sequences in the southern Piedmont by the Brevard fault zone. In the Greater Atlanta Regional Map area, the Brevard zone is a zone of early ductile and late, brittle shearing that is interpreted to have formed, at least in part, as a result of high strain along the axial zone of a large F_1 isocline. No major vertical displacement is apparent along this segment of the Brevard zone.

South of the Brevard fault zone, units defined as Atlanta Group by previous workers are interpreted in this report to be exposed in a large-scale synformal anticline. The Atlanta Group is characterized by metamorphosed sedimentary and volcanic rocks that have many similarities to lithologies north of the Brevard zone. Possible correlations between the Atlanta Group and the New Georgia and Sandy Springs Groups are presented in this report.

Paleozoic plutonic rocks present within the Greater Atlanta Regional Map area are divided into three major categories based upon chemical composition, depth of intrusion and time of intrusion relative to Paleozoic metamorphism. Earliest (category 1) intrusions were emplaced at shallow levels coincident with volcanism, are concordant to the regional trend, and are characterized by dacitic subvolcanic plutons and volcanics. Category 2 plutons were intruded syntectonically, at an intermediate level in the crust, and are characterized by moderately high concentrations of potassium, nearly concordant contacts with the country rocks and a lack of any association with volcanism. Both category 1 and 2 plutons have a metamorphic overprint. The final category of Paleozoic intrusive rocks present in the study area is dominantly granitic in composition, lacks a metamorphic overprint, is discordant to the regional trend and does not have a volcanic component. Plutons of category 3 are known to occur only south of the Brevard fault zone.

Two major regional progressive metamorphic events and seven deformational events have been recognized in the study area. The earliest deformation and metamorphism recognized occurred during the Grenville orogeny (approximately 1,000 m.y. ago) and is reflected only in basement gneisses of the Blue Ridge. The second metamorphic event is interpreted to have occurred approximately 365 m.y. ago and was associated with a major episode of isoclinal recumbent folding (F_1). Axial planar foliation (S_1) associated with this fold event represents the dominant planar feature in crystalline rocks of the area. Folds related to this deformation have not been recognized within the Valley and Ridge west of the Cartersville fault, partially supporting the existence of the fault east of Cartersville. F_2 folding postdated Paleozoic metamorphism and is responsible for the geometry of outcrop patterns in the Greater Atlanta Region. Subsequent folding events (F_3 and F_4) interfere with earlier fold patterns and complicate outcrop patterns of map units.

Twenty-eight commodities have been mined or prospected within the boundaries of the Greater Atlanta Regional Map. Of these various commodities only barite, ocher, sand, granite (dimension stone and crushed), limestone, structural clays, and marble are still being mined. Areas of extensive mining and (or) prospecting include the limestone, bauxite, and shale deposits of Floyd and Polk Counties; barite, ocher, iron and manganese deposits of the Cartersville district; volcanogenic massive sulfide and gold deposits in the northern Piedmont; and crushed and dimension stone from quarries in the Stone Mountain, Panola, Palmetto, and Ben Hill Granites and Lithonia Gneiss south of the Brevard fault zone and in the Austell, Sand Hill, Kennesaw and Dallas gneisses north of the Brevard zone.

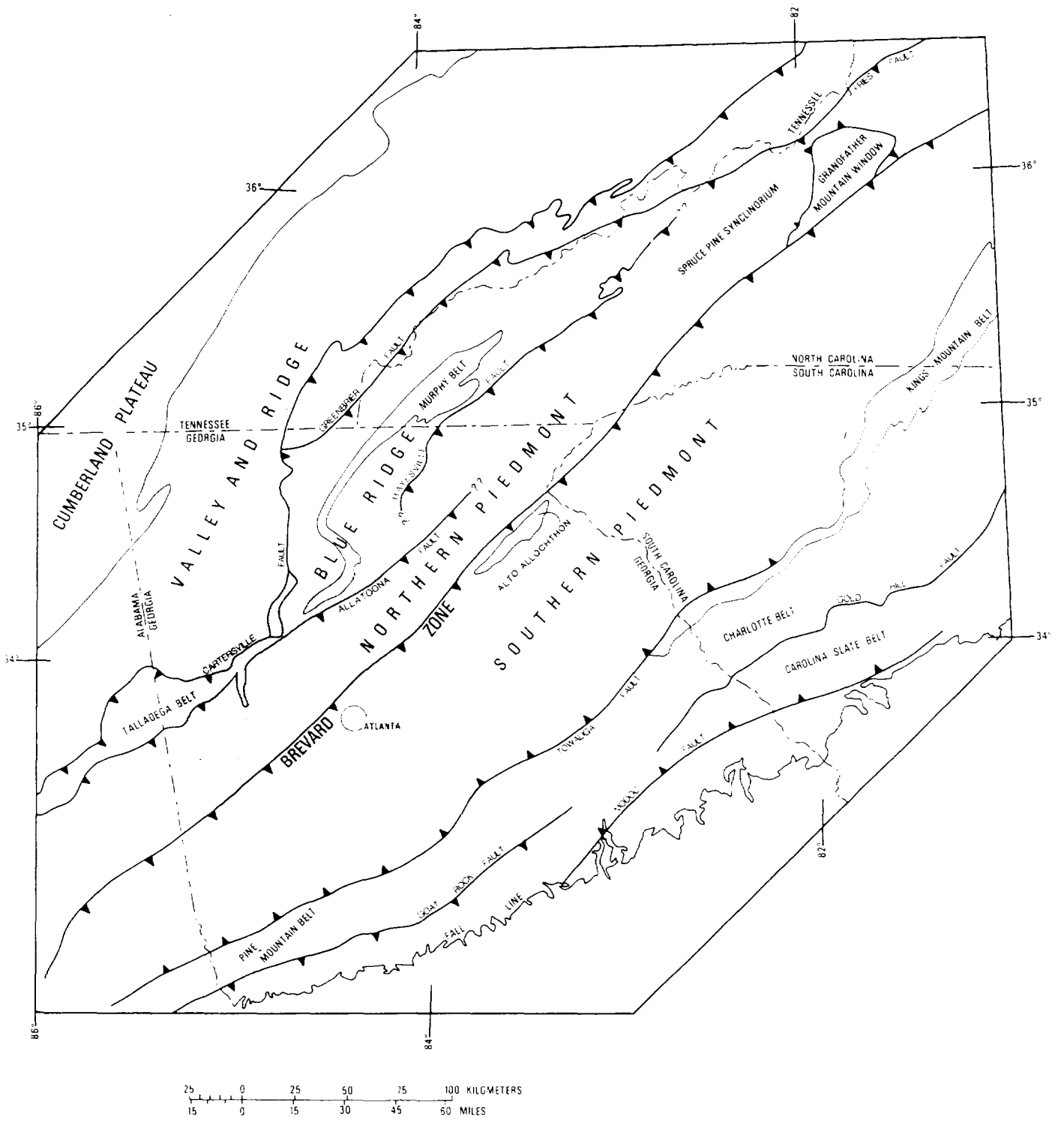


Figure 2. Regional location map showing boundaries of the Greater Atlanta Regional Map and regional setting of map area (modified after McConnell and Costello, 1982).

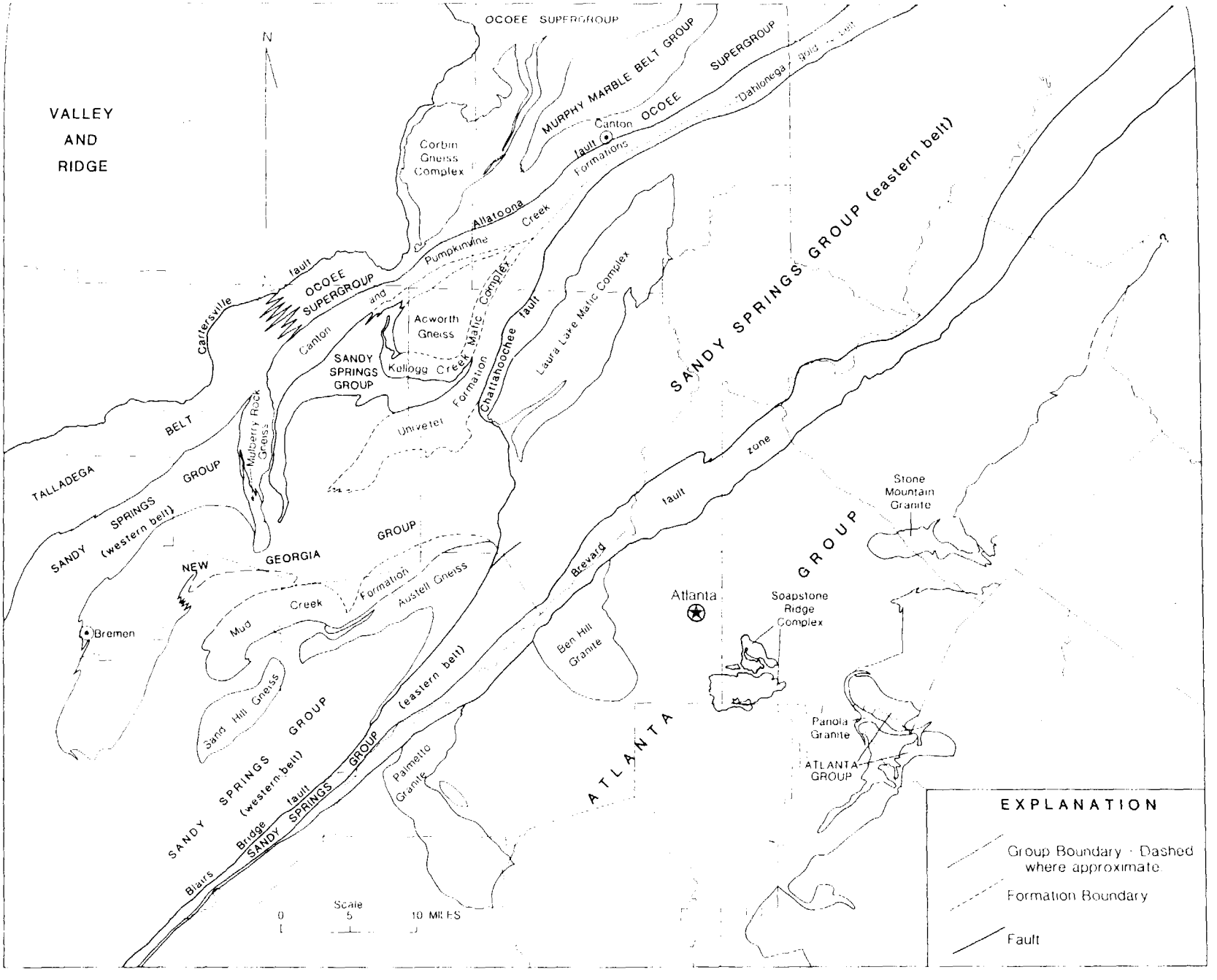


Figure 11. Group and formation boundaries of the crystalline rocks of the Greater Atlanta Regional Map.

Stratigraphic control is another aspect to the Brevard fault zone. Hatcher (1975, 1978a) indicated that the Brevard fault zone was stratigraphically controlled for at least part of its length and is bordered by several equivalent rock units (i.e., Heard group, Sandy Springs Group, Tallulah Falls Formation, Ashe Formation) for most of its length. In the Greater Atlanta Regional Map area, the stratigraphic distinction is not as clear as it is to the northeast. Although the Sandy Springs Group is present along the northwestern boundary of the Brevard zone in the Greater Atlanta Region, the absence of units defined as Chauga River Formation (Hatcher, 1969) south of Flowery Branch complicates the issue of stratigraphic control of the Brevard zone. In this area, rocks of the Sandy Springs Group occur on both sides of the Brevard fault zone (Kline, 1980, 1981). However, the Wolf Creek Formation (Higgins and Atkins, 1981), a unit composed of thinly laminated amphibolite interlayered with "button" schist, is lithologically and texturally similar to and in the same relative tectonic position as the Poor Mountain Formation in northeastern Georgia where the Poor Mountain Formation borders on the Alto Allochthon (Hatcher, 1978b). The Wolf Creek Formation may represent the lithostratigraphic equivalent of a portion of the Poor Mountain Formation and the stratigraphic association of the Brevard fault zone readily apparent to the northeast would be present at least as far southwest as Atlanta. A speculative extension of this correlation would be that the rocks exposed in the Newnan-Tucker synform may represent another allochthon resting on Poor Mountain Formation equivalents.

SOUTHERN PIEDMONT

In the recent past, the so-called "belt" terminology or geographic separation of rocks (i.e., northern and southern) was criticized for its ambiguity and in some cases its inapplicability (Crawford and Medlin, 1970; Medlin and Crawford, 1973; McConnell, 1980b). However, no suitable replacement was proposed to enable geographic placement of various rock sequences within the regional geologic framework. In the Atlanta area, rock sequences north of the Brevard fault zone were redefined by one set of workers (McConnell and Costello, 1980b; Abrams and McConnell, 1981a; McConnell and Abrams, 1982a, 1982b; this report), while south of the Brevard, another set of workers has redefined stratigraphic relationships (Atkins and Higgins, 1980; Higgins and Atkins, 1981). Although similar rocks and stratigraphic sequences exist on both sides of the Brevard zone, little effort has gone into relating the two areas. Thus, the geologic distinction between rocks on either side of the Brevard zone is more apparent than real.

Atlanta Group

Studies of stratigraphic relationships within that portion of the Greater Atlanta Regional Map southeast of the Brevard zone generally are limited to two reports (Atkins and Higgins, 1980; Higgins and Atkins, 1981). These reports define a stratigraphic succession of rocks (Atlanta Group, Fig. 11) that occurs in either a synformal anticline or a synformal syncline (Higgins and Atkins, 1981). Higgins and Atkins (1981) interpret this structure as a syncline, but indicate that the stratigraphic sequence they propose is inverted if the alternative hypothesis is correct. Many rock units defined by Higgins and Atkins (1981) are lithologically similar to units defined northwest of the Brevard fault zone (Appendix A gives a brief description of all rock units in the Greater Atlanta Regional Map south of the Brevard fault zone). In the Atlanta area, Kline (1980, 1981) and McConnell (1980b) indicated that rocks of the Sandy Springs Group are present on both sides of the Brevard fault zone. This is consistent with observations farther northeast (Hatcher, 1978b), as well as those related to this report (Plate Ia). The recognition that similar rock sequences exist on both sides of the Brevard zone opens the way for a reinterpretation of stratigraphic relationships within Higgins and Atkins' (1981) Atlanta Group using age and structural relationships established north of the Brevard zone. Rocks northwest of the Brevard zone can serve as a guide for stratigraphic interpretation because of the nonconformable relationship between Grenville basement and Sandy Springs Group equivalent Tallulah Falls Formation in northeastern Georgia (Hatcher, 1974, 1977). Therefore, some indication of stratigraphic "up" is available northwest of the Brevard zone. Comparing mineralogical characteristics of some units in the Atlanta Group with those defined in the northern Piedmont also allows for the reinterpretation of the origin of several rock units defined by Higgins and Atkins (1981), in particular, the Intrenchment Creek Quartzite. The Intrenchment Creek Quartzite is defined as a spessartine-bearing quartzite (coticule rock) and mica schist unit that is composed locally of 15 to 30 percent spessartine garnet and 70 to 85 percent quartz (Higgins and Atkins, 1981). The chemical composition of this rock is attributed to be the result of "halmyrolytic alteration" of oceanic sediments associated with mafic volcanic rocks by Higgins and Atkins (1981, pg. 20). However, spessartine-bearing quartzites are common in the predominantly volcanogenic New Georgia Group northwest of the Brevard zone and in volcanogenic sequences elsewhere (John Slack, personal commun., 1982). In the New Georgia Group spessartine quartzites are associated with banded iron formation. In addition, manganiferous quartzites are a facies of banded iron formation in the Draketown area and contain up to 53 percent manganese (Abrams and McConnell, unpublished data). We suggest that a more likely origin for the Intrenchment Creek Quartzite is derivation from exhalative processes and deposition as a siliceous chemical sediment within a volcanic terrain. The aluminous nature of the quartzite may suggest inclusion of a clay fraction (Abrams and McConnell, 1982b). The presence of garnet facies iron formation in association with mafic and felsic volcanics (i.e., Camp Creek and Big Cotton Indian Creek Formations; Higgins and Atkins, 1981) southeast of the Brevard fault zone is similar to relationships observed in the New Georgia Group northwest of the Brevard zone. The fact that similar stratigraphic sequences are present on both sides of the Brevard zone (Hatcher, 1972, 1978b; Crawford and Medlin, 1973; Kline, 1980, 1981; McConnell, 1980b) and that lithologic similarities exist between the New Georgia Group and the Intrenchment Creek Quartzite, Camp Creek Formation, Big Cotton Indian Creek sequence suggest that they formed in similar environments, possibly contemporaneously. If the above-mentioned stratigraphic sequences are coeval, a basis for reinterpreting the character of the Newnan-Tucker synform (Higgins and Atkins, 1981) exists. In this report, the Camp Creek Formation, Big Cotton Indian Creek Formation and Intrenchment Creek Quartzite

are interpreted as the oldest units in the Atlanta Group (analogous to the New Georgia Group northwest of the Brevard fault zone) and the Newnan-Tucker synform, therefore, is a synformal anticline with stratigraphically younger units occurring on limbs of the structure (Plate I). Sandy Springs Group rocks and their probable equivalents[1] in the Atlanta Group (Table 11, Plate Ib) are present on the limbs of the synform and stratigraphically overlie New Georgia Group equivalents (Plate I).

We also suggest that the relationship of Snellville Formation rocks to the Lithonia Gneiss is more likely a fault than an unconformity as previously suggested by Atkins and Higgins (1980). Atkins and Higgins (1980) interpreted this contact as an unconformity, but also gave evidence for characterizing this contact as a fault. This bulletin favors the latter interpretation of this contact primarily because of evidence cited by Atkins and Higgins (1980). Also, the "unconformity" interpretation requires a second Paleozoic metamorphic event for which, in the Greater Atlanta Region, there is a lack of strong evidence. However, due to a lack of detailed mapping in the area by the authors of this bulletin, the contact is expressed as a stratigraphic contact on Plate I.

Outside of the area mapped by Higgins and Atkins (1981) little to no data are available for compilation. Information that does exist is in the form of open-file maps. Other areas (i.e., the easternmost part of the Greater Atlanta Regional Map) where no detailed data are available for compilation are left blank (Plate I). Open-file mapping of Crawford and Medlin (Georgia Geologic Survey, 1976) was used in the southwesternmost portion of the Greater Atlanta Regional Map.

[1] Lithologic descriptions of rocks in the Wolf Creek Formation, Norcross Gneiss and, in part, the Promised Land Formation (Atkins and Higgins, 1980) resemble lithologies in the New Georgia Group and may represent New Georgia equivalents. This correlation would require that other members of the Atlanta Group be part of an allochthonous sheet resting on the Wolf Creek Formation, etc. as was previously proposed in the Brevard Fault Zone section.

Regional Correlations

The similarity between rock units and stratigraphic sequences across the Brevard fault zone was previously discussed in this and previous reports (Crawford and Medlin, 1973; Hatcher, 1972, 1978b). In general, correlatives of the Sandy Springs and New Georgia Groups are believed to occur southeast of the Brevard fault zone in rocks defined as Atlanta Group. We speculate that, although complicated by intrusion of late Paleozoic plutons and the presence of large migmatitic terranes such as the Lithonia Gneiss, rocks defined as Atlanta Group by Higgins and Atkins (1981) probably were deposited in similar environments and had similar provenance to the New Georgia and Sandy Springs Group rocks. Therefore, correlations made in a previous section for rocks of the New Georgia and Sandy Springs Groups (i.e., equivalent to Ashe Formation) may be applicable for rocks of the Atlanta Group.

PLUTONIC ROCKS

Post Grenville-age intrusive rocks generally are limited to the Piedmont portion of the Greater Atlanta Region, although numerous pegmatites occur in the Blue Ridge (Galpin, 1915). In the Greater Atlanta Regional Map area, plutons of known Grenville and possibly older age are restricted to the Corbin Gneiss Complex east of a Cartersville in the Blue Ridge province (Fig. 4) where a 1,000-m.y.-old, coarse, megacrystic facies crosscuts a metasedimentary precursor (Costello, 1978; McConnell and Costello, 1984).

Table 11. Proposed correlation chart of northern and southern Piedmont lithologic units.

Atlanta Group modified after Higgins and Atkins, 1981		Sandy Springs and New Georgia Groups this paper
Snellville Formation	Norris Lake Schist	Factory Shoals Formation
	Lanier Mountain Quartzite Member	Chattahoochee Palisades Quartzite
Inman Yard Formation	Promised Land Formation	Powers Ferry Formation Undifferentiated
Norcross Gneiss	Wolf Creek Formation	
Clairmont Formation	Senoia Formation	
Wahoo Creek Formation		
Stonewall Formation		
Clarkston Formation	Fairburn Member	
	Tar Creek Member	
Big Cotton Indian Formation	Intrenchment Creek Quartzite	New Georgia Group
Camp Creek Formation		

ag	**Austell Gneiss** (Abrams and McConnell, 1981a; Abrams, 1983): fine- to coarse-grained blastoporphyritic to nonporphyritic orthogneiss composed of muscovite, biotite, oligoclase, quartz and microcline.
shg	**Sand Hill Gneiss** (this report): fine- to coarse-grained blastoporphyritic to nonporphyritic orthogneiss composed of muscovite, biotite, oligoclase, quartz and microcline. Generally contains more muscovite, quartz and plagioclase and less microcline than Austell Gneiss.
mrg	**Mulberry Rock Gneiss** (this report): medium-grained, equigranular muscovite-quartz-microcline-plagioclase orthogneiss.
d	**Diabase dikes**

SOUTHERN PIEDMONT PROVINCE AND BREVARD FAULT ZONE

Atlanta Group (late Precambrian to early Paleozoic)
(stratigraphic order revised after Higgins and Atkins, 1981):

cc	**Camp Creek Formation** (Higgins and Atkins, 1981): massive granite gneiss interlayered with thin, fine-grained, dark-green hornblende-plagioclase amphibolite.
icq	**Intrenchment Creek Quartzite** (Higgins and Atkins, 1981): spessartine quartzite and spessartine-mica schist interpreted in this report to be banded iron formation.
bci	**Big Cotton Indian Formation** (Higgins and Atkins, 1981): intercalated biotite-plagioclase gneiss (locally porphyritic), hornblende-plagioclase amphibolite, and biotite-muscovite schist.
ca tc f	**Clarkston Formation** (Higgins and Atkins, 1981): sillimanite-garnet-quartz-plagioclase-biotite-muscovite schist interlayered with hornblende-plagioclase amphibolite (ca). Includes a unit composed only of schist termed the Fairburn Member (f); and a unit similar to Clarkston undifferentiated termed the Tar Creek Member (tc).
st	**Stonewall Formation** (Higgins and Atkins, 1981): intercalated fine-grained biotite gneiss, hornblende-plagioclase amphibolite and sillimanite-biotite schist.
wac	**Wahoo Creek Formation** (Higgins and Atkins, 1981): includes slabby, medium-grained muscovite-plagioclase-quartz gneiss, amphibolite, mica schist and epidote-calcite-diopside gneiss (calc-silicate).
se	**Senoia Formation** (Atkins and Higgins, 1981): garnet-biotite-muscovite schist interlayered with fine-grained amphibolite, local thin layers of spessartine quartzite (iron formation?), sillimanite schist and biotite gneiss.
cl	**Clairmont Formation** (Higgins and Atkins, 1981): interlayered medium-grained biotite-plagioclase gneiss and fine- to medium-grained hornblende-plagioclase amphibolite.
pl h	**Promised Land Formation** (Higgins and Atkins, 1981): includes massive to thinly layered, medium-grained, gray, banded biotite granite gneiss interlayered with fine-grained, dark-green to greenish black, blocky amphibolite. A thin quartzite and muscovite quartz schist unit near top of the Promised Land Formation is termed the Hannah Member (h).
wc	**Wolf Creek Formation** (Higgins and Atkins, 1981): thinly laminated, fine-grained amphibolite interlayered with lustrous, silvery, gray, biotite-muscovite schist.

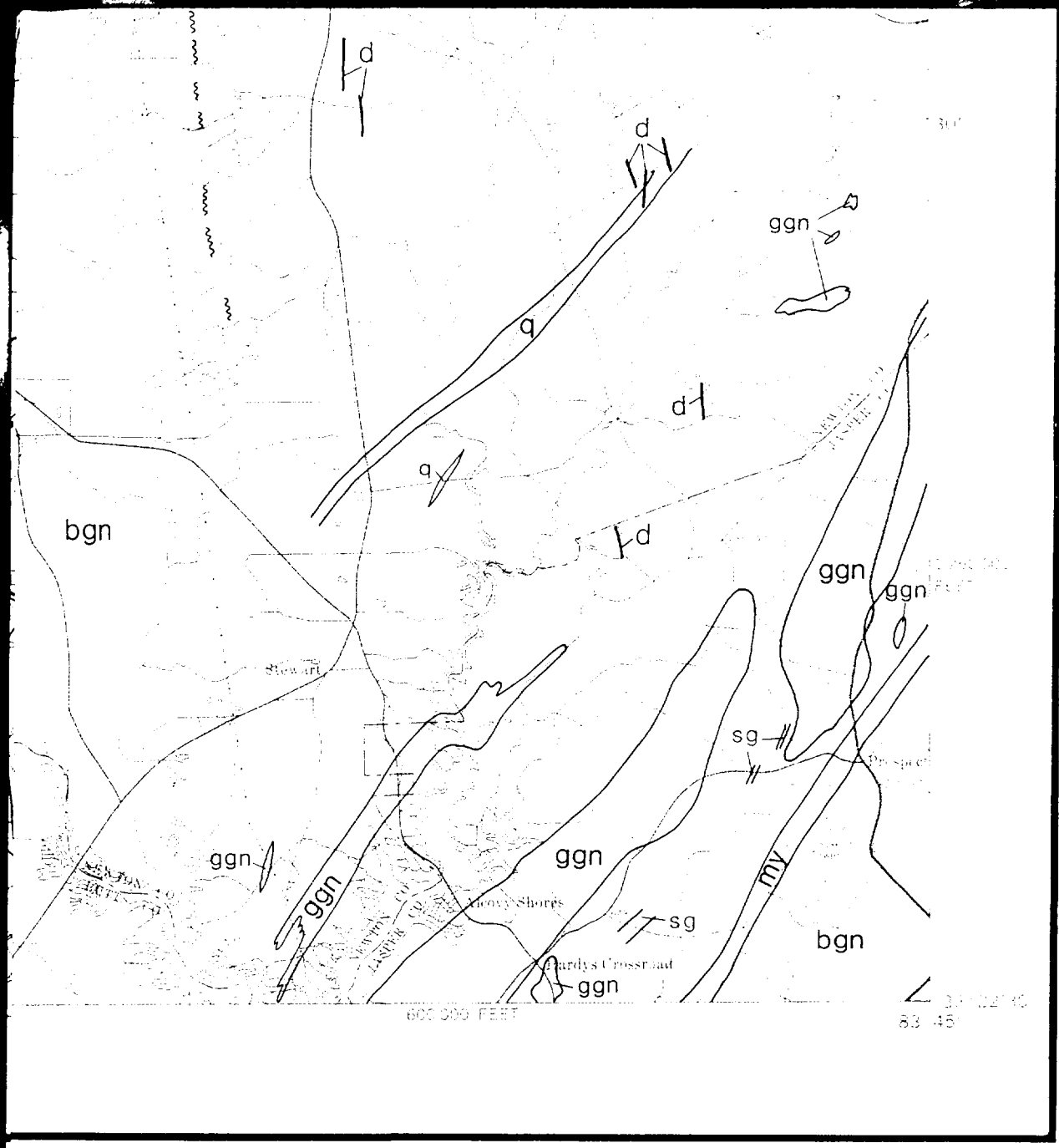
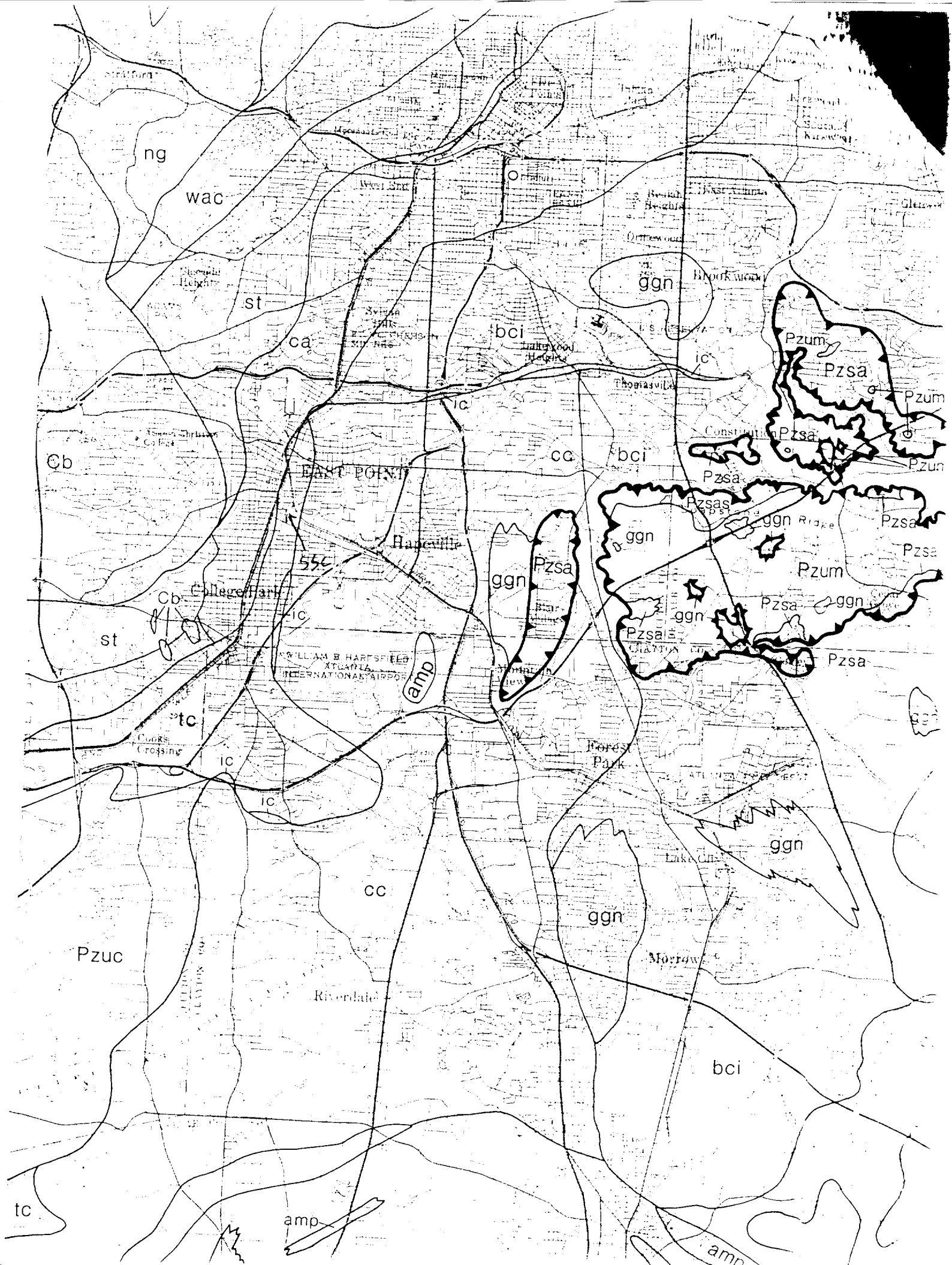


Plate I East, Bulletin 96

STEPHEN VAN JOHNSON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F FORMATION

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t. TALLADEGA BELT ROCKS
UNDIFFERENTIATED

ATION: includes Wilhite Formation
ated (pEwu), carbonaceous
wg), and sandy carbonate (pEwc).

ATION

S COMPLEX

STEPHEN VAN JOHNSON

Piedmont and Brevard Fault Zone

fied after Atkins and Higgins, 1980; and Kline, 1981)

d — diabase dikes

my, bz, bzm — Ductally sheared rocks: includes Brevard fault zone undifferentiated (bz), Brevard zone mylonites (bzm), and other mylonites (my).

Cpa — PANOLA GRANITE

Cb — BEN HILL GRANITE

des the
the

lig — LITHONIA GNEISS

Pzss, Pzsa, Pzsas — SOAPSTONE RIDGE COMPLEX: includes a schist unit (Pzss), an amphibolite unit (Pzsa), an amphibolite and schist unit (Pzsas) and a coarse-grained ultramafic unit (Pzum).

fs — FACTORY SHOALS FORMATION

CHATTAHOOCHEE PALISADES QUARTZITE

ED AND UNNAMED ROCKS

um — meta-ultramafic rocks

amp — [illegible] gneiss

bgn — predominantly biotite gneiss

ggn — granitic gneiss

Pzss	Pzum
Pzsa	Pzsas

SOAPSTONE RIDGE COMPLEX: includes a schist unit (Pzss), an amphibolite unit (Pzsa), an amphibolite and schist unit (Pzsas) and a coarse-grained ultramafic unit (Pzum).

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EK QUARTZITE

- fs — FACTORY SHOALS FORMATION
- cpq — CHATTAHOOCHEE PALISADES QUARTZITE
- pfu — POWERS FERRY FORMATION UNDIFFERENTIATED

SANDY SPRINGS GROUP

NEW GEORGIA GROUP

UNASSIGNED AND UNNAMED ROCKS

- um — meta-ultramafic rocks
- amp — amphibolite and hornblende gneiss
- bgn — predominantly biotite gneiss
- ggn — granitic gneiss
- sg — sillimanite-graphite schist
- m — marble
- bgn/amp/sch — biotite gneiss, amphibolite, and mica schist undifferentiated
- q — quartzite
- bms — biotite muscovite schist

Symbols

CONTACT, DASHED WHERE INFERRED

THRUST FAULT, DASHED WHERE INFERRED

D U REVERSE FAULT, DASHED WHERE INFERRED, DOTTED WHERE UNCERTAIN

FAULT TRACE

STRIKE-SLIP FAULT

E X P L A N A T I O N

le

Blue Ridge

hers, 1979)

(modified after McConnell and C

undifferentiated (Mfs),
and limestone (Ml).

ONIAN AGE: includes Mississippian
ed (MDc), Fort Payne Chert (Mfp),
rmuchee Chert (Da

DIVIDED: includes Murfreesboro, Ridley,

ne, conglomerate, and slate (Ors), and

ndivided; Longview Limestone, Chepultepec
te (OCk), and Copper Ridge Dolomite (Ꞓcr).

includes Western and Eastern belts in
its of mostly shale and some limestone
tone and some shale (Ꞓcls), siliceous
d sandstone (Ꞓcs), dolomite (Ꞓcd), shale
(Ꞓc), and mostly slate (Ꞓcs). In the
light to medium gray and brown dolomite
y, tan, purplish and blue slate (Ꞓcly),
enish, gray, and slightly purplish shale
omite (Ꞓcld).

Lower Paleozoic ?	Murphy Belt Group	Pzmb	Mineral Bluff Formation
		Pzmm	Murphy Marble and Marble undifferentiated.
		,Pzb	Brasstown Formation
		Pzna	Nantahala Formation
Proterozoic Z and (or) Lower Paleozoic	Ocoee Supergroup	Great Smoky Group	p€d	Dean Formation
			p€sc	Sweetwater Creek Formati
			p€et	Etowah Formation
		Walden Creek Group	p€wg, p€wc, p€wu	Wilhite Formation: includ undifferentiated (p€wu), c phyllite (p€wg), and sandy
		Snowbird Group	p€p	Pinelog Formation
Proterozoic Y			p€c	Corbin Gneiss Complex

enis... gray, and slightly purplish shale
omite (Ꞓcld).

merate and quartzite with interlayers of
), and graphitic shale and phyllite (Ꞓchs).

Southern Piedmon

nd Costello, 1980b;

(modified after Atki

MESOZOIC

CARBONIFEROUS

MIDDLE PALEOZOIC

LOWER PALEOZOIC

sha SAND HILL GNEISS

FACTORY SHOALS FORMATION

CHATTAHOOCHEE PALISADES QUARTZITE

POWERS FERRY FORMATION: includes the Mableton Amphibolite (ma), a mica schist facies (pfs), and undifferentiated biotite gneiss, mica schist and amphibolite (pfu).

LONG ISLAND GNEISS (age and stratigraphic position uncertain).

chlorite-bearing ... biotite, or ...

magnetite quartz ... iron format...

muscovite ... granite ...

kyanite ... and ... kyanite ...

carbonaceous ...

Cs STONE MOUNTAIN GRANITE

sr t Cp PALMETTO GRANITE: includes the Shake Rag phase (sr), and the Tyrone phase (t).

SNELLVILLE FORMATION: includes the ... Member (n) and the ... Mountain Quartzite Member (l).

ig — LONG ISLAND GNEISS (age and stratigraphic position uncertain).

cs — chlorite-bearing schist ± garnet, biotite, or anthophyllite

bif — magnetite quartzite (banded iron formation)

kq — muscovite kyanite quartz granofels ± pyrite

kqs — kyanite muscovite quartz schist and sericite quartzite ± kyanite and pyrite

gs — carbonaceous schist

s/hgn — sericite schist with interlayered quartzite and hornblende gneiss

ss — sericite schist with interlayered quartzite

qms — quartz muscovite schist

gms — garnet muscovite schist

gms — biotite garnet muscovite schist

eq — epidote quartzite

q — quartzite

amb — amphibolite/hornblende gneiss undifferentiated

amb/gn/gn — amphibolite, hornblende gneiss, and felsic gneiss

ggn / fgn — granitic gneiss (ggn) and felsic gneiss (fgn) of unknown composition

gab — metagabbro

um — meta-ultramafic rocks, includes anthophyllite-chlorite hydrothermal alteration assemblages

PROTEROZOIC Y AND (OR) Z AND (OR) LOWER PALEOZOIC

Pzss

Pzsc

n, l — SNELLVILLE FORMATION: includes the Norris Lake Schist Member (n) and the Lanier Mountain Quartzite Member (l).

ATLANTA GROUP

iy — INMAN YARD FORMATION

pl, h — PROMISED LAND FORMATION: includes the Hannah Member (h)

ng — NORCROSS GNEISS

wc — WOLF CREEK FORMATION

cl — CLAIRMONT FORMATION

se — SENOIA FORMATION

wac — WAHOO CREEK FORMATION

st — STONEWALL FORMATION

f, tc, ca — CLARKSTON FORMATION: includes the Fairburn Member (f), Tar Creek Member (tc), and undifferentiated Clarkston Formation (ca).

bci — BIG COTTON INDIAN FORMATION

icq — INTRENCHMENT CREEK QUARTZITE

cc — CAMP CREEK FORMATION

E

Valley and Ridge

(after Cressler, 1970; and Cressler and others, 1979)

CARBONIFEROUS

PENNSYLVANIAN

Pu — PENNSYLVANIAN ROCKS UNDIVIDED

MISSISSIPPIAN

Mb — BANGOR LIMESTONE

Mh, Mfs, Ml — FLOYD SHALE: includes Floyd Shale undifferentiated (Mfs), Hartselle Sandstone Member (Mh), and limestone (Ml).

DEVONIAN

MDc, Mfp, Mls, Da — CHERT OF MISSISSIPPIAN AND DEVONIAN AGE: includes Mississip and Devonian Chert undifferentiated (MDc), Fort Payne Chert (Mfp) Lavender Shale Member (Mls), and Armuchee Chert (Da).

SILURIAN

Srm — RED MOUNTAIN FORMATION

ORDOVICIAN

Oum — UPPER AND MIDDLE ORDOVICIAN UNDIVIDED: includes Murfreesboro Moccasin, and Bays Formations.

Ors, Or — ROCKMART SLATE: includes sandstone, conglomerate, and slate (Ors slate and siltstone (Or).

On — NEWALA LIMESTONE

O€k, €cr — KNOX GROUP: includes Knox Group undivided; Longview Limestone, Cr Dolomite, and Copper Ridge Dolomite (O€k), and Copper Ridge Dolor

CAMBRIAN

Western belt	Eastern belt	Cartersville area
€csl	€cd	€cld
€cls	€c	€csu
€cs	€cs	€cl
		€csl
		€cd

CONASAUGA GROUP: includes Western and Eastern be Floyd County with units of mostly shale and some lim (€csl), mostly limestone and some shale (€cls), sili shale and thin bedded sandstone (€cs), dolomite (€cs and limestone mixed (€c), and mostly shale (€cs). I Cartersville area: light to medium gray and brown c (€cd), greenish, gray, tan, purplish and black shal limestone (€cl), greenish, gray, and slightly purpl (€csu), and gray dolomite (€cld).

€r — ROME FORMATION

CAMBRIAN

Western belt	Eastern belt	Cartersville area
Ꞓcls / Ꞓcs	Ꞓc / Ꞓcs	Ꞓcsl / Ꞓcd

shale and thin bedded sandstone (Ꞓcs), [illegible] and limestone mixed (Ꞓc), and mostly shale (Ꞓcs). In Cartersville area: light to medium gray and brown do (Ꞓcd), greenish, gray, tan, purplish and black shale limestone (Ꞓcl), greenish, gray, and slightly purplis (Ꞓcsu), and gray dolomite (Ꞓcld).

Ꞓr — ROME FORMATION

Ꞓs — SHADY DOLOMITE

Ꞓchq / Ꞓchs — CHILHOWEE GROUP: includes conglomerate and quartzite with interl graphitic shale and phyllite (Ꞓcnq), and graphitic shale and phyll

Northern Piedmont

(modified after Crawford and Medlin, 1974; Higgins and McConnell, 1978a; McConnell and Costello, 1980b; and Abrams and McConnell, 1981a)

PALEOZOIC MESOZOIC

d — diabase dikes

ag — AUSTELL GNEISS

mrg — MULBERRY ROCK GNEISS

shg — SAND HILL GNEISS

SANDY SPRINGS GROUP (western belt)

ba — BILL ARP FORMATION

amu / amq — ANDY MOUNTAIN FORMATION: includes a quartzite member (amq) and undifferentiated schists and gneiss (amu).

dru / drs / dra — DOG RIVER FORMATION: includes undifferentiated biotite gneiss, mica schist and amphibolite (dru), a mica schist facies ± kyanite (drs), and amphibolite (dra).

SANDY SPRINGS GROUP (eastern belt)

fs — FACTORY SHOALS FORMATI

cpq — CHATTAHOOCHEE PALISADE

pfu / pfs / ma — POWERS FERRY FORMATION the Mableton Amphiboli schist facies (pfs), a tiated biotite gneiss, and amphibolite (pfu).

yd — YELLOWDIRT GNEISS: (age and stratigraphic position uncertain).

lig — LONG ISLAND GNEISS stratigraphic position

GROUP (uncertain)

acg — ACWORTH GNEISS

cas — CANTON FORMATION

pcu / gfg — PUMPKINVINE CREEK FORMATION: includes Pumpkinvine Creek undifferentiated (pcu) and Galts Ferry Gneiss (gfg).

vrg — MUD CREEK FORMATION: includes metadacite (Villa [illegible] Cedar Lake Quartzite (clq).

cs — chlorite-bearing schist ± biotite, or anthophyl

bif — magnetite quartzite (band iron formation)

kq — muscovite kyanite quartz granofels ± pyrite

kqs — kyanite muscovite quartz and sericite quartzite ± kyanite ± pyrite

PROTEROZOIC Z AND (OR) LOWER PALEOZOIC

NEW GEORGIA GROUP
(stratigraphic order uncertain)

- **yd** — YELLOWDIRT GNEISS: (age and stratigraphic position uncertain).
- **acg** — ACWORTH GNEISS
- **cas** — CANTON FORMATION
- **pcu / gfg** — PUMPKINVINE CREEK FORMATION: includes Pumpkinvine Creek undifferentiated (pcu) and Galts Ferry Gneiss (gfg).
- **vrg / mcu / clq / mcb** — MUD CREEK FORMATION: includes metadacite (Villa Rica Gneiss, vrg), Cedar Lake Quartzite (clq), Mudd Creek undifferentiated (mcu), and garnet biotite gneiss (mcb).
- **lma / rcs** — UNIVETER FORMATION: includes Lost Mountain Amphibolite (lma) and Rose Creek Schist (rcs).
- **kcc** — KELLOGG CREEK MAFIC COMPLEX
- **llu / lld / llg** — LAURA LAKE MAFIC COMPLEX: includes metagabbro (llg), undifferentiated mafic and intermediate rocks (llu), and quartz diorite gneiss (lld).

UNASSIGNED OR UNNAMED ROCKS

- **lig** — LONG ISLAND GNEISS (age stratigraphic position
- **cs** — chlorite-bearing schist ± biotite, or anthophy
- **bif** — magnetite quartzite (banded iron formation)
- **kq** — muscovite kyanite quartz granofels ± pyrite
- **kqs** — kyanite muscovite quartz schis and sericite quartzite ± kyanite and pyrite
- **gs** — carbonaceous schist
- **ss/hgn** — sericite schist with interlayered quartzite and hornblende gneiss
- **ss** — sericite schist with interlayered quartzite
- **qms** — quartz muscovite schist
- **gms** — garnet muscovite schist
- **bgms** — biotite garnet muscovite schis
- **eq** — epidote quartzite
- **q** — quartzite
- **amp** — amphibolite/hornblende gneiss undifferentiated
- **amp/hgn/fgn** — amphibolite, hornblende gneiss, and felsic gneiss
- **ggn / fgn** — granitic gneiss (ggn) and felsic gneiss (fgn) of unknown composition
- **gab** — metagabbro
- **um** — meta-ultramafic rocks, include anthophyllite-chlorite hyd thermal alteration assembla

REF. 19

GROUND WATER IN THE GREATER ATLANTA REGION, GEORGIA

by

C. W. Cressler, C. J. Thurmond,

and W. G. Hester

Prepared in cooperation with the

U. S. Geological Survey

Department of Natural Resources

Environmental Protection Division

Georgia Geologic Survey

INFORMATION CIRCULAR 63

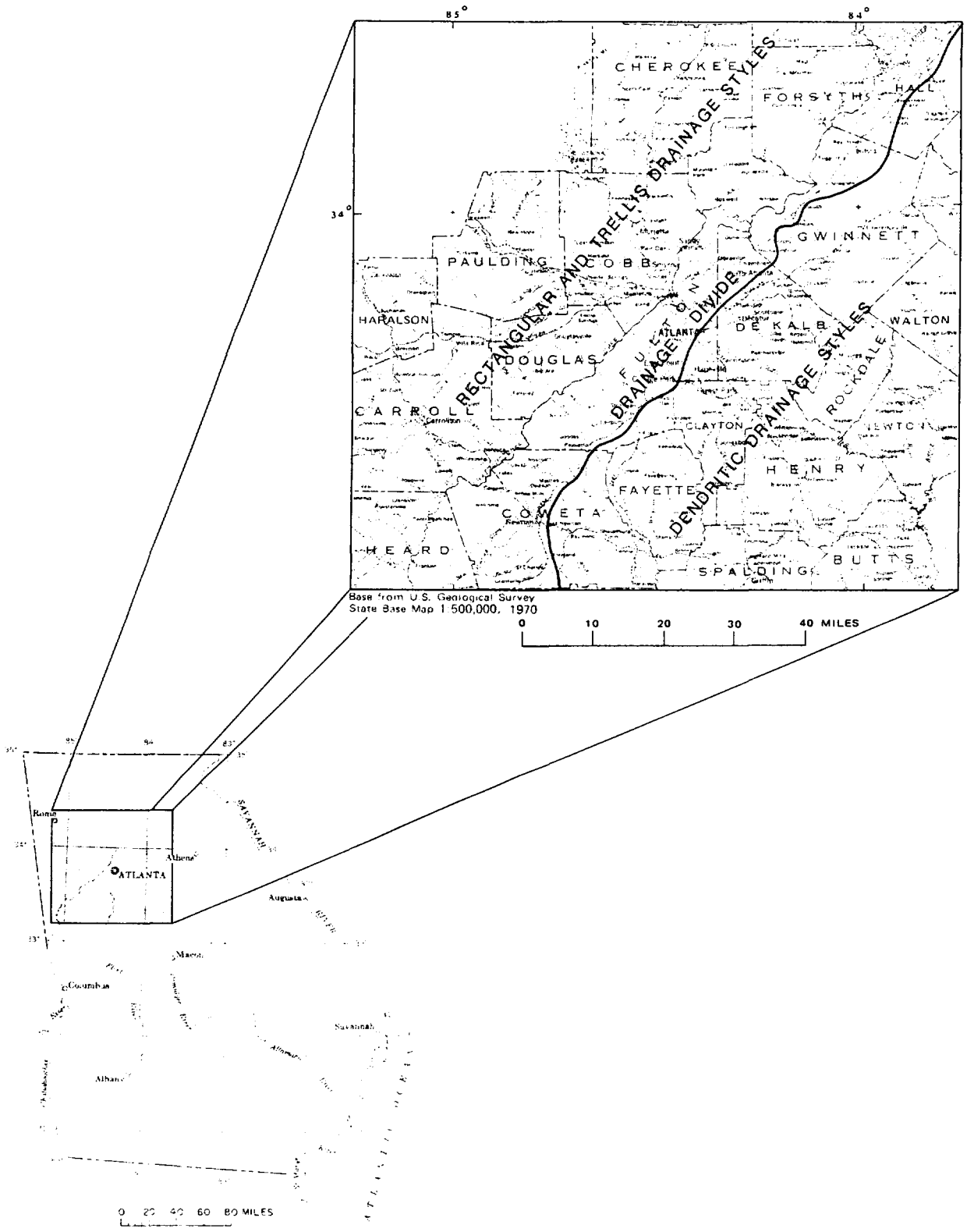


Figure 1. Location of study area.

In table 7, which lists chemical analyses of well water, some wells retain numbers used in previous reports.

WATER-BEARING UNITS AND THEIR HYDROLOGIC PROPERTIES

The part of the GAR included in this study lies wholly within the Piedmont physiographic province (Clark and Zisa, 1976; Fenneman, 1938). The area is underlain by a complex of metamorphic and igneous rocks that have been divided by various workers into more than 50 named formations and unnamed mappable units. Individual rock units range in thickness from less than 10 ft to possibly more than 10,000 ft.

Regional stresses have warped the rocks into complex folds and refolded folds, and the sequence has been injected by igneous plutons and dikes and broken by faults. Erosion of these folded and faulted rocks produced the complex outcrop patterns that exist today. The large number of rock types in the area and their varied outcrop patterns greatly complicate the occurrence and availability of ground water in the area. Nevertheless, many of the more than 50 named formations and unnamed mappable units in the GAR are made up of rocks that have similar physical properties and yield water of comparable quantity and chemical quality. Thus, for convenience, the rocks in the report area have been grouped into nine principal water-bearing units and assigned letter designations. The areal distribution of the water-bearing units and their lithologies are shown on plate 1. Data on wells in the water-bearing units are summarized in tables 1-3.

OCCURRENCE AND AVAILABILITY OF GROUND WATER

Ground water in the GAR occupies joints, fractures, and other secondary openings in bedrock and pore spaces in the overlying mantle of residual material. Water recharges the underground

Table 1.—Summary of well data for the Greater Atlanta Region

Water-bearing unit	Number of wells	Yield (gal/min)		Depth (ft)		Casing depth (ft)		Topography (percent of wells in each setting)						
		Range	Average	Range	Average	Range	Average	Slope	Broad lowlands	Uplands-ridge crests	Draw, hollow	Stream or lake	Saddle	Other
A Amphibolite-gneiss-schist	385	20-275	56	35-2,175	294	0-200	60	22	35	22	4	11	2	4
B Granitic gneiss	166	20-348	72	40-825	271	3-266	54	33	45	2	14	6	0	0
C Schist	185	20-150	47	67-700	195	4-144	53	19	19	27	20	11	4	0
D Biotite gneiss	70	20-351	56	82-710	270	7-140	56	20	27	36	6	11	0	0
E Mafic	32	20-471	79	67-386	191	8-116	46	17	35	28	3	17	0	0
F Granite	43	20-150	43	43-422	192	11-187	57	30	30	15	15	10	0	0
G Cataclastic	55	20-225	74	110-800	323	8-207	84	4	75	15	4	2	0	0
H Quartzite	12	20-200	72	122-500	297	30-85	58	45	9	27	18	0	0	0
J Carbonate	5	31-150	76	240-505	376	28-314	138	0	100	0	0	0	0	0

Table 2.--Summary of well data for the north half of the Greater Atlanta Region

Water-bearing unit	Number of wells	Yield (gal/min)		Depth (ft)		Casing depth (ft)		Topography (percent of wells in each setting)						
		Range	Average	Range	Average	Range	Average	Slope	Broad lowlands	Uplands-ridge crests	Draw, hollow	Stream or lake	Saddle	Other
A Amphibolite-gneiss-schist	107	20-200	53	55-675	220	12-187	52	25	28	23	9	12	2	1
B Granitic gneiss	6	20-200	81	170-337	235	31-140	68	50	0	33	0	17	0	0
C Schist	127	20-150	46	67-600	183	4-144	53	16	14	26	26	12	6	0
D Biotite gneiss	16	25-110	54	98-500	252	14-129	65	18	9	36	18	18	0	0
E Mafic	11	20-100	47	67-375	148	10-80	43	22	45	33	0	0	0	0
F Granite	17	20-75	39	43-398	152	11-72	38	20	33	7	27	13	0	0
G Cataclastic	0	--	--	--	--	--	--	--	--	--	--	--	--	--
H Quartzite	10	20-200	71	122-500	280	30-85	57	56	0	22	22	0	0	0
J Carbonate	4	31-85	58	240-505	399	28-314	164	0	100	0	0	0	0	0

Table 3.--Summary of well data for the south half of the Greater Atlanta Region

Water-bearing unit	Number of wells	Yield (gal/min)		Depth (ft)		Casing depth (ft)		Topography (percent of wells in each setting)						
		Range	Average	Range	Average	Range	Average	Slope	Broad lowlands	Uplands-ridge crests	Draw, hollow	Stream or lake	Saddle	Other
A Amphibolite-gneiss-schist	278	20-275	58	35-2,175	320	0-200	63	20	38	22	3	10	2	5
B Granitic gneiss	160	20-348	72	40-825	273	3-266	54	23	33	30	10	4	0	0
C Schist	58	20-150	48	72-700	243	19-125	56	24	32	26	8	8	6	0
D Biotite gneiss	54	20-351	56	82-710	275	7-140	53	21	32	36	2	9	0	0
E Mafic	21	25-471	116	83-386	214	8-116	47	15	30	25	5	25	0	0
F Granite	26	20-150	45	77-422	218	14-127	69	36	28	20	8	8	0	0
G Cataclastic	55	20-225	74	110-800	323	8-207	84	4	75	15	4	2	0	0
H Quartzite	2	50-100	75	240-500	370	--	62	0	50	50	0	0	0	0
J Carbonate	1	150	--	285	--	32	--	0	100	0	0	0	0	0

openings by seeping through this material or by flowing directly into openings in exposed rock. This recharge is from precipitation that falls in the area.

Unweathered and unfractured bedrock in the report area has very low porosity and permeability. Thus, the quantity of water that a rock unit can store is determined by the capacity and distribution of joints, fractures, and other types of secondary openings. The quantity of stored water that can be withdrawn by wells depends largely on the extent to which the rock openings are interconnected.

The size, spacing, and interconnection of openings differ greatly from one type of rock to another and with depth below land surface. Open joints and fractures tend to become tighter and more widely spaced with increasing depth. Joints and other openings in soft rocks such as phyllite tend to be tight and poorly connected; wells in rocks of this character generally have small yields. On the other hand, openings in more brittle rocks such as quartzite and graywacke tend to be larger and are better connected; wells in these rocks normally supply greater yields. Other rocks, including amphibolite, schist, and gneiss, are variable in the size and connection of secondary openings and generally yield small to moderate quantities of water to wells. Carbonate rocks, which include marble, can contain much larger and more extensively interconnected fracture systems. Openings in carbonate rocks commonly are enlarged by solution, and are capable of transmitting large quantities of water.

Effects of Drainage Style

The GAR is divided nearly in half by the Chattahoochee River, which follows a comparatively straight southwesterly course for nearly 110 miles across the area (fig. 1). Streams in the north half of the area, including the Chattahoochee River and its tributaries, mainly have rectangular and trellis drainage styles. In contrast, streams in the south half of the area, beginning at about the south edge of the Chattahoochee River basin, have a dendritic drainage style (Staheli, 1976).

Streams having rectangular drainage style flow in strongly angular courses that follow the rectangular pattern of the joints that break up the rocks. Areas having trellis drainage style are characterized by strongly folded and dipping rocks; the larger streams follow the outcrops of less resistant rocks and tributaries enter at right angles across the dip of the strata (Lobeck, 1939, p. 175). All of the streams in the north half of the area show the influence of geologic control, their drainage styles reflecting the varied outcrop pattern, the different lithologies present, and the geologic structure.

In the south half of the area, the dendritic drainage style is indicative of streams that developed independently of the underlying geology (LaForge and others, 1925; Staheli, 1976). According to Staheli (1976, p. 451), dendritic drainage, in which streams run in all directions like the branches of a tree, probably was established on some preexisting surface and later superimposed on the underlying crystalline rocks. Such streams are said to be superimposed when they acquire a course on nearly flat-lying material that covered the rocks beneath. Streams flowing on the veneer of material that covers the bedrock are superimposed above the concealed rocks. When rejuvenated by uplift, they become incised and develop courses without regard to the structure or lithology of the underlying rocks. Eventually, the cover material may be entirely removed and then only the physiographic pattern of the streams will suggest their having been let down from a superimposed position (Lobeck, 1939, p. 173).

According to Staheli (1976, p. 451), to explain the different drainage styles in regions underlain by similar rocks and

structures, it is suggested that an earlier Coastal Plain sedimentary cover buried the Piedmont and extended inland at least to the Chattahoochee River valley. Thus, according to Staheli, drainage to the north developed originally on Piedmont rocks and so reflects their structural orientations. Staheli believes that streams south of the Chattahoochee River valley developed as consequent streams on a flat Coastal Plain cover. These streams extended headward as sea levels lowered, developed dendritic drainage, and eventually became superimposed across regional Piedmont structures. Thus, the general area of the Chattahoochee River valley might well coincide with a fossil Fall Line in Georgia (Staheli, 1976, p. 451). As Staheli points out, in areas near the Chattahoochee River, the drainage pattern suggests that higher, more resistant rocks could have existed as islands that locally controlled stream development even though the lower areas were covered by Coastal Plain sediment. For example, drainage obviously has been diverted by such prominences as Stone Mountain.

Observations made during the present study indicate that in the south half of the GAR, many of the smaller elements of the drainages, such as draws, hollows, and intermittent streams in the uppermost headwaters areas seem to have developed under geologic control. The presence of geologic control is indicated by smaller drainages that parallel prominent joint sets or that are alined with bedrock foliation. Presumably these late-forming drainages were established after removal of a preexisting cover and, therefore, developed under geologic control. The fact that the smaller drainages may reflect bedrock weaknesses, whereas the larger streams generally may not, has a profound influence on the occurrence of ground water in the south half of the GAR and on the methods that can be used successfully to locate large ground-water supplies. The relations between drainage styles and the occurrence of ground water, and the effects that drainage styles have on the methods that can be used to locate sites for high-yielding wells, are discussed in later sections of this report.

AVAILABILITY OF LARGE GROUND-WATER SUPPLIES

The quantity of ground water available in the GAR varies greatly with the location, rock type, topographic setting, drainage style, and the geologic structure. In some areas, most wells yield less than 3 gal/min, which generally is considered a minimum requirement for domestic and stock supplies. In more favorable areas, yields commonly range between 3 and 10 gal/min. It should be pointed out, however, that obtaining this quantity may require drilling in more than one site.

High-yielding wells--ones that supply 20 gal/min or more--generally can be developed only where the rocks possess localized increases in permeability. This occurs mainly in association with certain structural and stratigraphic features, including: (1) contact zones between rock units of contrasting character, (2) contact zones within multilayered rock units, (3) fault zones, (4) stress relief fractures, (5) zones of fracture concentration, (6) small-scale structures, including joints, foliation planes, and fold axes, that localize drainage development, (7) folds that produce concentrated jointing, and (8) shear zones. Other factors, such as topographic setting, drainage style, rock type, depth of weathering, thickness of soil cover, and the pervasiveness and orientation of foliation can interact to increase or decrease the availability of ground water. The nature and occurrence of structural and stratigraphic features known to increase bedrock permeability, and the relation of these features to drainage style, topography, and other factors, are discussed in the following sections.

water level in some observation wells declined more than a foot per day. Other wells responded slowly and showed little change in water level after 4 days of pumping. With continued pumping, however, the water levels in all observation wells declined, and by May 25, 1978, were drawn down to depths of 16 to 38 ft below land surface. By August 1978 the water level was generally in the range of 27 to 39 ft below land surface, well below the bottom of the construction ditch. The low water level kept the ditch free of seepage except immediately following heavy rains. This decline in water levels and the reduced yield of the few active wells, clearly indicated that ground-water storage in the saprolite largely had been depleted.

The monitoring of water levels also revealed that saprolite of layered rocks at the site (amphibolite, gneiss, and schist) has strong preferential permeability. Observation wells that had shown little response to nearby pumping wells located across the strike of the rocks immediately began drawing down with the start-up of wells along the strike. Preferential permeability in the saprolite of layered rocks (documented by Stewart, 1964) accounts for differing rates of drawdown that occurred during the dewatering operation.

The highest yielding well (70 gal/min at site A, fig. 2) penetrated interlayered schist, gneiss, and amphibolite and probably derived water from more than one interformational contact zone. Other wells in the 20-30 gal/min yield range (sites B, C, and D, fig. 2) penetrated interlayered schist, granite gneiss, and some amphibolite.

The dewatering operation demonstrated the importance of locating high-yielding wells in topographic settings that can supply recharge in quantities large enough to balance intended withdrawals. After months of pumping, only the wells in stream valleys downgradient from sizable catchment areas (sites A and B, fig. 2) continued to supply significant yields. Wells in interstream areas (sites C and D, fig. 2), on the other hand, where the quantity of recharge is limited, declined in yield and eventually were pumped dry.

The response of this well field to pumping was much the same as others in the GAR and adjacent areas of the Georgia Piedmont. Over the long term, wells tapping permeable contact zones or other types of permeable zones, no matter how large the initial yield, can supply water only at the rate it is replaced by recharge. Normally, the recharge needed to sustain high well yields for extended periods, and especially through prolonged droughts, is available only in stream valleys, drainages, and draws that receive constant recharge from large catchment areas, or in broad flat areas covered by deep saturated soil. A leading cause of declining well yields in the report area is the practice of locating wells without regard to the adequacy of available recharge. For this reason, successful methods for locating high-yielding well sites emphasize the importance of considering the adequacy of available recharge.

Fault Zones

Faults in the report area consist of two types: (1) large fault zones, such as the Brevard Zone (Unit G, plate 1), that have extensive rock deformation (cataclasis) and numerous small faults within the zones, and (2) faults that displace rock units without extensive deformation around the fault zone.

In large fault zones, shearing and deformation within the zone may reduce the overall permeability of some types of rock and increase the permeability of others. Limited data indicate that wells in broad lowland settings may be highly productive in the Brevard Zone. Owing to the small number of wells and to poor exposures in lowland areas, however, data are not available to indicate which lithologies within the Brevard Zone are the most productive.

Faults that displace rock units without extensive deformation may be highly permeable and supply large well yields. The largest yields generally are available from faults that involve both resistant rocks such as massive gneiss or granite (Units B and F) and less resistant rocks such as feldspathic schist (Unit C). Increases in permeability along these faults result from differential weathering of the contrasting rock types, much the same as occurs in permeable contact zones. Although fractures produced by movement on the faults typically have been healed by mineralization and no longer are fully open, the shearing and mixing of rock types contribute to increasing the permeability along the faults. A good example of a permeable fault zone is the one that extends from eastern Carrollton, Carroll County, southwestward more than 5 miles, involving schist (Unit C) and granite (Unit F). Several wells in the fault zone yield 20 to 80 gal/min.

Work in crystalline rocks in eastern Georgia by David C. Prowell (U.S. Geological Survey, oral commun., 1980) has shown that relatively recent faults are unmineralized and contain open fractures. The faults consist of one or more zones 10 to 30 ft wide in which the rock is broken by numerous vertical or nearly vertical fractures 1 to 4 inches apart. Between the individual fractures, the rock commonly is brecciated and the pieces are rotated at various angles. A 4- to 6-inch wide zone of fault gouge (rock flour) generally occurs near the middle of each fracture zone. The fractures in the fault zone are open and should be capable of storing and transmitting large volumes of ground water. Although no recent faults were recognized during the present study, they may be present in the GAR. Where they project into topographically low areas favoring increased recharge, recent faults should supply large well yields.

According to Prowell (U.S. Geological Survey, oral commun., 1980), except in fresh-rock exposures such as in deep road cuts and quarries, these recent faults are difficult to recognize. Their presence cannot be detected in the soil horizon, but relicts of breccia or variously oriented rock fragments may remain visible in saprolite. It is not known whether the faults would produce a surface trace recognizable as a topographic feature such as a lineament, but it seems likely that they might bring about noticeable changes in vegetative vigor. The likelihood of their producing lineaments probably would be greater in the north half of the area than in the south half.

Stress Relief Fractures

Water-bearing openings in crystalline rocks traditionally have been described as steeply inclined and "X"-shaped fractures and joints similar to those pictured in figure 3 (LeGrand, 1967, p. 6). These openings are reported to be most numerous and to have the largest water-bearing capacity near the surface and to become tighter and more widely spaced with increasing depth.

According to LeGrand (1967, p. 5), most of the interconnecting openings occur less than 150 ft below land surface and few extend deeper than 300 ft. Tradition also has held, as stated by LeGrand (1967, p. 1-2), that high-yielding wells are common where relatively low topographic areas and thick residual soils are combined, and low-yielding wells are common where hilltops and thin soils are combined. Accordingly, sites having the largest yield potential are assumed to be draws and valleys in or downgradient from large catchment areas having a deep soil cover. Sites having the lowest yield potential are narrow ridge tops and upland steep slopes having little, if any, soil cover.

From the beginning of this study, it was apparent that many high-yielding wells, particularly in the south half of the GAR, occupy topographic settings indicated by previous workers to have low

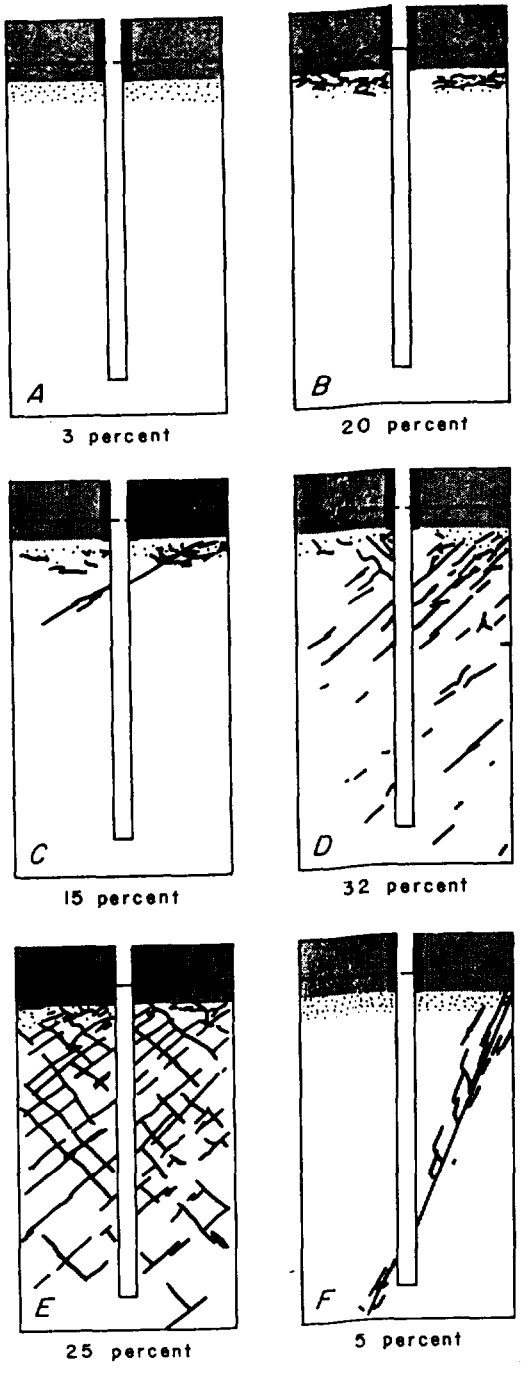


Figure 3. Six types of ground conditions showing distribution of fractures that influence the yields of wells. The stippled pattern represents soils and soft rock; the dashed line is the water table. The degree of frequency of the different types is shown in percentage. (LeGrand, 1967).

yield potential. These wells are on hilltops, ridge crests, and steep slopes, and many are in areas that have extensive rock outcrops and little or no soil cover. According to the statistical data presented by LeGrand (1967, p. 3), such sites should have only a slight chance of supplying large well yields. Moreover, about 14 percent of the high-yielding wells throughout the report area derive water from depths of 400 ft or more (table 9). Thus in the GAR, particularly in the south half of the area, a large percentage of the high-yielding wells derive water from bedrock openings more than 400 ft deep, which is a significant departure from the findings presented by LeGrand for wells in other crystalline rock areas.

Because of the inconsistancies between the occurrence of ground water in the GAR, especially in the south half of the area, and those reported from other crystalline rock areas, the authors decided to investigate the nature of water-bearing openings that supply large well yields. The intent was to identify whatever differences might exist between water-bearing openings in the GAR and those in other areas that could explain these inconsistencies.

Borehole Geophysical Logs

The most practical means available to study the nature of water-bearing openings in wells was borehole geophysical logs. A complete set of geophysical logs was run by the U.S. Geological Survey Southeast Region logger on test well 2 (8CC8) and 3 (9DD1). Logs also were run on high-yielding municipal wells in Turin, Coweta County, and Demorest in Habersham County and Blairsville in Union County northeast of the GAR. The results showed that the nature of bedrock openings could best be studied by using caliper and sonic televiewer logs. Caliper and sonic televiewer logs were run on five additional wells in different types

gneisses. Dark-gray to black flinty crush rock occurs in association with more mafic rocks, such as diabase.

The sheared country rock generally shows little or no replacement mineralization. Shearing of biotite-rich gneisses commonly results in a rock having a schistose texture containing a large proportion of platy minerals (muscovite or biotite). Sheared amphibolites retain the same mineralogy but undergo abrupt textural changes that produce the previously mentioned diamond-shaped fragments. Schist that has been sheared may weather into small disk-shaped pieces and is referred to as "button schist."

HIGH-YIELDING WELLS

In this report, the term "high-yielding wells" refers to ones that supply a minimum of 20 gal/min, except in the belt extending from College Park through Atlanta, where the minimum yield is 50 gal/min. The maximum yields of the wells range from 35 to 470 gal/min, the wide range in yields resulting from differences in rock type, geologic structure, and topographic settings. The distribution of high-yielding wells in the report area is shown on plate 1.

Data on more than 1,500 high-yielding wells in the GAR were obtained from files of the U.S. Geological Survey, local drilling contractors, and ground-water hydrologists, and from previous publications. The location of each high-yielding well used in this report was confirmed by field checking and plotted on topographic maps for determination of latitude, longitude, and topographic setting. Construction and yield data were confirmed, where possible, by interviews with well owners. About 400 reportedly high-yielding wells were excluded from use in this report because the wells could not be located within the alloted time or significant questions remained about the accuracy of yield or construction data.

SELECTING SITES FOR HIGH-YIELDING WELLS

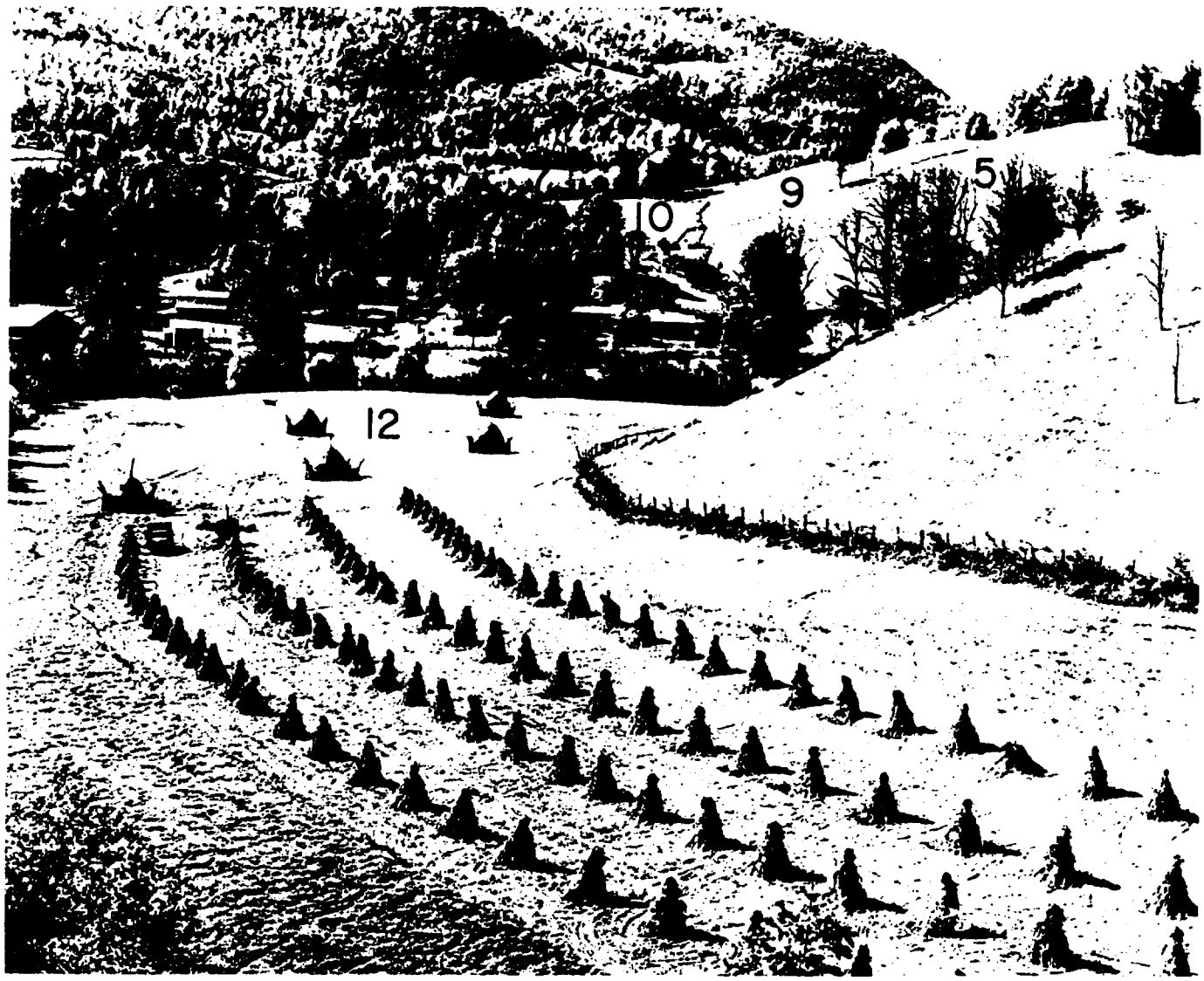
Selecting sites for high-yielding wells requires a knowledge of the character of the underlying bedrock, the structural and stratigraphic features present, and the relation of these features to the topography and drainage. This knowledge generally is obtained by a foot traverse of the area, during which structural and stratigraphic features such as fault zones, contact zones, zones of fracture concentration, the dip and strike of foliation and layering, the strike and plunge of fold axes; and other clues to localized increases in bedrock permeability are plotted on a topographic map. Locating observed features on a topographic map is a good way to understand their relation to the topography and drainage.

The appropriate method(s) to use for selecting high-yielding well sites depends on (1) the quantity of water needed, (2) the topography and the drainage style of the area, (3) the rock type, (4) the types and character of structural and stratigraphic features present in the rock, and (5) imposed constraints, such as being limited to a small area or to specific pieces of property, or the requirement that the sites be near pipelines or other facilities. Site selection methods that can be applied to most combinations of geology, topography, and drainage are presented below.

The reader also should understand that the successful siting of high-yielding wells in the GAR is not particularly good. Drilling of multiple wells to obtain required yields is common. Also, it should be recognized that some sites, for practical purposes, are virtually "barren" of ground water.

Topography and Soil Thickness

Because the yields of individual wells in the GAR vary greatly within short distances, estimating the potential yield of prospective sites can be very difficult.



From LeGrand, 1967

Figure 24. Countryside showing approximate ratings for topography. Numbers refer to figure 22.

In the south half of the area, the method probably will be most reliable in the uppermost headwaters areas of streams and along draws and drainages that flow down ridge slopes. In these areas, high-yielding wells commonly result when a dry hole on a hilltop or ridge crest is abandoned in favor of a site in the nearest draw or saddle, or downslope midway between the hilltop and the draw. The larger superimposed streams and drainages are not necessarily located over zones of bedrock weakness and, therefore, the method may not be applicable in those areas.

Contact Zones Between Rock Units of Contrasting Character

Potentially permeable contact zones between rock units of contrasting character occur in the GAR wherever Units B, D, and F are in contact with Units A, C, and E and in some areas with Unit G. Some contact zones between Unit C and Units E, H, and G also may be permeable. Most contacts between these units are shown on

plate 1. Additional contact zones between different rock types within individual units can be found on detailed geologic maps that are available for parts of the area. (See References.) Field surveys also may reveal contact zones between individual rock layers not shown on the geologic maps.

Identifying Contact Zones

Permeable contact zones form between rock units that respond differently to weathering, such as granite and schist, gneiss and feldspathic schist, and massive homogeneous rock and highly foliated rock. The greatest permeability may occur where resistant rock (massive granite or gneiss) is overlain by rapidly and deeply weathering rock (feldspathic schist). The more resistant rock may be characterized by fresh rock exposures and thin soil and may be somewhat higher topographically. The area underlain by the less resistant rock may lack exposures, have very deep soil, and be somewhat lower. Some contact zones occupy small linear depressions or show up as slight changes in slope between the two rock units. The contacts may follow small drainages or even streams, or they may cross drainages at various angles. Other contacts, particularly in the south half of the report area, have little if any surface expression and are visible mainly in road cuts and similar exposures.

Selecting Well Sites

High-yielding well sites should be selected so that the wells will penetrate contact zones at a depth of about 100 to 150 ft. Proper placement of the wells with respect to the dip of the contact zones is essential to avoid missing the zones completely or penetrating them at too great or too shallow a depth to obtain a large yield (fig. 25).

The largest yields to wells can be expected where contact zones trend parallel to and underlie draws or drainages that are downgradient from sizable catchment areas. Contact zones crossing broad, low areas covered by deep soil also can supply large well yields. In areas of poor exposure, it may be necessary to project contact zones into suitable topographic settings in order to select high-yielding well sites.

Area of Application

This method can be applied in most of the north half of the report area where drainage development and bedrock permeability are related. In the south half of the area, the method can best be applied to headwaters areas and to drainages and draws on the slopes of divide ridges. The development of these late-forming drainages probably followed the removal of any preexisting cover and thus, contact zones are more likely to have influenced drainage development.

Contact Zones in Multilayered Rock Units

Permeable contact zones in multilayered rock units are most likely to occur where different rock types alternate in layers a few feet to no more than a few tens of feet thick. Rock layers of suitable type and thickness are present in most areas underlain by Unit A and in some areas of Units C, D, E, and G. However, because the individual rock layers in these units are not shown on plate 1 and generally are not shown on geologic maps, they must be located and checked for suitability by field surveys. In areas of poor exposure, it may be necessary to determine the character and thickness of the rock layers in road cuts, quarries, and similar exposures and project them along strike into favorable topographic settings.

Identifying Contact Zones

Contact zones capable of supplying large well yields generally form between rock layers that respond differently to weathering, such as gneiss, schist, and amphibolite (Unit A). Permeable contact zones also may form between layers of feldspathic schist and graywacke or quartzite in Unit C, between layers of schist or amphibolite and biotite gneiss in Unit D, and between different lithologies in Unit E. Increases in permeability generally are greatest in contacts that occupy topographic settings which concentrate the flow of ground water, such as in draws, drainages, and stream valleys.

Selecting Well Sites

Well sites should be located so that at a depth of 100 to 150 ft the wells will penetrate whatever contact zones project updip into the nearest streambed, draw, or area of deep soil (fig. 26). The best locations are those that increase ground-water circulation along the contact zones, as where rock layers strike parallel to local drainages. In such areas deep soil normally obscures the bedrock, requiring that the dip and strike of the rock layers be determined at nearby roadcuts or similar exposures. The largest well yields generally are obtained by drilling on the downdip side of streams or other drainages where the rock layers and drainage courses are parallel (fig. 26). It is important that well sites be placed downgradient from catchment areas large enough to supply adequate recharge.

Area of Application

This method is applicable mainly to the north half of the report area where bedrock weakness and drainage patterns are closely related. In the south half of the area, the method probably will be successful mainly in headwaters areas and in draws and drainages that flow off divide ridges, especially where the strike of the rock layers and drainage courses are parallel.

Fault Zones

Fault zones become permeable mainly where they bring into contact two or more rock types that respond differently to weathering, much the same as with contact zones. Examples would be faults that displace schist (Unit C) against granite (Unit F), amphibolite (Unit E) against schist (Unit C), or a highly foliated rock against a massive rock. Several faults are visible on detailed geologic maps available for parts of the report area. (See References.)

Identifying Fault Zones

Most fault zones possess characteristic features that aid field identification. These features include: (1) angular rock fragments in fresh exposures, or preserved as relicts in saprolite, (2) zones of intense shearing, (3) terminated rock units or layers, offset beds or layers, and abrupt changes in lithology, either parallel to or across the strike, (4) abrupt offsets of drainages or valleys and abrupt changes in linear topography, (5) haphazard mixing of two or more rock types in zones less than 10 ft to more than 100 ft wide, and (6) pegmatites and vein fillings such as quartz and halloysite (clay) concentrated in bedrock or saprolite.

Recent faults may be recognized by the presence of vertical or near-vertical open fractures spaced 1 to 4 inches apart throughout a zone 10 ft to 30 ft wide. A 3- to 6-inch wide layer of fault gouge (rock flour or clay) may occur near the middle of the fault zone.

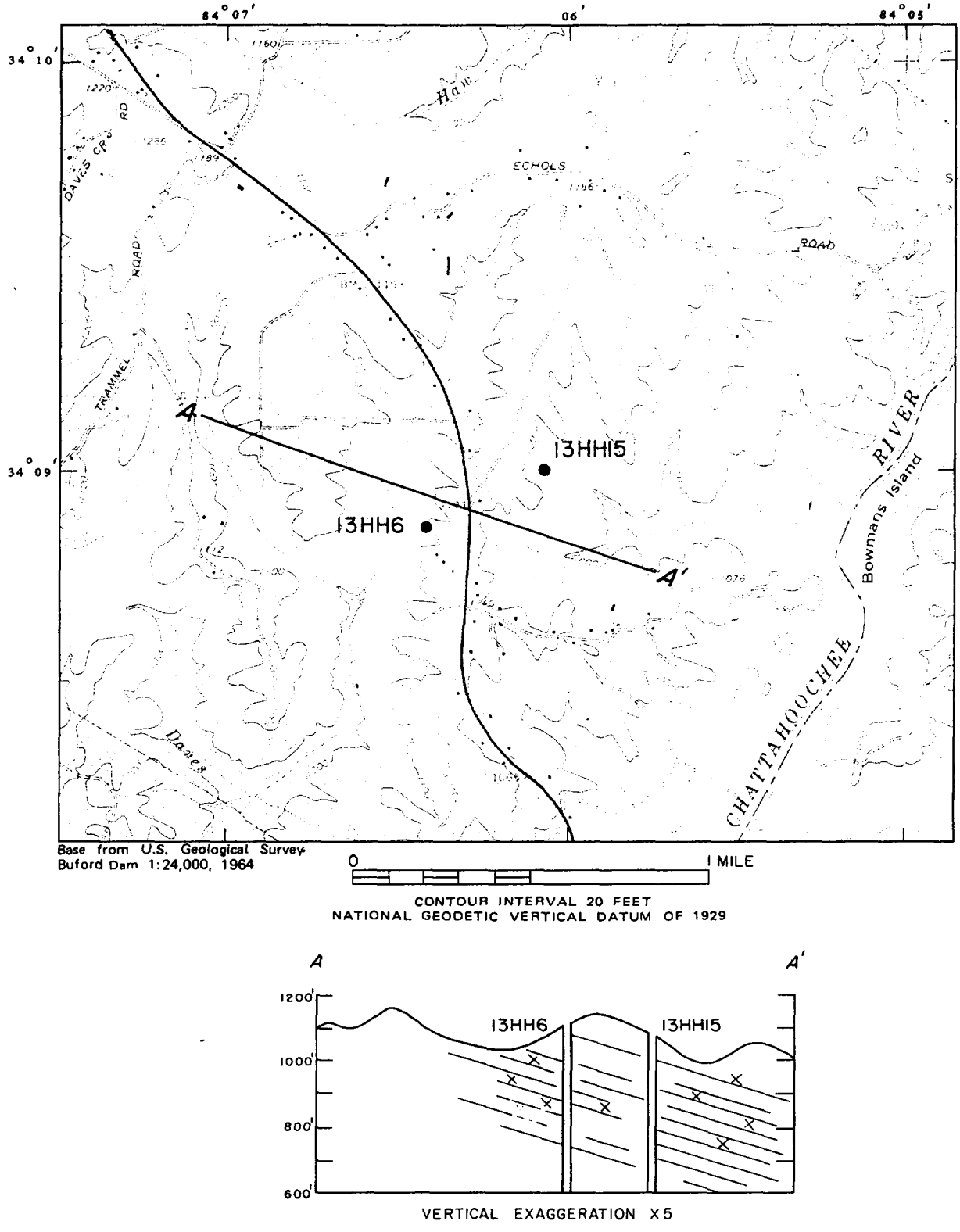


Figure 26. Wells tapping contact zones within multilayered rock unit. Well 13HH6 on downdip side of stream is 401 feet deep and yields 24 gallons per minute. Well 13HH15 is 660 feet deep and yields 6 gallons per minute.

Selecting Well Sites

High-yielding well sites in fault zones are selected in much the same way as they are in contact zones. The sites should be located so the wells will penetrate inclined fault zones at a depth of about 100 to 150 ft. In broad fault zones, wells can be sited in low-lying areas within the zone, preferably in draws or drainages that parallel the fault. All well sites should be downgradient from catchment areas large enough to provide adequate recharge.

Area of Application

The method is most effective in the north half of the report area where there is a strong correlation between drainage development and bedrock resistance. In the south half of the area, the method may be successful in headwaters areas, especially where faults underlie and parallel drainage courses.

Stress Relief Fractures

Stress relief fractures seem to occur mainly in large bodies of granitic and biotite gneiss (Units B and D), but they also are important in units consisting of gneiss interlayered with schist (Unit A), schist interlayered with amphibolite (Unit A) and amphibolite-hornblende gneiss (Unit E). Stress relief fractures have been observed in quartz-mica schist and they may be a common occurrence in schist units having a high quartz content. Stress relief fractures also may occur at depth in granites (Unit F), although none were identified during this study.

Identifying Stress Relief Fractures

Because of their horizontal nature and depth of occurrence, the presence of stress relief fractures is not indicated by structural and stratigraphic features normally associated with increased bedrock permeability. The only clue to their presence recognized thus far is topographic setting. Areas considered favorable for stress relief fractures include:

A. Points of land formed by (1) two streams converging at acute angles (fig. 12B, C), (2) two subparallel tributaries entering a large stream (fig. 12A, D), and (3) land protruding into the wide flood plains of large streams (fig. 12E). In 1 and 2, the points of land generally are less than 2,000 ft across.

B. Broad, relatively flat ridge areas, commonly on divide ridges, that are surrounded by stream heads (figs. 13 and 14). The wells are on the ridge crests and in the upper reaches of streams flowing off the ridges. Such areas are the sites of many towns and communities and, therefore, are centers of municipal and industrial pumpage.

C. Broad valleys formed by the removal of large volumes of material relative to the land on either side (fig. 28).

Selecting Well Sites

Topographic settings considered to be favorable areas for stress relief fractures can be identified on topographic maps. On broad, relatively flat ridge areas and in wide places on divide ridges, both of which are surrounded by stream heads, well sites may prove successful on the ridge crests and in the upper reaches of streams flowing off the ridges. On points of land, successful well sites generally are on the ridge crests or the lower ridge slopes from about midway along the ridge to near the end of the land point. Most high-yielding wells on points of land projecting into wide flood plains are near the flood plains. Statistics show that a well depth of about 620 ft is needed to test the yield potential of each site. Horizontal fractures also have been identified in the north part of the area

beneath the broad valleys formed by the erosion of large volumes of material (fig. 28).

Area of Application

Stress relief fractures have been identified beneath broad ridge areas and on divide ridges surrounded by stream heads mainly in the south half of the area, but they also could occur in the north half. Relief fractures beneath points of land have been recognized only in the south part of the area. Horizontal fractures beneath broad valleys have been identified in the north part of the area, but whether they occur beneath such valleys in the south part is unknown.

Zones of Fracture Concentration

Zones of fracture concentration are likely to increase bedrock permeability in comparatively brittle rocks such as quartzite (Unit H), amphibolite and hornblende gneiss (Unit E), interlayered gneiss, schist, and amphibolite (Unit A), and possibly granite (Unit F). They are less likely to produce permeable zones in schist (Unit C), except where graywacke or quartzite forms a significant part of the unit.

Identifying Zones of Fracture Concentration

Zones of fracture concentration form linear features that appear as straight stream and valley segments; abrupt changes in valley alinement; the alinement of gulleys, small depressions, and gaps in ridges; abrupt changes in slope; and the alinement of areas having vigorous or stressed vegetation. In the south half of the area, many linear valleys are a product of dendritic drainage and are not necessarily associated with zones of fracture concentration.

Selecting Well Sites

Zones of fracture concentration may be less than 30 ft to about 200 ft wide. Thus, well sites must be on or as near as possible to the centerline of the fracture zone. The highest yielding wells generally are at the intersection of two fracture zones, which may be indicated by an abrupt change in valley trend or by the intersection of two valley segments (fig. 17). Sizable catchment areas upgradient from the well sites are needed to supply adequate recharge and sustain large well yields.

Area of Application

The method is applicable mainly to the north half of the report area where characteristic topographic expressions can be used to identify zones of fracture concentration. Zones of fracture concentration probably are present in the south, but they are difficult to identify because of the prevalent dendritic drainage in that part of the area. Their presence may be detectable in headwaters areas where topographic development is more likely to reflect zones of bedrock weakness.

Small-Scale Structures that Localize Drainage Development

Small-scale structures represent inhomogenities in rocks that enhance the rapidity and depth of weathering and increase permeability. Increases in permeability generally are much greater in directions parallel to the small-scale structures than across them. This directional permeability tends to localize drainage development parallel to the small-scale structures. Where small-scale structures underlie and trend parallel to stream valleys, drainages, or draws that concentrate the flow of water, they can be avenues of greatly increased permeability capable of supplying large well yields.

Identifying Small-Scale Structures

Small-scale structures associated with increased bedrock permeability include joints, bedding or compositional layering, foliation, cleavage, and the axial planes of small folds. Most small-scale structures are readily recognized on bedrock exposures and some are visible in saprolite. Structural data needed to select well sites are dip and strike of planar surfaces and the strike and plunge of fold axes. Generally, this type of data can best be obtained from field surveys of prospective sites, although detailed geologic maps provide structural data for parts of the area. (See References.) The relation of the small-scale structures to the topography can be determined by plotting the structural data on topographic maps.

Selecting Well Sites

The largest well yields can be expected from sites in stream valleys, draws, and drainages that parallel the strike of small-scale structures. Where planar structures are vertical or near vertical, as with many joint sets, the sites should be as near as practicable to the centerline of the drainage, taking into account the possibility of flooding. Where the structures are inclined, as is common with foliation and compositional layering, the most productive drilling sites may be on the downdip side of the drainages, provided the drainages are broad enough so that moving to that side does not require being on or near a steep slope or bluff, or on the nose of a ridge, no matter how small. Where possible, the sites should be downdip far enough so the well, at a depth of 100 to 150 ft, will penetrate whatever surfaces project upward into the bed of the drainage. A good combination might be a draw that parallels the strike of a well-developed set of joints, or the axial planes of minor folds, especially where the folds plunge in the downstream direction. Other good sites are in stream valleys and drainages that parallel the strike of the foliation, at points where tributary draws following cross structures such as joints enter at right angles on the downdip sides, or on both sides of the valleys. Of course, catchment areas of adequate size upgradient from the sites are needed to sustain large well yields.

Where small-scale structures and drainages are not parallel, select sites in draws or stream valleys that are as nearly parallel as possible, staying well downgradient to insure adequate recharge.

In selecting well sites, it is important to keep off any kind of crest, no matter how small or insignificant. This applies to cross ridges or ridge backs, and the noses of ridges, such as one that projects toward or into the flood plain of a stream. (This is not to be confused with much larger "points of land" described in a preceding section on Stress Relief Fractures). Where limited to a ridge top, always place the well site in a saddle or low area on the ridge top, preferably one that parallels some small-scale structure and that forms the head of a draw, no matter how slight the depression.

Also, keep in mind that in a given rock type, the more gentle the slope, the softer, more readily weathering and more permeable the rock. Beneath steeper slopes, the rock is harder, less weathered, and generally less permeable. For this reason, the more gentle the slope, the larger the well yield may be.

Area of Application

This method is applicable to all of the north half of the report area. In the south half of the area, the method probably should be limited mainly to headwaters areas and to draws and drainages that flow off divide ridges and upland areas. To be effective, there should be a clear relationship between any topographic feature and the structure of the underlying bedrock.

Folds that Produce Concentrated Jointing

Two sets of late folds in the GAR have open joints concentrated along their axes that should produce significant increases in bedrock permeability. In favorable topographic settings, these zones of concentrated jointing should supply large quantities of water to wells.

Identifying Late Folds

Late folds that produce concentrated jointing along their axes are east-west and north-south trending symmetrical anticlines about 75 to 600 ft across. The folds are most easily recognized on near-vertical bedrock exposures in road cuts and quarries, but they can be identified in natural exposures in stream valleys. They also may be recognized in cuts through saprolite.

Selecting Well Sites

Large well yields should be obtainable where zones of concentrated joints occupy topographic settings that favor increased ground-water circulation and recharge. Folds identified in road cuts and other exposures can be projected into low areas covered by deep soil, or into drainages and draws, preferably ones that parallel the fold axes. Because the greatest permeability will exist within a zone a few feet wide, wells should be centered as nearly as possible over the fold axes.

Area of Application

The method is applicable to the entire GAR.

Shear Zones

High-yielding wells are associated with major shear zones in Rockdale, Newton, Walton, and northern Spalding Counties. Smaller shear zones occur in other parts of the area and may supply large well yields.

Identifying Shear Zones

Major shear zones in Rockdale, Newton, Walton, and Spalding Counties are shown on plate 1. The shear zones, which vary from less than a mile to about 7 miles long, form prominent topographic lineaments, generally consisting of low, narrow ridges flanking long, fairly straight valleys. The lineaments can be traced in the field and are readily visible on topographic maps. The thickness of the shear zones is unknown, but the width of the associated lineaments indicates that they may be as much as several hundred feet thick. The shear zones occur in a variety of rock types, although most are in granitic gneiss (Unit B). Rocks within the shear zones consist of chert-like flinty crush rock and sheared country rock. Large permeability increases can be expected where the sheared rock has a high feldspar content.

Selecting Well Sites

The best sites for high-yielding wells should be in the linear valleys that overlie shear zones such as those shown on plate 1. Because the shear zones dip to the southeast, wells drilled near the middle or on the southeast sides of the valleys may produce the highest yields.

Area of Application

The major shear zones are in the south part of the area, but smaller shear zones occur throughout the GAR. Shearing is very common in the Brevard Fault Zone (Unit G) and may be responsible for high-yielding wells in that feature. Small shear zones were observed in the north part of the area; and, where they occupy favorable topographic settings, they may supply large well yields, especially where they are in feldspathic rocks.

Table 9.—Record of wells in the Greater Atlanta Region—Continued

Well No.	Owner	Water-bearing unit	Latitude and longitude	Yield (gal/min)	Depth (ft)	Casing depth (ft)	Casing diam. (in.)	Date drilled	Driller	Elevation (ft)	Water level below land surface: Static head (ft)	Water level below land surface: Pumping head (ft)
Fulton County												
9CC23	James T. Bullard Lee's Mill Rd. Fairburn	F	33°32'11" 84°32'45"	20	130	37	6	2/61	Virginia	960	23	23
9CC24	Nelville McClure 286 Southwood Rd. Fairburn	D	33°36'38" 84°36'37"	47	208	32	6	9/59	do.	920	—	--
9CC25	do.	D	33°37'30" 84°36'14"	32	202	70	6	4/60	do.	820	—	--
9CC26	City of Union City (on Goodson St.) Union City	A	33°34'46" 84°33'02"	25	350	68	—	10/54	do.	1,020	—	—
9DD2	Fulton Co. Brd. of Ed., Utoy School Cascade Rd. Atlanta	F	33°43'35" 84°31'07"	40	250	46	6	1/53	do.	830	15	155
9DD3	Barton Brands Ltd. 650 Fairburn Rd., SW Atlanta	F	33°44'14" 84°30'29"	59	500	84	6	6/77	Ga. Well Drilling	820	—	--
9DD4	Sou. Natural Gas Co. Ben Hill	B	33°44'14" 84°33'29"	144	96	70	8	1947	Virginia	800	—	—
9EE3	Anaconda Aluminum Fulton Indus. Blvd. Atlanta	G	33°45'34" 84°32'55"	90	500	133	6	1/76	do.	800	40	250
9EE4	do.	G	33°45'33" 84°32'54"	49	—	—	—	12/78	do.	800	—	--
10CC17	W. P. Burns 5205 Schofield Rd. College Park	A,F	33°36'48" 84°27'50"	20	120	65	6	8/62	do.	1,015	20	40
10CC18	L. F. Hagan Old Bill Cook Rd. Red Oak	F	33°35'49" 84°29'18"	40	100	51	6	10/55	do.	900	--	--
10CC19	West Lumber Co. 2050 Roosevelt Hwy. Red Oak	A	33°37'18" 84°29'24"	64	225	27	6	6/61	do.	1,020	20	20
10DD1	Oneil Brothers East Point	A	33°40'43" 85°26'20"	—	298	49	10	—	—	910	25	—
10DD2	U.S. Government Fort McPherson	A	33°42'07" 84°25'48"	20	338	—	12	—	L. C. Dew	1,000	8	108
10DD3	City of College Park (Francis St.)	A	Not located	50	550	—	10	(Old)	Ga. Well Drilling	--	--	--
10DD4	do. (Cambridge St.)	A	Not located	75	500	—	—	Before 1930	do.	—	—	--
10DD5	do. (Wiley St.)	A	Not located	100	305	37	12	10/39	do.	1,000	12	—
10DD9	City of East Point (Center St.) East Point	F,A	33°40'17" 84°27'04"	40	552	15	10	1928	Hamilton & Sullivan	930	0	140

Table 9.—Record of wells in the Greater Atlanta Region—Continued

Well No.	Owner	Water-bearing unit	Latitude and longitude	Yield (gal/min)	Depth (ft)	Casing depth (ft)	Casing diam. (in.)	Date drilled	Driller	Elevation (ft)	Water level below land surface: Static head (ft)	Water level below land surface: Pumping head (ft)
Fulton County												
10DD10	City of East Point (Spring St.) East Point	A	Not located	36	600	—	—	—	Hamilton & Sullivan	—	13	—
10DD11	do. (St. Michael St.)	A	Not located	20	50	12	10	—	do.	—	—	—
10DD12	do. (Cleveland Ave.)	A	Not located	45	635	—	10	1926	do.	—	0	150
10DD13	do. (Jefferson Ave.)	A	Not located	40	500	—	10	—	do.	—	—	—
10DD14	do. (Wadley Ave.)	A	Not located	90	400	—	8	1926	do.	—	44	122
10DD15	do. (Harris St.)	A	Not located	35	490	—	10	1926	—	—	0	—
10DD16	do. (Chambers Park, Cleveland Ave.)	A	33°41'58" 84°26'09"	75	402	—	10	1940	Pat Murphy Eqpmt. Co.	980	15	—
10DD17	do. (at water tank)	A	Not located	70	530	—	—	—	Hamilton & Sullivan	—	54	—
10DD18	do. (Roosevelt Highway)	A	Not located	40	—	—	10	—	do.	—	—	93
10DD19	do. (Taylor Ave.)	A	Not located	61	500	—	10	—	L. C. Dew	—	60	—
10DD20	do. (Plant St.)	A	Not located	20	250	—	10	1909	Hamilton & Sullivan	—	58	—
10DD21	do. (100 yds east of 10DD20)	A	Not located	175	500	106	8	1911	L. C. Dew	—	65	77
10DD23	do. (Plant St.)	A	Not located	40	684	95	8	1928	do.	—	60	—
10DD24	City of College Park (Marion Harper Mill)	A	Not located	20	377	—	6	—	—	—	49	—
10DD28	do. (Conley Park)	A	33°41'03" 84°27'05"	20	600	—	10	3/40	Virginia	980	12.6	—
10DD29	City of Hapeville (Jonesboro Rd.) Hapeville	B	33°40'02" 84°24'10"	75	600	—	10	—	—	930	60	—
10DD30	do. (Atlanta Ave. at Georgia Ave.)	B	33°39'03" 84°24'46"	80	603	—	10	—	—	980	60	—
10DD31	do. (Oakdale Rd.)	B	33°39'37" 84°24'46"	35	616	—	10	1937	—	1,050	70	—
10DD32	do. (Sims St.)	B	Not located	75	600	—	10	—	—	—	57	—

Table 9.—Record of wells in the Greater Atlanta Region--Continued

Well No.	Owner	Water-bearing unit	Latitude and longitude	Yield (gal/min)	Depth (ft)	Casing depth (ft)	Casing diam. (in.)	Date drilled	Driller	Elevation (ft)	Water level below land surface: Static head (ft)	Water level below land surface: Pumping head (ft)
Fulton County												
10DD33	City of Hapeville (Clay Place at Virginia Ave.)	B	33°39'27" 84°25'00"	55	825	—	10	1938	—	980	66	—
10DD34	do. (by City Hall)	B	33°39'34" 84°24'30"	55	600	—	—	1914	—	980	—	—
10DD37	Motor Convoy Co. 25 Poole Creek Rd. Hapeville	F	Not located	50	84	62	6	1/48	Virginia	—	6	—
10DD38	West View Corp. West View Cemetery Gordon Rd. Atlanta	B	33°44'54" 84°26'48"	58	600	61	8	—	—	980	—	200
10DD39	U.S. Government Ft. McPherson	A	33°42'39" 84°26'04"	32	450	—	10	—	L. C. Dew	970	32	—
10DD40	do.	A	33°42'40" 84°26'07"	35	500	—	8	—	do.	1,000	22	—
10DD42	do.	A	33°42'47" 84°26'17"	21	250	—	8	1882	do.	1,010	50	—
10DD43	do	A	33°42'45" 84°26'15"	65	500	—	10	1885	do.	990	50	—
10DD45	do.	A	33°42'19" 84°25'43"	20	689	113	12	—	do.	1,050	30	—
10DD46	do.	A	33°42'07" 84°25'52"	66	300	—	12	—	do.	1,010	12	112
10DD47	City of College Park (Harvard Ave.)	A	Not located	100	600	—	12	1928	Virginia	—	—	—
10DD48	do.	A	33°42'06" 84°25'46"	136	651	—	12	—	do.	1,040	17	—
10DD50	Central of Ga. RR Lee St. at Lakewood Ave. Atlanta	A	33°41'51" 84°25'43"	100	308	9	10	—	do.	1,040	1.5	110
10DD51	National Biscuit Co. 1000 Arden Ave. Atlanta	A	33°42'54" 84°25'13"	77	376	—	6	—	Pat Murphy Eqpmt. Co.	1,020	—	—
10DD53	do.	A	33°42'53" 84°25'17"	70	1,000	—	—	—	Virginia	1,030	—	—
10DD54	Mrs. R. Lombard 2275 Rhinehill Rd. Atlanta	B	33°41'29" 84°22'47"	100	200	38	6	3/78	do.	820	—	—
10DD55	Brown Transport 352 University Ave. Atlanta	A	33°43'08" 84°23'59"	45	325	40	6	10/77	do.	940	31	252
10DD56	U.S. Plating & Bumper Service, Inc. 78 Milton Ave., SE Atlanta	A	33°43'28" 84°23'05"	45	325	44	6	11/62	do.	980	—	—

REF. 20

R. Allan Freeze

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

John A. Cherry

Department of Earth Sciences
University of Waterloo
Waterloo, Ontario

GROUNDWATER

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

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

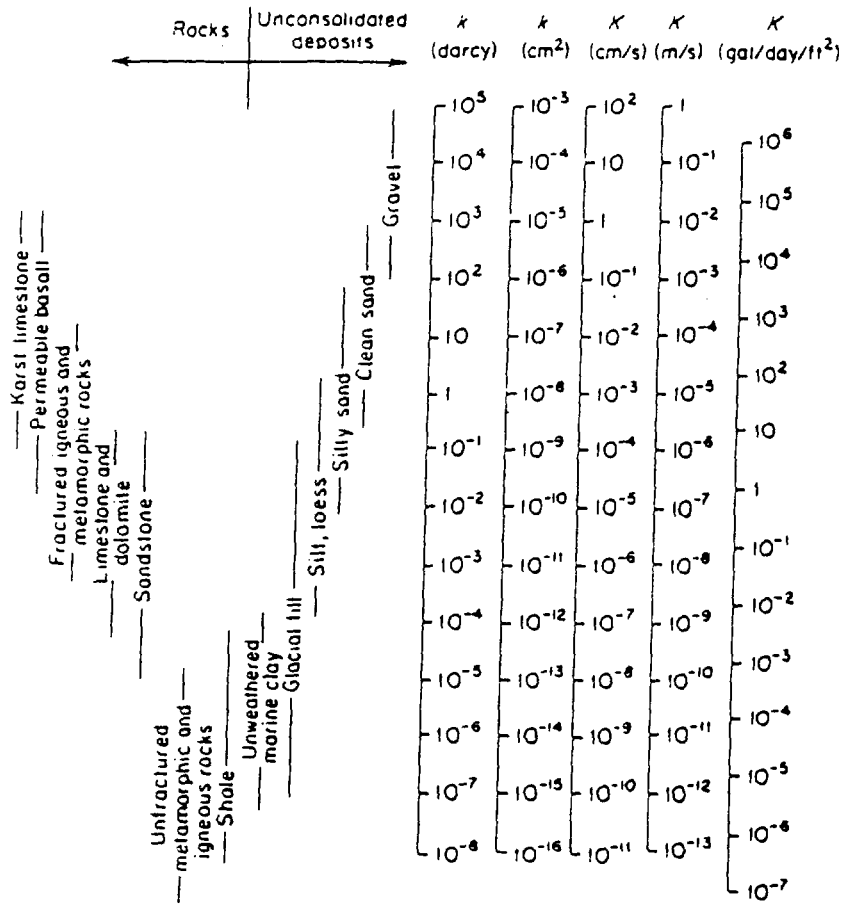


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

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

*To obtain k in ft^2, multiply k in cm^2 by 1.08×10^{-3}.

REF. 21

Water Availability & Use

CHATTAHOOCHEE RIVER BASIN

Georgia Department of Natural Resources

Environmental Protection Division

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ.MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
010(MSW)	City of Sugar Hill MWS	Gwinnett	Sugar Hill	Richland Creek	5.8/L.0.2		0.14	N/A	N/A	
015(ISW)	Bona Allen, Inc.	Gwinnett	Buford	Suwanee Creek	14.7		0.28	5.8	1.0	≥99*
020(ISD)	Bona Allen, Inc.	Gwinnett	Buford	Suwanee Creek	14.6	0.14		5.8	0.1	
030(MSD)	City of Buford Westside WPCP	Gwinnett	Buford	Suwanee Creek	7.9	0.25		3.23	0.54	
040(MSD)	City of Buford Southside WPCP	Gwinnett	Buford	Suwanee Creek	5.9	1.0		14.0		
050(MSW)	Gwinnett County Water Auth.	Gwinnett	Lawrenceville	Chat. River	338.0		12.0	1100	670	≥99*
060(MSW)	DeKalb County Water & Sewer Dept.	DeKalb	Decatur	Chat. River	325.5		96.0	1210	720	≥99*
070(MSD)	Crooked Creek WPCP	Gwinnett	Norcross	Crooked Creek	1.7	2.0				
080(MSD)	Johns Creek WPCP	Fulton	Roswell	Chat. River	324.0	4.0		1214	700	
090(MSD)	City of Cumming WPCP	Forsyth	Cumming	Big Creek	24.2	0.25		0.49	0.04	
095(MSW)	City of Roswell MWS	Fulton	Roswell	Big Creek	2.0		0.62	96.4	7.9	≥99*
100(ISW)	Horseshoe Bend Prop., Inc.	Fulton	Roswell	Chat. River	315.6		0.25	1250	760	≥99*
110(MSD)	Big Creek WPCP	Fulton	Roswell	Chat. River	315	6.0		1255	740	
120(MSW)	Cobb Co. Marietta Water Auth.	Cobb	Acworth	Chat. River	310		48	1390	810	≥99*
130(MSW)	City of Atlanta MWS	Fulton	Atlanta	Chat. River	299.6		160	1460	900	99-99
140(MSD)	Chattahoochee WPCP	Cobb	Smyrna	Chat. River	299.1	20		1461	781	
150(MSD)	R.M. Clayton WPCP	Fulton	Atlanta	Chat. River	298.8	120		1462	701	
160(ISW)	Ga. Power Plant McDonough	Cobb	Atlanta	Chat. River	298.6		394	1600	915	50-58
170(ISW)	Ga. Power Plant Atkinson	Cobb	Atlanta	Chat. River	298.6		432	1600	915	50-58
180(ISD)	Ga. Power Plant McDonough Atkinson	Cobb	Atlanta	Chat. River	298.0	818		1600	855	
190(MSD)	South Cobb WPCP	Cobb	Mableton	Chat. River	294.5	24		1650	943	
200(IGW)	Anaconda Aluminum Co.	Fulton	Atlanta	Chat. River	293.0		0.33	N/A	N/A	

* Calculated without minimum streamflow requirement

CHATTAHOOCHEE RIVER WATER AVAILABILITY AND USE REPORT

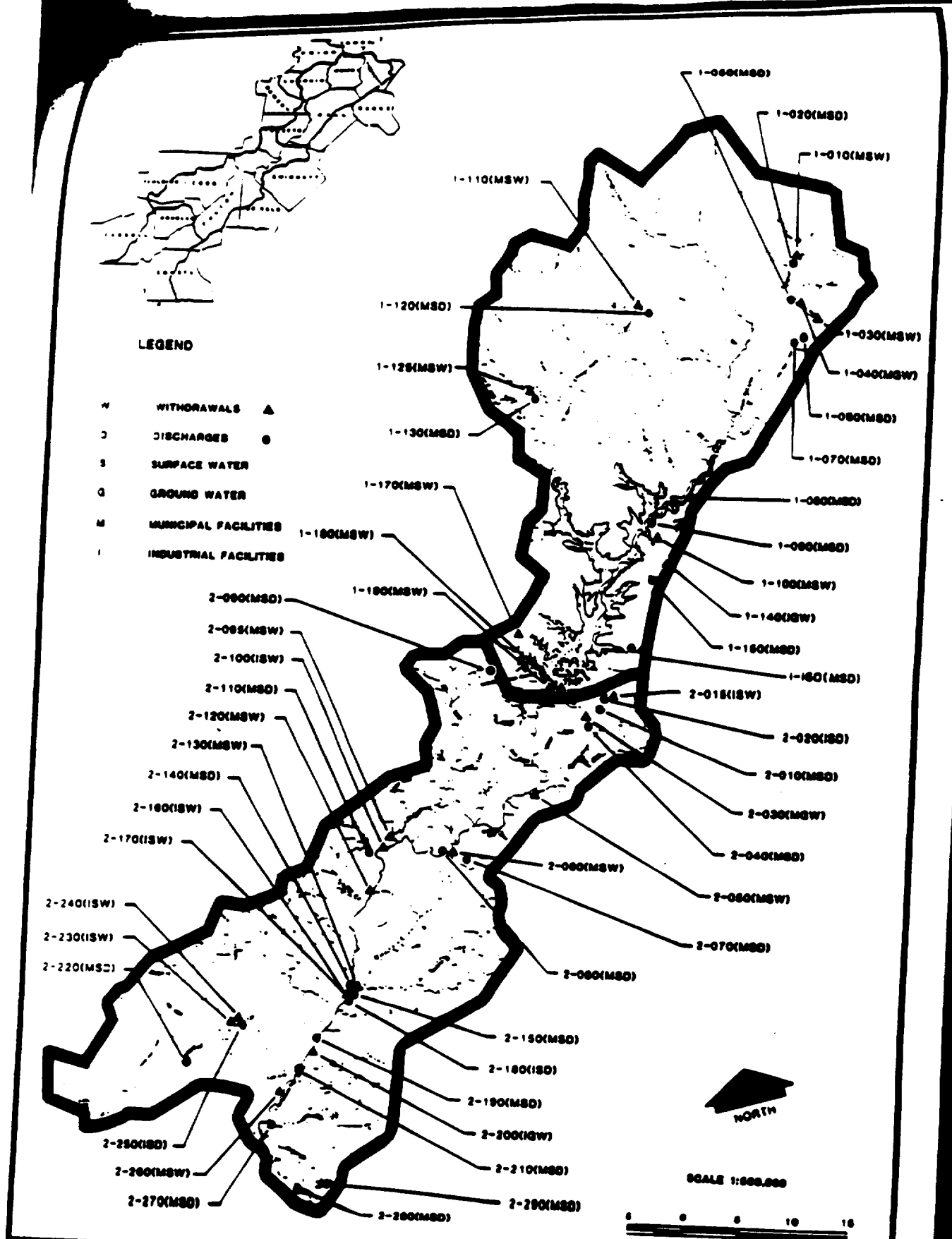
GEORGIA ENVIRONMENTAL PROTECTION DIVISION

MAJOR FACILITIES IN HYDROLOGIC UNIT #2

FIGURE 6

CILITY I.D. UMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ.MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
210(MSD)	Utoy Creek WPCP	Fulton	Atlanta	Chat. River	291.7	30		1080	981	
220(MSD)	Douglasville-North WPCP	Douglas	Douglasville	Gothards Creek	4.0	1.0		9.9		
230(ISW)	Sweetwater Paper Board	Cobb	Austell	Sweetwater Creek	16.2		0.20	150	9	≥99*
240(ISW)	Austell Box Board Company	Cobb	Austell	Sweetwater Creek	14.4		0.70	153	9	≥99*
250(ISD)	Austell Box Board Company	Cobb	Austell	Sweetwater Creek	14.0	0.18		153	9	
260(MSW)	City of East Point WWS	Douglas	East Point	Sweetwater Creek	1.0		11.5	246	15	≥99*
270(MSD)	Camp Creek WPCP	Fulton	College Park	Chat. River	283.5	15		1715	1090	
280(MSD)	Line Creek WPCP	Fulton	Fairburn	Line Creek	6.9	0.22		2.4		
290(MSD)	City of Union WPCP	Fulton	Union City	Deep Creek	8.0	0.25		1.0		

* Calculated without minimum streamflow requirement



CHATTANOOGA RIVER WATER AVAILABILITY AND USE

GEORGIA ENVIRONMENTAL

MAJOR WATER USERS

NUS CORPORATION AND SUBSIDIARIES REF. 22 **TELECON NOTE**

CONTROL NO.:	DATE: 06/05/91	TIME: 10:23

DISTRIBUTION:
SSC INDUSTRIES

BETWEEN: Phil Bingham	OF: East Point Public Utilities	PHONE: (404)765-1027

AND:
Gary Benfield

DISCUSSION:

Mr. Bingham told me all surface water that enters the storm water drainage system in the area of SSC, Industries drains into the head waters of the South River. The water is not treated before it enters this River.

NUS CORPORATION AND SUBSIDIARIES REF. 23 **TELECON NOTE**

CONTROL NO.:	DATE: 06/05/91	TIME: 10:14

DISTRIBUTION:

SSC INDUSTRIES

BETWEEN: David Whitson	OF: Henry County Water Authority	PHONE: (404)957-6659

AND:
Gary Benfield

DISCUSSION:

Mr. Whitson told me there were no surface water intakes on the South River north of Lake Jackson. The river was used for some recreational fishing and rafting.

[redacted]

REF. 24

REFERENCE 7

NUS CORPORATION AND SUBSIDIARIES ***TELECON NOTE***

CONTROL NO.	DATE: January 3, 1989	TIME: 15:45

DISTRIBUTION:

BETWEEN: Mike Callahan	OF: East Point Water Department	PHONE: (404) 765-1039

AND: Daniel L. Howard, NUS Corporation DL. Ho

DISCUSSION:

Mr. Callahan said that he does not know of any private wells in the East Point area. He also said that East Poin Water Department supplies water to College Park and Hapeville. East Point Water Department obtains its wate from Sweetwater Creek which is 10 miles northwest and upgradient of the facility in question.

ACTION ITEMS:

REF. 25

ENDANGERED AND THREATENED SPECIES

U.S. FISH AND WILDLIFE SERVICE

REGION 4 - ATLANTA

The Listing Process

The Fish and Wildlife Service follows a formal "rulemaking" procedure in determining which species should be placed on the U.S. List of Endangered and Threatened Wildlife and Plants. The Act defines an "endangered" species as one that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is defined as one that is likely to become endangered within the foreseeable future.

A "rulemaking" is the process used by Federal agencies (and many states) to propose and later adopt regulations which have the effect of law, and apply to all U.S. residents. The proposed rule is published in the Federal Register, a daily Government publication, to provide for public notification and a period for comments. The proposal is then reevaluated, and if adopted it is published again as a final rule. Endangered or threatened species are placed on the list, reclassified, or deleted through this process.

Protection Under the Act

Section 9 of the Act prohibits the illegal possession, import, export, or interstate or foreign sale of listed species (including their parts and products). It is also illegal to kill, harrass, harm, or remove listed species of animals from the wild. Taking of plants is prohibited only on Federal lands. Under Section 7 of the Act, Federal agencies are required to insure that actions they authorize (by permit), fund, or carry out do not jeopardize the existence of listed species or adversely affect critical habitat.

Penalties for violations can range from a warning and seizure of illegally held wildlife specimens and products to a maximum of $20,000 and/or a year in jail for criminal offenses.

Critical Habitat

The Endangered Species Act, as amended, calls for the conservation of what is termed "critical habitat"--the areas of land, water, and air space an endangered or threatened species needs for survival. These areas include such things as food and water, breeding sites, cover or shelter, and sufficient habitat to provide for normal population growth and behavior. Critical habitat is usually included with the proposal to list a species. However, if it is determined separately at a later date, the rulemanking procedure is the same as for classifying a species as endangered or threatened.

One of the primary threats to most species is the destruction or modification of essential habitat areas by uncontrolled land and water development. Accordingly, the law requires all Federal agencies to insure that actions they authorize (by permit), fund, or carry out do not jeopardize the existence of listed species or adversely affect critical habitat.

PREFACE

The materials in this notebook are provided as an aid to anyone having a continuing need for current information on Federally listed endangered and threatened species found within Region 4 of the U.S. Fish and Wildlife Service. This area includes the Carolinas, Georgia, Florida, Alabama, Tennessee, Kentucky, Mississippi, Arkansas, Louisiana, Puerto Rico, and the Virgin Islands.

Recipients of the notebook are placed on a permanent mailing list and will automatically receive updated information whenever listing or other changes occur. Questions or comments pertaining to the notebook should be directed to the Endangered Species Office, U.S. Fish and Wildlife Service, Richard B. Russell Federal Building, 75 Spring St., S.W., Atlanta, Georgia 30303; telephone 404/221-3583 or FTS 242-3583. Other questions pertaining to endangered species matters should be addressed to one of the Service field stations listed at the end of this Preface.

The notebook is divided into two primary sections. Materials in the first section provide quick reference as to what species are listed, proposed, or under review, the states where they occur, the location of critical habitat areas, and other related information. The second part of the notebook contains species accounts which briefly discuss such things as the status, range, life history, and management needs of listed species. Please note that the range maps for these species generally reflect current distribution, but in many cases they reflect distribution rather broadly and should only be interpreted in relation to other information included in the species account.

The Endangered Species Act - General

Passage of the Endangered Species Act of 1973 gave the United States one of the most far-reaching laws ever enacted by any country to prevent the extinction of imperiled animals and plants. Under the law, the Secretary of the Interior (acting through the U.S. Fish and Wildlife Service) has broad powers to protect and conserve all forms of wildlife and plants he finds in serious jeopardy. The Secretary of Commerce, acting through the National Marine Fisheries Service, has similar authority for protecting and conserving most marine life.

Congress addressed the question of why we should save endangered species in the preamble to the Endangered Species Act, holding that endangered and threatened species of fish, wildlife and plants "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people." In making this statement, Congress was summarizing a number of convincing arguments advanced by thoughtful scientists, conservationists, and others who are greatly concerned by the disappearance of wildlife.

Protecting endangered species and restoring them to the point where their existence is no longer jeopardized is the primary objective of the U.S. Fish and Wildlife Service's Endangered Species Program.

It should be emphasized, however, that not all Federal actions will necessarily be detrimental to critical habitat. There may be many kinds of actions which can be carried out within a critical habitat area without reducing the species' numbers or distribution, or otherwise posing jeopardy to it.

In summary, the designation of critical habitat does not create a nature preserve or refuge. It does not affect private, local, or state projects unless Federal funds or permits are involved. It does provide a means by which listed species can be protected from adverse impacts resulting from Federal action.

Consultation

Section 7 of the Act requires all Federal agencies to review their actions, and if they determine that their actions may affect a listed species or its habitat, they must enter into consultation with the Fish and Wildlife Service. During the course of such consultation the involved agency and the Fish and Wildlife Service will try to determine a course of action which will allow for completion of the agency's project and at the same time not jeopardize the species. Most consultations accomplish this goal.

In the case of a conflict, the Act provides a means whereby under certain conditions the affected Federal agency may be exempted from the requirements of Section 7. Exemption applications must be submitted to the Secretary of the Interior for consideration. If the Secretary decides the application meets exemption criteria, it is then passed on to a seven-member cabinet-level Endangered Species Committee for a final decision.

Conservation and Recovery

A main aim of the Service's Endangered Species Program is to restore populations of listed species to a point where they are no longer in danger of extinction and are again self-sustaining members of their ecosystem. Recovery plans for a number of these species are already being carried out. The plans may recommend the acquisition of land, new research, captive breeding, or may call for special wildlife and habitat management techniques.

In addition to overseeing the development and implementation of recovery plans, the Fish and Wildlife Service utilizes the authorities and funding provided under the Act to provide for technical assistance, management, law enforcement, land acquisition, research, status surveys, and financial assistance to state agencies which have entered into a cooperative agreement with the Service.

Permits

The Service's Wildlife Permit Office can issue permits for certain activities involving endangered or threatened species. Permits for

endangered species are issued only for scientific or breeding purposes. In addition to these purposes, permits for threatened species may be issued for educational activities, zoo exhibitions, and other special purposes.

U.S. Fish and Wildlife Service Endangered Species Field Offices - Region 4

U.S. Fish and Wildlife Service (serves KY, NC, SC, TN)
100 Otis Street, Room 224
Asheville, NC 28801
Phone: 704/259-0321
FTS 672-0321

U.S. Fish and Wildlife Service (serves AL, AR, LA, MS)
Jackson Mall Office Center
300 Woodrow Wilson Avenue, Suite 316
Jackson, MS 39213
Phone: 601/960-4900
FTS 490-4900

U.S. Fish and Wildlife Service (serves GA and FL)
2747 Art Museum Drive
Jacksonville, Florida 32207
Phone: 904/791-2580
FTS 946-2580

U.S. Fish and Wildlife Service (serves PR and VI)
Post Office Box 491
Boqueron, PR 00622
Phone: 809/851-7297

Federally Listed Species by State

GEORGIA

(E=Endangered; T=Threatened; CH=Critical Habitat determined)

Mammals	General Distribution
Bat, gray (Myotis grisescens) - E	Northwest, West
Bat, Indiana (Myotis sodalis) - E	Extreme Northwest
Manatee, West Indian (Trichechus manatus) - E	Coastal waters
Panther, Florida (Felis concolor coryi) - E	Entire state
Whale, finback (Balaenoptera physalus) - E	Coastal waters
Whale, humpback (Megaptera novaeangliae) - E	Coastal waters
Whale, right (Eubalaena glacialis) - E	Coastal waters
Whale, sei (Balaenoptera borealis) - E	Coastal waters
Whale, sperm (Physeter catodon) - E	Coastal waters

Birds	
Eagle, bald (Haliaeetus leucocephalus) - E	Entire state
Falcon, American peregrine (Falco peregrinus anatum) - E	North
Falcon, Arctic peregrine (Falco peregrinus tundrius) - T	Coast, Northwest
Plover, piping (Charadrius melodus) - T	Coast
Stork, wood (Mycteria americana) - E	Southeastern swamps
Warbler, Bachman's (Vermivora bachmanii) - E	Entire state
Warbler, Kirtland's (Dendroica kirtlandii) - E	Coast
Woodpecker, ivory-billed (Campephilus principalis) - E	South, Southwest
Woodpecker, red-cockaded (Picoides (=Dendrocopos) borealis) - E	Entire state

Reptiles	
Alligator, American (Alligator mississippiensis) - T(S/A)*	Coastal plain
Snake, eastern indigo (Drymarchon corais couperi) - T	Southeast

*Alligators are biologically neither endangered nor threatened. For law enforcement purposes they are classified as "Threatened due to Similarity of Appearance." Alligator hunting is regulated in accordance with State law.

GEORGIA (cont'd)

	General Distribution
Turtle, Kemp's (Atlantic) ridley (*Lepidochelys kempii*) - E	Coastal waters
Turtle, green (*Chelonia mydas*) - T	Coastal waters
Turtle, hawksbill (*Eretmochelys imbricata*) - E	Coastal waters
Turtle, leatherback (*Dermochelys coriacea*) - E	Coastal waters
Turtle, loggerhead (*Caretta caretta*) - T	Coastal waters

Fishes

Darter, amber (*Percina antesella*) - E,CH	Conasauga R., Murray County
Darter, snail (*Percina tanasi*) - T	S. Chickamauga Cr., Catoosa County
Logperch, Conasauga (*Percina jenkinsi*) - E,CH	Conasauga R., Murray County
Sturgeon, shortnose (*Acipenser brevirostrum*) - E	Coastal rivers

Plants

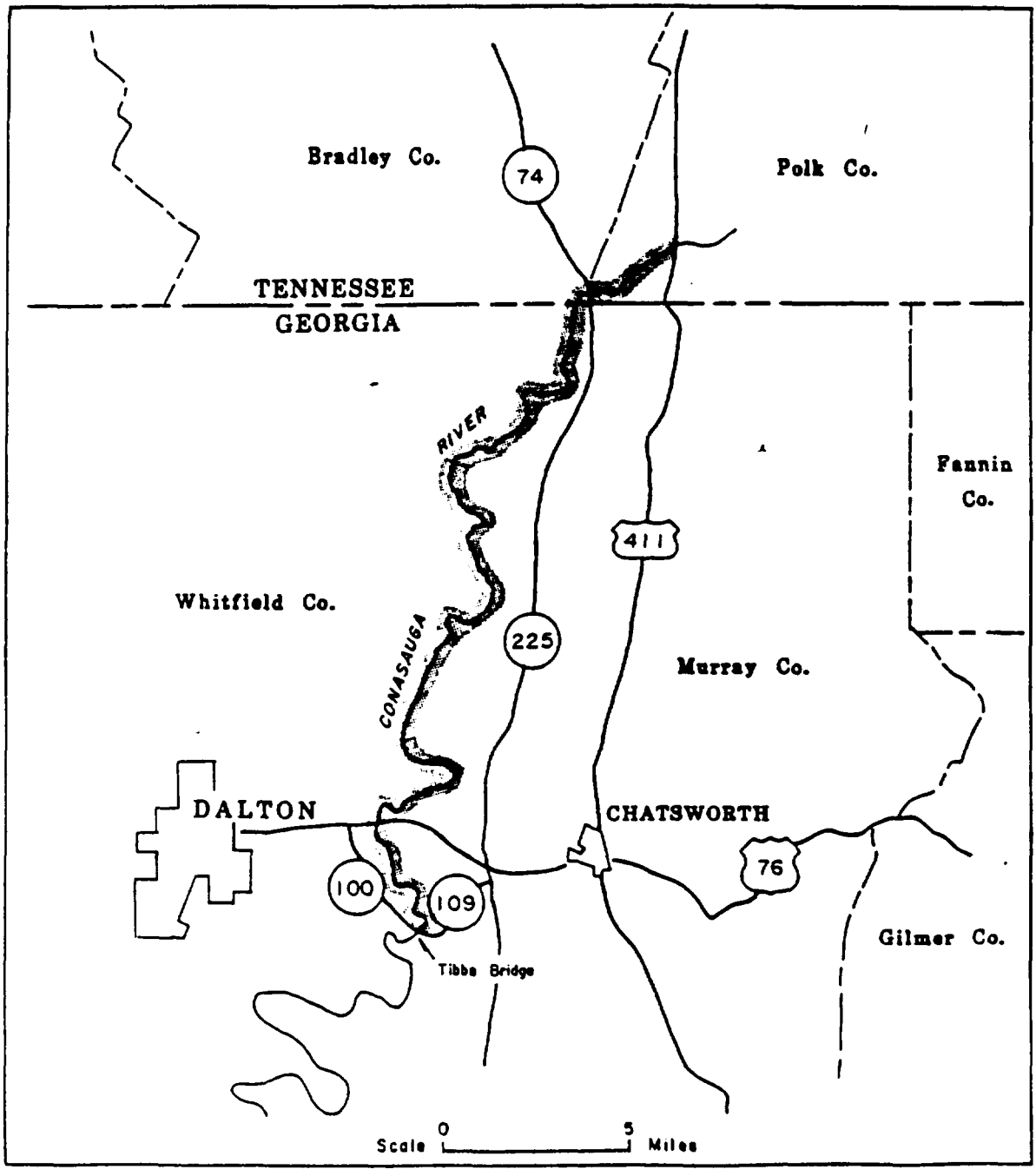
Baptisia arachnifera (hairy rattleweed) - E	Wayne, Brantley Counties
Isotria medeoloides (small whorled pogonia) - E	Rabun County
Lindera melissifolia (pondberry) - E	Wheeler County
Oxypolis canbyi (Canby's dropwort) - E	Burke, Lee, Sumter Counties
Sarracenia oreophila (green pitcher plant)- E	Towns County
Scutellaria montana (large-flowered skullcap) - E	Floyd, Gordon, Walker Counties
Torreya taxifolia (Florida torreya) - E	Decatur County
Trillium persistens (persistent trillium) - E	Tallulah-Tugaloo River system, Rabun and Habersham Counties

GEORGIA - Critical Habitat

Percina antesella, "amber darter"

Conasauga River from the U.S. Route 411 bridge in Polk County, Tennessee, downstream approximately 33.5 miles through Bradley County, Tennessee and Murray and Whitfield Counties, Georgia, to the Tibbs Bridge Road bridge (Murray County Road 109 and Whitfield County Road 100).

Constituent elements include high quality water, riffle areas (free of silt) composed of sand, gravel, and cobble which becomes vegetated primarily with Podostemum during the summer.

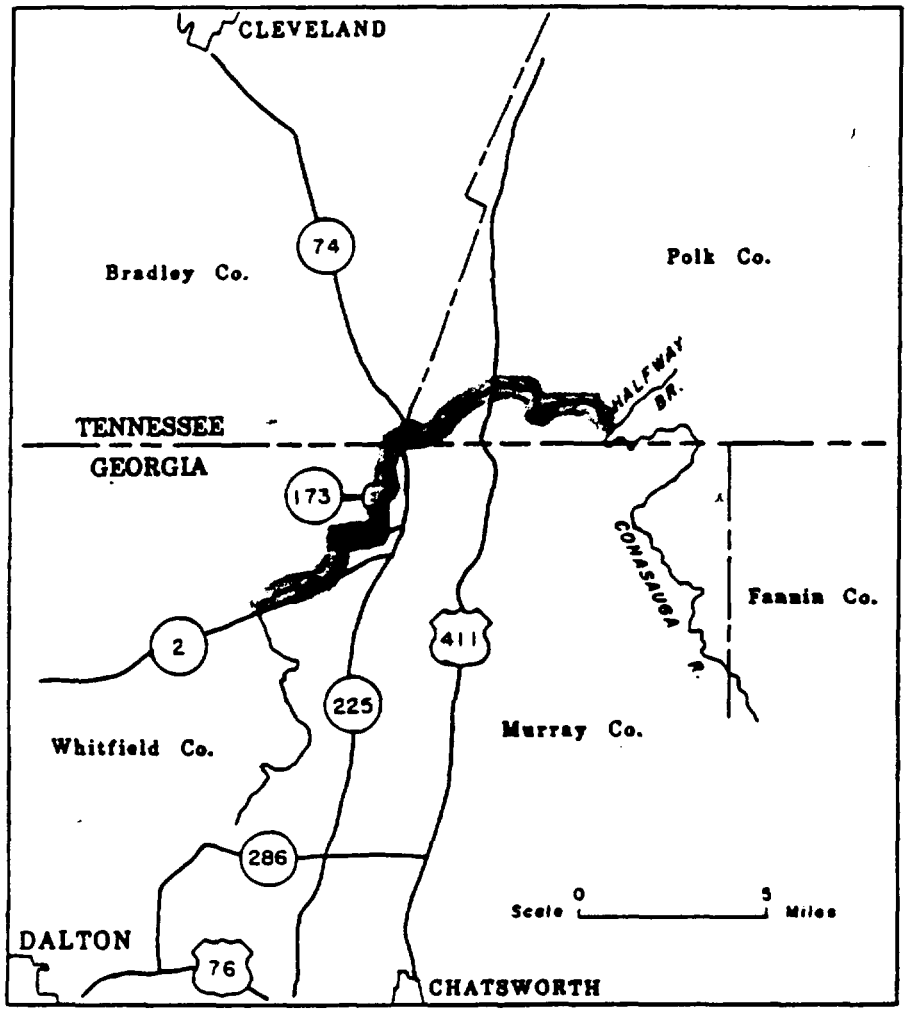


GEORGIA - Critical Habitat

Percina jenkinsi, "Conasauga logperch"

Conasauga River from the confluence of Halfway Branch with the Conasauga River in Polk County, Tennessee, downstream approximately 11 miles to the Georgia State Highway 2 bridge, Murray County, Georgia.

Constituent elements include high quality water, pool areas with flowing water and silt free riffles with gravel and rubble substrate, and fast riffle areas and deeper chutes with gravel and small rubble.



[redacted]

REF. 26

COVERAGE

STATE	COUNTY	STATE NAME	COUNTY NAME
13	63	Georgia	Clayton Co
13	67	Georgia	Cobb Co
13	121	Georgia	Fulton Co

CENTER POINT AT STATE : 13 Georgia
COUNTY : 121 Fulton Co

Press RETURN key to continue...

REGION OF THE COUNTRY

Zipcode found: 30344 at a distance of 0.9 Km

STATE	CITY NAME	COMMUNITY	FIPSCODE	LATITUDE	LONGITUDE
GA	ATLANTA	EAST POINT	13121	33.6800	84.4417

Press RETURN key to continue ...

CENSUS DATA

SSC Industries
LATITUDE 33:40:20 LONGITUDE 84:26:25 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	347	1680	8571	10028	20626
S 2	0	480	1004	3316	6920	10394	22114
S 3	0	474	2051	4112	7919	9053	23609
S 4	328	0	540	78	508	961	2415
S 5	0	1127	815	1251	36	3849	7078
S 6	0	0	841	4166	11128	3091	19226
S 7	0	1154	1157	4877	3242	5451	15881
S 8	0	0	1380	5586	6928	6282	20176
RING TOTALS	328	3235	9135	25066	45252	49109	131125

Press RETURN key to continue ...

END OF STATIC

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 1 through 14
February 6, 1989

6077L

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 27, 1989
PROJECT CODE APE 42827
ORDER NUMBER
PAGE 1 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/kg (ppm)

	AES #1	AES #2
Lead	553	2,600

MAR 1 1989

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TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 27, 1989
PROJECT CODE APE 42827
ORDER NUMBER
PAGE 2 OF 3

Sample Description: Four (4) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #1	AES #2	AES #3-4	AES #5-4
Lead	0.04	5.6	0.94	0.44

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

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ATTN: Joe Surowiec
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Chamblee, GA 30341

DATE REPORTED February 27, 1989
PROJECT CODE APE 42827
ORDER NUMBER
PAGE 3 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #11-2	AES #14-3
Lead	3.7	0.12

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 10, 1989
PROJECT CODE: APE 42750
ORDER NUMBER:
PAGE 1 OF 4

Sample Description: Twenty (20) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #3-1	38,600
AES #3-2	1,520
AES #3-3	57
AES #3-4	462
AES #4-1	2,570
AES #4-2	11,700
AES #5-1	68,200
AES #5-2	4,390
AES #5-3	1,580
AES #5-4	96
AES #6-1	61,400
AES #6-2	5
AES #6-3	211
AES #6-4	4,600
AES #7-1A	87,200
AES #7-4A	645
AES #8-1	58,200
AES #8-2	25,200
AES #8-3	37,700
AES #8-4	5,470

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TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 3 OF 4

Sample Description: Seventeen (17) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #3-1	222
AES #3-2	1.7
AES #3-3	1.1
AES #4-1	40.8
AES #4-2	114
AES #5-1	2,900
AES #5-2	69.7
AES #5-3	6.3
AES #6-1	1,210
AES #6-2	53.9
AES #6-3	0.52
AES #7-1A	838
AES #7-4A	0.37
AES #8-1	431
AES #8-2	561
AES #8-3	312
AES #8-4	12.3

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

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TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 2 OF 4

Sample Description: Fourteen (14) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #9	70,700
AES #10	187,000
AES #11-1	927
AES #11-2	92
AES #11-3	204
AES #12-1	16
AES #12-2	15
AES #12-3	6
AES #13-1	246
AES #13-2	446
AES #13-3	424
AES #14-1	23
AES #14-2	53
AES #14-3	<3

Alyce L. Moore
Approved by Laboratory Manager

Title

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TO AES
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Chamblee, GA 30341

DATE REPORTED: February 10, 1989
PROJECT CODE: APE 42750
ORDER NUMBER:
PAGE 4 OF 4

Sample Description: Thirteen (13) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #9	381
AES #10	873
AES #11-1	1.4
AES #11-2	0.36
AES #11-3	0.04
AES #12-1	0.15
AES #12-2	0.04
AES #12-3	0.03
AES #13-1	0.54
AES #13-2	0.12
AES #14-1	0.13
AES #14-2	<0.03
AES #14-3	0.10

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

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Title

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INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 15 through 22
February 16, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

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MAR 1 0 1989

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED March 8, 1989
PROJECT CODE APE 42826
ORDER NUMBER
PAGE 1 OF 3

Sample Description: Twenty-four (24) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
15 B-1	2,600
15 B-3	42
15 C-1	4,230
15 C-3	112
15 G-1	1,260
15 G-3	7,000
16 A-1	62
16 A-3	18
16 B-1	14
16 B-3	13
16 C-1	30
16 C-3	22
17 A-1	9,590
17 A-3	956
17 B-1	21
17 B-3	17
17 C-1	128
17 C-3	35
17 D-1	4,350
17 D-3	14
17 E-1	60,400
17 E-3	171
17 F-1	39,500
17 F-3	130

Alyce R. Moore
Approved by Laboratory Manager

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TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED March 8, 1989
PROJECT CODE APE 42826
ORDER NUMBER
PAGE 2 OF 3

Sample Description: Twenty-two (22) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
17 G-1	16
17 G-3	14
18 A-1	131
18 A-3	70
18 B-1	3,960
18 B-3	441
18 C-1	492
18 C-3	104
18 D-1	3,890
18 D-3	25
18 F-1	524
18 G-1	12
18 G-3	9
19 B-1	510
19 B-3	18
19 C-1	1,180
19 C-3	39
19 D-1	16,900
19 D-3	10,000
19 E-1	1,220
19 E-3	32
19 F-1	3,130

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TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED March 8, 1989
PROJECT CODE APE 42826
ORDER NUMBER
PAGE 3 OF 3

Sample Description: Six (6) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
20 F	315
20 G	2,170
20 H	2,570
21-1	550
21-3	30
22-1	5,540

Alice K. Moore
Approved by Laboratory Manager

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INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 1 through 66
May 15, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 1 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

RECEIVED
JUN 20 1989

	Total Lead
1-1'	100
1-3'	98
2-1'	22
2-3'	12
3-1'	20
3-3'	209
4-1'	24
4-3'	23
5-1'	34
5-3'	84
6-1'	6,920
6-3'	22
7-1'	178
7-3'	10
8-1'	21
8-3'	488
9-1'	8
9-3'	18
10-1'	19
10-3'	10
11-1'	10,800
12-1'	3,370
12-3'	1,040

Approved by: Alyce L. Moore
Laboratory Manager

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TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 2 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
13-1'	29
13-3'	26
14-1'	551
14-3'	15
15-1'	24
15-3'	28
16-1'	17
16-3'	16
17-1'	78
17-3'	36
21-1'	123
21-3'	12
22-1'	22
22-3'	29
23-1'	11
23-3'	11
24-1'	17
24-3'	15
25-1'	5,000
25-3'	386
26-1'	36
26-3'	26
27-1'	378

Alyce L. Moore
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TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 3 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
27-3'	319
28-1'	3,920
28-3'	7,350
30-1'	3,660
38-1'	895
38-3'	161
39-1'	38
39-3'	39
40-1'	34
40-3'	17
41-1'	25
41-3'	17
48-1'	124
48-3'	18
49-1'	1,120
49-3'	183
52-1'	1,580
52-3'	167,000
53-1'	82,500
53-3'	424
54-1'	67
54-3'	27
55-1'	18

Approved by: Laboratory Manager

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TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 4 OF 4

Sample Description: Three (3) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
55-3'	29
58-1'	785
61-1	28

Approved by: Alyce L. Moore
Laboratory Manager

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CERTIFICATE OF ANALYSIS

TO: Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43407
ORDER NUMBER:
PAGE 1 OF 3

Sample Description: Twenty-three (23) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

RECEIVED
JUN 19 1989
SHAW CONSTRUCTION, INC.

	Total Lead
18-1'	25
18-2'	2,100
19-1'	1,990
19-3'	19
20-1'	69
20-3'	81
29-1'	4,000
31-1'	91
31-3'	80
32-1'	28
33-1'	328
33-3'	234
34-1'	604
34-3'	89
35-1'	20
36-1'	21
36-3'	72
37-1'	19
37-3'	20
42-1'	11
42-3'	10
43-1'	15
43-3'	17

Alyce R. Moore
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TO Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43407
ORDER NUMBER:
PAGE 2 OF 3

Sample Description: Twenty-three (23) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

	Total Lead
44-1'	12
44-3'	10
45-1'	21
45-3'	18
46-1'	13
46-3'	13
47-1'	18
47-3'	14
50-1'	16,400
50-3'	124
51-1'	2,240
51-3'	698,000
56-1'	55
56-3'	38
57-1'	33
57-3'	22
59-1'	239
59-3'	26
60-1'	66
60-3'	45
61-3'	29
62-1'	28
62-3'	30

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5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43407
ORDER NUMBER:
PAGE 3 OF 3

Sample Description: Eight (8) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

	Total Lead
63-1'	20
63-3'	52
64-1'	59
64-3'	59
65-1'	27
65-3'	23
66-1'	21
66-3'	25

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D-586-_____

REF. 27

DRAFT REPORT

SCREENING SITE INSPECTION, PHASE II

~~SITE NAME~~ SSC Industries

~~SITE LOCATION (CITY, COUNTY, STATE)~~ East Point, Fulton County, Georgia

EPA ID #: GAD003284049

Prepared Under
TDD No. F4-9004-37
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

_____, 1991

NUS CORPORATION
SUPERFUND DIVISION

Prepared By		Reviewed By	Approved By
T. Gary Benfield Project Manager	Geologist	Bob Donaghue Assistant Regional Project Manager	Phil Blackwell Regional Project Manager

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FIGURES

Figure 1 Site Location Map
Figure 2 Site Layout Map
Figure 3 Sample Location Map

EXECUTIVE SUMMARY

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) was tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI) at ~~the~~ SSC Industries in East Point, Fulton County, Georgia. The investigation was performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The task was performed to satisfy the requirements stated in Technical Directive Document (TDD) number F4-9004-37. ~~The field investigation was conducted~~ *see insert (next page)

1.1 OBJECTIVES

The objectives of this inspection were to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection sought to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation was made regarding future activities at the site.

1.2 SCOPE OF WORK

The objectives were achieved through the completion of a number of specific tasks. These activities were to:

- Obtain and review relevant background materials.
- Obtain information on local water systems.
- Determine location of and distance to nearest potable well.
- Evaluate potentially affected populations and environments associated with the groundwater, surface water, air and soil exposure pathways.

*INSERT

The field investigation portion of this investigation was not conducted by the HALLIBURTON NUS Environmental Technologies, Inc. Region 4 FIT office. In lieu of ~~per-~~ ~~forming an~~ having FIT 4 conduct a sampling investigation, it was decided by EPA Region IV that a Phase II SSI analysis and report for the site could be accomplished using the analytical results of three sampling investigations performed between February 1989 and January of 1991, by contractors for SSC, Industries. This decision was made based upon the determination by EPA that these results were of acceptable scope and quality, as per EPA QA/QC requirements. All the analytical data presented and discussed in this SSI report are derived from the data reports from these three investigations.

- Develop a site sketch, to scale.

- ~~Collect environmental samples.~~
- Obtain analytical data derived from the analysis of environmental samples which were collected by the three contractors for SSC, Industries, site.

2.0 SITE CHARACTERIZATION

2.1 SITE HISTORY

SSC Industries is located at 1550 East Taylor Avenue, east of the Seaboard Railroad, in an industrial area (Ref. 1,2) (Figure 1). From 1939 to 1968, the property was owned by Gould National Batteries. From 1968 to 1984, the property was owned by Southern Sizing Company (SSC). From 1984 to present, the property has been owned by Chemtech Industries, but has retained the name ~~Southern~~ SSC (Ref. 3). SSC filed a Notification of Hazardous Waste form in September 1980 (Ref. 1). The company filed for protection reasons ~~reasons~~ and is presently classified as a small-quantity generator (Refs. 4, 5).

SSC Industries manufactures textile and paper processing chemicals and foam control agents through blending and cooking in several reactors on site. The purpose of most of SSC's chemical reactions is to produce surface active agents (surfactants). They also perform ageous and non-ageous blending, emulsions, pressure emulsions, flaking, powder blends, and homogenizations (Refs. 6, letter Bell).

SSC has had some problems handling and disposing of their liquid wastes throughout their history. Their liquid wastes consists of long chain hydrocarbons, fatty acids, fatty esters, polyethylene, and surfactants in water which is generated by reactor washdowns. ~~On November 16, 1979~~ In 1980, ~~Mr. O.E.~~ an inspection was conducted by Georgia Environmental Protection Division at the request of Mr. O.E. Rylander. SSC had been Mr. Rylander's customer for hauling 1,000 gallons every two weeks of ~~every~~

liquid wastes containing oils, fats, and greases to Rolling Hills Sanitary Landfill. However, on November 30 1979, the wastes were rejected by Rolling Hills Sanitary Landfill. This caused Mr. Rylander to have questions as to whether the liquid was hazardous. During the inspection Mr. Jack Westberry, plant engineer, revealed that SSC was attempting to discontinue land disposal of liquid waste. The facility was going to try work off, water removal, sewer discharge, and incineration in a fuel oil boiler, and any "non-work-off" portions would be stored in a 4,500 gallon storage tank (Ref. 6).

On October 20, 1983, SSC was notified by the Georgi Environmental Protection Division of the improper disposal of 300 fifty-five gallon drums of homogenated animal fat in Meriwether County. SSC was required to submit a write

clean-up plan to EPD for their approval. Also, a follow-up inspection was to be arranged (Ref. 7-15).

(next page)

In February 1986, Mr. Jack Westberry, Plant Manager for SSC, was contacted by the East Point Inspection Department regarding a white substance that was flowing off of the facility to the southeast into the storm drainage system. Examination of the substance revealed that it was a surfactant-type material. SSC prevented the further flow of the substance and cleaned up the contaminated area (Ref. letter Rocks).

In 1988, the City of Atlanta requested a removal ~~cleanup~~ of surface soils contaminated ~~for~~ with grease and oil from the SSC facility. SSC excavated these soils and had them analyzed prior to disposal. During analysis it was determined that the soil was also heavily contaminated with lead. The excavated soil was stored in thirty-seven drums and a stockpile on a concrete pad

adjacent to the Building 3 loading dock, covered and mark with caution tape. SSC retained Applied Engineering and Science, Inc. (AES) to direct and manage the soil removal an disposal project. Work on the removal of the lead contam inated soil began on April 12, 1989. Soil transportation was provided by Barton Environmental, Inc. The contaminated soil was loaded into trucks from the stockpile and the drums, and taken to the GSX landfill in South Carolina. A total of sixty-six tons (37 drums) of lead contamin ated soil was removed from the SSC Industries propert Once all the soil was emptied out of the thirty-seven drums they were loaded onto a truck and taken to MKC Enterprises in Doraville, Georgia to be crushed and disposed of at the GSX landfill (Ref. letter).

Since SSC Industries ~~does~~ uses no lead compounds in its processes they began a full scale environmental study of the area. They have used three different environmental firms to investigate the horizontal and vertical contamination at the facility. All three studies show heavy lead contamination over the facility (Ref [illegible]).

In May of 1990, FIT 4 was tasked to sample residential ~~area~~ and other areas in the immediate vicinity of SSC Industries for possible lead contamination in the surrounding community. Fifty-eight samples were collected within approximately one mile of the SSC facility and analyzed in the FIT 4 base laboratory for lead contamination. Sampling locations were determined using a grid divided by approximately 1,000 foot intervals in the area surround the SSC

facility. The area most contaminated with lead was northwest of the facility. As a result of this study FIT 4 recommended immediate onsite sampling be scheduled for this, facility (Ref. Survey Report).

3.0 REGIONAL POPULATIONS AND ENVIRONMENTS

3.1 POPULATION AND LAND USE

3.1.1 Demography (see next page)

SSG is located in a mixed industrial/residencial area of East Point, Fulton County, Georgia. The total population in a 4-mile ~~distribution is~~ radius is 131,125 people. The population distribution is 328 within 0.25 miles; 3,563 within 0.50

(cont. next page

3.1.2 Land Use (See next page)

3.1.1 Demography

SSC is located in a mixed industrial/residential area of East Point, Fulton County, Georgia. The total population in a 4-mile radius is 131,125 people. The population distribution is 328 people ~~of~~ between ~~from~~ 0 - 0.25 miles; 3,235 people between ~~from~~ 0.25 - 0.50 mile; 8,135 people between ~~from~~ 0.50 - 1.0 mile; 25,066 ~~11,698~~ people between 1 and 2-miles; 45,252 People between 2 and 3-miles; and 49,109 people between 3 and 4-miles (Ref. TOPO = REF #) (Appendix A).

3.1.2 Land Use

The nearest residence to SSC is

4.1.4 Field Measurements

Field measurements were performed on all water samples (Table 2). Parameters measured included temperature, pH, and conductivity of the sample at time of collection. No field measurements were performed on the soil samples during this investigation.

4.2 SAMPLE ANALYSIS

4.2.1 Analytical Support and Methodology

All samples collected were analyzed under the Contract Laboratory Program (CLP) and analyzed for all parameters listed in the Target Compound List (TCL). Organic analysis of soil and water samples was performed by _____ of _____. Inorganic analysis of soil and water samples was performed by _____ of _____.

All laboratory analyses and laboratory quality assurance procedures used during this investigation were in accordance with standard procedures and protocols as specified in the Laboratory Operations and Quality Control Manual, United States Environmental Protection Agency, Region IV, Environmental Services Division, issued October 24, 1990; or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the Contract Laboratory Program (CLP) Statement of Work (SOW), as applicable.

4.2.2 Analytical Data Quality and Data Qualifiers

All analytical data were subjected to a quality assurance review as described in the EPA Environmental Services Division laboratory data evaluation guidelines. In the tables, some of the concentrations of the organic and inorganic parameters have been flagged with a "J". This indicates that the qualitative analysis was acceptable, but the quantitative value has been estimated. A few other compounds are flagged with an "N", indicating that they were detected based on the presumptive evidence of their presence. This means that the compound was tentatively identified, and its detection cannot be used as positive identification of its presence. Results for some background samples are reported with a "U" flag. This flag means that the material was analyzed for but not detected. The reported number is the laboratory-derived minimum quantitation limit (MQL) for the compound or element in that sample. At times, miscellaneous organic compounds that do not appear on the target compound list are reported with a data set. These compounds are labeled as "JN", indicating that they are tentatively identified at estimated quantities. Because these compounds are not routinely analyzed for or reported, background levels or MQL values are not generally available for comparison. The complete analytical data sheets are presented in Appendix ____.

4.2.3 Presentation of Analytical Results

This section presents a discussion and interpretation of the analytical results from the environmental samples collected during the investigation at _____. Results of _____ samples are presented in Tables ___, ___, ___, ___, ___, ___, and ___. Background samples have been designated for all media. Values for background sample results are presented as either a measured value or as the minimum quantitation limit (MQL). Samples containing concentrations of contaminants greater than three times the background level or MQL of these contaminants are considered to be elevated. These samples are noted in the text.

5.0 SUMMARY

REFERENCES

1.

3.3.2 Aquifer Use

3.3 GROUNDWATER

3.3.1 Hydrogeology

REFERENCES

1. EPA Notification of Hazardous Waste Site (EPA Form 8900-1) for SSC Industries, East Point, Georgia. Filed by Jack G. Westberry, Plant Manager, September 10, 1980.

2. NUS Corporation Field Logbook No. F4-1582 for SSC Industries, TDD No. F4-8908-31. Documentation of facility reconnaissance, August 18, 1989.

3. New Logbook

3. ~~U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Georgia: Ben Hill 1954 (Photorevised 1982), Southwest Atlanta 1954 (PR 1983), Southeast Atlanta 1954 (PR 1983), Riverdale 1954 (PR 1982), scale 1:24,000.~~

4. Inspection Report for SSC Industries, East Point, Georgia, Inspection Date: November 14, 1980; obtained from state file.

5. Sue Matzuras, Environmental Specialist, Georgia Department of Natural Resources, letter to Terry Stewart, SSC Industries, May 31, 1988. Subject: Notification of changes in facility information.

6. Inspection Report for SSC Industries, East Point, Georgia, Inspection date: November 16, 19797; obtained from state file.

7. John D. Taylor, Jr., Program Manager, Industrial and Hazardous waste Management Program, Georgia Department of Natural Resources, letter to Jack Westberry, Southern Sizing Company, October 20, 1983. Subject: Improper disposal of drums.

8. Jack G. Westberry, Vice President-Operations, SSC Industries, letter to Terrell C. Rooks, Environmental Specialist, Georgia Department of Natural Resources, February 12, 1986. Subject: Acknowledgement of a spill.

9. Mario Villamarzo, memorandum to SSC Industries file, March 20, 1989. Subject: Ownership history of SSC Industries.

10. Linda Aller, et al., DRASTIC: A Standardized System For Evaluating Ground Water Pollution Potential Using Hydrologic Settings, EPA-600/2-87-035 (Ada, Oklahoma: EPA, April 1987).

11. Keith I. McConnell and Charlotte E. Abrams, Geology of the Greater Atlanta Region, Bulletin 96 (Atlanta, Georgia: Georgia Geologic Survey, 1988).

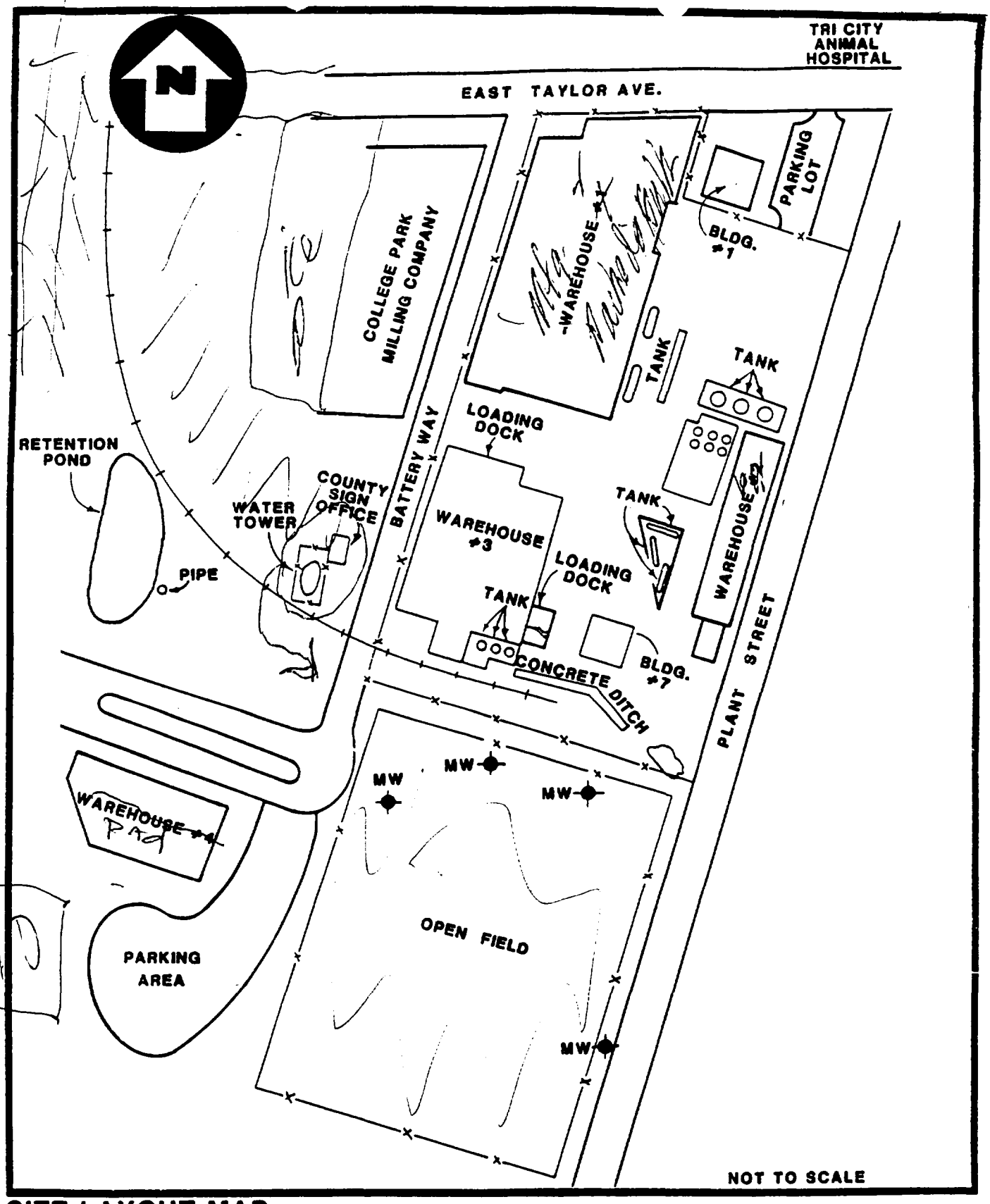
12. C.W. Cressler, C.J. Thurmond, and W.G. Hester, Ground Water in the Greater Atlanta Region, Georgia, Georgia Geologic Survey Information Circular No. 63 (Atlanta, Georgia, 1983).

13. U.S. Geological Survey, National Water Summary 1984: Hydrologic Events, Selected Water Quality Trends, and Ground-Water Resources, Water Supply Paper 2275 (1984).

14. R. Allan Freeze and John A. Cherry, Groundwater (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1979), p. 29.

2.0 SITE CHARACTERIZATION

2.1 SITE HISTORY



SITE LAYOUT MAP
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORGIA

FIGURE 2

NUS CORPORATION

2.2 SITE DESCRIPTION

2.2.1 Site Features

The SSC facility is located on approximately 12 acres. The facility consists of six buildings, five tank areas, two loading docks, several parking lots, and an open field. SSC also owns the spur track that runs through their facility (Ref. 3).

The southern end of the property is largely unused at this time. The only use of this section is the Research and Development building in the southwest corner of the property. The rest of the southern end of the facility is occupied by an open field and a parking area.

SSC also owns the property west of Battery Way to the spur track, north to where it meets East Taylor Avenue. Presently, this land is not used

for any SSC processes. At the northeast corner of this section of land (west of ~~the~~ Battery Way) there is an ice factory and the College Park Milling Company (Ref. 3). The area primarily used by SSC and previous owners of the property is the section surrounded by Battery Way, to the west, East Taylor Avenue to the north, and Plant Street to the east. Within this area are most of the building and all of the tank area associated with SSC. Building #1, located at the north end of the property, is used as an office building. ~~Build~~ Warehouse #2 is used as storage for manufacured bulk materials.

2.2.2 Waste Characteristics

3.2 SURFACE WATER

3.2.1 Climatology (see next page)

3.2.2 Overland Drainage

3.2.3 Potentially Affected Water Bodies

3.2.1 Climatology

Fulton County is located in north-central Georgia. The climate is humid and continental. ~~It experiences mild winte with changeable temperatures.~~ Prevailing wind in the area blows from the northwest to the southeast. The average winter temperature is 45.5°F, and the average summer temperature is 78.6°F. The majority of the rainfall occurs in the winter and midsummer (Ref. Soil Survey). Total annual precipitation is 48 inches, and the net annual precipitation is 7 inches. The 1-year, 24-hour rainfall is 3.2 inches (Refs. [illegible]).

3.2.2 Overland Drainage

The are two overland drainage pathways on this property. Surface water from the northern half of the facility flows northeast into the storm water drains located on East Taylor Avenue. Surface water from the southern half of facility flows southeast into the storm water drains along Plant Street (Appendix A) (Ref. meeting logbook).

3.2.3 Potentially Affected Water Bodies

All surface water that enters the storm water drainage system flows into the head waters of the South River approximately 0.75 mile east of SSC Industries (Ref. tele con). There are no surface water intakes on the South River within 15-stream miles of SSC. However, the river is used for some recreational fishing and rafting (Ref. tele con).

4.0 FIELD INVESTIGATION

4.1 SAMPLE COLLECTION

During the field investigation, conducted the week of _____ 19___, FIT 4 attempted to identify and characterize contaminants which may be present in the environment as a result of activities that were conducted at _____. To accomplish this, FIT 4 collected environmental _____ samples from a number of strategic locations. These locations were selected based on historical information, hydrogeological data for the region and site area, and direct observation at the site.

4.1.1 Sample Collection Methodology

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation were in accordance with the standard operating procedures as specified in Sections 3 and 4 of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986.

4.1.2 Duplicate Samples

Duplicate samples were offered to and accepted/declined by _____, a designated representative of _____. Receipt for sample forms are on file at FIT 4.

4.1.3 Description of Samples and Sample Locations

During the sampling investigation, a total of ____ environmental samples were collected. All sample locations are shown in Figure ____. Sample codes, descriptions, locations, and rationale are contained in Table 1.

DRAFT

APPENDIX F: LABORATORY DATA

TABLE F-1	Summary Tabulation of Inorganic Analysis of Soil Samples
Figures F-1 through F-18	NTH Sample Tracking Log
Figures F-19 through F-29	Results of RCRA Metals Analysis for Soil Samples
Figures F-30 through F-32	Results of Dissolved RCRA Metals Analysis for Groundwater Samples
Figures F-33 and F-34	Results of TPH, Oil and Grease Analysis for Soil Samples
Figure F-35	Results of TPH, Oil and Grease Analysis for Groundwater Samples
Figures F-36 through F-100	Results of Volatile and Semi-Volatile Organic Analysis for Soil Samples
Figures F-101 through F-169	Results of Volatile and Semi-Volatile Organic Analysis for Groundwater
Figures F-170 through F-178	Results of Percent Moisture Analysis for Soil Samples
Figures F-179 through F-184	Results of Disposal Characterization Analysis for Soil Cuttings, Decontamination Fluids and Well Development Fluids

OVERSIZED

DOCUMENT

SWIDLER & BERLIN
CHARTERED
3000 K STREET, N.W.
SUITE 300
WASHINGTON, D.C. 20007-3851
(202) 944-4300

SIBB/SAS
RECEIVED
MAY 0 1991
EPA - REGION IV

BARRY L. MALTER
ATTORNEY-AT-LAW

DIRECT DIAL
(202) 944-4946
TELEX: 701131
TELECOPIER: (202) 944-4296

April 30, 1991

Ms. Janice P. Thomas
Environmental Scientist
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, GA 30365

Re: SSC Industries, East Point, Georgia

Dear Ms. Thomas:

I am writing to confirm our telephone conversation earlier today, during which you advised me that the sampling visit scheduled for May 6, 1991, has been canceled. It is my understanding that you will continue to review the data that we provided to you and that you will be back in touch with me or Julie Weisman within the next few days to advise us of the name of counsel assigned to this matter and to discuss the next steps in addressing the site.

Sincerely,

Barry L. Malter

Barry L. Malter

BLM/lc

cc: Julie A. Weisman, Esq.
Mr. Dwight Bell

Janice Thomas

John McPherson

U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV, ATHENS, GEORGIA

SISB/SAS
RECEIVED
APR 1991

MEMORANDUM

DATE: APR 25 1991

SUBJECT: SSC Industries, East Point, Georgia, Screening Site Inspection Phase 2, Study Plan. ESD Project No. 91E-436.

FROM: Dan Thoman, Regional Expert
Hazardous Waste Section
Environmental Compliance Branch
Environmental Services Division

TO: Al Hanke, Chief
Site Assessment Section
Waste Programs Branch
Waste Management Division

THRU: William R. Bokey, Chief
Hazardous Waste Section
Environmental Compliance Branch
Environmental Services Division

I have reviewed the above mentioned document and have the following comments:

1. Page 3, paragraph 2. The second sentence is repeated twice.

2. Section 2.2. This section should specify the depths from which the subsurface soil samples will be collected and the rationale for selecting the depth.

3. Section 2.3. Surface water samples should be collected in conjunction with the sediment samples.

4. The elevations of the monitor wells should be surveyed such that a potentiometric surface map may be developed.

5. If the estimated direction of ground water flow is incorrect, that is more south than southwest, well SC-MW-01 will be down-gradient of the site. A well north of the site should be located and sampled as a control.

6. Section 2.6. The correct reference date for the SOP is February 1, 1991, rather than April 1986.

If you have any questions, please call me at FTS 250-3172.

cc: Bokey/Hall
Knight
Franklin (NUS)

NUS CORPORATION
1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

SISO/SAS
APR 1991
REGION IV

C-586-4-1-89

April 19, 1991

Mr. A.R. Hanke
Waste Programs Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Subject: Site Screening Study Plan
Revision 0
SSC Industries
East Point, Fulton County, Georgia
TDD No. F4-9004-37

Dear Mr. Hanke:

Enclosed please find one (1) copy of the Site Screening Study Plan for SSC Industries in East Point, Fulton County, Georgia.

If you have any questions or comments, please do not hesitate to contact me.

Very truly yours,

T. Gary Benfield

T. Gary Benfield
Project Manager

Approved:

Ralph Franklin

TGB/jec

Enclosure (1)

DATE REPORT ACCEPTED _____

DISPOSITION _____ R-586-4-0-9

SAM SIGNATURE _____

STUDY PLAN
SCREENING SITE INSPECTION, PHASE II
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORGIA
EPA ID #: GAD003284049

Prepared Under
TDD No. F4-9004-37
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

APRIL 15, 1990

NUS CORPORATION
SUPERFUND DIVISION

Prepared By	Reviewed By	Reviewed By	Approved By
for T. Gary Benfield Project Manager	Professional Geologist	Roger Franklin Assistant Regional Project Manager	Phil Blackwell Regional Project Manager

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STUDY PLAN

SCREENING SITE INSPECTION, PHASE II

SSC INDUSTRIES

EAST POINT, FULTON COUNTY, GEORGIA

EPA ID #GAD003284049

TDD NO. F4-9004-37

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) has been tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI) at the SSC Industries facility in East Point, Fulton County, Georgia. The inspection will be performed under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Tasks will be performed to satisfy the requirements stated in Phase II of Technical Directive Document (TDD) number F4-9004-37.

1.1 Objectives

The objectives of this Phase II inspection will be to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection will seek to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation will be made regarding future activities at the site.

Specific elements are:

- Obtain information to prepare a site-specific preliminary HRS.
- Provide EPA the necessary information to make decisions on any other actions warranted at the site.

1.2 Scope of Work

The scope of this investigation will include the following activities:

- Obtain and review background materials relevant to HRS scoring of site.
- Obtain aerial photographs and maps of site, if possible.
- Obtain information on local water systems.
- Evaluate target populations associated with the groundwater, surface water, air and onsite exposure pathways.
- Conduct a survey of private wells.
- Determine location and distance to nearest potable well.
- Develop a site sketch.
- Collect environmental samples.

1.3 Schedule

Week of May 6, 1991

1.4 Personnel

Project Manager - T. Gary Benfield
Other personnel as required

1.5 Permits and Authorization Requirements

EPA is responsible for obtaining access to the site and permission to take photographs of site. In addition, EPA is responsible for all permits which may be required to accomplish this task.

1.6 Site History and Description

SSC Industries is located at 1550 East Taylor Avenue, east of the Seaboard Railroad, in an industrial area (Refs. 1, 2, Figure 1). The property consists of approximately 12 acres (Ref. 3, Figure 2).

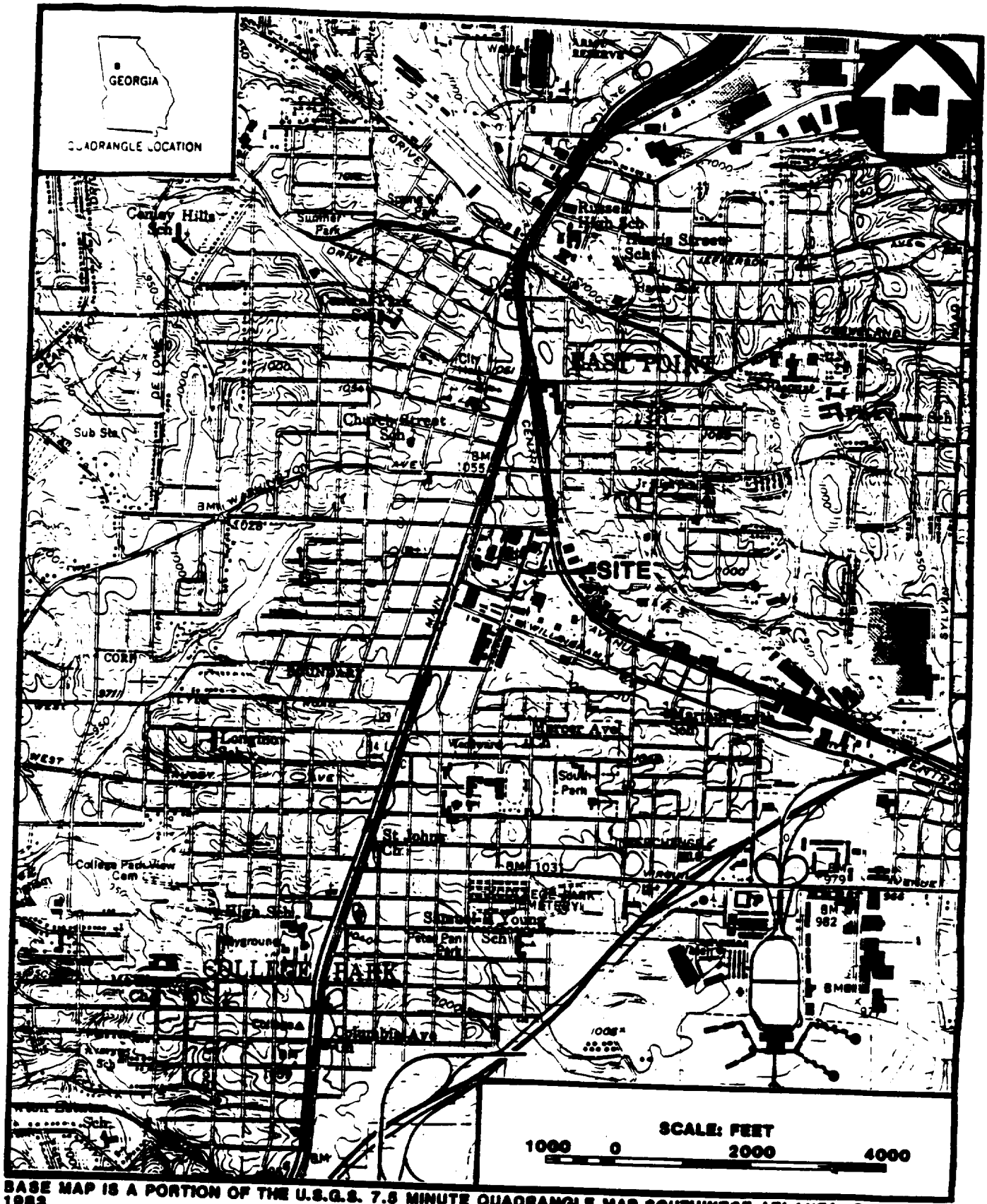
Prior to 1968, the property was owned by Gould National Batteries. From 1968 to 1978, the property was owned by Southern Sizing Company. From 1968 to 1978, the property was owned by Southern Sizing Company. From 1978 to 1984, the property was owned by SSC Industries, Inc. From December 14, 1984 to present, the property has been owned by Chemtech Industries but has retained the name SSC Industries (Ref. 4). SSC Industries filed a Notification of Hazardous Waste form in September 1980 (Ref. 1). The company filed for protection reasons and is presently classified as a small-quantity generator (Refs. 4, 5).

Liquid waste produced at the facility consists of long-chain hydrocarbons, fatty acids, fatty esters, polyethylene, and surfactants in water, which are generated by reactor washdowns (Ref. 6). More specific chemicals produced at the facility are pentachlorophenol, tetrachloroethene, methyl isobutyl ketone, and maleic anhydride (Ref. 1).

SSC has had difficulty disposing of their liquid waste throughout their history. In 1980, O.E. Rylander, the liquid waste transporter for SSC, requested that the EPA investigate the liquid waste (oils, fats, and greases) that they were transporting to Rolling Hills Sanitary Landfill, since they suspected it to be hazardous (Ref. 4). The results of this are unknown. In 1983, SSC improperly disposed of 300, 55-gallon drums of homogenated animal fat in Meriwether County. SSC was notified by the Industrial and Hazardous Waste management program requiring them to rectify the improper disposal (Ref. 7).

In February 1986, Mr. Jack Westberry, Plant Manager for SSC, was contacted by the East Point Inspection Department regarding a white substance that was flowing off of the SSC facility to the southeast. Examination of the substance revealed that it was a surfactant-type material. SSC prevented flow of the substance and cleaned up the contaminated area (Ref. 8).

In March 1989, SSC Industries retained the services of a local consulting firm to evaluate the presence of lead contamination on their property from previous operations. The studies were to investigate the vertical and horizontal extent of contamination. The results from the study have yet to be completed (Ref. 9).

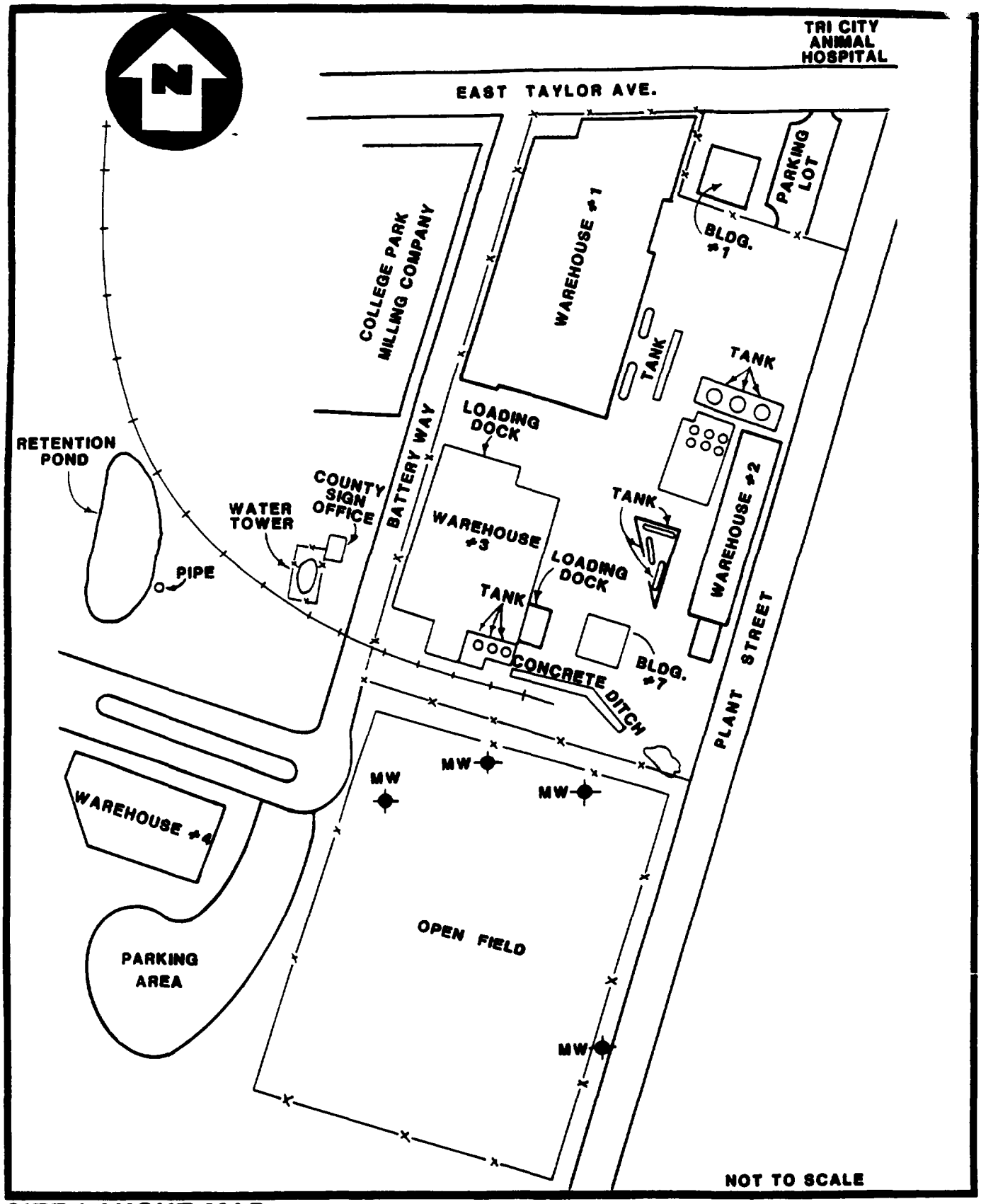


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE MAP SOUTHWEST ATLANTA, GEORGIA, 1983.

SITE LOCATION MAP
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORGIA

FIGURE 2

NUS CORPORATION

1.7 Regional Hydrogeology

The SSC Industries facility is located in the Piedmont Physiographic Province and hydrogeologic setting in East Point, Fulton County, Georgia (Ref. 10, pp. 251-252). The topography of the area consists of low, well-rounded hills and long, rolling, northeast-trending ridges with an average elevation of 950 feet above mean sea level (Ref. 10, p. 252). The topographic relief in the area ranges from 50 to 100 feet (Ref. 3).

The land surface in the Piedmont is underlain by a clay-rich, residual material called saprolite, derived from the in-place, chemical weathering of the bedrock. This soil material averages about 30 to 60 feet in thickness (Ref. 10, p. 252). In many valleys, the saprolite has been removed through erosion, and the bedrock is exposed or only thinly covered by fluvial deposits. Soil is present nearly everywhere as a layer of variable thickness on top of the residual soil (Ref. 10, p. 252). The underlying bedrock is composed mainly of metasedimentary and metavolcanic rocks, regionally metamorphosed and deformed into northeast-trending folds (Ref. 11, pp. 1, 55). The rocks are fractured and displaced by numerous faults and zones of shearing, some of which are many miles in length (Ref. 12, pp. 14-15). These fractured rocks, combined with the overlying soil material, make up the crystalline rock aquifer system, which is unconfined (Ref. 13, pp. 180, 182). The fractured crystalline rocks and overlying saprolite and alluvium are hydraulically interconnected. Saturation in the crystalline rock aquifer rarely exceeds 600 feet below land surface (bls) (Ref. 13, p. 180). The approximate range of hydraulic conductivity for the clayey soils and fractured rocks of the Piedmont Physiographic Province is from 10^{-5} to 10^{-7} cm/sec (Ref. 14).

The bedrock underlying the facility is composed of the Wahoo Creek Formation and the Clairmont Formation of the Atlanta Group. The Clairmont Formation is made up of interlayered medium-grained, biotite-plagioclase gneiss and fine- to medium-grained, hornblende-plagioclase amphibolite. The Wahoo Creek Formation includes slabby, medium-grained, muscovite-plagioclase-quartz gneiss, amphibolite, mica schist, and epidote-calcite-diopside gneiss (calc-silicate rocks) (Ref. 12, p. 87, Plate 1b, Plate 1 East). The contact between the Clairmont Formation and the Wahoo Creek Formation bisects the facility area (Ref. 11, Plate 1 East).

Groundwater in the Piedmont occupies joints, fractures, and other secondary openings in bedrock and pore spaces in the overlying residual soil material. Water recharges the underground openings by seeping through this material or by flowing directly into openings in exposed rock. This recharge is from precipitation that falls in the area (Ref. 12, pp. 7, 9). The water table in the Piedmont approximately conforms with the surface topography. The water table in the facility area is

estimated to be approximately 80 feet bls based on analysis of topographic maps (Ref. 3). Groundwater in the area tends to flow toward streams, although the flow may be influenced by structural features (Ref. 12, pp. 62, 66). The direction of groundwater flow in the facility area is estimated to be toward the southwest (Ref. 3).

2.0 SAMPLING INVESTIGATION

The sampling investigation will include the collection of surface soil, subsurface soil, sediment, and groundwater samples. Samples will be analyzed for extractable and purgeable organic compounds, pesticides, PCBs, cyanides, and metals. Analyses will be performed under the Contract Laboratory Program (CLP). The number of samples and sample locations are tentative and may change as field conditions warrant.

2.1 Surface Soil Sampling

A total of nine surface soil samples will be collected from onsite and offsite locations. Offsite sample SC-SS-01 will be collected to establish background conditions. In addition, eight surface soil samples will be collected within the facility boundaries to determine contamination. Sample codes and descriptions may be found on Table 1, and sample locations are shown on Figure 3.

2.2 Subsurface Soil Sampling

A total of nine subsurface soil samples will be collected from onsite and offsite locations. Offsite sample SC-SB-01 will be collected to determine background conditions for the site. Eight subsurface soil samples will be collected from within the facility boundaries to determine the contamination to subsurface soil. Subsurface soil samples will be collected in the saturation zone if possible. Sample codes, descriptions, and locations may be found in Table 1, and sample locations are shown on Figure 3.

2.3 Sediment Samples

A total of two sediment samples will be collected from onsite locations. Samples SC-SD-01 and SC-SD-02 will be collected to establish contamination of the surface water run-off pathways on both the east and west side of the facility. Sample codes, descriptions, and locations may be found in Table 1, and sample locations are shown on Figure 3.

TABLE 1

SAMPLE CODES, LOCATIONS, AND RATIONALE
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORGIA

Sample Code	Sample Type	Location	Rationale
SC-SB-06	Subsurface Soil	By the large storage tank south of warehouse #3	To establish the presence or absence of contaminants
SC-SB-07	Subsurface Soil	In the northeast end of the open field south of the facility	To establish the presence or absence of contaminants
SC-SB-08	Subsurface Soil	In the southwest end of the open field south of the facility	To establish the presence or absence of contaminants
SC-SD-01	Sediment	Retention pond west of the facility	To establish the presence or absence of contaminants
SC-SD-02	Sediment	By drainage pipe east of concrete drainage ditch	To establish the presence or absence of contaminants
SC-MW-01	Groundwater	East of fence on the southern end of the property	Establish control for groundwater samples
SC-MW-02	Groundwater	Northeast end of the open field on south end of property	To establish the presence or absence of contaminants
SC-MW-03	Groundwater	In the north end of the open field on the south end of the property	To establish the presence or absence of contaminants
SC-MW-04	Groundwater	In the northwest corner of the open field	To establish the presence or absence of contaminants

SC - SSC Industries
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment
MW - Groundwater, Monitoring Well

City Takes Closer Look at Proposal Regarding Former T Street Landfill

By ROBERT BRANCH
News Staff Writer

Earlier this month, Brunswick commissioners were all set to have deeded to the city free of charge a 100-acre former landfill site. Georgia-Pacific Corp., owner of the site, made the offer. Now, partly because of U.S. Environmental Protection Agency reports about the site, commissioners will take a closer look.

City commissioners want to use the site as a transfer/compacting station for garbage on its way to the Glynn County landfill. In exchange, Georgia-Pacific wants the city to deed to it a 350-foot strip of land near which the company has several oxidation ponds.

In a site screening report to the EPA dated July 10, 1985, a geologist at NUS Corp. of Atlanta recommended further studies be done to determine what effects if any the landfill has had on the groundwater supply in the area.

Using information from a 1980 EPA report, the NUS Corp. report said the landfill accepted approximately 17,000 tons of waste from Hercules Incorporated here.

That waste, the report said, included "an unknown amount of toxaphene sludge and other unspecified hazardous materials." In addition, the report said since the landfill began operations in 1961, it had taken in wastes from other sources in the Brunswick area.

Hercules began manufacturing toxaphene in 1948 for use as a pesticide. It stopped production of the chemical in 1979.

Hercules no longer manufactures any pesticides.

In 1980 toxaphene became an issue when the state Environmental Protection Division revoked Hercules' permit to dump toxaphene at a site along north Golden Isles Parkway (Spur 25), thereby shutting the site down. In addition, EPD ordered the company to submit a plan for monitoring the site.

Early last year, Glynn County commissioners were denied a $50,000 EPA technical assistance grant which would have allowed the county under the federal Superfund Program to hire a consultant to keep the public informed about EPA plans for the site.

The Superfund Program provides money for cleanup of toxic waste sites.

The application for the grant money was denied the county and the site did not qualify for cleanup under Superfund. NOT * SPLIT

Now the site still contains the toxaphene sludge which rests on the chalk-like lining of the dump site. But no more can be dumped there.

Frequent monitoring of the site is done by Hercules to ensure the toxaphene is not leaching into the local groundwater supply.

But, as for the T Street site, city commissioners have still not decided what action to take.

Following a regular meeting of the

(Continued on Page 14A)

*Governmental Groups do not qualify for TAGs

...Landfill

(Contined From Page 16A)

commission Wednesday, Mayor Homer Wilson said he is confident the city can use the site as a transfer station without being held accountable for what is buried there.

In its final analysis, NUS Corp. reported that daily tidal influence into the landfill area may have already washed a "potentially significant" amount of contaminants into the river and marshes, thereby diluting the buried materials. The report goes on to say the landfill does not constitute an immediate threat to the local population, and since high levels of contamination were not generally found, the company recommended any further action should not be a high priority.

However, the report did go on to say that since no subsurface water samples were taken, it cannot be determined whether the contaminants have managed to reach the underground aquifer. Neither, the report said, could NUS determine whether the contaminants continue to wash into the surrounding marshes or river through daily tidal action.

In the end, the company recommended to EPA that further studies be done to determine aquifer contamination and other migration of the contaminants.

According to information about the site released by EPA, no further studies have been conducted at the site since the 1985 report.

The city has yet to accept Georgia-Pacific's offer of the site, pending further deliberation by the city attorney.

Wilson said Georgia-Pacific no longer wants the property because it cannot develop on the land due to current federal wetlands regulations.

** TOTAL PAGE.001 **

** TOTAL PAGE.002 **

ROUTING AND TRANSMITTAL SLIP

Date 5/8/91

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1.		
2. Janice		
3. John		
4.		
5.		

	Action		File		Note and Return
	Approval		For Clearance		Per Conversation
	As Requested		For Correction		Prepare Reply
	Circulate		For Your Information		See Me
	Comment		Investigate		Signature
	Coordination		Justify		

REMARKS

Please review the T-Street site file and tell me if we should assigned this site for a SIP. It appears that we should reconsider this site if the attached news report is accurate.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)

Mario V.

Room No.—Bldg.

Phone No.

5041-102 ☆ U.S. GPO: 1990-254-313 **OPTIONAL FORM 41 (Rev. 7-76)**
Prescribed by GSA
FPMR (41 CFR) 101-11.206

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SUITE 300
WASHINGTON, D.C. 20007-3851
(202) 944-4300

JULIE A. WEISMAN
ATTORNEY-AT-LAW

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(202) 944-4421
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TELECOPIER: (202) 944-4296

April 22, 1991

SISE/SAS
APR 1991
EPA - REGION IV

VIA FEDERAL EXPRESS
Janice P. Thomas
Environmental Scientist
United States Environmental
Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: SSC Industries, East Point, Georgia

Dear Ms. Thomas:

This letter is in response to your correspondence dated April 16, 1991 to Dwight Bell concerning EPA's planned visit to SSC Industries beginning May 6, 1991. As Barry Malter mentioned to you last week, SSC has been conducting an ongoing investigation in order to delineate the extent of any contamination present on the property.

Enclosed are the data from recent studies. The data include results from soil and groundwater sampling performed by NTH consultants, and similar data collected by O'Brien & Gere. I have also attached earlier data which were sent previously to EPA.[1/] We believe that this extensive data base provides an accurate description of current conditions on the property and obviates the need for any additional work. Moreover, we believe the data demonstrate that the anticipated work by NUS is duplicative of that which has already been performed on the site.

SSC Industries is interested in cooperating with EPA to ensure that contamination on the property is properly addressed. SSC has investigated the source of elevated levels of lead in the soil and has concluded that it stems from the operations of Gould, Inc., a former owner of the site. SSC never used lead in any of its operations, while Gould operated a lead acid battery manufacturing facility at the site from about 1937 to 1968.

[1/] We are currently reviewing our files for any additional data that may be of interest to EPA.

Interviews with former Gould employees indicate that Gould's manufacturing process also included a spray painting operation involving the use of thinners and solvents. SSC has been negotiating with Gould to begin remedial activities on the property; but those negotiations have not been brought to a successful conclusion.

It is my understanding that EPA will not proceed with its planned work at the site until it reviews the enclosed data. Once you have had the opportunity to review the enclosed data, please call me so that we can discuss whether further investigatory work by EPA is warranted or necessary. I would also like to review possible remedial alternatives with you based on the attached sampling results.

If you have any questions or comments, feel free to call me.

Sincerely,

Julie Weisman

Julie A. Weisman

cc: J. Dwight Bell
Barry L. Malter

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Environmental Audits & Permitting
Exploratory Drilling & Monitoring Wells

RECEIVED
FEB 11 1991

CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15187	15188	15189
			STATION:	MW-1	MW-2	MW-3
Antimony	204.2	20		ND	ND	ND
Arsenic	206.2	20		ND	ND	ND
Barium	208.1	100		ND	ND	ND
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	ND	ND
Mercury	245.2	2		ND	ND	ND
Nickel	249.1	100		170	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND

ND-None Detected

Randy Brown
RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

Reviewed by:
Kim Humphries KH

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ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15190	15191	15192
			STATION:	MW-4	MW-5	MW-6
Antimony	204.2	20		ND	ND	ND
Arsenic	206.2	20		ND	ND	ND
Barium	208.1	100		ND	ND	ND
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	ND	ND
Mercury	245.2	2		ND	ND	ND
Nickel	249.1	100		ND	210	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND

ND-None Detected

Randy Brown

RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

Reviewed by: KH
Kim Humphries

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INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15193	15194	15195
			STATION:	MW-7	MW-8	MW-9
Antimony	204.2	20		ND	ND	ND
Arsenic	206.2	20		ND	ND	ND
Barium	208.1	100		ND	ND	ND
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	ND	ND
Mercury	245.2	2		ND	ND	ND
Nickel	249.1	100		ND	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND

ND-None Detected

Randy Brown

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ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15196 MW-10	15197 MW-11	15198 BLIND DUP
Antimony	204.2	20		ND	ND	ND
Arsenic	206.2	20		ND	ND	ND
Barium	208.1	100		ND	ND	ND
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	ND	ND
Mercury	245.2	2		ND	ND	ND
Nickel	249.1	100		ND	405	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND

ND-None Detected

Randy Brown

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Water DATE SAMPLE ANALYZED: 02/05/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15199 FIELD BK
Antimony	204.2	20		ND
Arsenic	206.2	20		ND
Barium	208.1	100		ND
Cadmium	213.1	50		ND
Chromium	218.1	50		ND
Lead	239.1	100		ND
Mercury	245.2	2		ND
Nickel	249.1	100		ND
Selenium	270.2	20		ND
Silver	272.1	20		ND

ND-None Detected

Randy Brown

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15187 MW-1	15188 MW-2	15189 MW-3
Dichlorodifluoromethane	1		ND	ND	ND
Chloromethane	1		ND	ND	ND
Vinyl Chloride	10		ND	ND	ND
Bromomethane	10		ND	ND	ND
Chloroethane	1		ND	ND	ND
Trichlorofluoromethane	10		ND	ND	ND
1,1-Dichloroethene	1		ND	ND	ND
Methylene Chloride	1		ND	ND	ND
Trans 1,2-Dichloroethene	1		ND	ND	ND
1,1-Dichloroethane	1		ND	ND	ND
Chloroform	1		6.7	ND	ND
1,1,1-Trichloroethane	1		ND	ND	ND
Carbon Tetrachloride	1		ND	ND	ND
1,2-Dichloroethane	1		ND	ND	ND
Trichloroethene	1		116	ND	ND
1,2-Dichloropropane	1		5.8	ND	ND
Bromodichloromethane	1		ND	ND	ND
cis 1,3-Dichloropropene	1		ND	ND	ND
trans 1,3-Dichloropropene	1		ND	ND	ND
1,1,2-Trichloroethene	1		ND	ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15187 MW-1	15188 MW-2	15189 MW-3
Tetrachloroethene	1		10.9	17.3	1.6
Dibromochloromethane	1		ND	ND	ND
Chlorobenzene	1		ND	ND	ND
Bromoform	10		ND	ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND

ND-None Detected

Randy Brown

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15190 MW-4	15191 MW-5	15192 MW-6
Dichlorodifluoromethane	1		ND	ND	ND
Chloromethane	1		ND	ND	ND
Vinyl Chloride	10		ND	ND	ND
Bromomethane	10		ND	ND	ND
Chloroethane	1		ND	ND	ND
Trichlorofluoromethane	10		ND	ND	ND
1,1-Dichloroethene	1		ND	ND	ND
Methylene Chloride	1		ND	ND	ND
Trans 1,2-Dichloroethene	1		ND	ND	ND
1,1-Dichloroethane	1		ND	ND	ND
Chloroform	1		1.8	3.8	4.7
1,1,1-Trichloroethane	1		ND	ND	ND
Carbon Tetrachloride	1		ND	ND	ND
1,2-Dichloroethane	1		ND	ND	ND
Trichloroethene	1		13.6	33.9	ND
1,2-Dichloropropane	1		2.3	2.8	ND
Bromodichloromethane	1		ND	ND	ND
cis 1,3-Dichloropropene	1		ND	ND	ND
trans 1,3-Dichloropropene	1		ND	ND	ND
1,1,2-Trichloroethene	1		ND	ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15190 MW-4	15191 MW-5	15192 MW-6
Tetrachloroethene	1		2.2	156	ND
Dibromochloromethane	1		ND	ND	ND
Chlorobenzene	1		ND	ND	ND
Bromoform	10		ND	ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND

ND-None Detected

Randy Brown

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METHOD: EPA 601 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15193 MW-7	15194 MW-8	15195 MW-9
Dichlorodifluoromethane	1		ND	ND	ND
Chloromethane	1		ND	ND	ND
Vinyl Chloride	10		ND	ND	ND
Bromomethane	10		ND	ND	ND
Chloroethane	1		ND	ND	ND
Trichlorofluoromethane	10		ND	ND	ND
1,1-Dichloroethene	1		ND	ND	ND
Methylene Chloride	1		ND	ND	ND
Trans 1,2-Dichloroethene	1		ND	ND	ND
1,1-Dichloroethane	1		ND	ND	ND
Chloroform	1		ND	5.3	ND
1,1,1-Trichloroethane	1		ND	ND	ND
Carbon Tetrachloride	1		ND	3.3	ND
1,2-Dichloroethane	1		ND	ND	ND
Trichloroethene	1		ND	ND	73.5
1,2-Dichloropropane	1		ND	ND	2.9
Bromodichloromethane	1		ND	ND	ND
cis 1,3-Dichloropropene	1		ND	ND	ND
trans 1,3-Dichloropropene	1		ND	ND	ND
1,1,2-Trichloroethene	1		ND	ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15193 MW-7	15194 MW-8	15195 MW-9
Tetrachloroethene	1		ND	ND	ND
Dibromochloromethane	1		ND	ND	ND
Chlorobenzene	1		ND	ND	ND
Bromoform	10		ND	ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND

ND-None Detected

Randy Brown

RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

Reviewed by:
Kim Humphries KH

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MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15196 MW-10	15197 MW-11	15198 BLIND DUP
Dichlorodifluoromethane	1		ND	ND	ND
Chloromethane	1		ND	ND	ND
Vinyl Chloride	10		ND	ND	ND
Bromomethane	10		ND	ND	ND
Chloroethane	1		ND	ND	ND
Trichlorofluoromethane	10		ND	ND	ND
1,1-Dichloroethene	1		ND	ND	ND
Methylene Chloride	1		ND	ND	ND
Trans 1,2-Dichloroethene	1		ND	ND	ND
1,1-Dichloroethane	1		ND	ND	ND
Chloroform	1		ND	ND	ND
1,1,1-Trichloroethane	1		ND	ND	ND
Carbon Tetrachloride	1		ND	ND	ND
1,2-Dichloroethane	1		ND	ND	ND
Trichloroethene	1		ND	ND	ND
1,2-Dichloropropane	1		ND	ND	ND
Bromodichloromethane	1		ND	ND	ND
cis 1,3-Dichloropropene	1		ND	ND	ND
trans 1,3-Dichloropropene	1		ND	ND	ND
1,1,2-Trichloroethene	1		ND	ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15196 MW-10	15197 MW-11	15198 BLIND DUP
Tetrachloroethene	1		5.1	ND	14.0
Dibromochloromethane	1		ND	ND	ND
Chlorobenzene	1		ND	ND	ND
Bromoform	10		ND	ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 601 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15199 FIELD BLANK	15200 TRIP BLANK
Dichlorodifluoromethane	1		ND	ND
Chloromethane	1		ND	ND
Vinyl Chloride	10		ND	ND
Bromomethane	10		ND	ND
Chloroethane	1		ND	ND
Trichlorofluoromethane	10		ND	ND
1,1-Dichloroethene	1		ND	ND
Methylene Chloride	1		ND	ND
Trans 1,2-Dichloroethene	1		ND	ND
1,1-Dichloroethane	1		ND	ND
Chloroform	1		1.5	ND
1,1,1-Trichloroethane	1		ND	ND
Carbon Tetrachloride	1		ND	ND
1,2-Dichloroethane	1		ND	ND
Trichloroethene	1		ND	ND
1,2-Dichloropropane	1		ND	ND
Bromodichloromethane	1		ND	ND
cis 1,3-Dichloropropene	1		ND	ND
trans 1,3-Dichloropropene	1		ND	ND
1,1,2-Trichloroethene	1		ND	ND

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

METHOD: EPA 601

UNITS: ug/L (ppb)

PARAMETER VOLATILES	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15199 FIELD BLANK	15200 TRIP BLANK
Tetrachloroethene	1		ND	ND
Dibromochloromethane	1		ND	ND
Chlorobenzene	1		ND	ND
Bromoform	10		ND	ND
1,1,2,2-Tetrachloroethane	1		ND	ND
1,3-Dichlorobenzene	1		ND	ND
1,4-Dichlorobenzene	1		ND	ND
1,2-Dichlorobenzene	1		ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 18002

INVOICE PROJECT #: 1621 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 602 DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	DETECTION LIMIT	SAMPLE I.D. LAB:	15187	15188	15189	15190
		STATION:	MW-1	MW-2	MW-3	MW-4
Benzene	1		ND	ND	ND	ND
Toluene	1		ND	ND	ND	ND
Ethylbenzene	1		ND	ND	ND	ND
Total Xylenes	1		ND	ND	ND	ND
Chlorobenzene	1		ND	ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 18002

INVOICE PROJECT #: 1621 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 602 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	DETECTION LIMIT	SAMPLE I.D. LAB:	15191	15192	15193	15194
		STATION:	MW-5	MW-6	MW-7	MW-8
Benzene	1		ND	ND	ND	ND
Toluene	1		ND	ND	ND	ND
Ethylbenzene	1		ND	ND	ND	ND
Total Xylenes	1		ND	ND	ND	ND
Chlorobenzene	1		ND	ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND	ND

ND-None Detected

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ATTENTION: Lowell W. McBurney

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LAB PROJECT #: 18002

INVOICE PROJECT #: 1621 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 602 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	DETECTION LIMIT	SAMPLE I.D. LAB:	15195	15196	15197	15198
		STATION:	MW-9	MW-10	MW-11	BLIND DUP
Benzene	1		ND	ND	ND	ND
Toluene	1		ND	ND	ND	ND
Ethylbenzene	1		ND	ND	ND	ND
Total Xylenes	1		ND	ND	ND	ND
Chlorobenzene	1		ND	ND	ND	ND
1,3-Dichlorobenzene	1		ND	ND	ND	ND
1,4-Dichlorobenzene	1		ND	ND	ND	ND
1,2-Dichlorobenzene	1		ND	ND	ND	ND

ND-None Detected

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LAB PROJECT #: 18002

INVOICE PROJECT #: 1621 DATE SAMPLED: 01/29/91

MATRIX: Water DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 602 DATE SAMPLE ANALYZED: 02/01/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

PARAMETER	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15199 FIELD BLK	15200 TRIP BLK
Benzene	1		ND	ND
Toluene	1		ND	ND
Ethylbenzene	1		ND	ND
Total Xylenes	1		ND	ND
Chlorobenzene	1		ND	ND
1,3-Dichlorobenzene	1		ND	ND
1,4-Dichlorobenzene	1		ND	ND
1,2-Dichlorobenzene	1		ND	ND

ND-None Detected

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Solid DATE SAMPLE ANALYZED: 02/05/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15175 S-1	15176 S-2	15177 S-3
Arsenic	206.2	0.5		2.45	1.15	9.53
Barium	208.2	5.0		84.3	22.6	66.7
Cadmium	213.1	1.0		ND	ND	ND
Chromium	218.1	3.0		14.8	10.1	12.5
Lead	239.1	5.0		34.3	18.9	28.3
Mercury	245.2	0.2		ND	ND	ND
Selenium	270.2	0.5		0.55	ND	1.3
Silver	272.1	1.0		1.1	ND	1.1
Antimony	204.2	1.0		ND	ND	ND
Nickel	249.1	5.0		5.9	ND	8.3

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Solid DATE SAMPLE ANALYZED: 02/05/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15178 S-4	15179 S-5	15180 S-6
Arsenic	206.2	0.5		2.20	0.53	0.52
Barium	208.2	5.0		19.6	25.2	8.9
Cadmium	213.1	1.0		ND	ND	ND
Chromium	218.1	3.0		8.25	17.4	ND
Lead	239.1	5.0		31.1	12.5	5.4
Mercury	245.2	0.2		ND	ND	ND
Selenium	270.2	0.5		ND	ND	ND
Silver	272.1	1.0		ND	ND	ND
Antimony	204.2	1.0		ND	ND	ND
Nickel	249.1	5.0		ND	5.2	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Soil DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 418.1 DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	DETECTION LIMIT	PARAMETER TOTAL PETROLEUM HYDROCARBONS
15175	S-1	5	ND
15176	S-2	5	ND
15177	S-3	5	ND
15178	S-4	5	ND
15179	S-5	5	ND
15180	S-6	5	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 02/01/91

MATRIX: % SOLIDS DATE SAMPLE ANALYZED: 02/05/91

METHOD: EPA 160.3 DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	PARAMETER % SOLIDS
15175	S-1	97.9%
15176	S-2	96.9%
15177	S-3	96.8%
15178	S-4	95.4%
15179	S-5	97.2%
15180	S-6	99.9%

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)-1311

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15171	15172	15173
			STATION:	H-1	H-2	H-3
Arsenic	206.2	20		24	ND	ND
Barium	208.2	100		196	495	370
Cadmium	213.1	50		ND	802	489
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		10,500	329,000	116,000
Mercury	245.2	2		ND	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND
Antimony	204.2	20		ND	665	57
Nickel	249.1	100		ND	ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)-1311

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15174	15181	15182
			STATION:	H-4	DRUM-1	DRUM-2
Arsenic	206.2	20		ND	ND	ND
Barium	208.2	100		ND	464	227
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		6,200	11,000	ND
Mercury	245.2	2		ND	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND
Antimony	204.2	20		ND	ND	ND
Nickel	249.1	100		ND	ND	ND

ND-None Detected

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ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)-1311

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB:	15183	15184	15185
			STATION:	DRUM-3	DRUM-4	DRUM-5
Arsenic	206.2	20		ND	ND	ND
Barium	208.2	100		181	172	143
Cadmium	213.1	50		ND	ND	ND
Chromium	218.1	50		ND	ND	ND
Lead	239.1	100		ND	181	ND
Mercury	245.2	2		ND	ND	ND
Selenium	270.2	20		ND	ND	ND
Silver	272.1	20		ND	ND	ND
Antimony	204.2	20		ND	ND	ND
Nickel	249.1	100		ND	ND	ND

ND-None Detected

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CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: mg/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)-1311

PARAMETER	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15186 DRUM-6
Arsenic	206.2	20		ND
Barium	208.2	100		184
Cadmium	213.1	50		ND
Chromium	218.1	50		ND
Lead	239.1	100		148
Mercury	245.2	2		ND
Selenium	270.2	20		ND
Silver	272.1	20		ND
Antimony	204.2	20		ND
Nickel	249.1	100		134

ND-None Detected

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Solid & Hazardous Waste Site Assessments
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Underground Tank Management
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Hydrogeologic Investigations & Monitoring
Analytical Testing / Chemistry
Industrial Hygiene / Hazard Communication
Environmental Audits & Permitting
Exploratory Drilling & Monitoring Wells

CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE(TCLP)-1311

PARAMETER TCLP VOLATILES	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15181 DRUM-1	15182 DRUM-2
Benzene	602	5		ND	ND
Carbon tetrachloride	601	5		ND	ND
Chlorobenzene	601	5		ND	ND
Chloroform	601	5		ND	ND
1,2-Dichloroethane	601	5		ND	ND
2-Butanone	602	10		ND	ND
1,1-Dichloroethylene	601	5		ND	ND
Tetrachloroethene	601	5		ND	ND
Trichloroethene	601	5		ND	ND
Vinyl chloride	601	10		ND	ND

ND-None Detected

Randy Brown

RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

Reviewed by:
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INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE(TCLP)-1311

PARAMETER TCLP VOLATILES	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15183 DRUM-3	15184 DRUM-4
Benzene	602	5		ND	ND
Carbon tetrachloride	601	5		ND	ND
Chlorobenzene	601	5		ND	ND
Chloroform	601	5		ND	ND
1,2-Dichloroethane	601	5		ND	ND
2-Butanone	602	10		ND	ND
1,1-Dichloroethylene	601	5		ND	ND
Tetrachloroethene	601	5		ND	ND
Trichloroethene	601	5		ND	ND
Vinyl chloride	601	10		ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Leachate DATE SAMPLE ANALYZED: 01/31/91

UNITS: ug/L (ppb) DATE REPORT: 02/06/91

METHOD: TOXICITY CHARACTERISTIC LEACHING PROCEDURE(TCLP)-1311

PARAMETER TCLP VOLATILES	METHOD	DETECTION LIMIT	SAMPLE I.D. LAB: STATION:	15185 DRUM-5	15186 DRUM-6
Benzene	602	5		ND	ND
Carbon tetrachloride	601	5		ND	ND
Chlorobenzene	601	5		ND	ND
Chloroform	601	5		ND	ND
1,2-Dichloroethane	601	5		ND	ND
2-Butanone	602	10		ND	ND
1,1-Dichloroethylene	601	5		ND	ND
Tetrachloroethene	601	5		ND	17.3
Trichloroethene	601	5		ND	24.2
Vinyl chloride	601	10		ND	ND

ND-None Detected

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Soil DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 9045 DATE SAMPLE ANALYZED: 01/30/91

UNITS: pH UNITS DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	PARAMETER pH
15181	DRUM-1	5.0
15182	DRUM-2	4.6
15183	DRUM-3	5.5
15184	DRUM-4	5.4
15185	DRUM-5	5.4
15186	DRUM-6 (Water)	4.3

ND-None Detected

Randy Brown

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621 DATE SAMPLED: 01/29/91

INVOICE PROJECT #: 18002 DATE SAMPLE RECEIVED: 01/30/91

MATRIX: Soil DATE SAMPLE ANALYZED: 02/01/91

METHOD: Pensky Martens DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	PARAMETER IGNITABILITY
15181	DRUM-1	>220°F
15182	DRUM-2	>220°F
15183	DRUM-3	>220°F
15184	DRUM-4	>220°F
15185	DRUM-5	>220°F
15186	DRUM-6 (Water)	>220°F

ND-None Detected

Randy Brown

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Soil DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 9010 DATE SAMPLE ANALYZED: 02/04/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	DETECTION LIMIT	PARAMETER REACTIVITY CYANIDE
15181	DRUM-1	0.100	ND
15182	DRUM-2	0.100	ND
15183	DRUM-3	0.100	ND
15184	DRUM-4	0.100	ND
15185	DRUM-5	0.100	ND
15186	DRUM-6 (Water)	0.100	ND

ND-None Detected

Reviewed by:
Kim Humphries KH

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CLIENT: O'Brien & Gere

ATTENTION: Lowell W. McBurney

CLIENT PROJECT #: SSC - Chemtech 5153.001

LAB PROJECT #: 1621

INVOICE PROJECT #: 18002 DATE SAMPLED: 01/29/91

MATRIX: Soil DATE SAMPLE RECEIVED: 01/30/91

METHOD: EPA 9030 DATE SAMPLE ANALYZED: 02/04/91

UNITS: mg/kg (ppm) DATE REPORT: 02/06/91

SAMPLE I.D.	STATION	DETECTION LIMIT	PARAMETER REACTIVITY SULFIDE
15181	DRUM-1	5.0	ND
15182	DRUM-2	5.0	ND
15183	DRUM-3	5.0	ND
15184	DRUM-4	5.0	ND
15185	DRUM-5	5.0	ND
15186	DRUM-6 (Water)	5.0	ND

ND-None Detected

Reviewed by: KH
Kim Humphries

Randy Brown
RANDY BROWN
CHEMISTRY LABORATORY SUPERVISOR
CHEMISTRY DIVISION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

4WD-WPB

APR 16 1991

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Dwight Bell
SSC Industries
1550 East Taylor Avenue
East Point, Georgia 30344

RE: SSC Industries
EPA ID No. GAD003284049

Dear Mr. Bell:

The United States Environmental Protection Agency (EPA), pursuant to the authority and requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act (SARA), Public Law 99-499, is planning to conduct an investigation of the above referenced site. The SSC Industries site is located at 1550 East Taylor Avenue in East Point, Georgia. EPA has reason to believe that there may be a release or threat of a release of hazardous substances from the site into the surrounding environment. The purpose of the investigation is to determine the nature and extent of contamination at the site and to determine what, if any, further response action would be appropriate.

As per our telephone conversation on April 11, 1991 with you, EPA was granted permission for access to your property beginning on or about May 6, 1991 and continuing through the completion of the investigation on or about May 10, 1991. Activities to be conducted during the investigation include:

1. Inspect, sketch, and photograph the premises;

2. Collect surface and subsurface soil samples;

3. Collect groundwater and subsurface water samples;

4. Collect sediment samples;

5. Conduct air monitoring;

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6. Transportation of equipment onto and about the site as necessary to accomplish the activities above, including trucks and sampling equipment.

The above sampling activity will be conducted by personnel from EPA Region IV's Field Investigation Team(FIT). Mr. Gary Benfield of FIT will contact you prior to the actual site visit to make final arrangements and note any changes.

Split samples will be made available if requested. However, you will be required to furnish your own containers as well as your own laboratory analyses.

If you have any questions, please contact me at (404) 347-5065. Your cooperation in this matter is appreciated.

Sincerely,

Janice P. Thomas
Environmental Scientist

cc: Eddie Vasser, NUS Corporation
Maureen Gordon, NUS Corporation

THOMAS:JF:4/12/91 DOC: SSCIND DISK: THOMAS

THOMAS VILLAMARZO

ACCESS INFORMATION SHEET

RECEIVED
APR 0 5 1991
EPA - REGION IV

Site Name:	SSC Industries	**FIT Project Manager:**	Gary Benfield
Site Address:	1550 East Taylor Avenue East Point, Georgia	**FIT State Coordinator:**	Eddie Vasser
		EPA Contact:	Janice Thomas
		Field Date:	May 6, 1991
EPA ID #:	GAD003284049	**TDD Number:**	F4-9004-37

	File Information	Verification
Facility Owner/Operator Address Phone No. Principal Contact	Chemtech 1550 East Taylor Avenue East Point, GA 30344 (404) 762-9651	
Landowner Address Phone No. Principal Contact (if different from above)	Dwight Ball (404) 762-9651	
Date of Information	April 1, 1991	

Date Access Required (3 weeks prior to field date)	_____	**Date Information Submitted to EPA**	_____

Comments:

NUS CORPORATION

1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

SISB/SAS
C-586-9-0-173
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FEB 26 1991
EPA - REGION IV
5-5-7-90
SSI phase II
onsite sampling
Ophnic Pthms

September 27, 1990

Mr. A.R. Hanke
Waste Programs Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Subject: FASP Lead Concentration Analytical Results
SSC Industries/Chemtech
East Point, Georgia
TDD No. F4-9003-35

Dear Mr. Hanke:

Enclosed are the results for the FASP and CLP lead analyses of offsite samples collected in the vicinity of SSC Industries/Chemtech, 550 East Taylor Avenue, East Point, Georgia.

If you have any questions or comments, please do not hesitate to call me at NUS Corporation.

Very truly yours,

Sherry Durren

Sherry Durren
Project Manager

Approved:

SD/tb

Enclosure

cc: Mario Villamarzo

NUS CORPORATION

1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

C-586-9-0-173

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EPA - REGION IV
ATLANTA, GA.

September 27, 1990

Mr. A.R. Hanke
Waste Programs Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Subject: FASP Lead Concentration Analytical Results
SSC Industries/Chemtech
East Point, Georgia
TDD No. F4-9003-35

Dear Mr. Hanke:

Enclosed are the results for the FASP and CLP lead analyses of offsite samples collected in the vicinity of SSC Industries/Chemtech, 550 East Taylor Avenue, East Point, Georgia.

If you have any questions or comments, please do not hesitate to call me at NUS Corporation.

Very truly yours,

Sherry Durren
Project Manager

Approved:

SD/tb

Enclosure

cc: Mario Villamarzo

UNSCANNABLE

MEDIA

(PHOTOGRAPHS)

R-586-9-0-45

LEAD CONCENTRATION ANALYTICAL RESULTS

SSC Industries Inc./Chemtech
East Point, Georgia
EPA ID No. GAD003284049
TDD No. F4-9003-35

Revision 0

Investigation Date: May 1990

FIT Field Team: Sherry Durren, Sam McIver, Donnie McCurry, Bob Tolford, Eric Tschudi

FIT Analytical Team: Sherry Durren, Walter Riley, John Schendel, Prince Goins

Report Date: September 27, 1990

Submitted to: A.R. Hanke

Prepared By	Reviewed By	Approved By
Sherry Durren	John Morrow	Phil Blackwell
Project Manager	Chemistry Group	Regional Project Manager

NOTICE

The information in this document has been funded wholly by the United States Environmental Protection Agency (EPA) under Contract Number 68-01-7346 and is considered proprietary to the EPA. Technical content of this report is the responsibility of NUS, FIT 4, Tucker, Georgia.

This information is not to be released to third parties without the expressed or written consent of the EPA.

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I INTRODUCTION

FIT 4 was tasked to sample residential and other areas in the immediate vicinity of SSC Industries/Chemtech, East Point, Fulton County, Georgia for possible lead contamination in the surrounding community. Forty-seven surface soil samples were collected within approximately one mile of SSC Industries on May 21 and 22, 1990. Eleven more samples were collected on June 21, 1990. Samples were analyzed for lead contamination in the FIT 4 base laboratory.

II SAMPLING METHODOLOGY

Sampling locations were determined using a grid divided with approximately 1000 foot intervals in the area surrounding SSC. Because the prevalent wind direction in that area is from the northwest to the southeast, the majority of samples were taken southeast of the facility in an effort to identify a plume of migrating, airborne lead. Table 1 presents data for samples collected on May 21 and 22 (FA-101 through FA-147) and for samples collected on June 21 (FA-05 through FA-11). The June samples were collected to fill in data gaps and to confirm sample results. Table 1 also contains the results of 10 duplicate samples that were submitted to CLP for confirmation.

Sample locations, designated by x, y coordinates, and lead concentrations in mg/kg were entered into the Surfer Program (Surfer, Registered Trademark, Version 3.00, Golden Software, Inc., Golden, Colorado). (See Overlay and Figure 1). The Surfer Program is a graphics program used to prepare contour maps. In this case contours represent varying levels of lead concentration. Each contour line represents a change of 40 ppm in lead concentration. Because of interferences, sample locations did not fall exactly on 1,000 foot grid intervals. To simplify data input for the Surfer Program sample coordinate designations were divided by 1000 ft., thus reducing the x and y scales on the graph. For example, Sample FA-101 where X = 0.3 and Y = 5.8 was located 300 ft. east and 5800 ft. north of 0,0 as indicated on Figure 1. The SSC site location is also indicated on Figure 1. The lead concentration in mg/kg for each sample appears on the overlay that accompanies Figure 1.

III FASP DATA

Surface soil samples were collected in 8 ounce jars, iced, and transported immediately to the base lab. Samples were prepared by microwave digestion (CEM Corporation, Application Note GM-1) and analyzed using Method 7420, Lead (Atomic Absorption, Direct Aspiration), SW-846. FASP data are annotated with the data qualifier "F" indicating that quantitative data should be interpreted as estimated quantities.

FASP data is not equivalent to or a replacement for CLP data. The results presented in this report are consistent, in that all samples were collected, extracted and analyzed using the same procedure. The FASP analytical quantitation limit for lead for this study was 6 mg/kg. Quality control results are presented in Table 3. Ten duplicate samples were submitted to a CLP laboratory for metals analysis as confirmation samples. In many instances FASP and CLP data compare well. On an average, concentrations obtained by FASP tend to be 80% of those obtained by CLP analysis. Considering shortened preparation methods and quick turn-around time, this is an acceptable number.

IV SAMPLE RESULTS

Sample FA-134 initially was analyzed and found to contain 830 mg/kg lead, about 300 mg/kg greater than any other sample. This high concentration prompted a second sample collection trip to SSC. It was discovered that a large metals recycling facility is located directly southeast of SSC. The facility recycles lead, copper, brass, iron, steel, and batteries. Sample FA-134 had been collected near the recycling facility. Samples FA-134 and FA-10, collected from the same location, have been omitted from the contour map.

High lead concentrations (>500 mg/kg) were noted in an area northwest of the SSC facility. Additional samples were collected here in June as a check on earlier results. These numbers have remained high. According to wind rose information, prevailing winds in Atlanta blow from the northwest the majority of the time. Winds also blow from the southwest and east (U.S. Department of Commerce, Climatic Atlas of the United States (Washington, D.C.: GPO June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration, p. 76). Without further investigation into local meteorology it is not possible to make a correlation between wind direction and lead deposition around the facility.

During the second sampling trip four samples were collected offsite from four corners of the SSC property. Sample locations as well as surrounding businesses are shown in Figure 3. Sample results are presented in Table 2. 1800 mg/kg of lead was detected in the sample collected at the northwest corner of the facility.

V CONCLUSION

Onsite sampling at SCC by Applied Engineering Science in 1989 indicated extremely high levels of lead concentration. One sample near the loading dock measured 87,000 ppm lead. FASP sampling of the four corners of the facility in June 1990 yielded concentrations ranging from 220 mg/kg to 1800 mg/kg lead. Extensive offsite sampling within about one mile of SSC was performed. An expected plume of lead deposition to the southeast based on the prevalent wind direction was not found. Higher concentrations of lead were observed northwest of the facility.

The following unexamined factors may affect the concentration as well as the deposition of lead in the area of SSC: other sources of lead such as recyclers, manufacturers; combustion of lead containing petroleum products; presence of a nearby airport; effects of local geography such as buildings, embankments, etc. on wind direction. Whether fugitive lead emissions from SSC Industries are a direct threat to the surrounding community can not be concluded from this study. FIT 4 recommends that immediate onsite sampling be scheduled for SSC Industries. FIT 4 also recommends that inquiry be made through further sampling and/or a literature search for more information on the nature of lead deposition in an urban setting. Such information would make it possible to establish a baseline background level of urban lead concentrations for comparison purposes. From this a more accurate evaluation of community threat could be made.

TABLE 1
SSC INDUSTRIES
GRID SAMPLES, FASP DATA

FASP Sample ID	X	Y	Distance from Road (feet)	Lead (mg/kg)	CLP Sample ID	Lead (mg/kg)
FA-101	0.3	5.8	5	61F	SSC-SS-01	140
FA-102	1.5	4.9	4	280F		
FA-103	2.4	3.7	3	68F	SSC-SS-02	65
FA-104	3.3	2.9	5	No data		
FA-105	4.0	2.0	-	70F	SSC-SS-03	110
FA-106	0.2	4.8	10	510F		
FA-107	1.0	3.7	15	120F		
FA-108	2.1	3.0	15	150F		
FA-109	3.2	2.2	60	32F		
FA-110	4.0	1.0	10	65F		
FA-111	1.0	6.0	10	44F		
FA-112	2.2	5.0	45	100F		
FA-113	3.0	3.8	30	33F		
FA-114	4.0	3.0	10	310F		
FA-115	5.0	2.0	20	91F		
FA-116	6.0	1.0	20	75F		
FA-117	5.2	1.0	5	66F		
FA-118	6.0	0.0	5	190F	SSC-SS-04	410
FA-119	1.0	3.0	-	290F		
FA-120	0.2	4.2	5	210F		
FA-121	2.0	2.0	8	110F	SSC-SS-06	120
FA-122	3.0	1.0	200	8F		
FA-123	4.0	0.0	-	88F		
FA-124	0.2	0.4	10	56F		

FA - Field Analytical Sample
SS - Surface Soil
X - East/West Location of Sample
Y - North/South Location of Sample
F - FASP Data, all quantities are estimated
* - Sample FA-134 reanalyzed 6/8/90. Results 960F mg/kg.

TABLE 1
SSC INDUSTRIES
GRID SAMPLES, FASP DATA

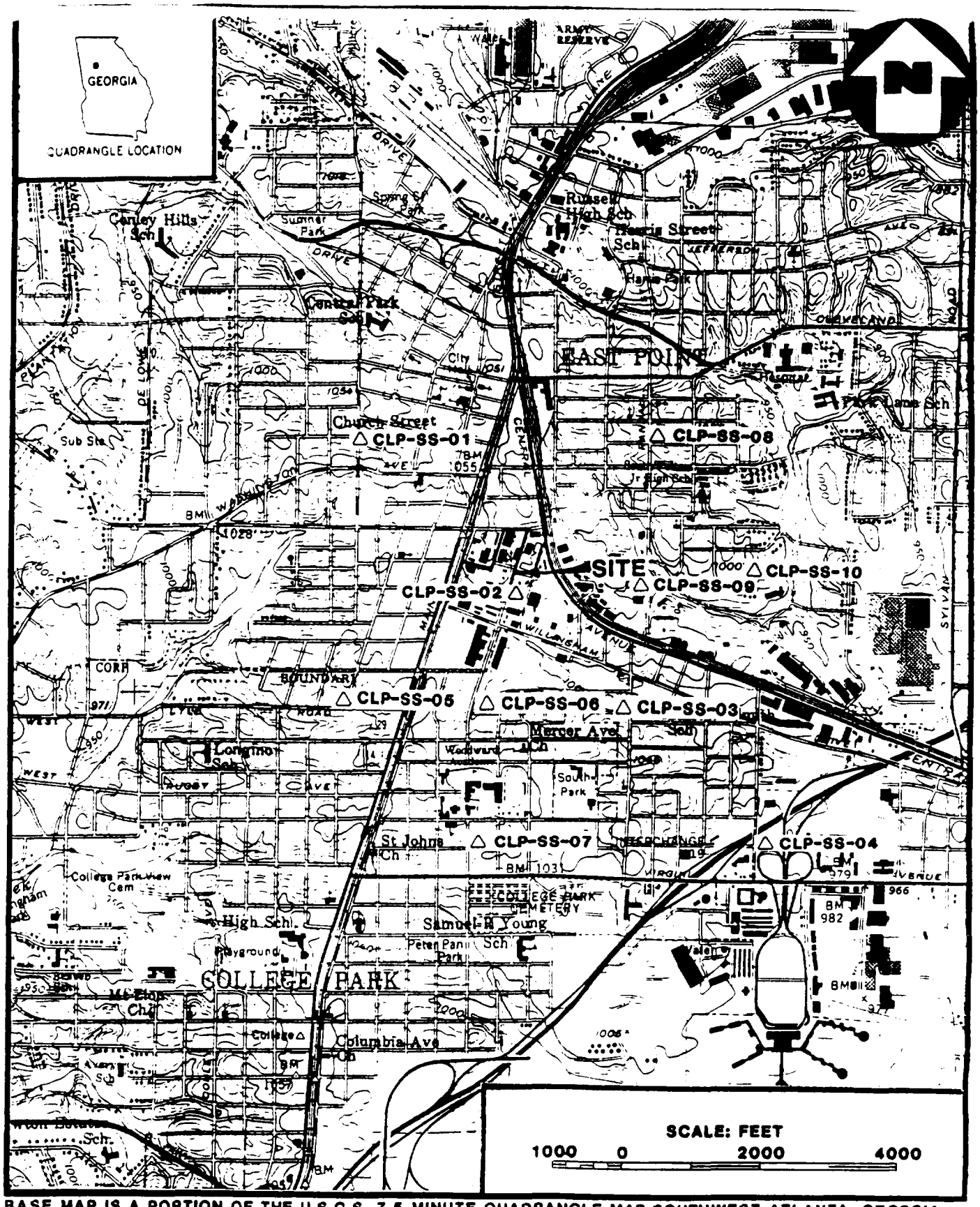
FASP Sample ID	X	Y	Distance from Road (feet)	Lead (mg/kg)	CLP Sample ID	Lead (mg/kg)
FA-125	0.0	2.0	3	170F	SSC-SS-05	9.4
FA-126	0.2	3.0	17	220F		
FA-127	2.0	0.0	3	170F	SSC-SS-07	190
FA-128	2.4	1.2	20	27F		
FA-129	1.8	5.9	7	510F		
FA-130	3.0	4.7	7	140F		
FA-131	4.2	4.2	5	44F	SSC-SS-09	60
FA-132	3.0	5.9	30	24F		
FA-133	3.6	5.2	15	72F		
FA-134	4.7	3.9	20	* 830F		
FA-135	5.3	3.0	7	71F		
FA-136	6.0	2.8	30	130F		
FA-137	5.8	4.0	500 +	25F	SSC-SS-10	20
FA-138	7.3	4.2	2	170F		
FA-139	4.0	5.8	4	160F	SSC-SS-08	220
FA-140	8.6	4.2	7	170F		
FA-141	5.5	5.1	5	53F		
FA-142	7.3	5.8	4	19F		
FA-143	6.0	2.0	6	190F		
FA-144	5.7	6.2	4	28F		
FA-145	6.0	5.1	11	220F		
FA-146	7.1	3.4	9	210F		
FA-147	8.6	2.0	15	380F		
FA-05	3.7	4.2	5	130F		

FA - Field Analytical Sample
SS - Surface Soil
X - East/West Location of Sample
Y - North/South Location of Sample
F - FASP Data, all quantities are estimated
* - Sample FA-134 reanalyzed 6/8/90. Results 960F mg/kg.

TABLE 1
SSC INDUSTRIES
GRID SAMPLES, FASP DATA

FASP Sample ID	X	Y	Distance from Road (feet)	Lead (mg/kg)	CLP Sample ID	Lead (mg/kg)
FA-06	3.3	3.4	3	71F		
FA-07	1.5	5.9	<1	570F		
FA-08	2.3	6.4	3	210F		
FA-09	0.5	4.2	2	150F		
FA-10	4.7	3.9	2	670F		
FA-11	4.6	3.8	5	230F		

FA - Field Analytical Sample
SS - Surface Soil
X - East/West Location of Sample
Y - North/South Location of Sample
F - FASP Data, all quantities are estimated
* - Sample FA-134 reanalyzed 6/8/90. Results 960F mg/kg.



BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE MAP SOUTHWEST ATLANTA, GEORGIA, 1983.

CLP SAMPLE LOCTION MAP
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

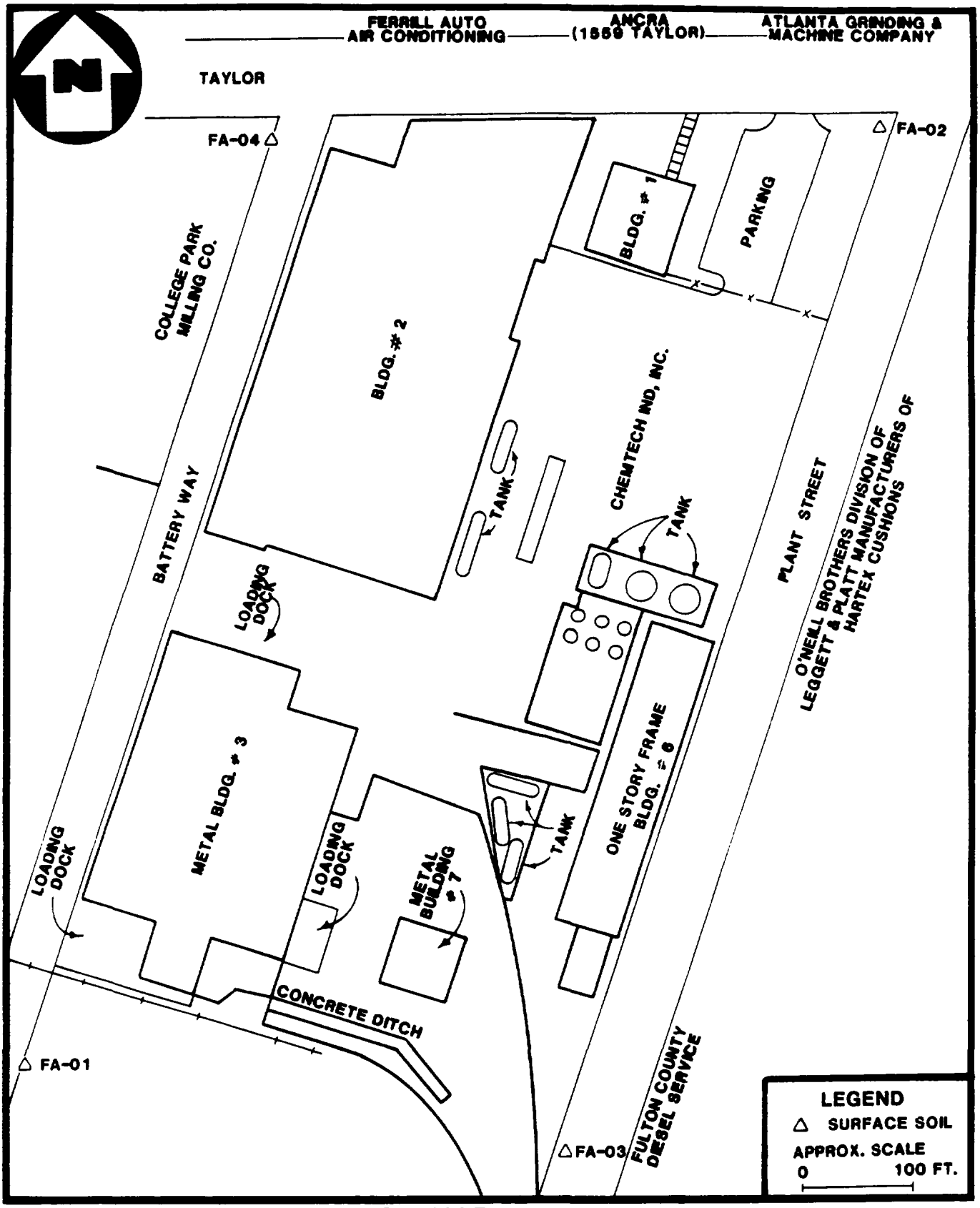
FIGURE 2

NUS CORPORATION

TABLE 2
SSC INDUSTRIES
OFFSITE SAMPLES, FASP DATA

FASP Sample ID	Location	Distance from Road (feet)	Lead (mg/kg)
FA-01	Southwest Corner	3	580F
FA-02	Northeast Corner	2	680F
FA-03	Southeast Corner	2	220F
FA-04	Northwest Corner	1	1800F

FA - Field Analytical Sample
F - FASP Data, all quantities are estimated



OFF SITE SAMPLE LOCATION MAP
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORGIA

FIGURE 3

NUS CORPORATION

TABLE 3
SSC INDUSTRIES
DUPLICATE RESULTS
SOIL LEAD ANALYSIS
(mg/kg)

Sample	Sample Result	Duplicate Result	% Difference
FA-01	580F	580F	0
FA-114	310F	260F	16
FA-123	88F	91F	3.4
FA-124	58F	53F	8.6
FA-132	24F	24F	0
FA-134	960F	780F	19
FA-140	170F	180F	5.9

FA - Field Analytical Sample
F - Data have been generated using FASP methodologies. Analyte concentrations are quantitative estimates.
% Difference = (sample - duplicate) /sample

TABLE 4
SSC INDUSTRIES
MATRIX SPIKE RECOVERY RESULTS
SOIL LEAD ANALYSIS
(mg/kg)

Sample	Sample Result	Amount Lead Spiked	Sample With Spike	% Recovery
FA-114	310F	1000	1000F	69
FA-123	88F	1000	950F	86
FA-124	56F	1000	870F	81
FA-132	24F	1000	730F	71
FA-140	170F	1000	890F	72

FA - Field Analytical Sample
F - Data have been generated using FASP methodologies. Analyte concentrations are quantitative estimates.
% Recovery = (Spiked Sample - Unspiked Sample)/spike.

TABLE 5
SSC INDUSTRIES
NBS STANDARD RECOVERY RESULTS
SOIL LEAD ANALYSIS
(mg/kg)

Sample	Sample Result	% Recovery
NBS-1	30F	107
NBS-2	26F	93
NBS-1A	30F	107
NBS-2A	24F	86
NBS-3	30F	107
NBS-4	26F	93
NBS-5	39F	139
AVERAGE	29F	104

NBS STANDARD #1646 Estuarine Sediment
Lead concentration = 28.3 ± 1.8 ug/g
F - Data have been generated using FASP methodologies. Analyte concentrations are quantitative estimates.
% Recovery = Sample result/28 mg/kg.

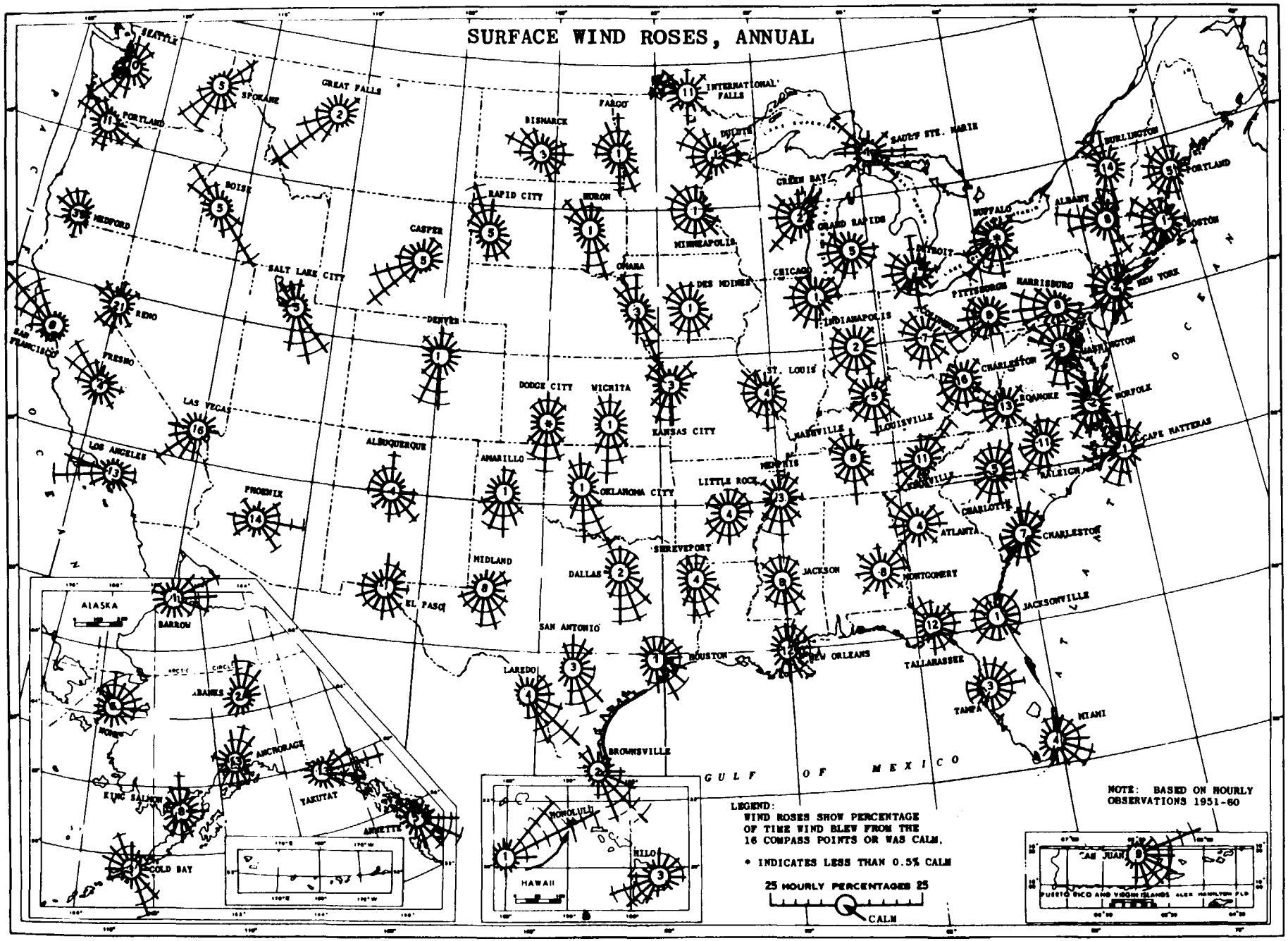
TABLE 6
SSC INDUSTRIES
METHOD BLANK RESULTS
SOIL LEAD ANALYSIS
(mg/kg)

Sample	Sample Result
MB-1	6.0 UF
MB-2	6.0 UF
MB-3	6.0 UF
MB-4	6.0 UF

F - Data have been generated during FASP methodologies. Analyte concentrations are quantitative estimates.

U - The material was analyzed for but was not detected. The associated numerical value is a FASP quantitation limit, adjusted for sample weight, extract volume, and

SURFACE WIND ROSES, MONTHLY AND ANNUAL; RESULT AN



STATE AND STATION
ALA. Birmingham
Mobile
Montgomery
ALASKA Anchorage
Cold Bay
Fairbanks
King Salmon
ARIZ. Phoenix
Tucson
ARK. Little Rock
CALIF. Bakersfield
Burbank
Fresno
Los Angeles
Oakland
Sacramento
San Diego
San Francisco
COLO. Colorado
Denver
CONN. Hartford
D.C. Washington
DEL. Wilmington
FLA. Jacksonville
Miami
Orlando
Tallahassee
Tampa
West Palm Beach
GA. Atlanta
Augusta
Macon
Savannah
HAWAII Hilo
Honolulu
IDAHO Boise
ILL. Chicago
Chicago (Mid)
Moline
Springfield
IND. Evansville
Fort Wayne
Indianapolis
South Bend
IOWA, Des Moines
Sioux City

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	GAD003284049

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
SSC Industries	1550 East Taylor Avenue				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
East Point	GA	30344	Fulton		

09 COORDINATES	LATITUDE	LONGITUDE
	33°40'20.0	084°26'25 0

10 DIRECTIONS TO SITE (Starting from nearest public road)

From the intersection of Main Street and Willingham Drive, proceed east on Willingham Drive for approximately 900 feet and then turn left onto Plant Rd. After approximately 1300 ft., Plant Road will dead-end into East Taylor Ave. SSC is located on the left at this intersection.

III. RESPONSIBLE PARTIES

01 OWNER (IF KNOWN)	02 STREET (Business, mailing, residentiall)		
Chemtech Industries			
03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
St. Louis	MS		
07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residentiall)		
SSC Industries	1550 East Taylor Avenue		
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
East Point	Ga.	30344	404-762-9651

13 TYPE OF OWNERSHIP (Check one)

☑ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103c) DATE RECEIVED: ☑ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☐ YES

☑ NO DATE: 08/18/89

BY (Check all that apply)

☐ A. EPA ☑ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR

☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER _____ (Specify)

CONTRACTOR NAME(S): NUS Corporation

02 SITE STATUS (Check one)

☑ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

BEGINNING YEAR	ENDING YEAR
1968	Present

☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Pentachlorophenol, Maleic Anhydride, Methyl Isobutyl Ketone, Tetrachloroethene, and Lead.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Unknown

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH (Inspection required promptly) ☑ B. MEDIUM (Inspection required promptly) ☐ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT: Mario Villamarzo 02 OF (Agency/Organization): EPA Region IV 03 TELEPHONE NUMBER: (404) 347-5065

04 PERSON RESPONSIBLE FOR ASSESSMENT: Jonathan Hughes 05 AGENCY: NUS 06 ORGANIZATION: FIT 07 TELEPHONE NO: 404-938-7710 08 DATE: 08/28/89

PRELIMINARY ASSESSMENT

Date: September 28, 1989

Prepared by: Jonathan Hughes, NUS Corporation
NUS Corporation, FIT 4; Atlanta, Georgia

Site: SSC Industries
1550 East Taylor Avenue
East Point, Fulton County, Georgia
TDD No. F4-8908-31
EPA ID No. GAD003284049
Revision 0

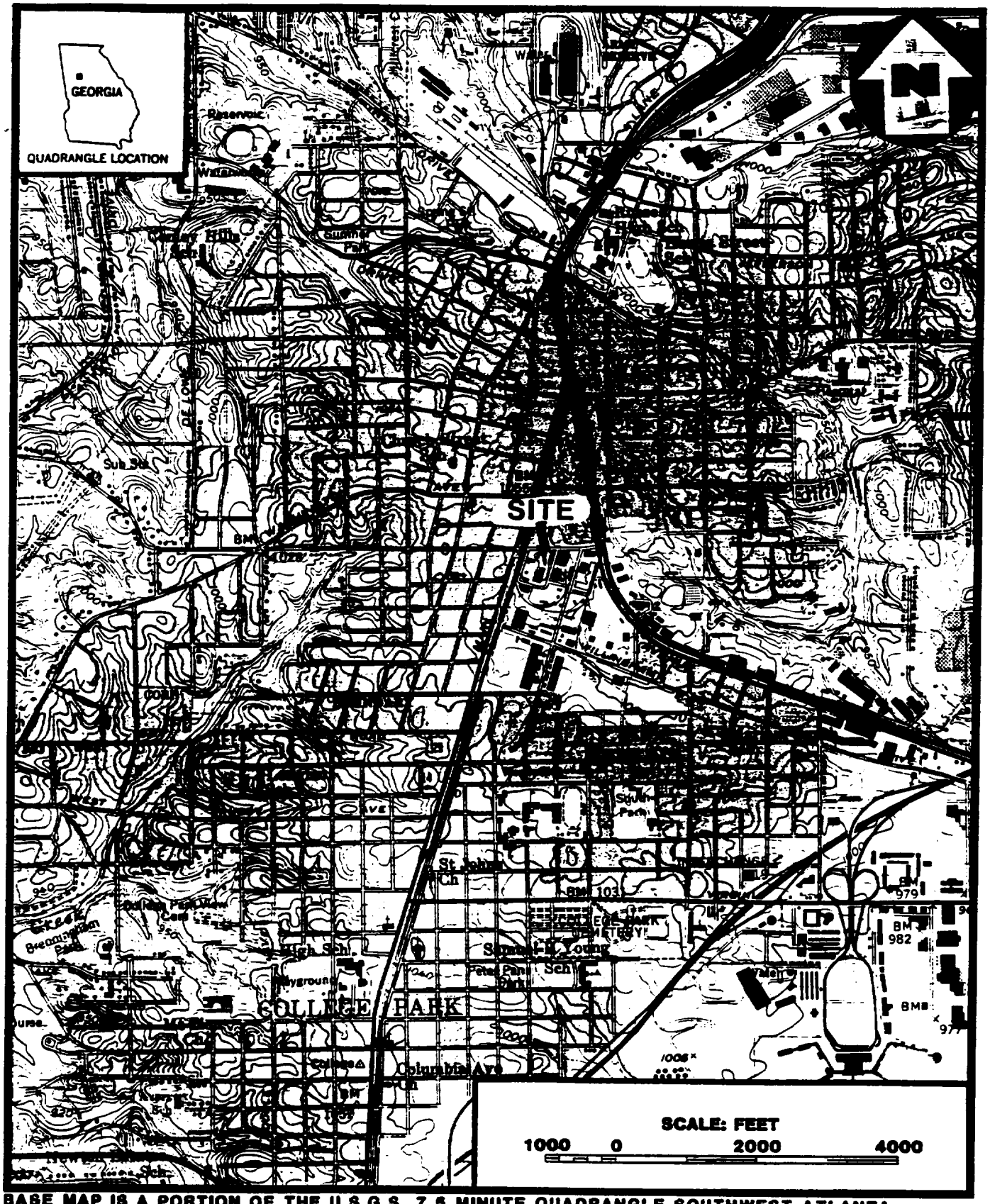
Recommendation and Justification

A screening site inspection of medium priority is recommended for the SSC Industries facility. This recommendation is based on the following concerns: the presence of lead contamination on site and the possibility of lead contamination off site; the presence of a nearby playground and residential area; and the presence of freshwater wetlands along the surface water migration route.

Site History

SSC Industries is located on 1550 East Taylor Avenue east of the Seaboard Railroad in an industrial area (Refs. 1, 2) (Figure 1). The property consists of approximately 12 acres (Ref. 3) (Figure 2). There are approximately 8135 persons living within a 1-mile radius of the facility. Two houses are within 300 feet (Refs. 3, 4).

Prior to 1968, the property was owned by Gould National Batteries. From 1968-1978, the property was owned by Southern Sizing Company. From 1978-1984, the property was owned by SSC Industries Inc. From December 3, 1984, to the present, the property has been owned by Chemtech Industries but has retained the name of SSC Industries (Ref. 5). SSC Industries manufactures textile and paper processing chemicals and foam control agents through blending and cooking in several reactors on site (Ref. 6).

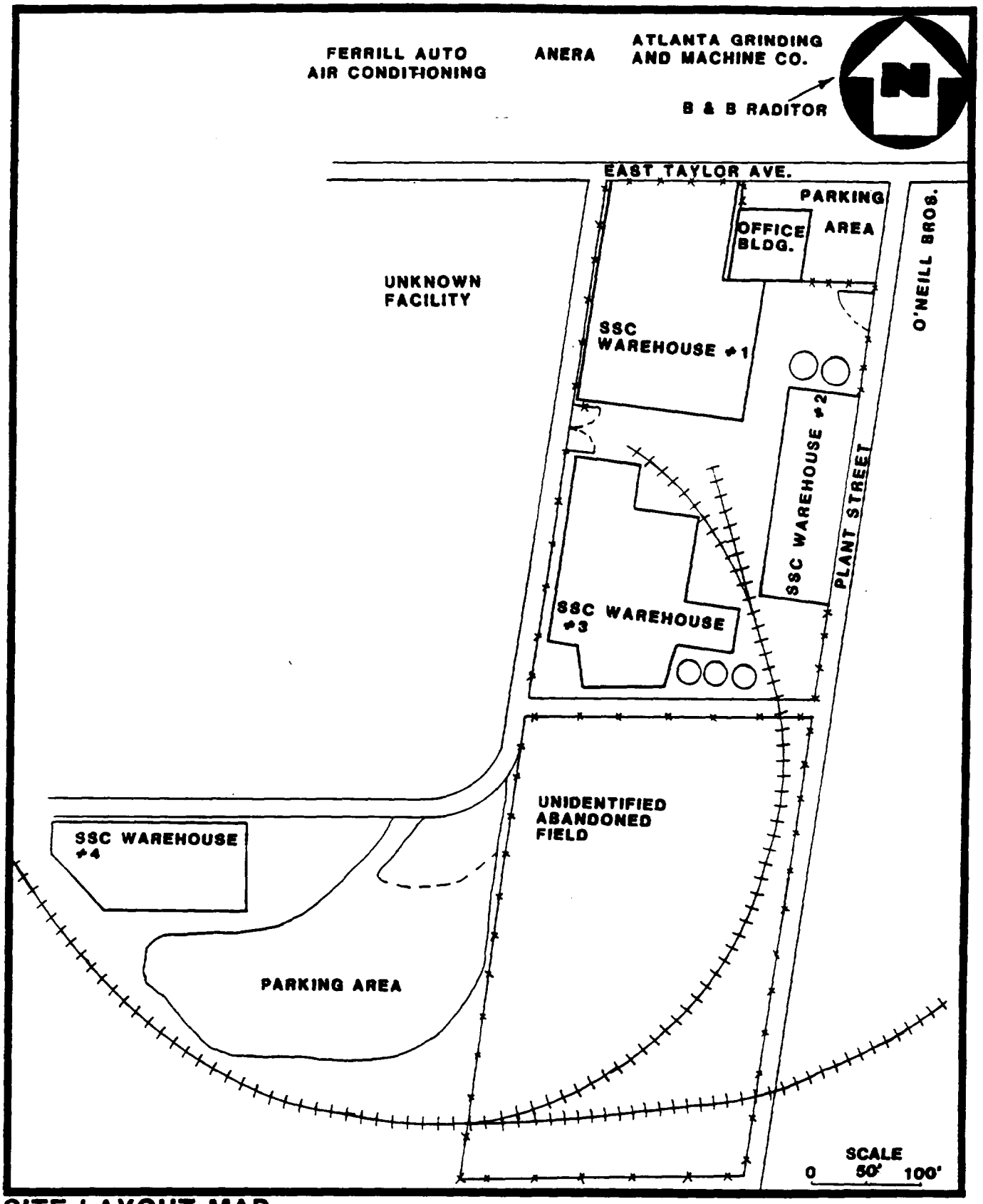


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE SOUTHWEST ATLANTA, GEORGIA 1983.

SITE LOCATION MAP
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORIGA

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORIGA

FIGURE 2

NUS CORPORATION

Disposal History and Waste Characteristics

Liquid waste produced at the facility consists of long-chain hydrocarbons, fatty acids, fatty esters, polyethylene, and surfactants in water, which are generated by reactor washdowns (Ref. 6). More specific chemicals produced at the facility are pentachlorophenol, tetrachloroethene, methyl isobutyl ketone, and maleic anhydride (Ref. 1).

SSC has had difficulty disposing of their liquid waste throughout their history. In 1980, O.E. Rylander, the liquid waste transporter for SSC, requested that the EPA investigate the liquid waste (oils, fats, and greases) that they were transporting to Rolling Hills Sanitary Landfill since they suspected it to be hazardous (Ref. 7). The results of this are unknown. In 1983, SSC improperly disposed of 300 55-gallon drums of homogenated animal fat in Meriwether County. SSC was notified by the Industrial and Hazardous Waste management program requiring them to rectify the improper disposal (Ref. 8).

In February 1986, Mr. Jack Westberry, Plant Manager for SSC, was contacted by the East Point Inspection Department regarding a white substance that was flowing off of the SSC facility to the southeast. Examination of examining the substance revealed that it was a surfactant-type material. SSC prevented flow of the substance and cleaned up the contaminated area (Ref. 9).

In March 1989, SSC Industries retained the services of a local consulting firm to evaluate the presence of lead contamination on their property from previous operations. The studies were to investigate the vertical and horizontal extent of contamination. The results from the study have yet to be completed (Ref. 5).

Regulatory History

SSC Industries filed a Notification of Hazardous Waste form in September 1980 (Ref. 1). The company filed for protection reasons and is presently classified as a small quantity generator (Refs. 7,10).

Groundwater Pathway

SSC Industries is located in the Piedmont Physiographic Province and hydrogeologic regime which is typified by a residual soil of variable thickness overlying folded, faulted, and fractured metamorphic and igneous crystalline bedrock of Paleozoic age (Ref. 11). The facility rests directly on the undifferentiated Tar Creek Member of the Clarkston Formation, which consists of a sillimanite mica schist interlayered with amphibolite (Ref. 12).

The source of groundwater in the area is from the surficial, unconfined residual soil/crystalline rock aquifer system. Although water levels are quite variable in this aquifer, the water table is locally located at an average depth of 70 feet below land surface (bls) in the vicinity of the facility (Refs. 3, 13).

The most common type of residual soil that develops from weathering of mica schists and amphibolites is a dense clay material. They clay residual soil represents the layer with the lowest hydraulic conductivity between underlying crystalline rocks and the surface, with typical values ranging from 1×10^{-6} to 1×10^{-7} cm/sec (Ref. 13). There is a net annual rainfall of 7 inches and a 1-year, 24-hour rainfall of 3.25 inches (Refs. 14, 15).

No private wells or springs were located during the offsite reconnaissance (Ref. 2). However, some irrigation wells have been reported in the area (Ref. 16).

Surface Water Pathway

Surface runoff drains in a southeasterly direction toward Mud Creek. Total overland flow is approximately 2.5 miles . Mud Creek is a tributary to the Flint River. It merges with the Flint River after approximately 5 miles (Ref. 3). The Flint River hosts recreational swimming, fishing, and boating (Ref. 18). Freshwater wetlands are located on Mud Creek and the Flint River. Wetlands begin approximately 5 miles from the facility (Ref. 3). There are no permitted intakes within 15 miles downstream of the site (Ref. 17).

All residences in the area of concern are served by municipal water systems. The city of East Point, where the facility is located, obtains its drinking water from Sweetwater Creek. The East Point Water Department's intake on Sweetwater Creek is approximately 10 miles northwest and upgradient of the facility. East Point Water Department also supplies water to College Park and Hapeville (Ref. 17). The remainder of south Fulton County, which is within the 4-mile site radius, is serviced by the Atlanta Water Department. The Atlanta Water Department intake is on the Chattahoochee River upgradient and north of the facility (Refs. 20, 21).

Air Pathway

There are no air emission sources on site; however, fugitive dust from contaminated surface soils could pose a threat to workers on site.

HRS2 Concerns

Access to the facility is difficult since the area is completely fenced (Ref. 2). However, soil contaminated with lead is present on site, and could have spread off site. SSC has retained an environmental consulting firm to determine the vertical and horizontal extent of lead contamination (Ref. 5). The samples have not returned from analysis.

There are approximately 9 schools, 15 churches, and 2143 residences within a 1-mile radius of the facility (Ref. 3). There is also a playground, community center, and residential area 900 feet east of the facility. No stressed vegetation was seen on site (Ref. 2).

Swimming, fishing, and boating occur along the extended surface water migration pathway (Ref. 18). Furthermore, there are freshwater wetlands along the extended pathway (Ref. 3). Although the ranges of some endangered or threatened species include the state of Georgia, no federally designated critical habitats are in Fulton County (Ref. 22).

Reference No. 2

"Rite in the Rain"®

ALL-WEATHER

LEVEL

Notebook No. 311

F4-1582
F4-8908-31
SSC Industries
East Point, Fulton Co., GA
Jonathan F. Hughes

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook: TDD No., Site Name, Site Location, Project Manager.
2. All entries are made using ink. Draw a single line through errors. Initial and date corrections.
3. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team members' signatures.
4. Record weather conditions and general site information.
5. Sign and date each page. Project Manager is to review and sign off on each logbook daily.
6. Document all calibration and pre-operational checks of equipment. Provide serial numbers of equipment used onsite.
7. Provide reference to Sampling Field Sheets for detailed sampling information.
8. Describe sampling locations in detail and document all changes from project planning documents.
9. Provide a site sketch with sample locations and photo locations.
10. Maintain photo log by completing the stamped information at the end of the logbook.
11. If no site representative is on hand to accept the receipt for samples, an entry to that effect must be placed in the logbook.
12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.
13. Complete SMO information in the space provided

I have read and understand the Phase I workplan for this facility.

Jonathan Fitzgerald 8/18/89

Elaine Tinsley 8/18/89

[illegible] 8-18-89

Solomon Pollard Jr 8-18-89

Equipment serial numbers:

690779 - 35 mm

690780 - Polaroid

C00002

Arrived at site 1:00 PM
Hazy, hot + humid ≈ 90°F

Area is fenced with barbed wire

Across street (East Taylor)
- Ferrill Auto Air Cond.
- Ancra
- Atlanta Grinding and Machine Co.
- B + B Radiator (766-4967)

listed from W-E

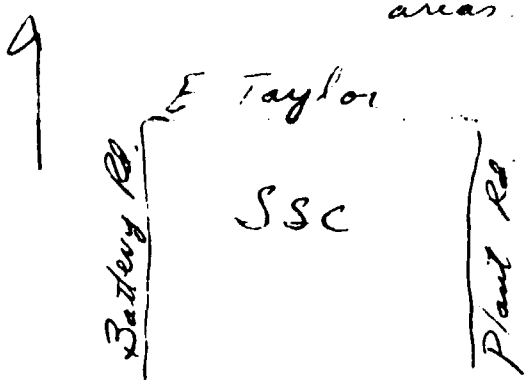
Driving around the facility, there were gates open and unattended.

There are adequate signs expressing danger and flammability.

Gates have chains.

Jonathan F. Hughes 8/18/89

Separate, fenced in area located behind facility. Could be part of SSC facility. RR tracks separate these two fenced areas.

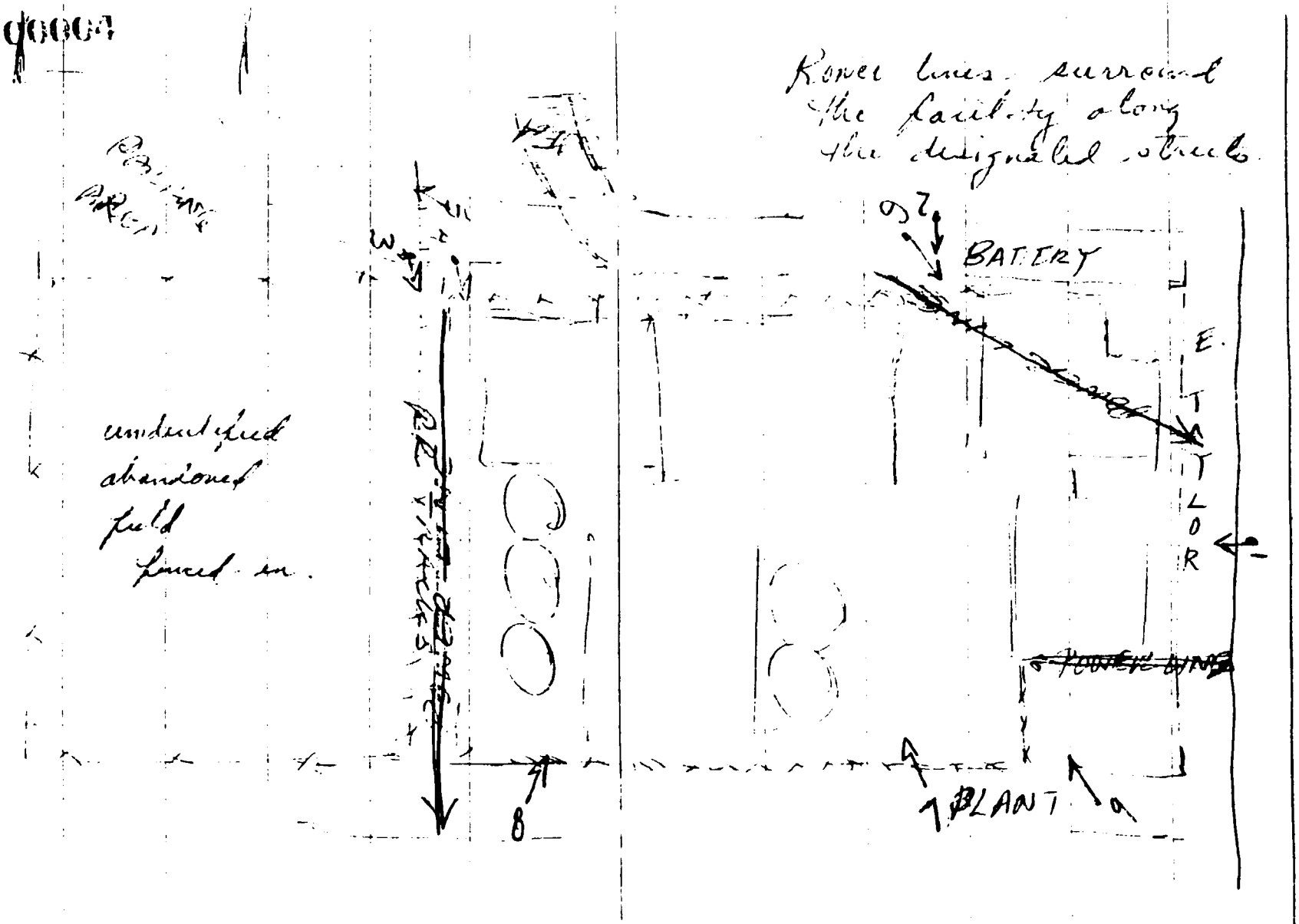


3 large storage tanks at rear of facility.

Water Tower is located across Battery Rd from SSC

Jonathan F. Hughes 8/18/89

C00003



Jonathan F. Hugh 8/18/89

Jonathan F. Hugh 8/18/89

Area is accessible.
Not overgrown

Vegetation seems to be healthy.

There was seen to be no dead fauna on site.

Located in an industrial area.

No private wells were located.

No air emission sources seen on site

playground community wells and residential area are located approx [illegible] [illegible]

Jonathan T. Hughes 8/8/89

Reference No. 4

COVERAGE

STATE	COUNTY	STATE NAME	COUNTY NAME
13	63	Georgia	Clayton Co
13	67	Georgia	Cobb Co
13	121	Georgia	Fulton Co

CENTER POINT AT STATE : 13 Georgia
COUNTY : 121 Fulton Co

Press RETURN key to continue...

REGION OF THE COUNTRY

Zipcode found: 30344 at a distance of 0.9 Km

STATE	CITY NAME	COMMUNITY	FIPSCODE	LATITUDE	LONGITUDE
GA	ATLANTA	EAST POINT	13121	33.6800	84.4417

Press RETURN key to continue ...

CENSUS DATA

SSC Industries
LATITUDE 33:40:20 LONGITUDE 84:26:25 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	347	1680	8571	10028	20626
S 2	0	480	1004	3316	6920	10394	22114
S 3	0	474	2051	4112	7919	9053	23609
S 4	328	0	540	78	508	961	2415
S 5	0	1127	815	1251	36	3849	7078
S 6	0	0	341	4166	11128	3091	19226
S 7	0	1154	1157	4877	3242	5451	15881
S 8	0	0	1380	5586	6928	6282	20176
RING TOTALS	328	2235	8135	25066	45252	49109	131125

Press RETURN key to continue ...

END OF STATISTICS

Reference No. 5

MEMO TO FILE

MARCH 20, 1989

FROM: MARIO VILLAMARZO
TO: SSC INDUSTRIES FILE
GAD003284049

The attached SSC Industries letter was received on March 20, 1989

As notification of the existence of the situation, a copy of the letter was provided to Jan Rogers of Region 4 ERCS.

I spoke with Mr. J. Dwight Bell, Jr. (of SSC Industries) per telc of 3/20/89. Mr. Bell provided the following history of the facil. at the address where SSC Industries is located:

pre-1968.....owned by Gould National Batteries
1968-1978.....owned by Southern Sizing Company
1978-1984.....owned by SSC Industries Inc.
Dec 3, 1984
to present.....owned by Chemtech and called SSC Industrie

The site is listed in WASTELAN as of 3/20/89.

SSC INDUSTRIES
CHEMTECH

March 16, 1989

Mr. Mario Villamarzo, Jr.
Emergency Response and Control Section
U.S. Environmental Protection Agency
345 Courtland Street
Atlanta, GA 30365

RE: SSC Industries, East Point, GA

Dear Mr. Villamarzo:

Please be advised that SSC Industries, located at 1550 East Taylor Street, East Point, Georgia, 30344 wishes to report the presence of an undetermined volume of surface and subsurface soils on our property contaminated with lead. The present owner of the property, SSC Industries, has not contributed in any way to this condition and is currently investigating the responsibility of prior owners and operators.

We have retained the services of Applied Engineering and Science, Inc., ("AES") an Atlanta based consulting firm experienced in hazardous waste management, to fully investigate both the vertical and horizontal extent of lead contamination on our property. These studies are presently underway. It is the opinion of AES that the presence of lead does not present a safety hazard to our employees or to the surrounding residents.

The presence of the lead in the soil was discovered when SSC Industries was in the process of excavating soil on its property. The soil was tested prior to disposal and the lead was discovered. This soil is presently secured on our property. We are at this time receiving proposals from several contractors for the proper transportation and disposal of this material in a secured, permitted, hazardous waste landfill.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

ENVIRONMENTAL PROTECTION DIVISION
SOLID WASTE MANAGEMENT SECTION
ACTION REPORT

Reference No. 6

1-4-80

FACILITY ID	REGION	COUNTY	HOURS	REVIEWED BY	CODE
	North 4	Fulton 060	4	HK	

FACILITY NAME Southern Sizing Company

ADDRESS Box 90987 CITY East Point ZIP 30344

PERSON(S) CONTACTED Jack Westberry TITLE Plant Engineer

TRIP BY Jennifer Kaduck ACCOMPANIED BY none

INVESTIGATION DATE 11-16-79 FOLLOW-UP DATE 3-1-80

REFERENCE Request by Rylander to evaluate landfilled liquid waste

PROGRAM ACTIVITY Inspection & Compliance - Industrial (03)

ACTIONS	FINDINGS/DECISIONS	NEXT ACTIONS
Office Meeting 43	Insufficient Info 85	Review Plans 42
Facility requested to submit plans 40		Telephone call 44

COMMENTS, CONCLUSIONS, AND RECOMMENDATIONS:

1. O. E. Rylander reported this facility has been his customer for hauling 1,000 gal/2 weeks of liquid wastes containing oils, fats, and greases. Previously, the waste has been disp of in Rolling Hills SLF, but has been rejected as of November 30, 1979.

2. Meeting with Mr. Westberry of SSC revealed the company plans to work off most of this liq waste and store "non-work-off" portions in a 4500 gal storage tank. The liquid waste consists of long chain hydrocarbons, fatty acids, fatty esters, polyethylene, and surfactants in water which is generated by reactor washdowns. SSC manufactures textile and paper processing chemicals and foam control agents ~~in a~~ through blending and cooking in several reactors on site.

3. I explained to Mr. Westberry that continuous disposal of liquid wastes at local SLF's was becoming increasingly difficult and SSC needed to develop an alternative disposal method

CONCLUSIONS AND RECOMMENDATIONS CONT.

He indicated that the facility will try a combination of work-off, H_2O removal, sewer discharge, and incineration in their #2 fuel oil boiler. He reported that he will contact this office prior to any future land disposal so the waste can be analyzed and classified as hazardous or non-hazardous.

CONCLUSIONS:

SSC is attempting to discontinue land disposal of this liquid waste.

RECOMMENDATIONS: Review SSC's final solution upon receipt. Telephone Mr. Westberry by 3-1-80 to monitor disposal activities.

ENVIRONMENTAL PROTECTION DIVISION
SOLID WASTE MANAGEMENT SECTION
ACTION REPORT

11-26-80 Reference No. 7

FACILITY ID	REGION	COUNTY	HOURS	REVIEWED BY	CODE
	North 4	Fulton 060	1	HB	

FACILITY NAME Southern Sizing Co.

ADDRESS Box 90987 CITY East Point ZIP 30344

PERSON(S) CONTACTED Jack Westberry TITLE Plant Engineer

762-9651

TRIP BY Telecom by Jennifer Kaduck JK ACCOMPANIED BY

INVESTIGATION DATE 11-14-80 FOLLOW-UP DATE 12-14-80

REFERENCE AR dated 11-16-79

PROGRAM ACTIVITY Inspection and Compliance - Industrial (03)

ACTIONS	FINDINGS/DECISIONS	NEXT ACTIONS
elephone Call 44	Insufficient info 85	Review plans 42
	Request further info 41	

COMMENTS, CONCLUSIONS, AND RECOMMENDATIONS:

1. Rylander continues to haul SSC's liquid waste from their oil-water separator to Crymes SLF both Rylander and Crymes wish to know classification of this material.
2. Mr. Westberry said SSC has notified EPA as a hazardous waste generator "just to make sure" although he claims the material is non-hazardous under the new regulations.
3. I requested Mr. Westberry be letter to send copies of their EPA Notification form, chemica analyses for pH, % solids, FP, Phenolics, and EP Toxicity, and lists of E or F list chemic used in their processes.

CONCLUSIONS: Generator claims the material is non-hazardous but this should be confirmed by analysis and production records. We may want to classify the material as a "Special Waste" unc the Georgia SWMA if it contains toxic materials presently not covered by RCRA Part 261.

RECOMMENDATIONS: Review data upon receipt & classify waste.

Reference No. 8

Department of Natural Resources

ENVIRONMENTAL PROTECTION DIVISION
270 WASHINGTON STREET, S.W.
ATLANTA, GEORGIA 30334

JOE D. TANNER
Commissioner

J. LEONARD LEDBETTER
Division Director

October 20, 1983

Mr. Jack Westbury
Southern Sizing Company
Post Office Box 90987
East Point, Georgia 30364

Dear Mr. Westbury:

This letter references our telephone conversation of October 5, 1983, and the improper disposal of 300 fifty-five gallon drums of homogenated animal fat in Meriwether County.

The method by which these wastes have been placed on this site constitutes "open dumping" as defined in Section .01, paragraph (q) of Georgia's Rules and Regulations for Solid Waste Management. Further, under Section .04, paragraph (4)(c), of the Rules, open dumping is listed as a prohibited act and is consequently a violation of Section 7 of the Solid Waste Management Act.

In an effort to absolve the violation referenced above, this office is requiring that you submit for approval of the Director, a written plan by November 21, 1983, delineating the following:

1. An inventory of the wastes on site to include the name and quantity of each;

2. Disposal plans of non-hazardous wastes in a permitted sanitary landfill;

3. Date for completing all clean-up operations.

Upon approval of the plan by this Division, a staff member will contact you for arrangements to conduct a follow-up inspection.

If you have questions or desire any assistance, please contact Ms. Gwendolyn Glass at (404) 656-7802.

Sincerely,

Howard S. Bamford

for John D. Taylor, Jr.
Program Manager
Industrial & Hazardous Waste
Management Program

JDT:gg:rw
Enclosures
cc: Meriwether County File
Mr. James Smith

Reference No. 9

SSC INDUSTRIES
CHEMTECH

RECEIVED

FEB 13 1986

LAND PROTECTION BRANCH

February 12, 1986

Mr. Terrell C. Rooks
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
270 Washington Street, S.W.
Atlanta, GA 30334

Dear Mr. Rooks:

This correspondence will summarize our knowledge of a spill event detected at our East Point facility on Friday, February 7, 1986.

At approximately 3:00 P.M. on Friday, I was contacted by Mr. Homer Jones of the East Point Inspection Department to discuss a white substance exiting our property to the southeast. He and I went out and examined the liquid and determined that it was, indeed, originating from SSC and was obviously a surfactant type material that was mixing with water to yield the white appearance. We immediately prevented the flow and began clean-up procedures, emptying the liquid content from the storm drainage system. In pumping out an oil separation unit that we have placed in the drainage line, it was apparent that a high percentage of surfactant was contained therein. This was also properly emptied and disposed of.

To this point, we have had no one acknowledge that a spill occurred at our facility; however, the evidence indicates that at some time a spill did occur and that the spilled surfactant was allowed to enter the storm drainage system. We have again spoken with each of our employees and stressed the seriousness of such an event. They have been reminded that in the event of a spill, the proper procedure is to contain the spill and to get up the material, minimizing the entrance of any of the spilled material into any drainage system.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

If we acquire any additional information regarding this spill, we will so inform you and should you have additional questions, please contact us.

Sincerely,

Jack G. Westberry
Vice President - Operations

JGW/jm
cc: Mr. Dwight Bell
Mr. Art Goldmann

Georgia Department of Natural Resources
205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334
J. Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division

Reference No. 10

May 31, 1988

Mr. Terry Stewart
[redacted] Industries Inc.
Post Office Box 90987
East Point, Georgia 30344

Re: GAD003284049
~~1500~~ East Taylor Avenue
1550

Dear Mr. Stewart:

Your recent notification of changes in facility information obtained from the Georgia Biennial report form has been processed. The Hazardous Waste Management data files are updated for the above referenced facility(ies) to cover items indicated here under:

/_/ Change of corporate name.

/_/ Change of address:
[ ] Mail address
[ ] Location address - requiring subsequent notification

/_/ Change of ownership:

/X/ Change of facility contact.

/_/ Change in waste streams.

/X/ Change of generator status:
[ ] Generator
[X] SQG
[ ] Conditionally Exempt SQG
[ ] Non-Generator

/_/ Facility has been closed.

Your interest in protecting Georgia's environment is appreciated.

Sincerely,

Sue Matzuras

Sue Matzuras
Environmental Specialist
Hazardous Waste Management Program

SM:mcw(2081R)(006)

Ground Water of the Piedmont and Blue Ridge Provinces in the Southeastern States

By H. E. LeGrand

GEOLOGICAL SURVEY CIRCULAR 538

Washington 1967

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Reference No. 11

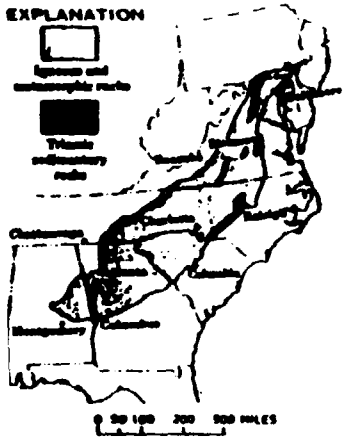
Ground Water of the Piedmon' ınd Blue Ridge Provinces in the Southeastern States

By H. E. LeGrand

INTRODUCTION

This circular summarizes the underground ater conditions in the Piedmont and Blue idge provinces of the Southeastern States— e region shown on the geologic map (fig. 1).

There are several ways of developing water om the ground in this region. In earlier days ringe were used because they are common coves or on lowland slopes. Almost all ringe in the region yield between ½ to 3 gal- s per minute and rarely show a significant cline in yield during dry weather. Dug wells re common in the past, but they are being placed by bored and drilled wells. Bored lls, like dug wells, are as much as 2 feet in diameter and are commonly lined with concrete or terra cotta pipe; these wells do not extend into hard rock and go dry if the water table falls below the bottom of the well. Drilled wells, which are now the most common source of ground-water supply and which are the chief concern of this report, are cased to the hard rock and extend as open holes into the rock. Although some drilled wells are as small as 2 inches in diameter and others are as large as 10 inches, the most common size is about 5 or 6 inches. Almost every well in recent years has been properly constructed to prevent water on the ground from running down the outside of the casing into the well.



e 1.—Generalized geologic map. Areas underlain by igneous and metamorphic rocks are better suited to numerical rating of ll than those areas underlain by Triassic sedimentary rocks

EVALUATING SITES

A special attempt is made to help those who are interested in the yields of wells. Because yields of individual wells in the region vary greatly within distances as short as 100 feet, estimates of potential yields of prospective wells are difficult to make. This fact has led frequently to water shortages, excessive costs, inconveniences, or undue anxiety in many cases. As the yield of a well is unpredictable, the next best approach is to attempt to show, on a percentage basis, the chance for a certain yield from a well for different conditions.

Although many factors determine the yield of a well, two ground conditions, when used together, serve as a good index for rating a well site. These conditions are topography and soil thickness. The ratings are based on the following statement: High-yielding wells are common where thick residual soils and relatively low topographic areas are combined, and low-yielding wells are common where thin soils and hilltops are combined. By comparing conditions of a site according to the topographic and soil conditions one gets a relative

rating value. For example, the following topographic conditions are assigned point values:

Points	Topography
0	Steep ridge top
2	Upland steep slope
4	Pronounced rounded upland
6	Hillsides ridge slope
7	Gentle upland slope
8	Broad flat upland
9	Lower part of upland slope
12	Valley bottom or flood plain
15	Draw in narrow continuous area
18	Draw in large continuous area

Figure 3 shows values for certain topographic conditions. Figure 3 shows rating values for soil thickness. The soil zone in this report includes the normal soils and also the relatively soft or weathered rock. The topographic conditions and soil conditions are separately rated, and the points for each are added to get the total points which may be used in table 1 to rate a site.

Using two well sites, A and B, as examples, we can evaluate each as to the potential yield of a well. Site A, a pronounced rounded upland (4-point rating for topography in fig. 2) having a relatively thin soil (6-point rating for soil characteristic in fig. 3), has a total of 10 points. In table 1 the average yield for site A is 6 gpm (gallons per minute). This site has a 65-percent chance of yielding 3 gpm and a 40-percent chance of yielding 10 gpm. Site B, a

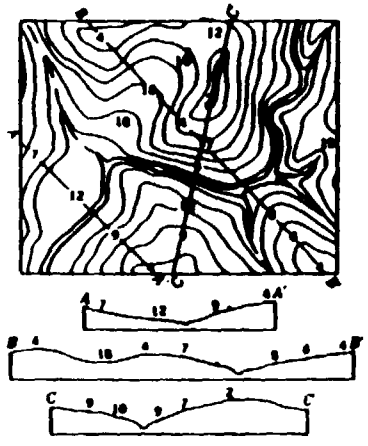


Figure 2.—Topographic map and profiles of ground surface showing rating in points for various topographic positions.

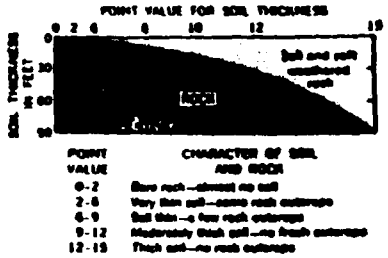
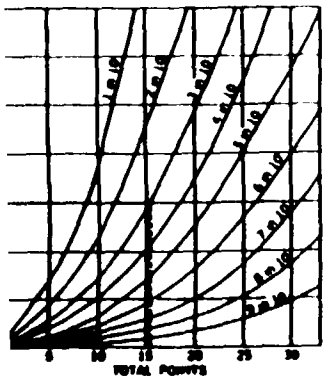


Figure 3.—Rating in points for various conditions of soil thickness.

Table 1.—*Use of numerical rating of well site to estimate the percent chance of success of a well*

[Data are based on maximum depth of 300 feet or maximum drawdown of water level of about 200 feet. No interference from pumping is assumed. Numerical rating is obtained by adding rating in points for topography and soil thickness]

Total points of a site	Average yield (gpm)	Chance of success, in percent, for a well to yield at least—				
		3 gpm	10 gpm	25 gpm	50 gpm	75 gpm
5	2	48	18	6	2	------
6	3	50	20	7	3	------
7	3	55	25	8	3	------
8	4	55	30	11	3	------
9	5	60	35	12	4	------
10	6	65	40	15	5	------
11	7	70	43	19	7	------
12	9	73	46	22	10	------
13	11	77	50	26	12	------
14	12	80	53	30	14	------
15	14	83	54	33	16	------
16	16	85	57	36	18	------
17	17	86	60	40	20	12
18	20	87	63	45	24	15
19	23	88	66	50	25	18
20	26	89	70	53	27	20
21	28	90	72	54	30	22
22	31	91	74	56	35	24
23	34	92	76	58	38	26
24	37	92	78	60	40	29
25	39	93	80	62	43	32
26	41	93	81	64	46	36
27	43	94	82	66	48	40
28	45	95	83	68	50	42
29	48	95	84	71	53	44
30	50	96	87	73	56	47
30+	50	97	91	75	60	50



Example. A site with 10 points has 3 chances in 10 of yielding at least 30 gallons per minute and 6 chances in 10 of yielding 10 gallons per minute.

—Probability of getting a certain yield from a well at different sites having various total-point ratings.

draw or slight sag in topography (18-point rating) having a moderately thick soil (12-point rating), has a total of 30 points, an average yield of 50 gpm, and a 73-percent chance of yielding 25 gpm. Referring to figure 4, we see that the 10-point site has less than 1 chance in 10 of yielding 40 gpm whereas the 30-point site has better than an even chance of yielding 40 gpm.

Some topographic conditions of the region and a few topographic ratings are shown in figure 5. Wells located on concave slopes are commonly more productive than wells on convex slopes or straight slopes. Broad but slight concave slopes near saddles in gently rolling upland areas are especially good sites for potentially high-yielding wells. On the other hand, steep V-shaped valleys of the gully type may not be especially good sites, and they should be avoided if surface drainage near the well is so poor that contamination is possible.

More difficulty is likely to occur in rating character of soil and rock than in rating

Figure 5.—Countryside in the Blue Ridge province showing appearance ratings for topography.

Figure 6.—The soil zone is likely very thin near three earth outcrops (soil-thickness rating 0 to 4 points).

topography. Everyone should be able to determine by observation if the soil is thin (less than 7 soil and rock points as shown in figure 6) and if the soil is fairly thick (more than 10 soil and rock points), but the intermediate ratings are difficult to make. If the observer is unsure of the soil and rock rating above the 6-point (thin soil) value he may choose a 10-point value for the site with assurance that he is fairly correct. White quartz of flint, which occurs as veins and as rock fragments on the ground, is not considered a true rock in this report because it persists in the soil zone; a quartz vein in many cases is considered to be a slightly favorable indication of a good well site.

The numerical rating system is not intended to be precise. One person may rate a particular site at 15 points, whereas another person may rate it at 17 points; such a small difference in rating would not be misleading. Almost everyone's rating will be within 5 points of an average rating for a site.

YIELD

The term "yield" is not definite but is the reported capacity of a well to produce water, generally during a short pumping test. The water level in a well will stabilize if a certain limited yield or withdrawal of water is maintained; however, a greater withdrawal or yield will cause the water level to fall. In many cases the water level continues to fall until the pumping stops so that continuous pumping would result in a smaller yield than that estimated earlier. The percentage of relative yield is not directly proportionate to the percentage of drawdown of the water level, but the greater percentage of yield is reached before the greater percentage of drawdown. Figure 7 shows an approximate relation of drawdown to yield for an average well in the region. Note that the yield-drawdown relationships of all wells lie within the shaded zone and that average conditions occur on or near the heavy line. As an example of the relation between yield and drawdown, we may consider a well 220 feet deep having a static water level of 30 feet below land surface. (See fig. 8.) This well yields 40 gpm with a pumping level at a depth of nearly 220 feet; the pump might better be set at 120 feet (50 percent of drawdown or half the thickness of the water) where about 36 gpm or 90 percent of the relative yield could be realized. It is unnecessary and uneconomical to lower the water level of a well to a position near the bottom unless the yield is so poor that the water stored in the well is needed.

There is no simple definition of the yield of a well—especially in the Blue Ridge and Piedmont provinces. Yields for various levels of the water in the pumped well are rarely known. The yields in this report are considered to be standard for wells about 300 feet deep which are pumped about 12 hours each day and in which drawdown of the water level is about 200 feet; it is assumed that there is no interference by pumping from other wells, which would increase drawdown.

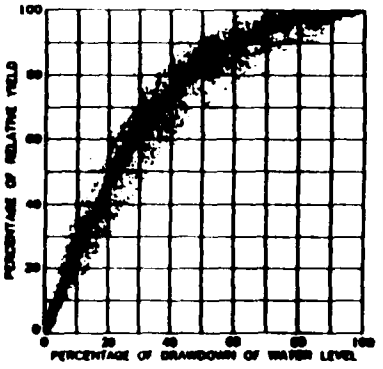


Figure 7.—The curve shows that an increase in yield of a well is not directly proportionate to an increase in drawdown of the water level. A yield of nearly 50 percent of the total capacity of a well results from lowering the water level only 40 percent of the available drawdown.

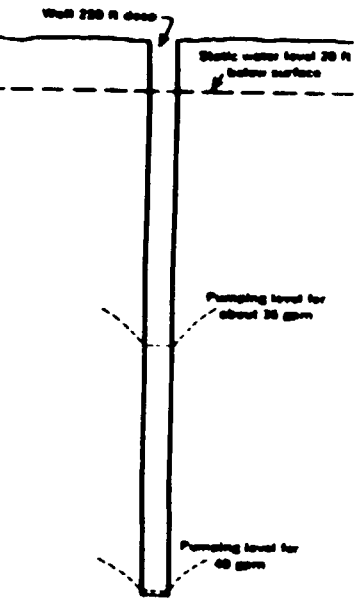


Figure 9.—Yield of a well at two different pumping rates.

DEPTH OF WELLS

ow deep should a well be drilled? This stion is not easy to answer for an individ- well. In most places fractures in the rock smaller and fewer with depth and drop lling may not be economical. Figure 9 ws the percentage of total yield for certain ths in an average well.

he following table shows the percentage of s that reach their maximum yields at cer- depths below which drilling is useless. As

Depth (feet)	Percentage of wells
0	25
50	30
100	50
150	70
200	85
300	93

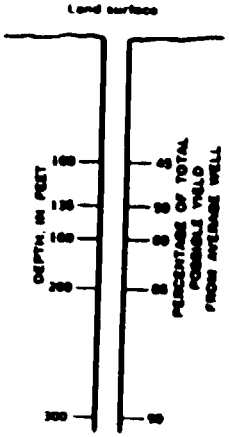


Figure 9.—Extent to which deepening of average well increases the yield.

most of the interconnecting fractures occur in a zone no deeper than 150 feet below the land surface, it may be wise to drill no deeper than 150 feet if the yield is very poor, or no deeper than 300 feet in almost all cases.

FRACTURES IN THE ROCK

Figure 10 illustrates six different fracture patterns in rocks penetrated by wells. To simplify the illustrations the water table and soil thickness are considered uniform, and each well, cased to 50 feet, is 250 feet deep. The approximate number of times each general pattern of fractures occurs in 100 wells is shown in percentage beneath each type. Well A penetrates no fractures below the casing; therefore, the well yields no water. Well B penetrates a fracture zone in which two or more fractures occur a few feet below the casing. This type of well is common. It may yield as much as 10 to 20 gpm for a period of several minutes until the fractures are drained. Then its yield will likely decline suddenly, and the amount of decline will depend upon the amount of water transmitted to the well by the soil and the underlying thin zone of fractured rock. That part of the well below the fracture zone contributes no water and acts only as a storage reservoir into which water drains. The yield of this well does not increase with increased drawdown. Well C penetrates only one fracture, a large one near the

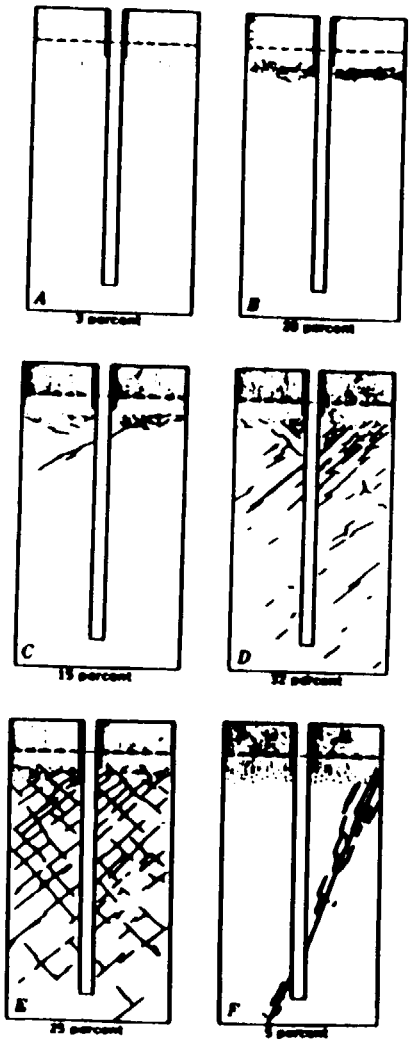


Figure 10.—Six types of ground conditions showing distribution of fractures that influenced the yields of wells. The stippled patterns represents soil and rock mantle; the dashed line is the water table. The degree of frequency of the different types is shown in percentage.

top of the fresh rock. This well is similar to well B. It may yield considerable water for a few minutes until the stored water in the fracture is drained. The perennial yield, under continuous pumping, will depend on the permeability of the soil and weathered rock and on the amount of water that is released to the fracture. Well D penetrates several fractures, which contribute small amounts of water, and a large fracture at a depth of about 90 feet. Well E penetrates several small- to medium-sized fractures. These fractures are larger and more closely spaced in the upper part of the bedrock. Well F penetrates only one fracture—a large one below a depth of 200 feet.

WATER TABLE

The water table, or upper surface of the underground reservoir, continuously fluctuates and reflects changes in underground storage. During droughts we see evidence of a falling water table when many shallow wells go dry. We also can detect a lowering of the water table locally around wells from which water is pumped. There is a continual discharge of ground water by seepage into streams, by evaporation, and by transpiration through vegetation. The discharge causes a gradual lowering of the water table except for periods during and immediately after significant precipitation when recharge to the underground reservoir exceeds the discharge from it and the water table rises. Figure 11 shows the trends of water-level fluctuation in a well at Chapel Hill, N. C. The water level in this well is controlled entirely by natural conditions, and its fluctuation is typical of that in the region. There is a characteristic seasonal change in the water table, which begins to decline in April or May owing to the increasing amount of evaporation and transpiration of plants. In November or December, when much of the vegetation has become dormant, the precipitation first makes up the summertime soil-moisture deficiency and then again becomes effective in producing recharge, and the water table begins to rise. In a year of normal rainfall the recharge to the underground reservoir is approximately equal to the discharge from it, so that the water table

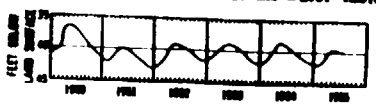


Figure 11.—The water table generally declines in summer and fall but rises to a high level in early spring, as shown by the record of of this well in Chapel Hill, N. C.

Table 2.—Concentrations of chemical constituents and their characteristic effects on water use in the region

[Concentration in parts per million except as indicated. Occurrence, where noted, is given in parenthesis after concentrations]

Constituents	Concentration	Characteristic effects on water use
Silica (SiO_2)	Rarely less than 15 or more than 45, commonly 20 to 35.	Forms hard scale in pipes and boilers but not normally a serious problem in the region.
Iron (Fe)	Commonly less than 0.3 in natural water, but corrosion of iron pipes from water with pH less than 6.8 causes a fairly common iron problem.	More than 0.3 ppm stains laundry, utensils, and fixtures reddish brown.
Calcium (Ca) and magnesium (Mg)	Rarely less than 5 or more than 80 (commonly 5 to 20 in water beneath light-colored soils and 15 to 50 in water beneath dark-colored soils).	Cause most of the hardness and scale-forming properties of water. (See hardness below.)
Bicarbonate (HCO_3)	Rarely less than 15 or more than 150, commonly 30 to 100.	Concentrations in region are not generally high enough to cause trouble.
Sulfate (SO_4)	Rarely less than 1 or more than 100, commonly 1 to 40.	Concentrations in region are not generally high enough to cause trouble.
Chloride (Cl)	Rarely less than 1 or more than 40, commonly 1 to 20.	Salty taste to water having more than a few hundred parts per million.
Fluoride (F)	Rarely more than 1, commonly 0.0 to 0.8.	Concentration between 0.6 and 1.7 ppm in water retards decay of teeth, but amounts in excess of 1.5 ppm may cause mottled enamel of teeth.
Nitrate (NO_3)	Rarely more than 20, commonly less than 10.	Where concentration is greater than 20 ppm, contamination from sewage may be suspected. Water of concentrations greater than 45 ppm may be harmful to babies.
Dissolved solids	Total of all mineral matter rarely exceeds 250, commonly 70 to 150.	Water containing more than 1,000 ppm of dissolved solids is unsuitable for most purposes.
Hardness as equivalent $CaCO_3$	Rarely less than 10 or more than 150 (commonly 10 to 30 in water beneath light-colored soils and 40 to 200 in water beneath dark-colored soils).	Causes consumption of soap before lather will form. Hard water forms scale in boilers and hot water heaters. Water whose hardness is less than 60 ppm is considered soft; 61 to 120 ppm, moderately hard; 121 to 180 ppm, hard; more than 180 ppm, very hard.
pH	Rarely less than pH of 5.5 or more than 7.5 (commonly 6.5 to 6.8 in water beneath light-colored soils and 6.8 to 7.5 in water beneath dark-colored soils).	Values less than 7.0 indicate acidity, and corrosiveness of water generally increases with decreasing pH.

at the end of the year is at about the same level as at the beginning of the year. Wells drilled into rock may, when pumped at full capacity, yield slightly less during the driest part of the year when the water table is low. Yet there appears to be no evidence to support the general belief that the water table has been declining during recent years.

CHEMICAL QUALITY OF THE WATER

In comparison with ground water in widely scattered regions of the world, the water in the Piedmont and Blue Ridge provinces ranks among the best in chemical quality. (See table 2.) Most of the water is low in total dissolved solids and is generally soft, but some is moderately hard.

Iron in water is the most common complaint. As little as 0.4 ppm (parts per million) will cause a red stain on plumbing fixtures. About 5 of every 10 wells yield water with less than 0.3 ppm of iron. About 4 of 10 wells yield water with just enough iron to cause a slight stain, and about 1 of 10 wells yields water that has considerable iron. Some iron problems result when iron is dissolved from rocks, and other problems result when water, moving through iron pipes, consequently picks up a brown iron stain by corrosion. It is important to determine the source of the iron, whether dissolved from the rocks or from the pipes, before methods for its removal are employed. Most of the water is satisfactory for use without any type of treatment (table 2). Yet an analysis of the water should be made as soon as a well is drilled to determine if treatment is necessary. It is not possible to determine the quality of water before a well is drilled.

CONTAMINATION OF GROUND WATER

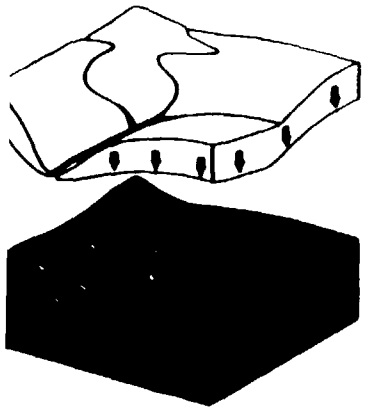
In view of the many hundreds of thousands of wells that are interspersed with about an equal number of septic tanks and other waste sites, it is proper to give serious attention to the possibility of contaminating an individual water supply. The tendency for ground water—and contaminants that might be in it—to move naturally from upland areas toward stream valleys offers help in planning wells and waste sites to avoid contamination. A well that is pumped may modify the natural movement of water and draw contaminated water toward it; this condition is more likely where the soil is thin or absent than where it is thick. Care should be taken to see that no water from the land surface can seep easily into the well around the casing. Not only is the well site important but so is the waste site. In most cases the chances of contaminated water from a waste site moving into a well are not easy to predict, but a few general statements can be made. For example, at a waste site (1) a deep water table is safer than a shallow water table, (2) thick soil is safer than thin soil or rock outcrops, (3) sandy soil with some clay may be better than a clean sandy soil or a sticky clay soil, and (4) a slope of both the land surface and the water table away from a well is better than one toward it.

The soil and weathered rock are generally effective in preventing waste materials from passing through to underlying rock fractures, but the combination of (1) certain types of wastes, (2) excessive quantities of disposed wastes, and (3) thin soils may result in contaminated water reaching bedrock fractures. Once in the bedrock fractures the contaminated water may move easily to water supplies. Only a small percentage of wells have been contaminated, but proper care in locating and constructing wells and waste sites must be taken to minimize the risk of contamination. Minimum standards specified by health officials, such as those relating to permeability of the soil, distance between a well and a waste site, and depth of the water table, must be followed.

GENERAL STATEMENTS ABOUT GROUND WATER IN THE REGION

1. Ground water may be considered as occurring in an underground reservoir, the water being held in the open spaces of the rock materials. The water table, representing the top of the reservoir, generally lies in the clay, or disintegrated rock materials. In the lower part of the reservoir, water occurs in interconnecting fractures in bedrock; the fractures diminish in number and size with increasing depth. Water enters the fractures by seeping through the overlying clay, and drilled wells draw water from these fractures. The source of this water is precipitation in the general area of a well and not in some remote place.

2. A layer of residual soil and weathered rock lies on the fresh rock in most places; the thickness of the soil and weathered rock ranges from zero to slightly more than 150 feet.



ge 13.—Dry zone (above water table) lifted up to show water table as outline of saturated zone. Movement of water (arrows) such to be downward in the dry zone and toward surface streams in the saturated zone.

5. The water table has a hill and valley relation that approximately conforms with surface topography, although the water table is somewhat flatter. (See fig. 13.) For example, a creek or river is the surface expression of a water table in a valley, but beneath a hill the water table may be 30 to 70 feet below the ground surface. Ground water, like surface water, has the tendency to drain away from the hills to the valleys. This tendency helps in planning the location of wells in relation to other wells and to sources of possible contamination.

4. A close network of streams prevails, and most places on an upland area a perennial stream is less than 1 mile away.

5. Toward the streams is a continuous flow of ground water. Some of the outflowing ground water is used up by evaporation and by transpiration of plants in the valley areas; the remainder of the water discharges as small springs and as bank and channel seepage into the streams.

6. The natural movement of ground water is relatively short and is almost everywhere restricted to the zone underlying the gross topographic slope extending from a particular land-surface divide to the adjacent streams.

7. In ideal cases the pumping of a well causes the water table to be depressed smoothly in the shape of an inverted cone, the apex of the cone being in the well; however, the erratic distribution of rock fractures and the contrasting nature of permeability between rock fractures and overlying soils cause the depressed part of the water table to extend unevenly around a well. Where two heavily pumped wells are within a few hundred feet of each other, there is a strong likelihood of some interference of pumping level between the two, but in most cases there is not any appreciable interference between low-yielding wells a few hundred feet apart. From a pumped well the depressed part of the water table rarely extends beneath a perennial stream or beneath a hilltop to a slope on the opposite side. Well interference is local, and there is no regional lowering of the water table because of pumping.

8. The relation of the depth of a well to yield of the aquifer is not simple. In spite of some beliefs, water already available to a well is rarely lost by drilling deeper; therefore, there is always a chance of getting a larger supply by increasing the depth of the well. Yet this chance becomes poorer as the well deepens because the interconnecting fractures and the ability of the rocks to store and transmit water decrease significantly with depth. More than 90 percent of all ground water occurs in the first 100 feet below the water table. Generally two wells 200 feet deep each will yield more water than one well 400 feet deep.

9. The relationship of topography to yield is emphasized. The great majority of wells are located on hills or smooth upland slopes because of convenience and because these locations appear safe from sources of contamination. Yet the percentage of low-yielding wells is much greater on hills and upland convex slopes than in lowlands or draws (concave slopes that lead upward from a valley to a saddle or sway-backed position in a ridge). Steep-sided depressions, such as gullies and ravines, should not be considered acceptable sites for wells.

10. In general, wells are more productive and tend to have a more stable year-round yield where there is a thick mantle of soil than where bare rock crops out. The presence of a soil cover and the absence of rock outcrop

suggest that water moves downward into the rock and is not readily shunted toward the adjacent valley; in fact, the soil cover suggests that interconnecting rock fractures are available to store water and to transmit it to wells. Where there is a good soil cover, the water table generally lies in it; therefore, the storage capacity in the vicinity is much greater than where bare rock is exposed and where the only water in storage is in the rock fractures that might be quickly drained.

11. Simple clear-cut statements about the water-yielding properties of the various types of rocks are not easy to make. There are many varieties of igneous and metamorphic rocks, but for a discussion of their ground-water properties they may be grouped as follows: (1) Somewhat massive igneous rocks, such as granite, and (2) metamorphic rocks, such as schists, gneisses, and slates, which may show an alinement of minerals or an alinement of cleavage planes or openings along which water may move. In some places a type of rock may have distinctive water-bearing characteristics, but, if so, it is also likely to show distinctive topographic and soil-mantle features. Topography and soil-mantle features are readily observed and may be used as criteria for predicting the water-yielding potential of a well site, whereas the water-bearing characteristics of a type of rock by itself may be obscure. At any rate, there are too many complex factors involved to justify generalizations about the yield of wells in individual types of rock.

12. Whenever water is pumped from a well, the water level is lowered in and around the well. The drawdown increases with an increase in the rate of pumping, although this relation is not simple. For example, a well yielding 20 gpm with a drawdown of 50 feet will not double its yield by increasing the drawdown to 100 feet. Instead, it will yield less than 40 gpm and perhaps no more than 25 to 30 gpm with a drawdown of 100 feet.

13. Some wells that are pumped heavily tend to decline gradually in yield. This fact may be due to the following circumstances. The size and setting of a pump are determined from a short bailer or pumping test when the well is completed. Such a short test may not indicate the long-term yield of the well because the first water is withdrawn from storage in the rock materials, and many hours, days, or even months may pass before there is a stable adjustment between the amount of water that the fractures can feed into the well and the amount of water available to drain through the overlying clay into the fractures feeding the well. Failure to have knowledge of water-level fluctuations as a result of pumping is the cause of many well problems and of the erroneous conclusion that well supplies are not dependable. If a well tends to have an unstable yield, it is probably overpumped. A reduction in the rate of pumping and consequently a raising of the water level will result in a perennially safe yield. Constant pumping at a moderate rate does not damage a well.

14. There is a tendency for rocks underlying a light-colored soil to yield water that is low in dissolved mineral matter and is soft. On the other hand, rocks underlying darker soils (dark red, brown, and yellow) tend to yield water that is slightly hard, or hard, and that may contain objectionable amounts of iron.

15. Many people think that a shallow depth to the water table is an indication of a good yield of a potential well, but this is not a rule to follow. In fact, where the water table is only a few feet beneath the land surface on an upland area, the rock fractures may be so scarce that water may not be able to move downward in the rock; it is held near the ground surface and perhaps is shunted out to the land surface as a wet seepage spot on a steep slope.

16. There are many mistaken notions about the availability of ground water in the region. These notions arise from lack of knowledge of the occurrence and movement of ground water and of the behavior of wells. The common erroneous statement that a certain town in the region could not depend on well water stems from the existence of a limited number of wells; never has the underground reservoir beneath any town or city in the region been completely depleted of its water. There has been a tendency for towns of about 2,000 people to convert from well supplies to a treated surface-water supply; such conversion commonly occurs when the town requires more than 500,000 gallons of water per day, an amount which only a few wells in aggregate may not produce. Few towns have the experienced persons with diversified knowledge of wells and ground-water conditions to provide the good management comparable to that of municipal surface-water supplies.

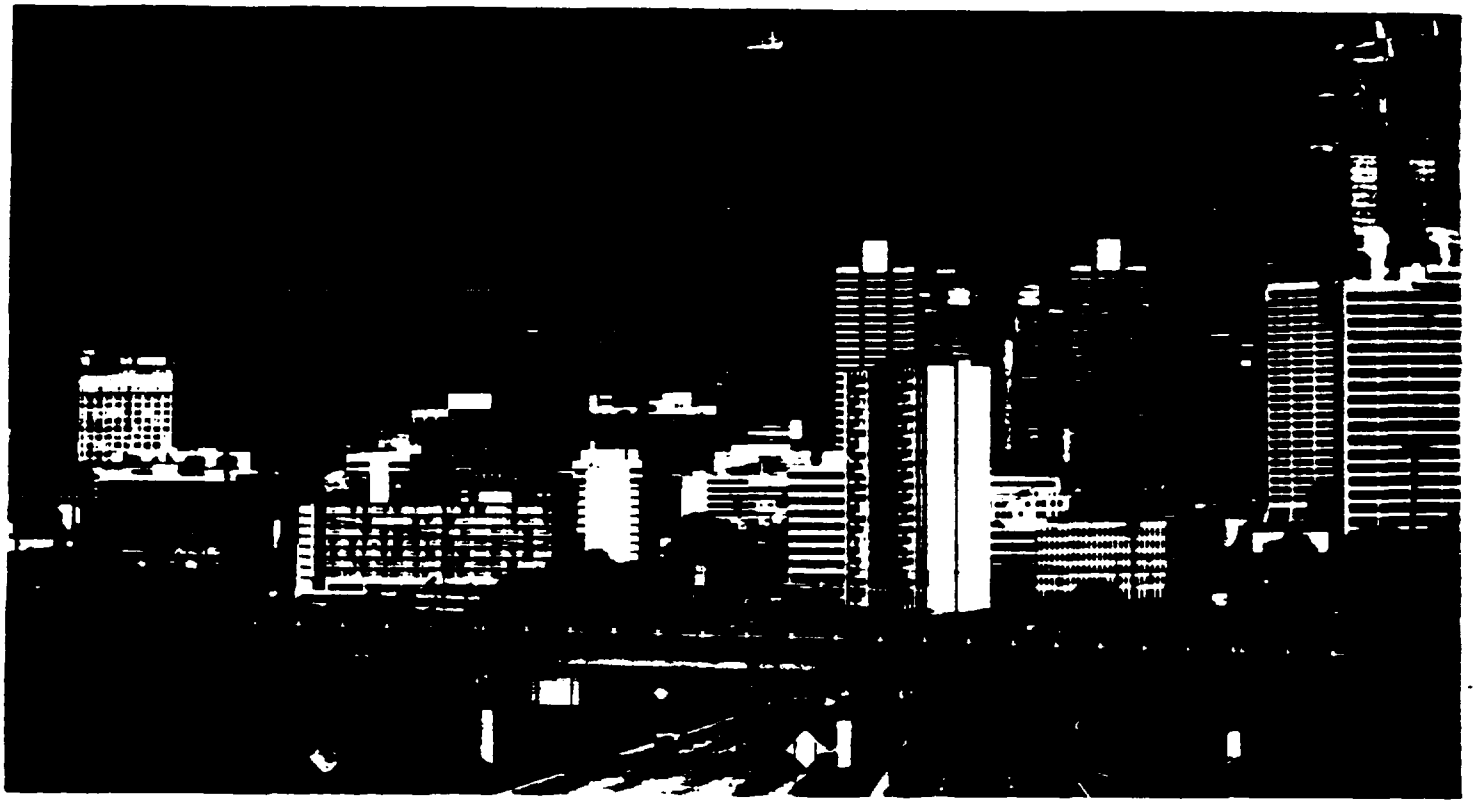
SOURCES OF INFORMATION

There are many sources of information on ground-water conditions in specific parts of the region. At least one agency in each State has cooperated financially with the U.S. Geological Survey, and these agencies have contributed in some way to the results of this report. Further information about reports published or work in progress may be obtained from the district offices of the Geological Survey in each State or from the respective State cooperating agencies.

Reference No. 12

GEOLOGY OF THE GREATER ATLANTA REGION

Keith I. McConnell and Charlotte E. Abrams

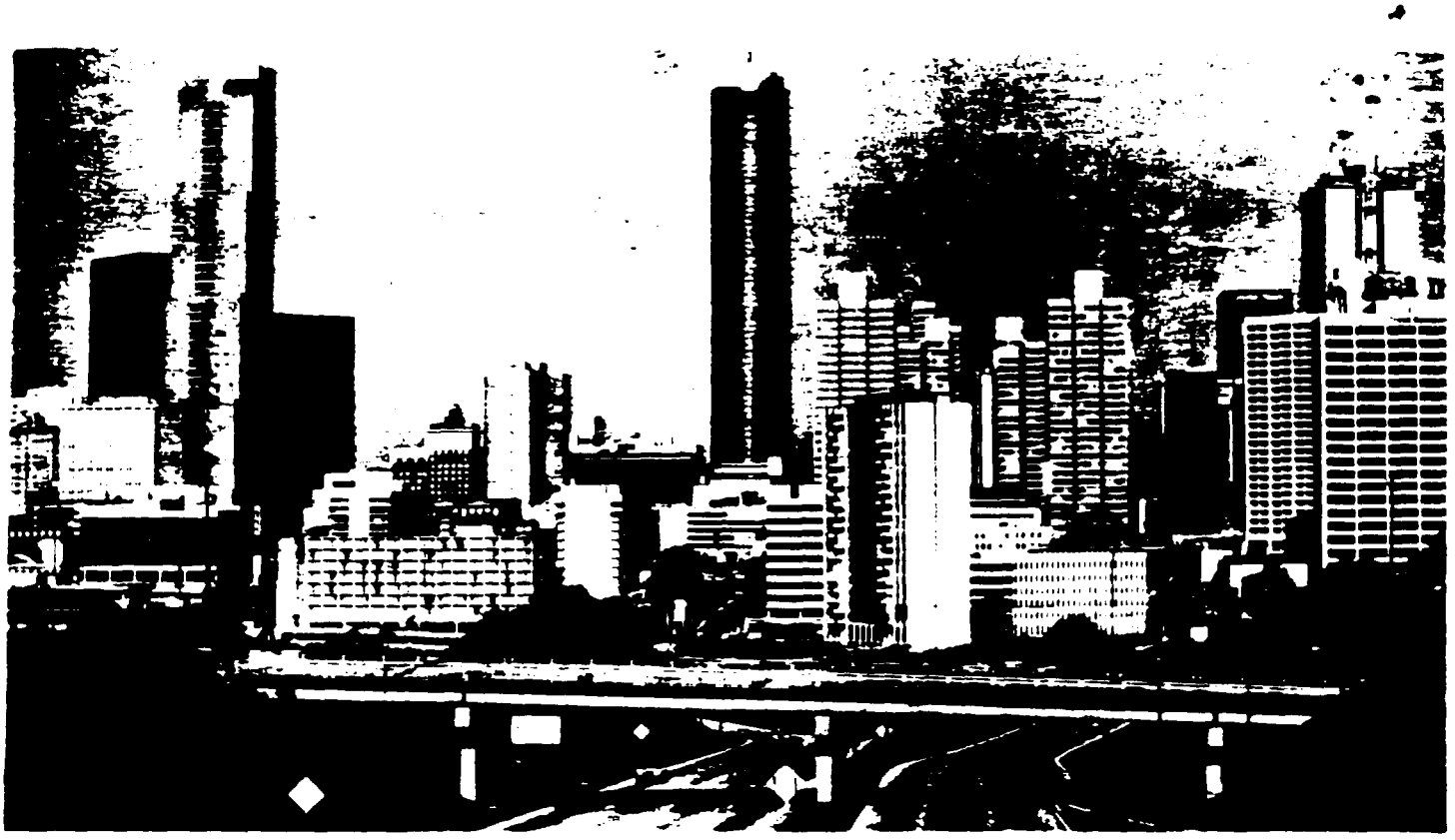


Department of Natural Resources
Environmental Protection Division
Georgia Geologic Survey

BULLETIN 96

GEOLOGY OF THE GREATER ATLANTA REGION

Keith I. McConnell and Charlotte E. Abrams



Department of Natural Resources
J. Leonard Ledbetter, Commissioner

Environmental Protection Division
Harold F. Reheis, Assistant Director

Georgia Geologic Survey
William H. McLemore, State Geologist

Atlanta
1984

BULLETIN 96

ag	**Austell Gneiss** (Abrams and McConnell, 1981a; Abrams, 1983): fine- to coarse-grained blastoporphyritic to nonporphyritic orthogneiss composed of muscovite, biotite, oligoclase, quartz and microcline.
shg	**Sand Hill Gneiss** (this report): fine- to coarse-grained blastoporphyritic to nonporphyritic orthogneiss composed of muscovite, biotite, oligoclase, quartz and microcline. Generally contains more muscovite, quartz and plagioclase and less microcline than Austell Gneiss.
mrg	**Mulberry Rock Gneiss** (this report): medium-grained, equigranular muscovite-quartz-microcline-plagioclase orthogneiss.
d	**Diabase dikes**

SOUTHERN PIEDMONT PROVINCE AND BREVARD FAULT ZONE

Atlanta Group (late Precambrian to early Paleozoic)
(stratigraphic order revised after Higgins and Atkins, 1981):

cc	**Camp Creek Formation** (Higgins and Atkins, 1981): massive granite gneiss interlayered with thin, fine-grained, dark-green hornblende-plagioclase amphibolite.
icq	**Intrenchment Creek Quartzite** (Higgins and Atkins, 1981): spessartine quartzite and spessartine-mica schist interpreted in this report to be banded iron formation.
bci	**Big Cotton Indian Formation** (Higgins and Atkins, 1981): intercalated biotite-plagioclase gneiss (locally porphyritic), hornblende-plagioclase amphibolite, and biotite-muscovite schist.
ca tc f	**Clarkston Formation** (Higgins and Atkins, 1981): sillimanite-garnet-quartz-plagioclase-biotite-muscovite schist interlayered with hornblende-plagioclase amphibolite (ca). Includes a unit composed only of schist termed the Fairburn Member (f); and a unit similar to Clarkston undifferentiated termed the Tar Creek Member (tc).
st	**Stonewall Formation** (Higgins and Atkins, 1981): intercalated fine-grained biotite gneiss, hornblende-plagioclase amphibolite and sillimanite-biotite schist.
wac	**Wahoo Creek Formation** (Higgins and Atkins, 1981): includes slabby, medium-grained muscovite-plagioclase-quartz gneiss, amphibolite, mica schist and epidote-calcite-diopside gneiss (calc-silicate).
se	**Senoia Formation** (Atkins and Higgins, 1981): garnet-biotite-muscovite schist interlayered with fine-grained amphibolite, local thin layers of spessartine quartzite (iron formation?), sillimanite schist and biotite gneiss.
cl	**Clairmont Formation** (Higgins and Atkins, 1981): interlayered medium-grained biotite-plagioclase gneiss and fine- to medium-grained hornblende-plagioclase amphibolite.
pl h	**Promised Land Formation** (Higgins and Atkins, 1981): includes massive to thinly layered, medium-grained, gray, banded biotite granite gneiss interlayered with fine-grained, dark-green to greenish black, blocky amphibolite. A thin quartzite and muscovite quartz schist unit near top of the Promised Land Formation is termed the Hannah Member (h).
wc	**Wolf Creek Formation** (Higgins and Atkins, 1981): thinly laminated, fine-grained amphibolite interlayered with lustrous, silvery gray, biotite-muscovite schist.

Reference No. 13

$7.00

GROUND WATER IN THE GREATER ATLANTA REGION, GEORGIA

by

C. W. Cressler, C. J. Thurmond, and W. G. Hester

Prepared in cooperation with the U. S. Geological Survey

Department of Natural Resources
Environmental Protection Division
Georgia Geologic Survey

INFORMATION CIRCULAR 63

GROUND WATER

IN THE GREATER ATLANTA REGION,

GEORGIA

By

C. W. Cressler, C. J. Thurmond, and W. G. Hester

Georgia Department of Natural Resources

Joe D. Tanner, Commissioner

Environmental Protection Division

J. Leonard Ledbetter, Director

Georgia Geologic Survey

William H. McLemore, State Geologist

Prepared in cooperation with the

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Atlanta

1983

INFORMATION
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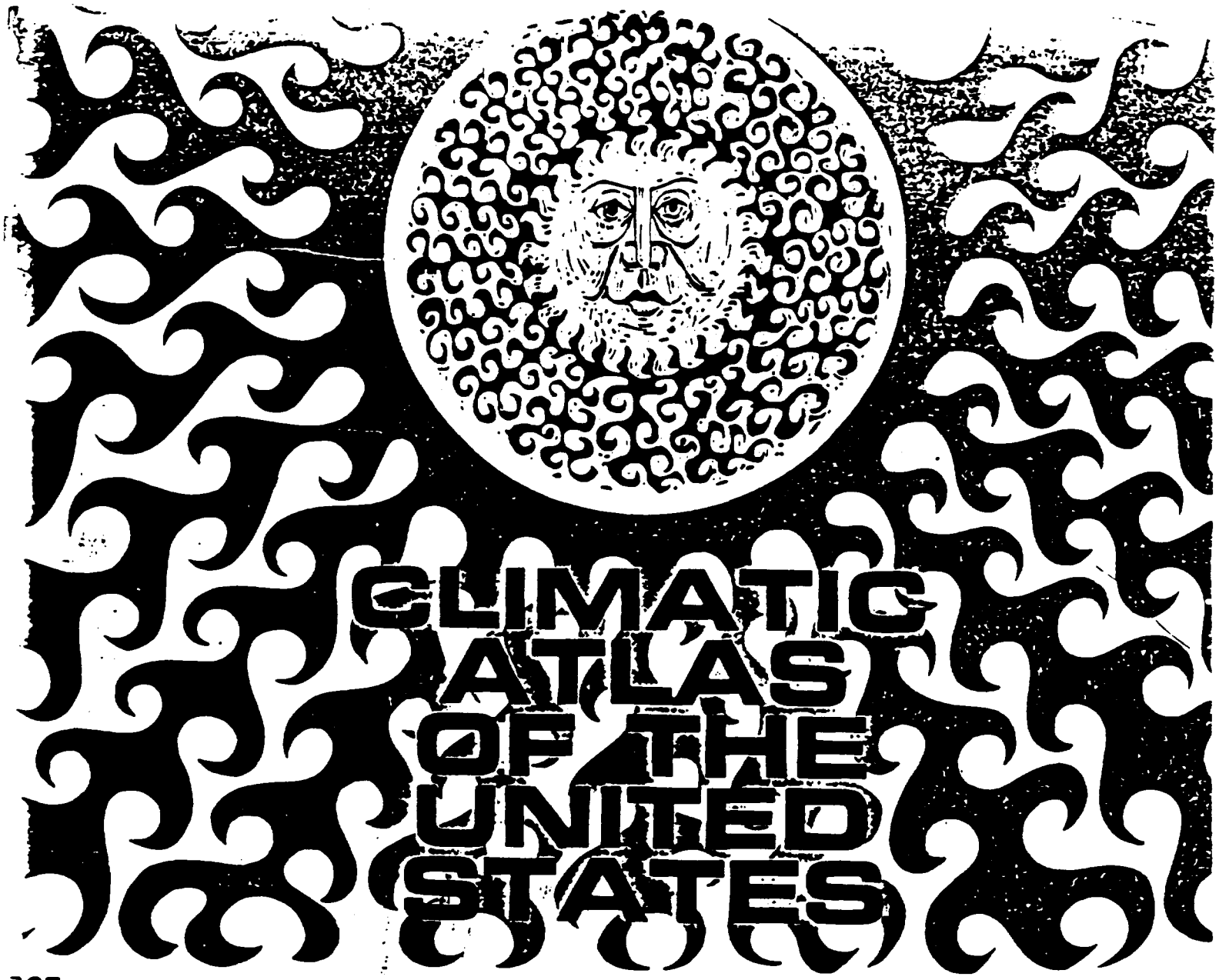
Reference No. 14



CLIMATIC ATLAS OF THE UNITED STATES

RCE . Environmental Science Services Administration . Environmental Data Service

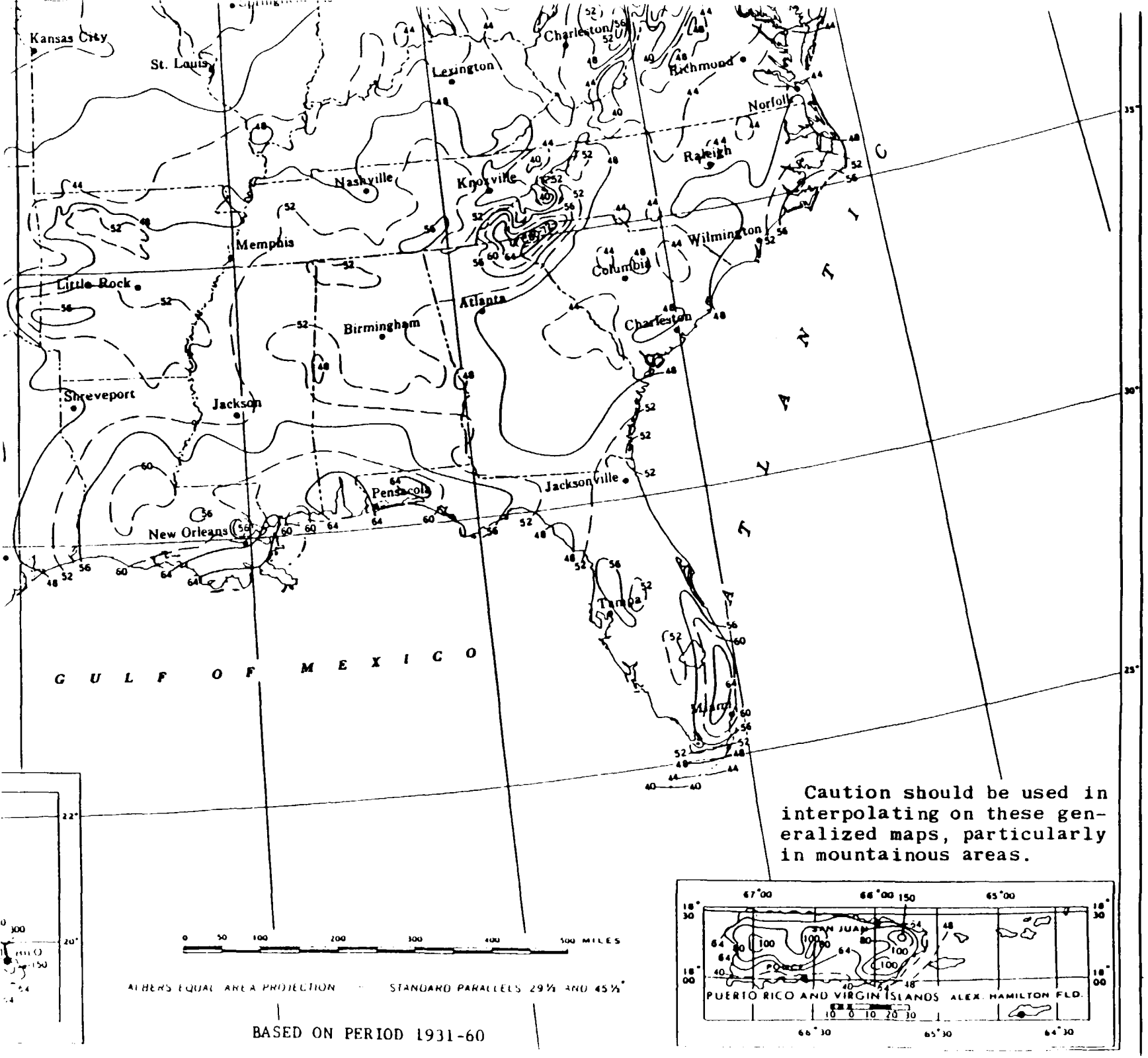
U.S. DEPARTMENT OF COMMERCE
C. R. Smith, Secretary

ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
Robert M. White, Administrator

ENVIRONMENTAL DATA SERVICE
Woodrow C. Jacobs, Director

JUNE 1968

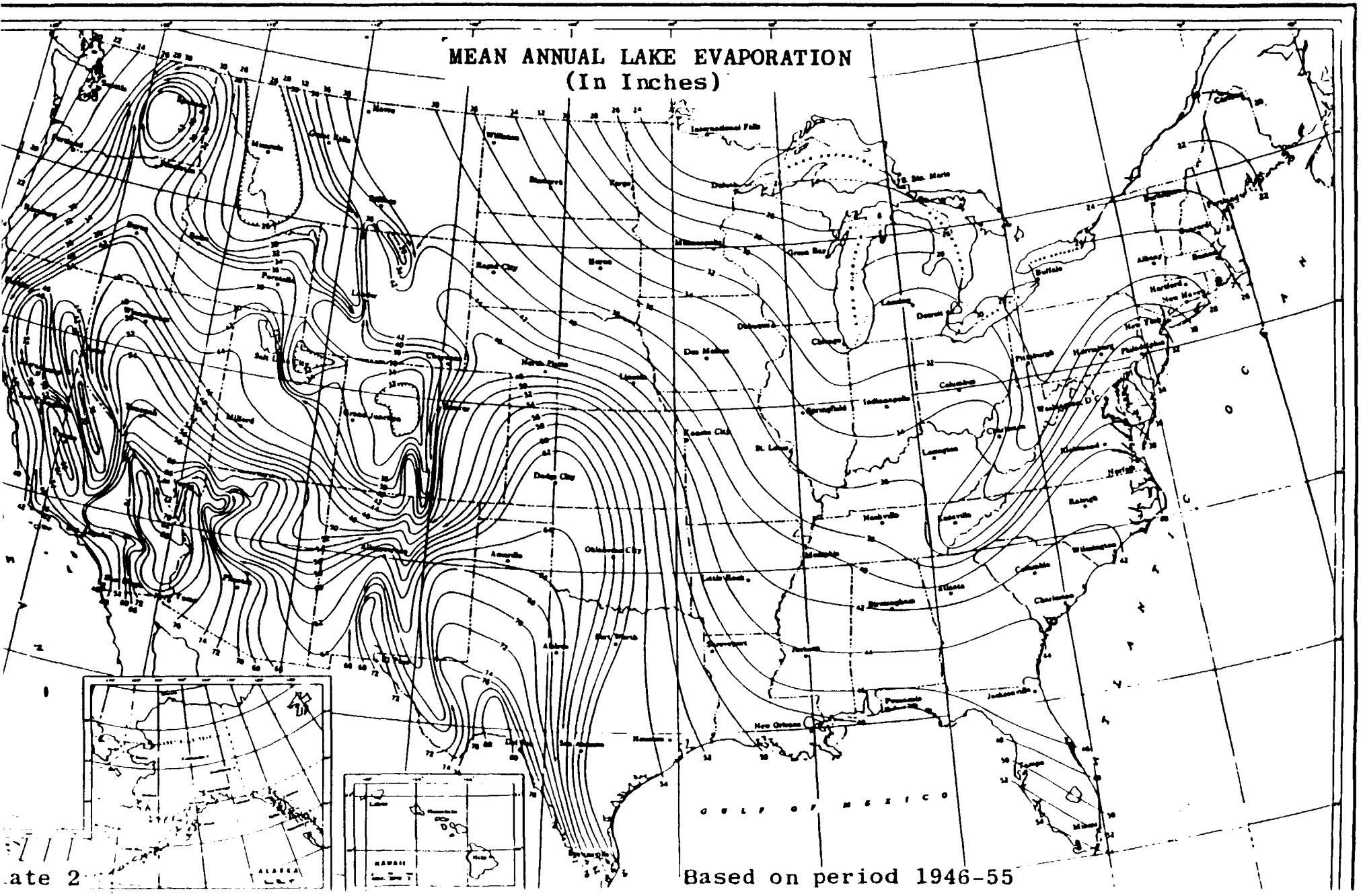
REPRINTED BY THE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
1983



Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.

BASED ON PERIOD 1931-60

KE EVAPORATION



ate 2

TECHNICAL PAPER NO. 40

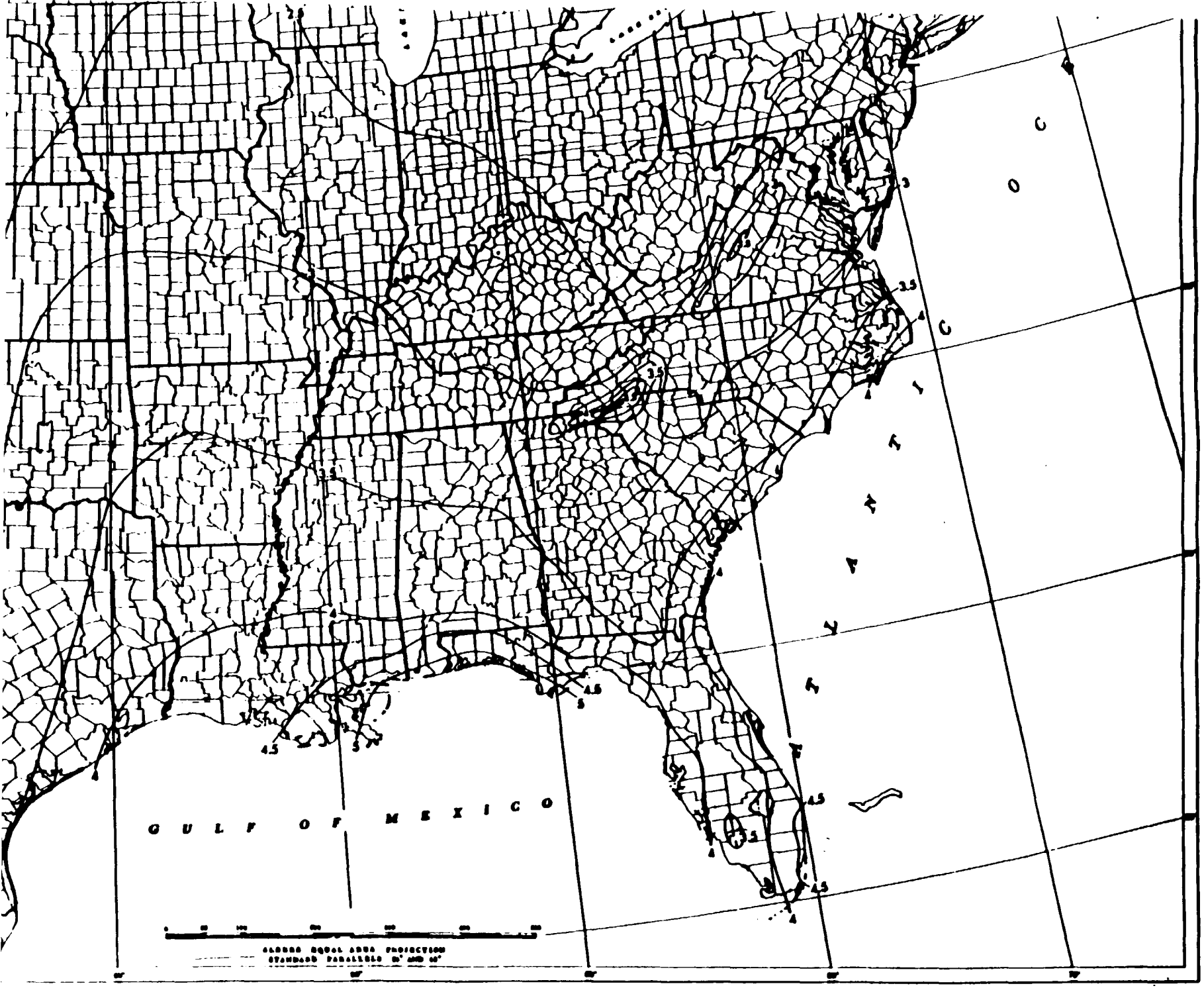
RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Year

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

Reference No. 15

PROPERTY


GULF OF MEXICO
ATLANTIC OCEAN

Reference No. 16

RFA REPORT

Southern Wood Piedmont Company
East Point, Georgia

GAD067560870

I. INTRODUCTION

OBJECTIVE/SCOPE

The objective of this RCRA Facility Assessment (RFA) is to:

1. Identify all Solid Waste Management Units (SWMUs) which have operated at Southern Wood Piedmont Company, East Point, Georgia;

2. Collect SWMU-related data from file reviews and a site visit and evaluate these data to assess the potential for release of hazardous constituents from each SWMU; and,

3. For each unit, determine what course of action, if any, should be followed to safeguard human health and the environment from a SWMU release. When further remedial investigation or corrective action not already underway is deemed appropriate, provide a site-specific conceptual plan (e.g., a sampling plan) that may be used to initiate necessary clean-up and/or restoration.

ASSESSMENT BASIS

The findings, conclusions, and suggested actions contained in this report are based on:

1. A desktop study of the existing files and Part B permit application.

2. A site inspection performed on September 17, 1987.

SITE CONDITIONS

General Conditions

The Southern Wood Piedmont Company, East Point, Georgia facility (SWP-EP) is located on a 65 acre site in the Lawrence Avenue Industrial District of Fulton County, approximately six miles southwest of downtown Atlanta. The street address of the facility is:

Southern Wood Piedmont Company
1745 Connally Drive
East Point, Georgia 30364

The facility is now closed and all contact should be made to the following mailing address:

Southern Wood Piedmont Company
Post Office Box 5447
Spartanburg, South Carolina 29304

Topographic Map

Figure 1 is a topographic map of the Southern Wood Piedmont Company, East Point (SWP-EP) facility and a graphic representation of the plant site.

a) 100-Year Floodplain Area

The SWP-EP hazardous waste surface impoundment is located at an elevation of 1015 feet (at bottom of impoundment). The impoundment is not located within the 100-year floodplain as shown in the Federal Emergency Management Agency (FEMA) Flood Insurance Program (FIA) Flood Insurance Rate Map provided as Figure 2. As shown, the highest 100-year floodplain elevation is approximately 908 feet.

b) Surface Waters

The SWP-EP facility is located on a northwest-trending ridge. Local relief is on the order of 70 feet. The northeast slope of the ridge is relatively steeper than the southwest slope and is occupied by the northwest-flowing, unnamed tributary No. 3 to South Utoy Creek (Figure 2). This unnamed tributary normally has flowing surface water. The southwest slope (west side of the facility) is dissected by two relatively gentle swales which intersect the same unnamed tributary northwest of the site. Several culverts transporting surface runoff from the western portion of the site discharge into the most southern of these swales. Off-site drainage from this swale extends to the northwest in a culvert beneath Stanton Road. Drainage into this swale occurs only during heavy rainfall. Surface runoff from the site flows along these features which discharge into South Utoy Creek near the Lakewood Freeway. The entire site constitutes only about 2 percent of the South Utoy Creek watershed, upstream of Campbellton Road. South Utoy and North Utoy Creeks merge near Fairburn Road west of I-285 to form Utoy Creek which empties into the Chattahoochee Rive about 8 to 10 miles northwest of the facility. Flows on the Tributary No. 3 are measured at a gauging station (Figure 3). Unnamed Tributary No. 2 may also collect surface run-off from the facility. Tributary No. 2 originates about 1,000 to 1,200 feet west of the facility.

Drinking water for the City of East Point is supplied from surface water (Sweetwater Creek) by the municipal water system. Atlanta Regional Commission data show that more than 99.6% of the water used in Fulton County is derived from surface water sources such as the Chattahoochee River used by Atlanta and College Park. The nearest surface water withdrawal point is approximately eight miles west of the SWP-EP facility.

The mean annual precipitation, reported by state climatic division (1931-1955) and the mean annual Class A pan evaporation (1946-1955) from the surface of a body of water for the area is as follows:

Annual Precipitation	46.34
Pan Evaporation	55.00
Net Precipitation	- 8.66

c) Surrounding Land Use

The area within four miles of the SWP-EP facility includes unincorporated areas in Fulton and Clayton County and parts of the cities of East Point, College Park, Hapeville and Atlanta. This area can be characterized as heavily developed mixed use zone with some open areas southwest of the facility. The four mile radius around the facility also contains a part of

Hartsfield International Airport. Over 200,000 people live within four miles of the facility.

The Atlanta Regional Commission (ARC) projects little growth in the area surrounding the facility and development that does occur will be concentrated around the airport facility. Local development in East Point has been limited to commercial development along Main Street in East Point. Main Street runs north and south (U.S. Highway 29) and is just east of the facility. Contiguous to the facility on the north and northeast are industrial properties. Contiguous to the west is a cemetery. Single family residential and commercial development is located to the southwest across Connally Drive from the facility.

d) Injection and Withdrawal Wells

The locations of water supply wells within a three-mile radius of the site are shown on Figure 4. The primary source of information pertaining to these wells, Ground Water in the Greater Atlanta Region, Georgia by Cressler, C.W., et al, 1983, Georgia Geologic Survey, Information Circular No. 63, shows that most of these wells are no longer in service. Wells owned by National Biscuit Company are permitted by the State of Georgia. Wells located at Fort MacPherson, no longer used for drinking water supply, are now primarily used for landscape watering.

Eleven private water wells in the East Point area have been reported to exist using data from the 1980 Census summary Statistics (Detailed Housing Characteristics of Georgia; Table 87). Seven of the eleven wells have been reported in Block group 4 of tract 112.01 (1980 Census STF 3A/3C Microfiche Product Description) located to the west of the site past Stanton Drive (Figure 4). The exact location of these wells and the number of users cannot be completely ascertained, as that information was not available to the Information Officer from the U.S. Census Bureau (personal communication, Ms. B. Richardson). A survey of residences and businesses within the area of block group 4 within 1,000 feet of the SWP property boundary was conducted on January 22, 1988 to determine the location of off-site private groundwater wells. Two such private wells (Ms. Fuller's and Mr. Gardner's) were located (Figure 4). The results of the groundwater analysis from Mr. Gardner's well, used for irrigation only, did not detect the presence of any site-specific constituents. Ms. Fuller's well could not be sampled as there was an obstruction in the well twenty feet below ground surface. Additionally, the well appeared to be plugged, as the water depth was not evident at 100 feet below the ground surface. There are no injection wells on, or in the vicinity of the SWP-EP facility.

e) Building and Structures

The primary buildings and structures at the SWP-EP facility are the treating cylinders and building, chemical storage tanks, chemical recovery and cooling water tanks and ponds, the pilot laboratory, the drip track area, the floor block buildings, and the overhead crane (Figure 1). Other structures include the boiler, adzing and boring mill, two controlled air seasoning units (kilns), the shop building, seasoning and storage sheds, and two office buildings at the front entrance. All of the structures such as the cylinders, tanks, ponds, and piping are empty. All buildings and structures are being

demolished and removed from the facility except for the small office building, a cross tie storage shed, and two storage tanks to be used during implementation of corrective actions.

f) Sewers

Connections to the East Point and Atlanta Sewer Systems are shown on Figure 5. SWP-EP has a POTW discharge permit for wastewaters from the treating process and from corrective action activities. The facility does not have an NPDES permit.

g) Run-off Control Facilities

Collection drains located throughout the facility collect run-off from the track areas and other processing and storage areas (Figures 5 and 6).

h) Loading and Unloading Areas

A concrete loading pad was provided on the west side of the preservative storage areas. There are no designated loading areas for hazardous waste or materials being shipped off-site for reclamation or disposal. Since all hazardous waste was stored in the surface impoundment and hazardous materials are generated at the sources of corrective action cleanup, loading of trucks is accomplished in areas immediately adjacent to the sources. However, no specific areas have been designated for this purpose.

Site Geology and Hydrogeology

The SWP-EP facility lies within the Greenville Slope District of the Piedmont Physiographic Province. The site is on a northwest-southeast trending ridge, flanked by a steep-sided gully to the northeast and by relatively gentle swales along the southwest slope.

The site is underlain by metamorphic rocks of the Clarkston Formation of the Atlanta Group (Cressler, et al., 1983). The mineralogy of the Clarkston Formation consists of sillimanite-garnet-quartz-plagioclase amphibolite (McConnel and Abrams, 1984). Core borings made both on-site and off-site during the monitoring well installation encountered biotite-muscovite schists with occasional hornblende-plagioclase amphibolite.

Available geologic information indicates that the local structure is genetically related to the Brevard Lineament. Lineations related to the Brevard Lineament (i.e., with a general strike of N 35° to 55° E) strike either parallel to or normal to the strike of the Brevard. Linears interpreted from topographic maps of the area in the vicinity of the SWP facility exhibit this range of strike directions. Because of the proximity of the site to Brevard Lineament, the local geologic structure at the site is probably a result of the tectonism which produced the Brevard.

Although the Brevard is probably the major structural controlling factor in the area, other influences include the intrusion of granite bodies, such as the Ben Hill Granite, and stress relief due to weathering and overburden removal.

Thus geologic structure in the vicinity of the site is complex and is the result of multi-phase deformation and tectonism. The stresses thus imposed caused intense jointing and faulting which have produced a very irregular top-of-rock profile due to preferred weathering along the tectonically-imposed discontinuities. Other geologic factors which have contributed to the differential weathering are the orientation of foliations, geologic contacts, and mineralogical variations.

The subsurface immediately underlying the site can be readily subdivided as follows:

- residual soil (i.e., micaceous sandy silt)
- partially weathered rock
- upper fractured rock
- competent rock
- lower fractured rock

Uppermost Aquifer

At the site the uppermost aquifer occurs under water table conditions. The depth to ground water is on the order of 30 to 40 feet throughout the topographically higher portions of the site. As is common for unconfined water table aquifers, the potentiometric surface presents a subdued reflection of the topographic surface and the directions of ground-water flow are, in general, coincident with surface water flow. The axis of the ridge upon which the site is located appears to be a ground-water divide with ground-water flows to the northeast, north, and northwest along the northern portion of the site and to the west and northwest along the southern portions of the site. The unnamed tributary which flows through the northeast corner of the facility is also interpreted as being a ground-water divide.

The uppermost aquifer consists of water-bearing zones in both the residual soil and the upper fractured rock which are hydraulically interconnected. Ground-water occurring in the soils and partially weathered rock which mantle the upper fractured rock is typically a component of the small scale (or local) ground-water flow sub-system. Ground-water within the upper fractured rock flows along tortuous pathways created by discontinuities within the rock mass. Many, if not most, of these discontinuities are a result of regional stress imposed by past tectonic activity. Geologic contacts (which are numerous in the study area) may serve as pathways for ground water flow. Stress relief fractures form pathways for the movement of ground water and the horizontal stress relief fractures serve as discontinuous subsurface reservoirs of varying capacity.

Recharge of the ground-water regime within the site boundaries is limited due to the local topographic relief and the presence of man-made features (i.e., paved roads, buildings) which retard infiltration. Other factors present which limit the amount of recharge include the limited areal extent of the recharge area and the nature of the residual soils which mantle the site.

Estimates of the amount of recharge expected rely upon typical total runoff values for similar geographic settings which are on the order of 20 inches per year. Assuming that one-half of the total run-off occurs as subsurface flow yields 10 inches per year infiltrations. This, in turn,

results in an average flow through Segment W-W' (less than 500' long) on the northwest side of the facility of less than 10 gpm. This result is based upon the assumption that the site is homogeneous for infiltration capacity and is isotropic for flow direction and velocity. A ground-water plume of contamination occurs along segment W-W'.

The majority of the precipitation falling on the site which enters the ground-water regime discharges into tributaries of South Utoy Creek.

Soil and Partially Weathered Rock

The soil and partially weathered rock that overlie the rock in the area within and around the site can be grouped together. The primary difference between these two strata are the number of blow counts required to perform the standard penetration test. The soil is considered to be partially weathered rock whenever the blow count exceeds 100 per foot of penetration (Figure 7).

The soil is typically a tan, fine micaceous silty sand to sandy silt, with fragments of partially weathered rock. The partially weathered rock is typically mottled tan to grey micaceous silty fine to course sand, with rock fragments. The total thickness of the soil and partially weathered rock is variable throughout the area, ranging from an average of 58 feet in the center of the site, to an average of 80 feet along the northern boundary of the site before the land elevations fall sharply into the creek in the northeast corner and the property adjacent to the northern site boundary. The total thickness of the soil and partially weathered rock decreases west of the site at MW-34. These variations in the total thickness of the soil and partially weathered rock are important in assessing ground-water flow through the strata in the vicinity of the western boundary of the site.

The ground-water level measurements for the soil and partially weathered rock were used to produce potentiometric maps of the site and nearby areas, and are shown in Figure 8. The potentiometric surface exhibits a pattern similar to the topographic contours for the area. The axis of the ridge upon which the site is located appears to be a ground-water divide with ground-water flow to the northwest, north and northeast in the northern half of the site.

The range of hydraulic conductivity (k values) probably reflects the degree of weathering and the resulting silt and clay content. The more highly weathered soils contain more silt and clay than those soils of limited weathering. The soils with higher k values contain larger amounts of sand-size quartz or have undergone less weathering due to increased depth below the surface or to a lack of tectonic discontinuities which would allow localized weathering. Rocks containing relatively large amounts of mica and feldspars are more susceptible to weathering compared to those rocks containing quartz.

The average ground-water flow velocity is 150 feet per year for the north slope and 75 (range, 55 to 125) feet per year for the western area of the site. The calculation of these ground-water velocities assumes that the soil and partially weathered rock are homogeneous and isotropic. The constituent migration rate calculated for the north slope is bout 3 feet/year in the flow direction towards the northeast. The constituent migration rates calculated

for the western area are about 3 feet/year towards the west and about 2 feet/year towards the northwest. More recent calculations indicate a contaminant migration of typically less than 20 feet/year.

Rock

The rock underlying the soil and partially weathered rock is a soft to hard, severely to slightly weathered biotite-muscovite schist with low to high angle joints. The top of the rock is identified as the depth at which the auger bit is no longer capable of advancing into the formation.

The top of rock contours (Figure 9) exhibit a large variation along the western boundary of the site, from a high of 984 feet above mean sea level (MSL) to 919 feet above msl in the northwest corner. In the area adjacent to the stream in the northeast corner of the site there is another bedrock low with a bottom elevation of 919 feet above msl. There is more than 50 feet of competent rock separating the upper fractured rock zone from the deeper water-bearing zone. Competent rock is identified as having hydraulic conductivities less than 10^{-6} cm per second.

The ground-water level measurements were used to produce potentiometric maps for the rock at the site as shown in Figure 10. The potentiometric surface exhibits a pattern similar to both the site topography and the potentiometric contours for the soil and partially weathered rock. The ridge upon which the site is located appears to be a ground-water divide.

A comparison of the potentiometric maps for both the rock and the overlying soil and partially weathered rock material reveals that in some areas the ground-water elevations in the rock are higher than those in the overlying soil and in other areas the ground-water elevations are higher in the soil and partially weathered rock than the underlying rock. In Figure 11 the shaded area identifies those regions in which the potentiometric levels in the rock are higher than those in the overlying strata. Therefore within these regions the ground-water tends to move upwards, from the rock into the overlying strata. The area in which the ground-water may potentially flow from the rock into the overlying strata are located around the eastern and western sides, and across the northern end of the site. This upward gradient is interpreted as being indicative of discharge into the small unnamed tributary which flows along the northeastern boundary.

Within the central area of the site, the vertical movement of ground-water tends to be downward from the partially weathered rock into the rock. Therefore, the central area of the site is generally a recharge area for the rock.

The hydraulic conductivity data (k values) for the upper fractured rock exhibits a narrower data range than for the overlying strata. The k values calculated for the upper fractured rock wells fall into two sets. These two sets are interpreted to represent two different sets of geologic structure elements (joints, foliations, etc.) which have different physical characteristics. The less permeable set ($k = 10^{-5}$ cm/sec) may represent flow in slightly fracture foliated rock, while the more permeable set ($k = 10^{-4}$ cm/sec) may represent rocks that are both fractured and foliated. Generally more than 50 feet of competent rock with hydraulic conductivities of less than 10^{-6} cm/sec separates the upper fractured rock from the

rock zones. The deeper rock water-bearing zones are characterized by hydraulic conductivities on the order of 10^{-4} cm per second. Within fractured rock the hydraulic conductivity data represents the degree of interconnection between the fractures. Therefore, the vertical hydraulic conductivity in fractured zone is assumed to be there same as the horizontal hydraulic conductivity.

It is also noted that fractures that can transmit water may have very limited (typically in range of 10's and 100's of feet) spatial extent. Pump tests at other locations have demonstrated the limited (typically less than 500 feet) radius of influence of wells in similar rock.

The average ground-water flow velocity in the severely weathered upper fractured rock is 500 feet per year for the north slope and 300 (range, 185 to 400) feet per year for the area in the vicinity of western boundary of the site. The calculation of these ground-water velocities assumes that the rock formation is homogeneous and isotropic. Similar to the overlying soil, the higher flow velocities are representative of the ground-water flow regime beyond the site.

Nature of Operations

a. Manufacturing Process

The SWP-EP facility was a wood treating (preserving) plant engaged in treatment of railroad cross-ties, utility poles, switch-ties, cross-arms and floor block from the 1920's until 1984. Wood raw materials were delivered by rail or truck to the facility for processing by the following general steps:

1. Wood raw materials were shaped to the desired product dimensions (e.g., ties, poles, blocks).

2. Shaped wood products were seasoned by a natural drying process, closed steaming, and controlled air seasoning.

3. Seasoned wood was treated with a preservative. Treatment preservatives were creosote or pentachlorophenol.

4. Following treatment, final wood products were stored on the plant site until needed by a customer or were shipped directly by rail or truck to customers.

Process water from the SWP-EP facility operations consisted of steam condensate and moisture extracted from wood generated during the seasoning process, vacuum pump seal water, and waste steam condensate from the creosote/pentachlorophenol treatment process. These wastes were transferred to equipment used for transfer of treatment chemicals and as a result became contaminated with small quantities of creosote and pentachlorophenol. Process water from these sources was collected at various locations in the processing area and was piped directly to an API separator, installed before 1950, for recovery of organic wood treatment preservatives for recycling to the wood preserving operation. Wastewater generated from the API separator flowed to the surface impoundment, installed by 1940. This surface impoundment was aerated to provide biological treatment, increase evaporation and provide sufficient residence time to allow settling of organics and solids.

The treatment process generated one waste listed as hazardous: "K001: Bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol." These sludges were generated in and stored only in the surface impoundment.

After wood treating stopped, the use of the impoundment was discontinued and it was cleaned out by March 1985. Of the 1890 cubic yards of material manifested off-site to an approved hazardous waste facility from the impoundment, approximately 945 cubic yards were K001 sludge. SWP-EP implemented closure from February to October 1986. The impoundment was backfilled with clean soil and a synthetic membrane and clay cap were installed on top of the soil. SWP-EP does not foresee this facility returning to operation in the future. Current use of the facility is limited to storage of treated wood products produced at other locations.

b. Use of Hazardous Materials and Generation of Solid and Hazardous Waste (Figure 12).

Only creosote and pentachlorophenol have been used to preserve wood at the SWP-EP facility. The treatment of the wastewater from this process generated hazardous waste sludge in the surface impoundment. Due to past operating practices associated with the process, other wastes were also generated. The following paragraphs identify how the handling of hazardous materials has created solid and hazardous waste management units. Not all of the materials discussed are regulated as hazardous waste materials under RCRA. The clean-up of all of the identified unit is or will be addressed in the corrective action program of the Part B Post-Closure Care Permit application or in accordance with permit conditions.

1. Landfill (Unit M)
   Nineteen monitoring wells have been installed along the northern border of the facility to assist in determining the presence of contaminant migration. Early topographic maps and aerial photographs indicate that a ravine previously existed in the immediate area of the K001 pond trending northeast from near monitoring well MW-5 and the adjacent slope in the northeast corner of the site. The ravine and north slope of the ridge upon which the plant is situated have been filled with waste wood and other debris and generally covered by soil over a period of many years to provide a relatively level area for access roads and outdoor storage. Three soil test pits/trenches have been sampled in the landfill unit. Oily residues were encountered in the ravine area.

2. K001 Impoundment (Unit A)
   Wells MW-1, MW-2, MW-5, and MW-6 were installed downgradient of this regulated unit to monitor ground-water contamination. K001 sludge was removed and sent to a permitted hazardous waste landfill in the winter of 1984-1985. The impoundment was backfilled with clean soil and a synthetic membrane and clay cap were installed.

3. Abandoned Sump (Unit O)
   Wells MW-14, MW-14A, and MW-14B were installed to evaluate conditions downgradient of the buried sump which contained wood preserving compounds ("tank bottoms"). These compounds were removed

and manifested off-site to an approved hazardous waste facility in 1987. The sump was backfilled with clean soil and seeded with grass.

4. Drip Track Area (Unit L)
As the railroad track area appears to be located along the ground-water divide, it is felt that monitoring wells MW-16 and MW-16A represent downgradient conditions along the northeastern flank of the ridge while wells MW-18 and MW-18A represent downgradient conditions along the southwestern flank of the ridge. Monitoring wells MW-15 and MW-17 represent upgradient conditions at the source of contamination and help determine if contamination from the drip track area has reached the water table and provide hydrogeologic data necessary to determine the location of the ground-water divide. Thirteen soil test pits (TP)have been sampled in the drip track unit. Along the length of the drip tracks, extending from the treating cylinder building to approximately 700 feet east of the cylinder building, there was an approximately 6-inch thick layer of tar-like residual wood treating materials. Below these tar-like materials there was a layer of tar mixed with ballast to a depth of approximately 1.0 foot (1.5 feet at test pit TP-26). Soil fill varying in thickness from 0.5 feet to as much as 9 feet (TP-6) underlies much of the drip track area. The fill, consisting micaceous sandy silt, appears to thicken away from the treating room area where partially weathered rock is present at relatively shallow depth (2 to 3 feet). No obvious contamination of the soil fill was noted. Old, oily ballast about 0.5 feet thick was encountered in the soil fill 1.75 and 2.0 feet below the surface at two of the nine test pits excavated in the drip track area (TP-2 and TP-5). Heavily contaminated ballast and soil was removed from the drip track area in 1986 and manifested off-site to an approved hazardous waste facility. The drip track area is tilled regularly. Contamination has been found 10 to 20 feet deep in the overhead crane area. The methods to handle this material will be included in the permit application.

5. Production and Storage Area (Units C, D, E, F, G, H, and I)
Sixteen monitoring wells and four soil testing pits have been installed and sampled in this area to assist in determining the presence of contamination. Units C, D, E, F, G, H, and I consist of production and storage areas within the main plant area. These areas comprise those portions of the plant where the past potential for spills of product was greatest. Heavily contaminated surface deposits and deposits in old sumps in the area of the previous storage and unloading facilities and in the area of the old cooling and were removed. All buildings and structures are being demolished and removed from the facility. This will allow sources of contamination to be assessed further.

6. Old Surface Impoundment (Unit B)
Wells MW-20 and MW-20A and soil test pit TP-17 are adjacent to the abandoned surface impoundment. The impoundment contained up to 3.0 feet of oily waste below a thin 0.2 to 1 foot thick surface soil veneer. A sample of black oil impregnated soil from this

impoundment was analyzed. The visually contaminated material was removed and manifested off-site to an approved hazardous waste facility.

7. Slope Sprayed with Creosote (Unit K)
Four wells (MW-33 through MW-34A) have been installed to assist in determining the presence of contaminant migration. A soil hand auger sample (HA) was collected adjacent to this unit. Surface deposits along this embankment are apparent. However, samples from HA-3 resulted in non-detectable concentrations at this location. The thin coating of creosote sprayed on the slope will be removed and the slope stabilized with grass or crushed stone.

8. Surface Spill (Unit J)
Four wells (MW-33 through MW-34A) have been installed to assist in determining the presence of contaminant migration. A soil hand auger sample (HA) was collected adjacent to this unit. Surface deposits along this embankment are apparent. However, samples from HA-3 resulted in non-detectable concentrations at this location. The thin coating of creosote sprayed on the slope will be removed and the slope stabilized with grass or crushed stone.

8. Surface Spill (Unit J)
Four wells (MW-33 through MW-34A) have been installed to assist in determining the presence of contaminant migration. Samples from wells MW-36 and MW-36A and a soil hand auger located within the spill area have been collected to assess the area further.

9. Treated Wood Storage Areas (Unit N)
Six monitoring wells and eight soil test pits/hand augers have been installed and sampled in these areas to assist in determining the presence and migration of contamination.

10. Old Pond
Near the east property line at tributary #3.

11. Overhead Crane Area
Approximately 10,000 to 12,000 cubic yards of contaminated material about 10 feet below ground surface.

12. Old Ravine and Drainage Discharge
Trended northeast from about MW-5 to MW-10. Wood preserving constituents and free oil detected in soil test pits TP-32 and 34 along the ravine, p. E4-21.

13. Potential Areas of Concern Identified in the Permit Application

a. MW-8A and 16A. Limited source control proposed, p. E4-8 & 12.
b. Free oil found in PW-2, p. E4-3 & 13.
c. Free oil found in MW-2, 3, 6, 26, 26A, 43, and 43A. Proposed seismic refraction surveys to map the top of the rock lows p[illegible] exploratory borings to map oil, and oil recovery, p. E8-3, [illegible] 20, & 22.
d. Fill material along east and west slopes, p. E-4 18 and 19.

Wastewater Treatment and Disposal

Wastewater generated during the wood treating process flowed to the surface impoundment where it was stored prior to treatment and discharge to the sanitary sewer. The facility ceased treating operations in 1984 and the surface impoundment was closed in 1986.

Air Emission Control

The facility ceased treating operations in 1984. All process equipment is being dismantled and removed from the site. There are no sources of air emissions at the facility.

Release Pathways

1. Normal Plant Operations

   a. Soil and Groundwater
   SWP-EP has verified and confirmed the presence of hazardous and solid waste management units and contaminated groundwater. Corrective action plans are proposed in the permit application. Large volumes of contaminated material have already been removed from the site and manifested to approved hazardous waste facilities. Pilot projects have also begun to assess contaminated ground-water recovery.

   b. Surface Waters
   There is a potential for releases to affect the Unnamed Tributary No. 3. Hazardous constituents have been detected in water samples collected from the tributary. Assessment and investigation will continue in accordance with conditions of the permit. In addition surface drainage culverts, features, and paths identified in Figure B-2.2 of the permit application will be sampled regularly.

2. Spills
   Two spills of potentially hazardous materials have been documented in the facility file. Both spills occurred within the waste management area (WMA) and are addressed in the permit application. Some soil contamination has been found outside the WMA at test pits TP-37 and TP-13. These areas are also being addressed in the permit application.

SUMMARY AND CONCLUSIONS

Due to the extensive assessment performed by SWP-EP, many SWMUs have been identified and addressed in the permit application. The corrective action plan proposes clean-up of sources and recovery of contaminated ground-water. Assessment and investigation of potential SWMUs and releases will continue in accordance with conditions of the permit.

MP:mcw(0018R)

Topographic Map of Plant

Primary Buildings + Structures

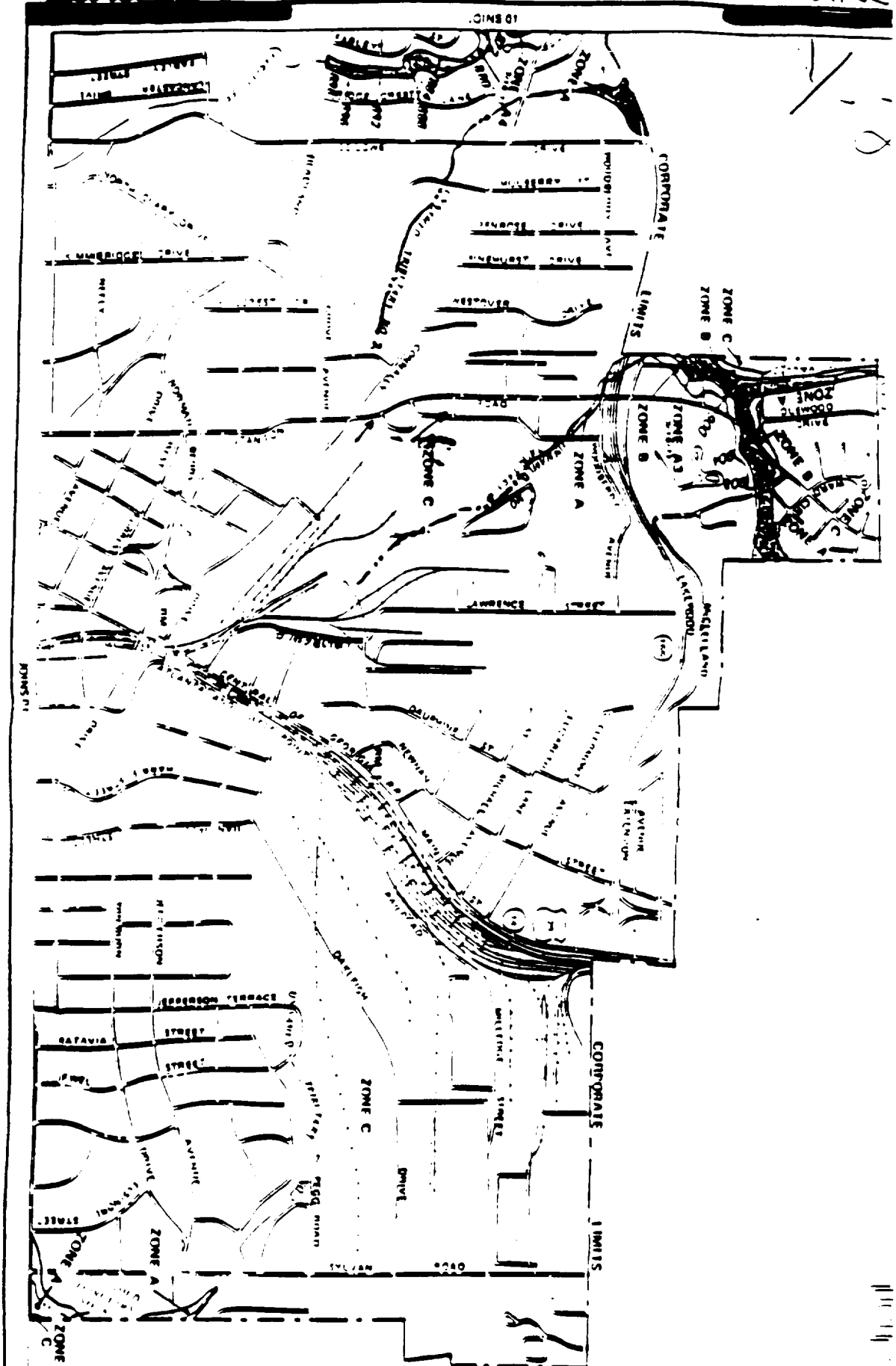
Other Structures

K001 Surface Impoundment

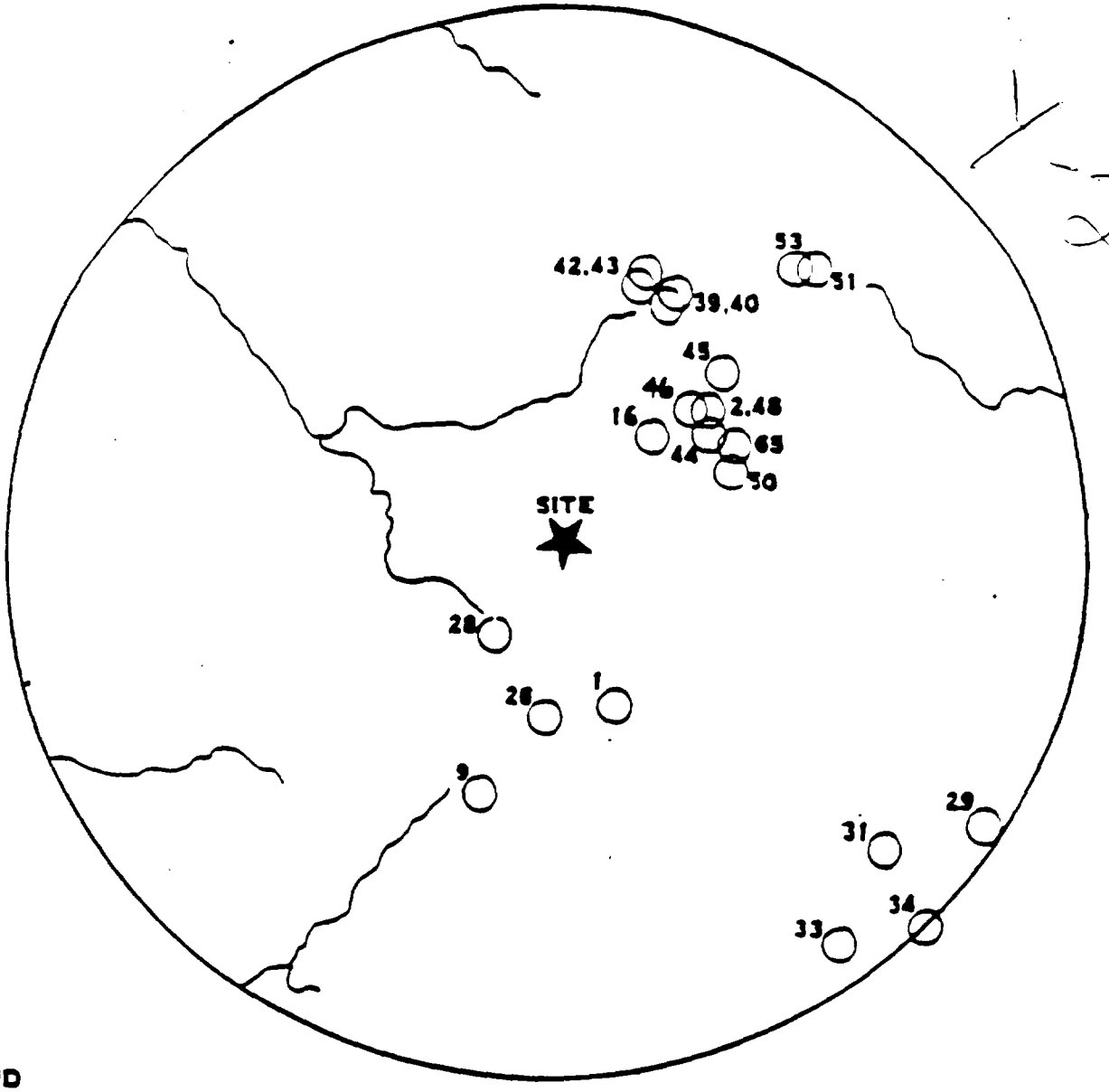
Old Surface Impoundment

Flood [illegible] with Unnamed [illegible] and Swales (→)

FIGURE



Location of Water Supply Wells, FIGURE 4A



LEGEND

42 ○ WATER WELL LOCATIONS

0 1
SCALE IN MILES

NOTE: REFER TO TABLE 1
FOR WELL DATA

Reference: Cressler, C.W., C.J. Thurmond and W.G. Hester, 1983, Ground water in the Greater Atlanta Region, Georgia: Georgia Geologic Survey Information Circular 63.

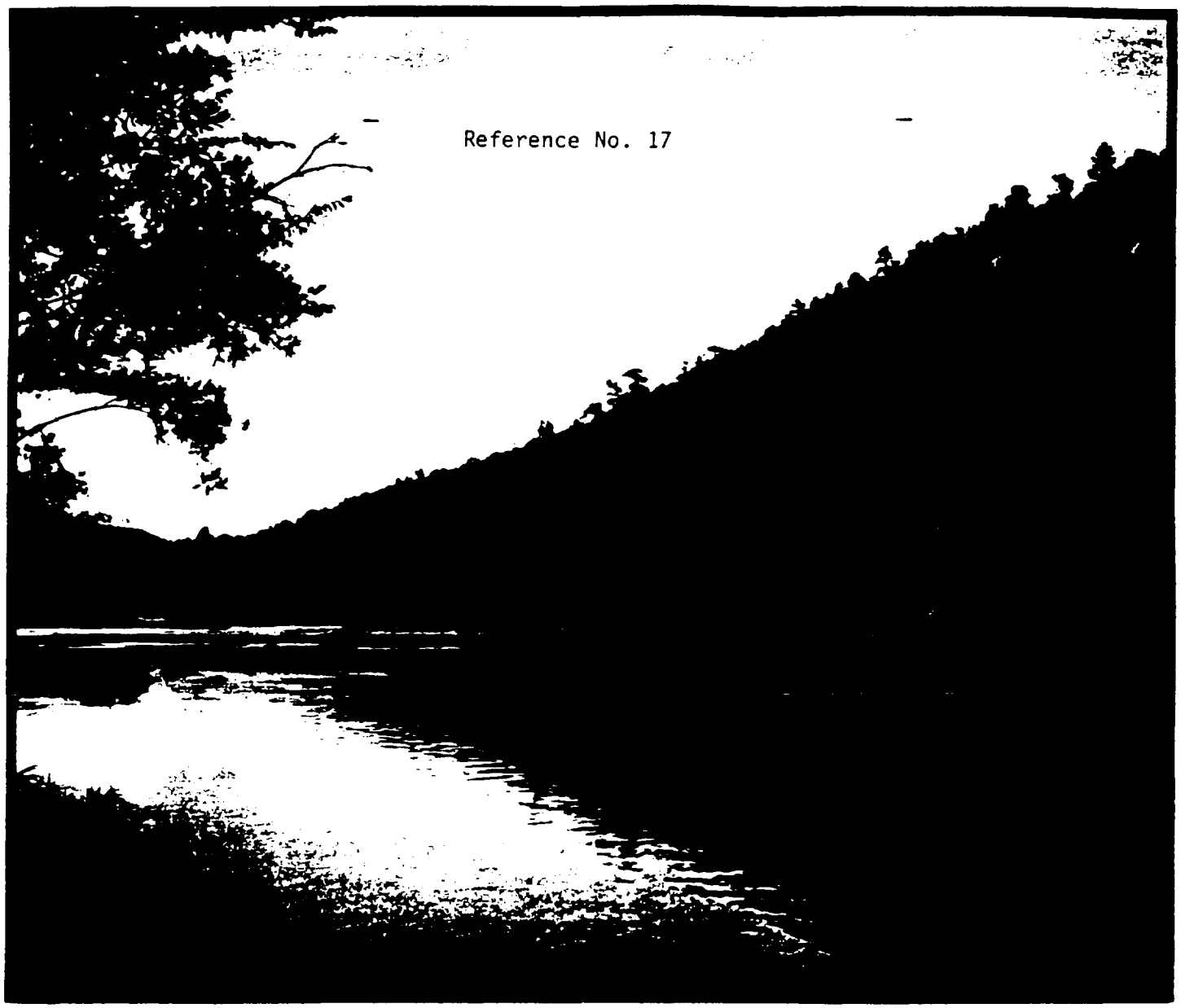
SOUTHERN WOOD PIEDMONT COMPANY	LAW ENVIRONMENTAL SERVICES	WATER WELLS AND STREAMS WITHIN 3 MILES OF SITE

FIGURE 4B

Well Number	Owner
* 1	O'Neil Bros., East Point
* 2	Fort MacPherson
16	City of East Point
26	?
28	City of College Park
* 39	Fort MacPherson
* 40	Fort MacPherson
* 42	Fort MacPherson
* 43	Fort MacPherson
44	?
* 45	Fort MacPherson
* 46	Fort MacPherson
48	City of College Park
50	Central of Georgia Rail Road
o 51	National Biscuit Company
o 53	National Biscuit Company
65	Central of Georgia Rail Road

* High-yielding wells that currently (1980) are unused and could provide emergency water supplies.

o Active wells in use longer than 30 years.



Reference No. 17

Water Availability & Use

Flint River Basin

Georgia Department of Natural Resources
Environmental Protection Division

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
1-010 (ISD)	Ford Motor Co.	Fulton	Atlanta	Mud Creek	338.8	0.20		0.20	0.0	
1-020 (ISD)	Delta Airlines Inc.	Clayton	Atlanta	Flint River	338.8	1.00		3.00	0.0	
1-030 (MSD)	Atlanta Flint R. WPCP	Clayton	Atlanta	Flint River	337.5	6.00		4.93	0.2	
1-050 (ISD)	Vulcan Materials Co.	Fulton	Red Oak	Kimberly Cr.	338.03	1.60		1.91	0.08	
1-060 (MSD)	Ful. Co. Morn. Cr. WPCP	Fulton	Union City	Morning Cr.	336.35	3.00		3.64	0.14	
1-070 (MSD)	Fayetteville E. Pond	Fayette	Fayetteville	Nash Creek	322.33	0.12		1.80	0.10	
1-080 (MSD)	Hampton WPCP	Henry	Hampton	Bear Cr., Trib.	317.19	0.50		6.00	0.24	
1-090 (MSW)	City of Griffin	Spalding	Griffin	Flint River	307.40		8.00	194.00	10.70	≥ 99
1-100 (MSD)	Griffin WPCP	Spalding	Griffin	Shoal Creek	309.20	0.60		4.35	0.21	
1-110 (MSD)	Fairburn WPCP	Fayette	Fairburn	Whitewater Cr.	326.79	0.60		3.96	0.16	
1-130 (MSW)	City of Fayetteville	Fayette	Fayetteville	Gingercake Cr.	318.12		0.15	5.29	0.21	≥ 99*
1-140 (MSD)	Fayetteville W. Pond	Fayette	Fayetteville	Gingercake Cr.	318.47	0.10		5.29	1.00	
1-150 (MSD)	Fayetteville WPCP	Fayette	Fayetteville	Whitewater Cr.	315.74	1.23		30.00	3.00	
1-160 (MSW)	City of Newnan	Coweta	Newnan	Line Cr.	316.00		7.5		1.50	60*
1-170 (MSD)	Peachtree City WPCP	Fayette	P'tree City	Line Cr.	310.06	1.00		70.00	3.15	
1-180 (MSW)	Fayette Co. Water Sys.	Fayette	Fayetteville	Lake P'tree	312.30		0.50	18.58	1.10	≥ 90*
1-190 (MSD)	Peachtree City WPCP	Fayette	P'tree City	Flat Creek	311.77	0.90		19.00	1.14	
1-200 (MSW)	City of Senoia	Coweta	Senoia	Hutchins Lake	305.97		0.30	14.70	1.50	≥ 99*
1-210 (MGW)	City of Senoia	Coweta	Senoia	n/a			0.20			
1-230 (MSW)	City of Greenville	Meriwether	Greenville	Town Creek	293.01		0.15	1.11	0.13	97*
1-240 (MSD)	Greenville South WPCP	Meriwether	Greenville	Kennel Cr.	291.65	0.13		2.00	3.00	

* No Minimum Flow Requirement

FLINT RIVER
WATER AVAILABILITY
AND USE REPORT

GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES
IN HYDROLOGIC UNIT 1
FIGURE 5

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
2-010 (MSW)	City of Zebulon	Pike	Zebulon	Elkins Cr.	292.94		0.30	21.40	0.72	≥99*
2-020 (MSD)	Zebulon Pond	Pike	Zebulon	Town Branch	293.33	0.28		2.24	0.09	
2-030 (MSD)	Concord Pond #2	Pike	Concord	Concord Br.	287.2	0.10		1.23	0.05	
2-040 (MSW)	City of Woodbury	Meriwether	Woodbury	Pound Cr.	279.05		0.50	6.00	0.50	≥99*
2-050 (IGW)	Nabisco	Meriwether	Woodbury	n/a			0.25			
2-060 (MSW)	City of Manchester	Meriwether	Manchester	Pigeon Cr. Tr.	258.36		0.75	1.73	0.17	54*
2-070 (MSD)	Manchester WPCP	Meriwether	Manchester	Pigeon Cr.	254.52	0.75		17.10	1.70	
2-080 (MGW)	City of Talbotton	Talbot	Talbotton	n/a			0.10			
2-090 (MSD)	Talbotton WPCP	Talbot	Talbotton	Edwards Cr.	269.30	0.10		0.05	0.00	
2-100 (ISD)	Pomona Products Co.	Spalding	Griffin	Ison Br.	294.26	0.35		1.00	0.00	
2-110 (MSD)	Griffin WPCP	Spalding	Griffin	Potato Cr.	289.65	2.00		10.00	1.30	
2-120 (ISW)	BF Goodrich	Upson	Thomaston	Potato Cr.	262.82		0.40	154.00	11.00	≥99
2-130 (ISD)	BF Goodrich	Upson	Thomaston	Drake Br.	263.18	0.26		1.55	0.09	
2-140 (MSW)	City of Thomaston	Upson	Thomaston	Potato Cr.	260.32		3.00	176.00	10.60	≥99*
2-150 (ISW)	Thomaston Mills Inc.	Upson	Thomaston	Potato Cr.	262.82		3.40	154.00	11.00	≥99*
2-160 (ISD)	Thomaston Mills Inc.	Upson	Thomaston	Dye Branch	258.21	2.50		0.27	0.00	
2-170 (MSD)	Thomaston Town Br. WPCP	Upson	Thomaston	Bell Cr. Trib.	256.01	0.75		2.00	0.50	
2-180 (MSD)	Thomston Bell Cr. WPCP	Upson	Thomaston	Bell Cr.	256.60	1.50		8.20	0.60	

* No Minimum Flow Requirement

FLINT RIVER
WATER AVAILABILITY
AND USE REPORT

GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES
IN HYDROLOGIC UNIT 2
FIGURE 6

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
3-010 (MGW)	City of Roberta	Crawford	Roberta	n/a			0.20			
3-020 (MSD)	Roberta WPCP	Crawford	Roberta	Matt. Cr. Trib.	216.8	0.20		0.61	0.20	
3-030 (MGW)	City of Butler	Taylor	Butler	n/a			0.50			
3-040 (MSD)	City of Butler	Taylor	Butler	Beaver Cr. Tr.	227.14	0.20		1.00	0.00	
3-050 (MGW)	City of Reynolds	Taylor	Reynolds	n/a			0.17			
3-060 (MSD)	City of Reynolds	Taylor	Reynolds	Patsiliga Cr.	213.63	0.16		139.00	31.00	
3-070 (IGW)	Bibb Co. Plant	Coweta	Newnan	n/a			0.11			
3-080 (ISD)	Bibb Mfg. Co. Potterdale	Taylor	Potterdale	Horse Cr.	202.44	0.12		22.10	17.60	
3-090 (MGW)	City of Marshallville	Macon	Marshallville	n/a			0.50			

* No Minimum Flow Requirement

FLINT RIVER
WATER AVAILABILITY
AND USE REPORT

GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES
IN HYDROLOGIC UNIT 3
FIGURE 7

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
4-010 (MGW)	City of Oglethorpe	Macon	Oglethorpe	n/a	177.63		0.13	39.00	16	
4-020 (MSD)	Oglethorpe WPCP	Macon	Oglethorpe	Mills Cr.	177.33	0.13		13.20	14	
4-025 (MGW)	City of Oglethorpe	Macon	Oglethorpe	n/a			0.15			
4-030 (IGW)	Southern Frozen Foods	Macon	Montezuma	n/a			2.50			
4-040 (MSD)	Montezuma WPCP #2	Macon	Montezuma	Spring Cr.	178.4	2.2		0.60	0.18	
4-050 (MSD)	Montezuma WPCP #1	Macon	Montezuma	Spring Cr.	176.56	0.84		7.70	3.60	
4-060 (MGW)	City of Montezuma	Macon	Montezuma	n/a			0.78			
4-070 (IGW)	Buckeye Cellulose	Macon	Oglethorpe	n/a			1.80			
4-080 (ISW)	Buckeye Cellulose Corp.	Macon	Oglethorpe	Flint River	172.51		10.00		693.00	≥99*
4-090 (ISD)	Buckeye Cellulose Corp.	Macon	Oglethorpe	Flint River	172.51	9.70		2950		
4-100 (MSD)	Ellaville Pond	Schley	Ellaville	Lt. M'lee Trib.	136.33	0.16		0.54	0.15	
4-110 (MGW)	City of Ellaville	Schley	Ellaville	n/a			0.25			
4-120 (IGW)	American Cyanamid	Macon	Andersonville	n/a			0.14			
4-130 (MSD)	Byronville WPCP	Dooly	Byronville	Turkey Cr.	166.06	0.10		45.00	2.4	
4-140 (MGW)	City of Vienna	Dooly	Vienna	n/a			0.62			
4-150 (MSD)	City of Vienna WPCP	Dooly	Vienna	Pennahatchee Cr.	165.5	0.28		22.50	0.0	
4-160 (MGW)	City of Cordele	Crisp	Cordele	n/a			1.62			
4-170 (MSD)	Cordele WPCP	Crisp	Cordele	Gum Creek	150.77	5.00		48.00	0.5	
4-180 (ISW)	Crisp County Power Co.	Worth	Warwick	Flint River	132.5		4.90	3700.00	745	≥99
4-190 (ISD)	Crisp County Power Co.	Worth	Warwick	Flint River	132.5	4.90		3700.00	745	
4-200 (IGW)	Firestone Tire Co.	Dougherty	Albany	n/a			0.65			
4-210 (ISD)	Albany Naval Air Station	Dougherty	Albany	Flint River	105.9	0.75		4900	900	
4-220 (IGW)	Miller Brewing Co.	Dougherty	Albany	n/a			3.00			
4-230 (MGW)	City of Buena Vista	Marion	Buena Vista	n/a			1.30			
4-240 (MSD)	Buena Vista WPCP	Marion	Buena Vista	Oochee Cr. Tr.	214.23	0.25		0.10	0.0	
4-250 (ISD)	Cargill Inc - Buena Vista	Marion	Buena Vista	Muckalee Cr.	174	0.25		0.13	0.10	
4-260 (MSD)	Plains WPCP	Sumter	Plains	Pepell Cr.	139.99	0.12		0.86	0.08	
4-280 (MSD)	City of Richland WPCP	Stewart	Richland	Bear Cr.	154.52	0.19		0.76	0.08	
4-290 (MGW)	City of Leesburg	Lee	Leesburg	n/a			0.18			
4-300 (MSD)	Leesburg WPCP	Lee	Leesburg	Kinchafoonee Cr.	114.61	0.10		590.00	110	
4-320 (ISD)	Martin Marietta Aggregates	Dougherty	Albany	Fowltown Cr. Tr.	114.29	0.84			•	
								5310.00		
4-340 (MGW)	Town of Plains	Sumter	Plains	n/a			0.12			
4-350 (MGW)	City of Americus	Sumter	Americus	n/a			4.40			
4-360 (MSD)	Americus-M'lee Cr. WPCP	Sumter	Americus	Muckalee Cr.	147.6	2.00		165.00	16.00	
4-370 (MSD)	Americus-Willets Br. WPCP	Sumter	Americus	Willets Br.	148.48	0.70		3.00	0.3	
4-380 (ISD)	Miller Brewing Co.	Dougherty	Albany	Flint River	101.90	2.30		5310.00		

* No Minimum Flow Requirement

FLINT RIVER
WATER AVAILABILITY
AND USE REPORT

GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES
IN HYDROLOGIC UNIT 4
FIGURE 8

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
5-010 (MGW)	City of Albany	Dougherty	Albany	n/a			27.0			
5-020 (ISD)	Firestone Tire & Rubber Co.	Dougherty	Albany	Flint River	97.67	0.63		5322.00	1087	
5-030 (ISD)	USMC Support	Dougherty	Albany	Flint River	97.67	0.63		5322.00	1087	
5-040 (IGW)	USMC	Dougherty	Albany	n/a			2.20			
5-050 (IGW)	Proctor & Gamble	Dougherty	Albany	n/a			6.00			
5-060 (MSD)	Albany WPCP	Dougherty	Albany	Flint River	98.05	20.00		5322.00	1087	
5-070 (IGW)	Southern Concrete	Dougherty	Albany	n/a			0.24			
5-080 (IGW)	Merck & Co., Inc.	Dougherty	Albany	n/a			9.00			
5-090 (ISD)	Merck & Co., Albany	Dougherty	Albany	Flint River	94.20	1.00		5393.00	1133	
5-100 (ISW)	GA. Power Plant Mitchell	Dougherty	Albany	Flint River	89.2		255.00	5450.00	1215	≥99*
5-110 (ISD)	GA. Power Plant Mitchell	Dougherty	Albany	Flint River	89.2	252.00		5450.00	1215	
5-130 (MSD)	City of Shellman	Randolph	Shellman	Icwynowy. Cr. Tr.	99.14	0.15		5.00	0.0	
5-140 (MGW)	City of Shellman	Randolph	Shellman	n/a			0.15			
5-150 (MGW)	City of Cuthbert	Randolph	Cuthbert	n/a			0.60			
5-160 (MSD)	Cuthbert Pond	Randolph	Cuthbert	Town Branch	98.03	0.41		5.61	2.7	
5-170 (MGW)	City of Edison	Calhoun	Edison	n/a			0.25			
5-180 (MSD)	Edison Pond	Calhoun	Edison	Bay Branch Trib.	80.96	0.15		0.89	0.18	
5-190 (MGW)	City of Dawson	Terrell	Dawson	n/a			1.20			
5-200 (MSD)	Dawson WPCP	Terrell	Dawson	Brantley Cr.	104.0	1.00		9.00	0.7	
5-210 (MGW)	City of Leary	Calhoun	Leary	n/a			0.10			
5-220 (MSD)	Leary WPCP	Calhoun	Leary	Keel Cr.	83.82	0.10		0.50	0.05	
5-230 (ISD)	ITT United Plastics Div.	Decatur	Bainbridge	Flint River	34.38	0.14		7200.00	2181	
5-240 (ISD)	Decatur Co. Ind. Airpark	Decatur	Bainbridge	Flint River	34.11	0.50		7200.00	2181	
5-250 (IGW)	Flint Concrete Products	Decatur	Bainbridge	n/a			0.36			
5-260 (MGW)	City of Camilla	Mitchell	Camilla	n/a			2.50			
5-270 (MSD)	Camilla WPCP	Mitchell	Camilla	Bib Slough Cr.	39.26	3.00		2.00	0	
5-280 (MGW)	City of Bainbridge	Decatur	Bainbridge	n/a			2.10			
5-290 (MSD)	Bainbridge WPCP	Decatur	Bainbridge	Flint R.	27	2.50		7600.00	2320	
5-300 (MSD)	Arlington Pond #2	Calhoun	Arlington	Mill Cr.	70.34	0.13		0.60	0	
5-310 (MGW)	City of Arlington	Calhoun	Arlington	n/a			0.20			
5-320 (MGD)	Arlington Pond #1	Calhoun	Arlington	Perry Cr. Trib.	73.10	0.10		0.44	0	
5-330 (MSD)	Blakely Pond B	Early	Blakely	Breastwork Br.	90.91	0.12		15.00	0.5	
5-340 (MSD)	Blakely WPCP	Early	Blakely	Baptist Br.	69.95	1.2		3.00	0.1	
5-350 (MSD)	Blakely Pond A	Early	Blakely	Blue Creek	67.36	0.12		2.20	0.1	
5-360 (MSD)	Colquitt WPCP	Miller	Colquitt	Spring Cr.	46.12	0.40		284.00	10.0	
5-370 (MGW)	City of Donaldsonville	Seminole	Donaldsonv'l	n/a			0.97			
5-380 (MSD)	Donaldsonville WPCP	Seminole	Donaldsonv'l	Fishpond Drain	19.68	0.40		13.64	0	
5-390 (IGW)	Decatur Co. Inc. Airpack	Decatur	Bainbridge	n/a			0.77			
5-400 (IGW)	Patchogue Plymouth	Decatur	Bainbridge	n/a			2.00			

* No Minimum Flow Requirement

FLINT RIVER WATER AVAILABILITY AND USE REPORT

GEORGIA ENVIRONMENTAL PROTECTION DIVISION

MAJOR FACILITIES IN HYDROLOGIC UNIT 5

FIGURE 9

Reference No. 18

REFERENCE 7

NUS CORPORATION AND SUBSIDIARIES ***TELECON NOTE***

CONTROL NO.	DATE: January 3, 1989	TIME: 15:45

DISTRIBUTION:

BETWEEN: Mike Callahan	OF: East Point Water Department	PHONE: (404) 765-1039

AND: Daniel L. Howard, NUS Corporation DL. Ho

DISCUSSION:

Mr. Callahan said that he does not know of any private wells in the East Point area. He also said that East Poin Water Department supplies water to College Park and Hapeville. East Point Water Department obtains its wate from Sweetwater Creek which is 10 miles northwest and upgradient of the facility in question.

ACTION ITEMS:

Reference No. 19

Water Availability & Use

CHATTAHOOCHEE RIVER BASIN

Georgia Department of Natural Resources

Environmental Protection Division

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ.MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
010(MSW)	City of Sugar Hill MWS	Gwinnett	Sugar Hill	Richland Creek	5.8/L.0.2		0.14	N/A	N/A	
015(ISW)	Bona Allen, Inc.	Gwinnett	Buford	Suwanee Creek	14.7		0.28	5.8	1.0	≥99*
020(ISD)	Bona Allen, Inc.	Gwinnett	Buford	Suwanee Creek	14.6	0.14		5.8	0.1	
030(MSD)	City of Buford Westside WPCP	Gwinnett	Buford	Suwanee Creek	7.9	0.25		3.23	0.54	
040(MSD)	City of Buford Southside WPCP	Gwinnett	Buford	Suwanee Creek	5.9	1.0		14.0		
050(MSW)	Gwinnett County Water Auth.	Gwinnett	Lawrenceville	Chat. River	338.0		12.0	1100	670	≥99*
060(MSW)	DeKalb County Water & Sewer Dept.	DeKalb	Decatur	Chat. River	325.5		96.0	1210	720	≥99*
070(MSD)	Crooked Creek WPCP	Gwinnett	Norcross	Crooked Creek	1.7	2.0				
080(MSD)	Johns Creek WPCP	Fulton	Roswell	Chat. River	324.0	4.0		1214	700	
090(MSD)	City of Cumming WPCP	Forsyth	Cumming	Big Creek	24.2	0.25		0.49	0.04	
095(MSW)	City of Roswell MWS	Fulton	Roswell	Big Creek	2.0		0.62	96.4	7.9	≥99*
100(ISW)	Horseshoe Bend Prop., Inc.	Fulton	Roswell	Chat. River	315.6		0.25	1250	760	≥99*
110(MSD)	Big Creek WPCP	Fulton	Roswell	Chat. River	315	6.0		1255	740	
120(MSW)	Cobb Co. Marietta Water Auth.	Cobb	Acworth	Chat. River	310		48	1390	810	≥99*
130(MSW)	City of Atlanta MWS	Fulton	Atlanta	Chat. River	299.6		160	1460	900	88-99
140(MSD)	Chattahoochee WPCP	Cobb	Smyrna	Chat. River	299.1	20		1461	781	
150(MSD)	R.M. Clayton WPCP	Fulton	Atlanta	Chat. River	298.8	120		1462	701	
160(ISW)	Ga. Power Plant McDonough	Cobb	Atlanta	Chat. River	298.6		394	1600	915	50-58
170(ISW)	Ga. Power Plant Atkinson	Cobb	Atlanta	Chat. River	298.6		432	1600	915	50-58
180(ISD)	Ga. Power Plant McDonough Atkinson	Cobb	Atlanta	Chat. River	298.0	818		1600	855	
190(MSD)	South Cobb WPCP	Cobb	Mableton	Chat. River	294.5	24		1650	943	
200(IGW)	Anaconda Aluminum Co.	Fulton	Atlanta	Chat. River	293.0		0.33	N/A	N/A	

* Calculated without minimum streamflow requirement

CHATTAHOOCHEE RIVER WATER AVAILABILITY AND USE REPORT

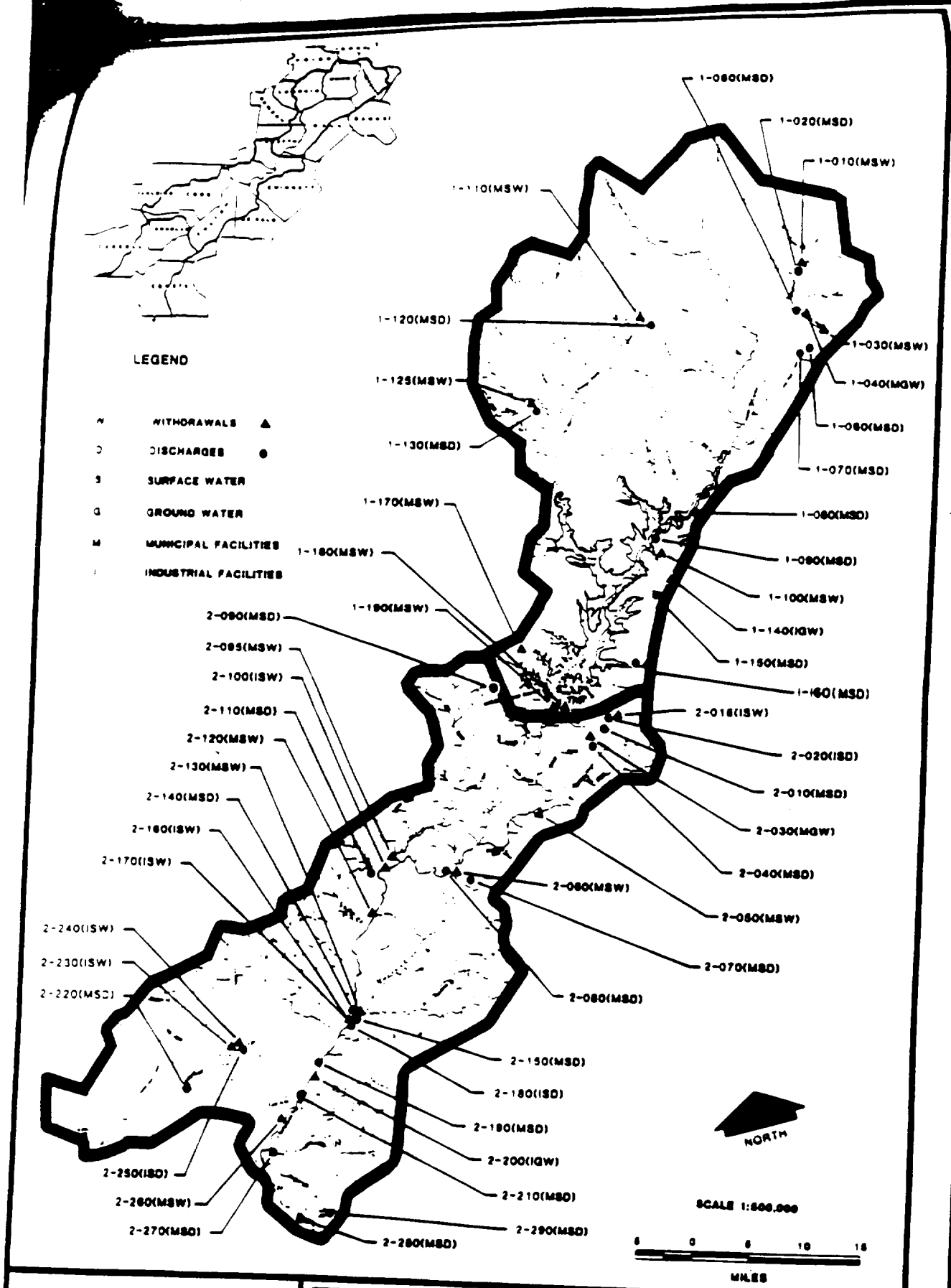
GEORGIA ENVIRONMENTAL PROTECTION DIVISION

MAJOR FACILITIES IN HYDROLOGIC UNIT #2

FIGURE 6

CILITY I.D. UMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ.MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
210(MSD)	Utoy Creek WPCP	Fulton	Atlanta	Chat. River	291.7	30		1680	981	
220(MSD)	Douglasville-North WPCP	Douglas	Douglasville	Gothards Creek	4.0	1.0		9.9		
230(ISW)	Sweetwater Paper Board	Cobb	Austell	Sweetwater Creek	16.2		0.20	150	9	≥99*
240(ISW)	Austell Box Board Company	Cobb	Austell	Sweetwater Creek	14.4		0.70	153	9	≥99*
250(ISD)	Austell Box Board Company	Cobb	Austell	Sweetwater Creek	14.0	0.18		153	9	
260(MSW)	City of East Point MWS	Douglas	East Point	Sweetwater Creek	1.0		11.5	246	15	≥99*
270(MSD)	Camp Creek WPCP	Fulton	College Park	Chat. River	283.5	15		1715	1090	
280(MSD)	Line Creek WPCP	Fulton	Fairburn	Line Creek	6.9	0.22		2.4		
290(MSD)	City of Union WPCP	Fulton	Union City	Deep Creek	8.0	0.25		1.0		

* Calculated without minimum streamflow requirement



CHATTAHOOCHEE RIVER WATER

AVAILABILITY AND USE

GEORGIA ENVIRONMENTAL

MAJOR WATER USERS

Reference No. 20

NUS CORPORATION AND SUBSIDIARIES

TELECON NOTE

CONTROL NO.	DATE: March 20, 1989	TIME: 9:35

DISTRIBUTION:

BETWEEN: Tommy Fowler	OF: City of Atlanta Water	PHONE: (404) 658-7280

AND: Walter Riley, NUS Corporation

Walter Riley Jr. 3/20/89

DISCUSSION:

City of Atlanta Water Department Service. The water department supplies water to all areas of the city of Atlanta. All water comes from the intake located at Marietta Blvd. and Plant Road. There are no emergency connections to other systems but provide water to other smaller systems. All areas within the city have water service.

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

Reference No. 21

CONTROL NO. FS-8908-31	**DATE:** 8/29/89	**TIME:** 11:10

DISTRIBUTION: SSC Industries
East Point, Fulton County, Georgia

BETWEEN: Chris Martin	**OF:** Georgia, State Game and Fish Division	**PHONE:** (404)

AND: Jonathan Hughes, NUS Corporation

DISCUSSION:

Called Chris Martin to inquire about recreational or commercial activities that occur on the Flint River. He stated that:

- Recreational fishing, swimming, and boating occur.
- If commercial fishing is practiced on the Flint River, Mr. Martin claimed that it would be minimal.

Reference No. 22

REFERENCE 10

ENDANGERED AND THREATENED SPECIES

U.S. FISH AND WILDLIFE SERVICE

REGION 4 - ATLANTA

U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV, ATHENS, GEORGIA

SISB/SAS
RECEIVED
MAY 17 1990
EPA - REGION IV
ATLANTA, GA.

MEMORANDUM

DATE: MAY 14 1990

SUBJECT: Document Review of NUS Corp. SSI Study Plan for
SSC Industries, Inc.
Atlanta, Fulton County, **Georgia**
ESD Project No. 90E-397

FROM: John D. Schoolfield
Hazardous Waste Section M. R. C.
Environmental Compliance Branch
Environmental Services Division

TO: Al Hanke, Chief
Site Assessment Section
Waste Programs Branch
Waste Management Division

THRU: M. R. Carter, Acting Chief M. R. Carter
Hazardous Waste Section
Environmental Compliance Branch
Environmental Services Division

The Screening Site Inspection Study Plan (SSI) for the SSC Industries site, prepared by NUS Corporation, has been reviewed. The study plan is adequate for conducting the off-site investigation. However, please see the following comment:

- The sample point locations are based on a 1,000 foot grid. Lead particulates, however, generally do not travel far from their source. A better approach might be to initially sample at 100 to 200 foot intervals (proceeding from the site), until sample results indicate a larger grid is appropriate.

If you have any questions, I may be reached at (FTS) 250-3317.

cc: Finger/Wright
Carter/Bokey
Knight
Franklin

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

ENVIRONMENTAL SERVICES DIVISION
ATHENS, GEORGIA 30613

STSB / SAS
RECEIVED
MAY 17 1990
EPA - REGION IV
ATLANTA, GA.

MEMORANDUM

DATE: May 14, 1990

SUBJECT: SSC Industries, Inc., Atlanta, GA, SSI
Study Plan

FROM: Pat Stamp
Laboratory Quality Control Specialist
Laboratory Evaluation & Quality Assurance Section

TO: Al Hanke, Chief
Site Assessment Section
Site Investigation & Support Branch, WASTMD

THRU: Wade Knight, Chief
Laboratory Evaluation & Quality Assurance Section

We have reviewed the subject document and have no comments.

To Wade Knight

NUS CORPORATION

1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

From M. Carter

C-586-5-0-40

May 7, 1990

Mr. Michael Carter
Environmental Protection Agency
College Station Road
Athens, Georgia 30613

Subject: Screening Site Inspection
Study Plan
SSC Industries, Inc.
Atlanta, Fulton County, Georgia
TDD No. F4-9004-37
Revision 0

Dear Mr. Carter:

Enclosed please find two (2) copies of the Study Plan, Revision 0, for the Site Screening investigation to be conducted at SSC Industries, Inc., Atlanta, Fulton County, Georgia. Field work is scheduled for the week of May 21, 1990.

If you have any questions or comments, please do not hesitate to contact me at NUS Corporation.

Very truly yours,

Sherry Durren
Project Manager

Approved:

SD/gwn

Enclosures (2)

MAY 09 1990

R-586-4-0-34

STUDY PLAN
SCREENING SITE INSPECTION, PHASE II
SSC INDUSTRIES, INC.
ATLANTA, FULTON COUNTY, GEORGIA
EPA ID #: GAD003284049

Prepared Under
TDD No. F4-9003-35
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

MAY 7, 1990

NUS CORPORATION
SUPERFUND DIVISION

Prepared By	Reviewed By	Approved By
Sherry Durren	Donna McCurry for	Phil Blackwell
Sherry Durren Project Manager	Roger Franklin Assistant Regional Project Manager	Phil Blackwell Regional Project Manager

NOTICE

The information in this document has been funded wholly by the United States Environmental Protection Agency (EPA) under Contract Number 68-01-7346 and is considered proprietary to the EPA.

This information is not to be released to third parties without the expressed or written consent of the EPA.

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STUDY PLAN

SCREENING SITE INSPECTION, PHASE II

SSC INDUSTRIES, INC.

ATLANTA, FULTON COUNTY, GEORGIA

EPA ID #GAD003284049

TDD NO. F4-9003-35

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) has been tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct an offsite Site Screening Investigation (SSI) in the immediate vicinity of SSC Industries, Inc. facility in Fulton County, Georgia. The investigation will be performed under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The task will be performed to satisfy the requirements stated in Technical Directive Document (TDD) number F4-9003-35.

1.1 Objectives

The objectives of this inspection will be to determine if the surrounding community has been contaminated with lead from the operation of Gould National Batteries prior to 1968. Further, this inspection will seek to determine the populations and environments potentially affected. Through these objectives, a recommendation will be made regarding future activities at the site.

1.2 Scope of Work

The scope of this investigation will include the following activities:

- Collect approximately 100 surface soil samples from offsite surroundings for Field Analytical Support Project (FASP) analysis

- Collect 10 surface soil samples (splits of FASP samples) from offsite locations for CLP analysis for metals only

- Obtain aerial photographs and maps of site, if possible

- Evaluate target populations associated with the offsite exposure pathways

- Obtain information on local water systems

1.3 Schedule

Week of May 21, 1990

1.4 Personnel

Project Manager - Sherry Durren
Other personnel as required

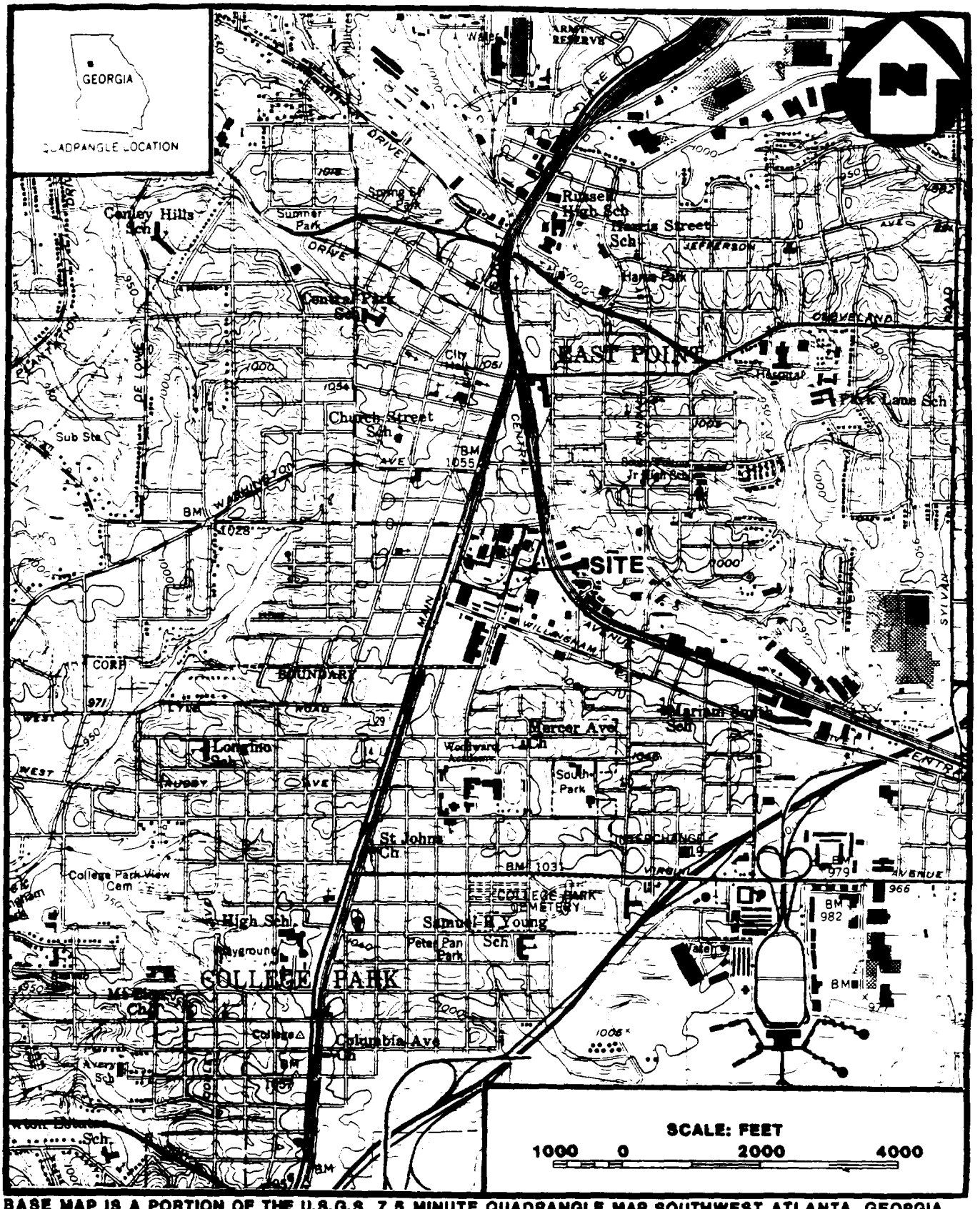
1.5 Permits and Authorization Requirements

EPA is responsible for obtaining access to sample locations and for obtaining permission to take photographs. In addition, EPA is responsible for all permits which may be required to accomplish this task.

1.6 Site History and Description

SSC Industries is located at 1550 East Taylor Avenue, east of the Seaboard Railroad in an industrial area (Refs. 1, 2, Figure 1). The property consists of approximately 12 acres (Ref. 3, Figure 2). There are approximately 8,135 persons living within a 1-mile radius of the facility. Two houses are within 300 feet (Refs. 3, 4).

Prior to 1968, the property was owned by Gould National Batteries. From 1968 to 1978, the property was owned by Southern Sizing Company. From 1978 to 1984, the property was owned by SSC Industries, Inc. From December 3, 1984 to the present, the property has been owned by Chemtech Industries but has retained the name of SSC Industries (Ref. 5). SSC Industries manufactures textile and paper processing chemicals and foam control agents through blending and cooking in several reactors on site (Ref. 6).

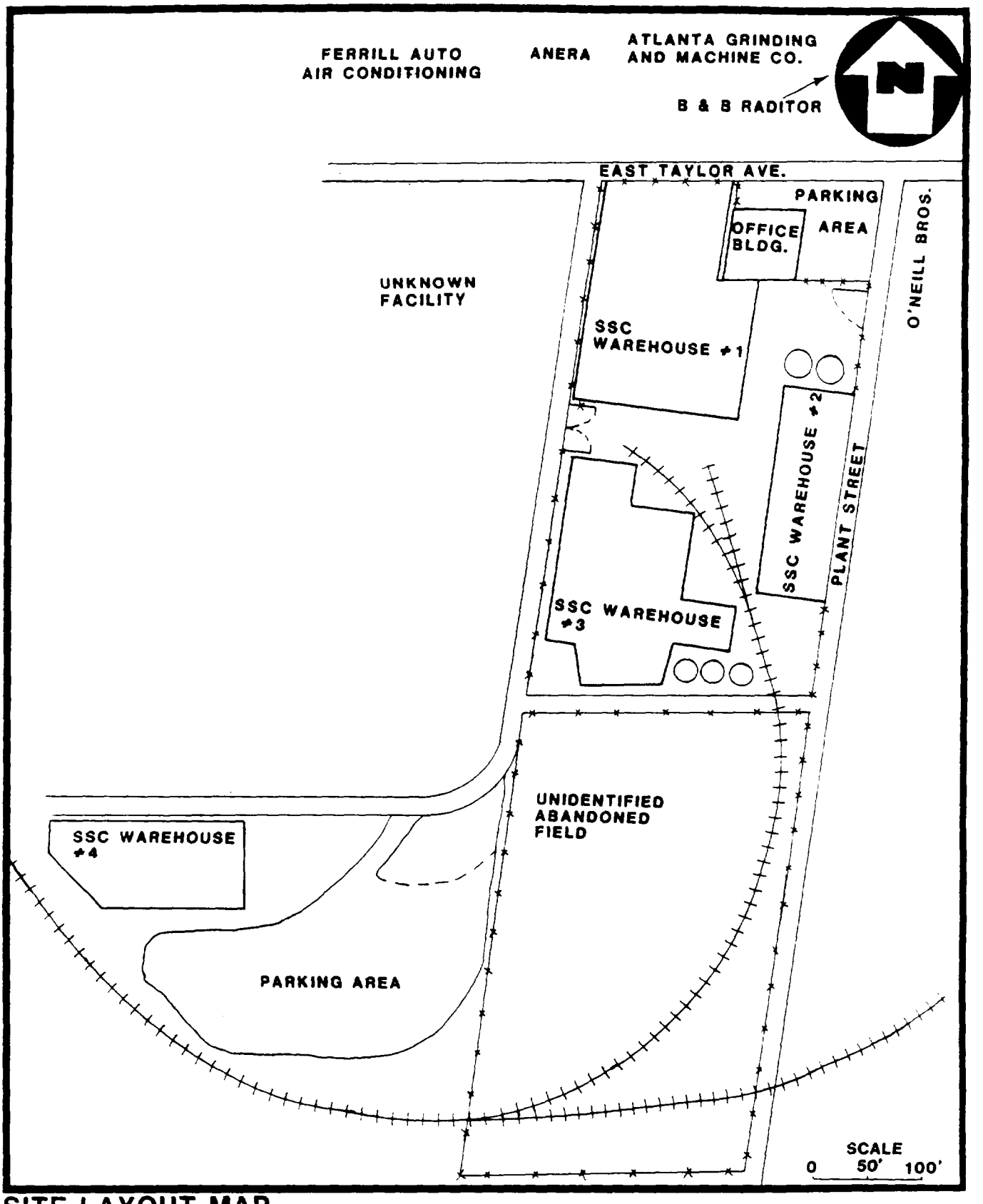


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE MAP SOUTHWEST ATLANTA, GEORGIA, 1983.

SITE LOCATION MAP
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORIGA

FIGURE 2

NUS CORPORATION

There are approximately 9 schools, 15 churches, and 2,143 residences within a 1-mile radius of the facility (Ref. 3). There is also a playground, community center, and residential area 900 feet east of the facility. Swimming, fishing, and boating occur along the extended surface water migration pathway (Ref. 7). Furthermore, there are freshwater wetlands along the extended pathway (Ref. 3). Although the ranges of some endangered or threatened species include the state of Georgia, no federally designated critical habitats are found in Fulton County (Ref. 8).

1.7 Regional Hydrogeology

SSC Industries is located in the Piedmont Physiographic Province and the Piedmont - Blue Ridge hydrogeologic regime, which is typified by the occurrence of a residual soil layer of variable thicknesses overlying folded, faulted, and fractured metamorphic and igneous, crystalline bedrock of Paleozoic and older age (Ref. 9, pp. 1-11). The facility rests directly on the undifferentiated Tar Creek Member of the Clarkston Formation, which consists of a sillimanite mica schist interlayered with amphibolite (Ref. 10, p. 83). The source of groundwater in the area is from the surficial, unconfined residual soil/crystalline rock aquifer system. Although water levels are quite variable in this aquifer, the water-table is generally located at an average depth of 70 feet below land surface (bls) in the immediate vicinity of the facility (Ref. 11, Ref. 3).

The most common type of residual soil that develops from weathering of mica schists and amphibolites is a dense clay material. The clay residual soil represents the layer with the lowest hydraulic conductivity between underlying crystalline rocks and the surface. They have hydraulic ocnductivities similar to that of similar clay materials with typical values ranging from 1×10^{-6} to 1×10^{-7} cm/sec (Ref. 11). There is a net annual rainfall of 7 inches and a 1-year, 24-hour rainfall of 3.25 inches (Refs. 12, pp. 43, 63; Ref. 13, p. 93).

All residences and businesses within 4 miles of the site are supplied with water by the Atlanta Municipal Water System or the East Point Municipal Water System (Ref. 14). The city of East Point, where the facility is located, obtains its drinking water from Sweetwater Creek in Douglas County upstream and west of the Chattahoochee River (Ref. 15). The East Point Water Department also supplies water to College Park and Hapeville (Ref. 16). The remainder of south Fulton County, which is within the 4-mile site radius, is serviced by the Atlanta Water Department. The Atlanta system obtains its water from the Chattahoochee River. This intake is upgradient and north of the site at the confluence of the Chattahoochee River and Nancy Creek (Refs. 17, 18, 19).

2.0 SAMPLING INVESTIGATION

The sampling during this investigation will include the collection of an approximately 100 environmental samples. The samples will be analyzed for lead exclusively, using the Field Analytical Support Program (FASP) protocols. Between 10 and 20 percent of the samples will be submitted to USEPA Contract Laboratory Program (CLP) for analysis. These samples will be analyzed only for the metals included in the USEPA CLP Target Compound List (TCL).

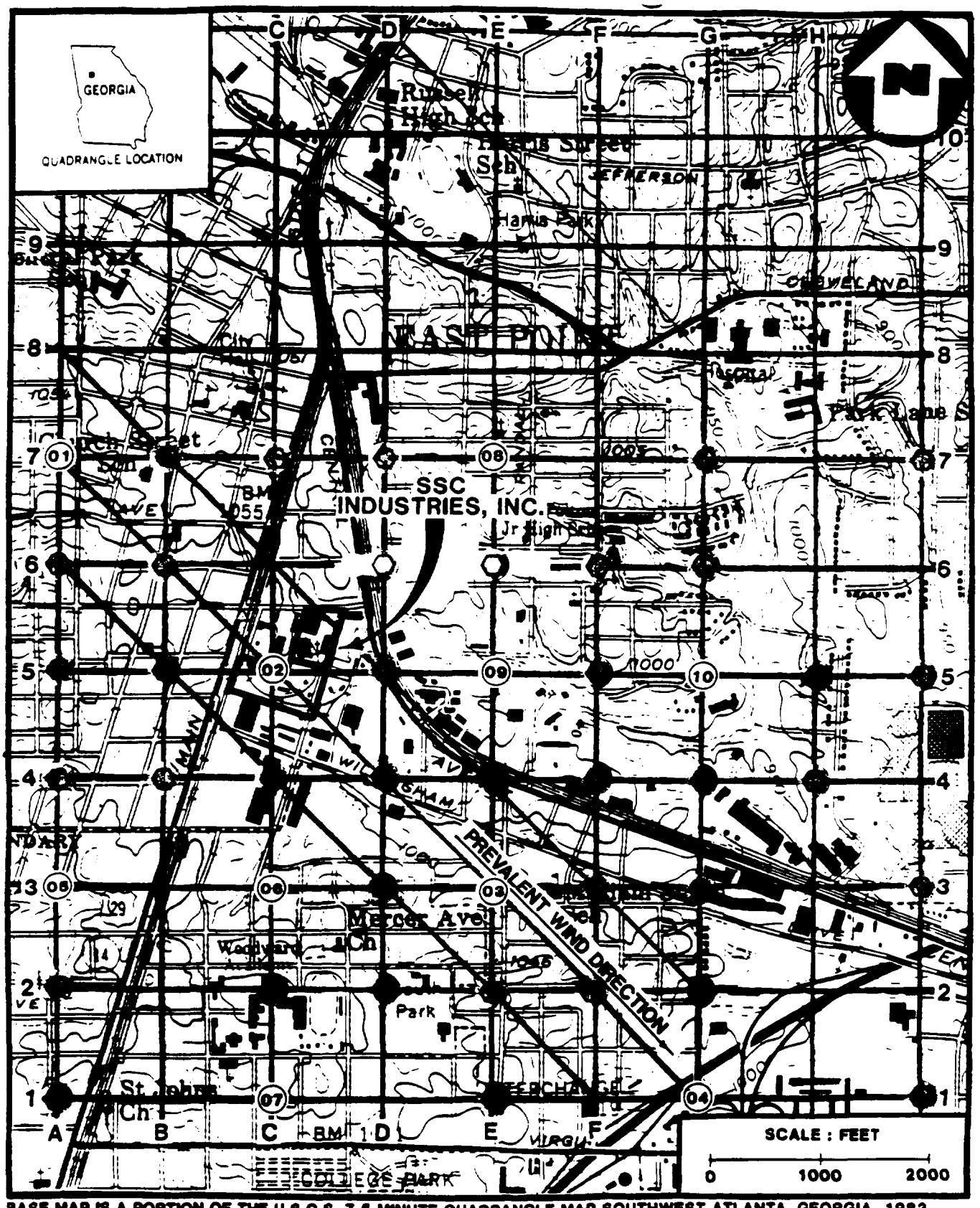
2.1 Sampling Locations

A total of approximately 100 surface soil samples will be collected for this investigation. Ten of these will be split samples to be submitted for CLP analysis. The purpose of the sampling investigation is to determine if nearby soils have been contaminated by airborne particulates from the site. The FASP sample locations and CLP sample locations are shown in Figure 3. Sample codes, descriptions, and rationales for CLP samples are presented in Table 1.

The sampling grid shown in Figure 3 consists of seven rows aligned in an east-west direction and nine columns aligned north-south. This results in a grid from just south of East Point City Hall to Virginia Avenue and from Semmes Street to Sylvan Road. The sampling points of the grid are 1,000 feet apart. The diagonal lines from northwest to southeast define the prevalent wind direction and the expected areas of higher lead concentration. The sampling will be done in stages and the FASP results used to determine the appropriate direction and extent of the grid at the next stage. This, along with the probability of unanticipated field conditions, will result in some changes from the anticipated sampling locations.

2.2 Analytical and Container Requirements

Sample containers used will be in accordance with the requirements specified in the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986. The following is a description of the analysis and types of containers required.



BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE MAP SOUTHWEST ATLANTA, GEORGIA, 1983.
ALL CLP SAMPLES WILL BE SPLIT WITH FASP

SAMPLE LOCATIONS MAP
SSC INDUSTRIES, INC.
EAST POINT, FULTON COUNTY, GEORGIA

FIGURE 3

LEGEND
SSC-SS- - CLP SAMPLE
- FASP SAMPLE

NUS CORPORATION

TABLE 1

SAMPLE LOCATIONS AND RATIONALE
CLP SAMPLE CODES, DESCRIPTIONS, LOCATIONS, AND RATIONALE
SSC INDUSTRIES, INC.
ATLANTA, FULTON COUNTY, GEORGIA

Sample Code	Description	Location/Rationale
SSC-SS-01 Grid A7	Upgradient surface soil	Westwood Avenue and Semmes Street. Grid A7. Establish upgradient conditions.
SSC-SS-02 Grid C5	Surface soil adjacent to facility	Battery Way. Grid C5. Determine presence or absence of contaminants.
SSC-SS-03 Grid E3	Surface soil downwind	Vesta Terrace at Harrison Road. Grid E3. Determine presence or absence of contaminants.
SSC-SS-04 Grid G1	Surface soil downwind	Hardin Avenue at Whipple Street. Grid G1. Determine presence or absence of contaminants.
SSC-SS-05 Grid A3	Surface soil	Lyle Avenue and Lowe Street. Grid A3. Determine presence or absence of contaminants.
SSC-SS-06 Grid C3	Surface soil	Myrtle Lane at Adams Plant Street. Grid C3. Determine presence or absence of contaminants.
SSC-SS-07 Grid C1	Surface soil	Hardin Avenue at N. Adams Street. Grid C1. Determine presence or absence of contaminants.
SSC-SS-08 Grid E7	Surface soil	Between Veterans Street and Norman Berry Drive at Lyle Avenue. Grid E7. Determine presence or absence of contaminants.
SSC-SS-09 Grid E5	Surface soil	300 feet west of Randall Street and 300 feet south of Martin Street. Grid E5. Determine presence or absence of contaminants.
SSC-SS-10 Grid G5	Surface soil	End of Bayard Circle. Grid G5. Determine presence or absence of contaminants.

SSC - SSC Industries, Inc.
SS - Surface Soil

Analyses	Container	Preservatives**
Inorganics, Soil/Sediment	8 oz., glass*	None

* Sample container lids are lined with teflon.

** All samples will be iced to 4 C upon collection.

2.3 Methodology

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation will be in accordance with the standard operating procedures as specified in Section 3 and 4 of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986.

Except for FASP analyses, all laboratory analyses and laboratory quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified in the Analytical Support Branch Operations and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division; revised June 1, 1985 or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the contract analytical laboratory program.

FASP samples will be prepared by microwave digestion in accordance with CEM Application Note GM-1, Revision G-88 (This is not an EPA approved method). FASP laboratory analyses will employ flame atomic absorption (AA) in accordance with SW-846, Methods 7000 and 7420, Revision 0, September 1986. If the sensitivity of this method (based on sample results below detection limits) proves to be inadequate, samples may be analyzed by SW-846 Method 7421: Lead (AA, Furnace Technique). FASP methods are included as Appendix A. Because of abbreviated or modified methods and QA/QC requirements, FASP results are considered estimates of actual concentrations.

REFERENCES

1. EPA Notification of Hazardous Waste Site (EPA Form 8900-1) for SSC Industries, East Point, Georgia. Filed by Jack G. Westberry, Plant Manager, September 10, 1980.

2. NUS Corporation Field Logbook No. F4-1582 for SSC Industries, TDD No. F4-8908-31. Documentation of facility reconnaissance, August 18, 1989.

3. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle maps of Georgia: Ben Hill 1954 (Photorevised 1982), Southwest Atlanta 1954 (PR 1983), Southeast Atlanta 1954 (PR 1983), Riverdale 1954 (PR 1982), scale 1:24,000.

4. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base, Compiled from U.S. Bureau of the Census data (1980).

5. Mario Villamarzo, memorandum to SSC Industries File, March 20, 1989. Subject: Ownership history of SSC Industries.

6. Inspection Report for SSC Industries, East Point, Georgia, Inspection Date: November 16, 1979; obtained from state file.

7. Chris Martin, Georgia DNR - State Game and Fish, telephone conversation with Jonathan Hughes, NUS Corporation, August 29, 1989. Subject: Recreational uses of the Flint River.

8. U.S. Fish and Wildlife Service, Endangered and Threatened Species of the Southeastern United States,(Atlanta, Georgia: 1988).

9. H.E. LeGrand, Groundwater of the Piedmont and Blue Ridge Provinces in the Southeastern States, Circular 538, (U.S. Geological Survey, 1967).

10. Keith I. McConnell and Charlotte E. Abrams, Geology of the Greater Atlanta Region, Georgia Geologic Survey, Department of Natural Resources, Environmental Protection Division, (Atlanta, Georgia, 1984).

11. C.W. Cressler, C.J. Thurmond, and W.G. Hester, Groundwater in the Greater Atlanta Region, Georgia, Information Circular 63, (Atlanta, Georgia: Georgia Geological Survey, 1983).

12. U.S. Dept. of Commerce, Climatic Atlas of the United States, (Washington, D.C.: GPO, June 1968) Reprint 1983, National Oceanic and Atmospheric Administration.

13. U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Technical Paper Number 40 (Washington, D.C.: GPO, 1963)

14. Dennis Swanson, Assistant Supervisor, Atlanta Water Bureau, telephone conversation with Doug Chatham, NUS Corporation, November 7, 1989. Subject: Atlanta water supplies.

15. Robert Hall, East Point Water Department, telephone conversation with Doug Chatham, NUS Corporation, November 8, 1989. Subject: Location of East Point water intakes and area of distribution.

16. "Water Availability and Use, Flint River Basin", Georgia Department of Natural Resources, Environmental Protection Division, 1984.

17. Rodney Sams, Atlanta River Intake operator, Atlanta Water Bureau, telephone conversation with Doug Chatham, NUS Corporation, November 8, 1989. Subject: Location of Atlanta water intakes.

18. "Water Availability and Use, Chattahoochee River Basin", Georgia Department of Natural Resources, Environmental Protection Division, 1984.

19. Tommy Fowler, City of Atlanta Water Department, telephone conversation with Walter Riley, NUS Corporation, March 20, 1989. Subject: City of Atlanta Water Department Service.

NUS CORPORATION

1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

C-586-9-9-160

September 28, 1989

Mr. A.R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

SISB/SAS
RECEIVED
SEP 29 1989
RECEIVED
EPA - REGION IV
ATLANTA, GA.

Subject: Preliminary Assessment
SSC Industries
East Point, Fulton County, Georgia
EPA ID No. GAD003284049
TDD No. F4-8908-31
Revision 0

Dear Mr. Hanke:

Enclosed please find two copies of the Preliminary Assessment for the SSC Industries site located in East Point, Georgia.

If you have any questions or comments, please do not hesitate to contact me.

Very truly yours,

Jonathan F. Hughes
Project Manager

Approved:

JFH/gwn

Enclosures

cc: Mario Villamarzo

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

SSC INDUSTRIES
EPA SITE NUMBER GAD003284049
EAST POINT
FULTON COUNTY, GA
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY JONATHAN HUGHES
OF NUS CORPORATION
ON 08/28/89

DATE OF THIS REPORT: 09/28/89
DATE OF LAST MODIFICATION: 09/28/89

GROUND WATER ROUTE SCORE :	3.67
SURFACE WATER ROUTE SCORE:	4.36
AIR ROUTE SCORE :	0.00
MIGRATION SCORE :	3.29

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	70 FEET		
DEPTH TO BOTTOM OF WASTE	6 FEET		
DEPTH TO AQUIFER OF CONCERN	64 FEET	2	4
PRECIPITATION	51.0 INCHES		
EVAPORATION	44.0 INCHES		
NET PRECIPITATION	7.0 INCHES	2	2
PERMEABILITY	1.0X10-7 CM/SEC	0	0
PHYSICAL STATE		3	3
TOTAL ROUTE CHARACTERISTICS SCORE:			9
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
GROUND WATER USE		1	3
DISTANCE TO NEAREST WELL	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			3

GROUND WATER ROUTE SCORE (Sgw) = 3.67

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER	NO		
SITE WITHIN CLOSED BASIN	NO		
FACILITY SLOPE	2.0 %		
INTERVENING SLOPE	2.0 %	0	0
24-HOUR RAINFALL	3.3 INCHES	3	3
DISTANCE TO DOWN-SLOPE WATER	13200 FEET	0	0
PHYSICAL STATE	S		3
TOTAL ROUTE CHARACTERISTICS SCORE:			6
3. CONTAINMENT	3		3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
SURFACE WATER USE		2	6
DISTANCE TO SENSITIVE ENVIRONMENTS		0	0
COASTAL WETLANDS	NONE		
FRESH-WATER WETLANDS	15750 FEET		
CRITICAL HABITAT	NONE		
DISTANCE TO STATIC WATER	> 3 MILES		
DISTANCE TO WATER SUPPLY INTAKE	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			6

SURFACE WATER ROUTE SCORE (Ssw) = 4.36

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY:

MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE: N/A

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
0 to 0.25 mile
0 to 0.50 mile
0 to 1.0 mile
0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
COASTAL WETLANDS
FRESH-WATER WETLANDS
CRITICAL HABITAT

DISTANCE TO LAND USES
COMMERCIAL/INDUSTRIAL
PARK/FOREST/RESIDENTIAL
AGRICULTURAL LAND
PRIME FARMLAND
HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE: N/A

AIR ROUTE SCORE (Sa) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: SSC INDUSTRIES
AS OF 09/28/89

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		9
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	3

= 2106 /57,330 X 100 = 3.67 = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		6
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	6

= 2808 /64,350 X 100 = 4.36 = S_{sw}

AIR ROUTE SCORE

OBSERVED RELEASE 0 /35,100 X 100 = 0.00 = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
GROUND WATER ROUTE SCORE (S_{gw})	3.67	13.47
SURFACE WATER ROUTE SCORE (S_{sw})	4.36	19.01
AIR ROUTE SCORE (S_{air})	0.00	0.00
$S^2_{gw} + S^2_{sw} + S^2_{air}$		32.48
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		5.70
$S_M = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}/1.73$		3.29

RECONNAISSANCE CHECKLIST FOR HRS2 CONCERNS

Instructions: Obtain as much "up front" information as possible prior to conducting fieldwork. Complete the form in as much detail as you can, providing attachments as necessary. Cite the source for all information obtained.

Site Name: SSC Industries
City, County, State: East Point, Fulton County, Georgia
EPA ID No.: GAD003284049
Person responsible for form: Jonathan Hughes
Date: 08/18/89

Air Pathway

Describe any potential air emission sources onsite: None

Identify any sensitive environments within 4 miles: Freshwater wetlands are locatedapproximately 5 miles southeast of the facility.

Identify the maximally exposed individual (nearest residence or regularly occupied building - workers do count): Workers on site

Groundwater Pathway

Identify any areas of karst terrain: None

Identify additional population due to consideration of wells completed in overlying aquifers to the AOC: None

Do significant targets exist between 3 and 4 miles from the site? No

Is the AOC a sole source aquifer according to Safe Drinking Water Act? (i.e. is the site located in Dade, Broward, Volusia, Putnam, or Flager County, Florida): No

Surface Water Pathway

Are there intakes located on the extended 15-mile migration pathway? No

Are there recreational areas, sensitive environments, or human food chain targets (fisheries) along the extended pathway? Freshwater wetlands are present along the extended pathway. Recreational fishing, swimming, and boating occur along the pathway. If human food chain targets exists, they are small; but they could exist.

Onsite Exposure Pathway

Is there waste or contaminated soil onsite at 2 feet below land surface or higher? Lead contamination is suspected onsite.

Is the site accessible to non-employees (workers do not count)? The facility is fenced in all areas. Placards indicating danger and flammability are approximately position around the facility.

Are there residences, schools, or day care centers onsite or in close proximity? There are approximately 9 schools, 15 churchs, and 195 residences within one (1) mile of the facility (According to a 1983 photorevised topographic map). Playground and community center is located approximately 900 feet to the east of the facility. (Field logbook F4-1582).

Are there barriers to travel (e.g., a river) within one mile? No.

CERCLA ELIGIBILITY QUESTIONNAIRE

Site Name: SSC Industries

City: East Point State: Georgia

EPA I.D. Number: GAD003284049

I. CERCLA ELIGIBILITY	YES	NO
Did the facility cease operations prior to November 19, 1980?	___	✓

If answer YES, STOP, facility is probably a CERCLA site
If answer NO, Continue to Part II

II. RCRA ELIGIBILITY	YES	NO
Did the facility file a RCRA Part A application?	___	✓
If YES:		
1) Does the facility currently have interim status?	___	✓
2) Did the facility withdraw its Part A application?	___	✓
3) Is the facility a known or possible protective filer? (facility filed in error)	___	✓
4) Type of facility: Generator ✓ Transporter ___ Recycler ___ TSD (Treatment/Storage/Disposal) ___		
Does the facility have a RCRA operating or post closure permit?	___	✓
Is the facility a late (after 11/19/80) or non-filer that has been identified by the EPA or the State? (facility did not know it needed to file under RCRA)	___	✓

If all answers to questions in Part II are NO, STOP, the facility is a CERCLA eligible site.

If answer to #2 or #3 is YES, STOP, the facility is a CERCLA eligible site.

If #2 and #3 are NO and any OTHER answer is YES, site is RCRA, continue to Part III.

III: RCRA SITES ELIGIBLE FOR NPL	YES	NO
Has the facility owner filed for bankruptcy under federal or state laws?	___	___
Has the facility lost RCRA authorization to operate or shown probable unwillingness to carry out corrective action?	___	___
Is the facility a TSD that converted to a generator, transporter or recycler facility after November 19, 1980?	___	___

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
GA	GAD003284049

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
SSC Industries	1550 East Taylor Avenue

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
East Point	GA	30344	Fulton		

09 COORDINATES	LATITUDE	LONGITUDE
	33°40'20.0	084°26'25.0

10 DIRECTIONS TO SITE (Starting from nearest public road)

From the intersection of Main Street and Willingham Drive, proceed east on Willingham Drive for approximately 900 feet and then turn left onto Plant Rd. After approximately 1300 ft., Plant Road will dead-end into East Taylor Ave. SSC is located on the left at this intersection.

III. RESPONSIBLE PARTIES

01 OWNER (IF KNOWN)	02 STREET (Business, mailing, residentiall)
Chemtech Industries	

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
St. Louis	MS		

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residentiall)
SSC Industries	1550 East Taylor Avenue

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
East Point	Ga.	30344	404-762-9651

13 TYPE OF OWNERSHIP (Check one)

☑ A. PRIVATE: ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE: ☐ D. COUNTY: ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103c) DATE RECEIVED: ☑ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☐ YES
☑ NO DATE: 08/18/89

BY (Check all that apply)

☐ A. EPA ☑ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER _____ (Specify)

CONTRACTOR NAME(S): NUS Corporation

02 SITE STATUS (Check one)

☑ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

1968	Present
BEGINNING YEAR	ENDING YEAR

☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Pentachlorophenol, Maleic Anhydride, Methyl Isobutyl Ketone, Tetrachloroethene, and Lead.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Unknown

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH (Inspection required promptly) ☑ B. MEDIUM (Inspection required promptly) ☐ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Mario Villamarzo	EPA Region IV	(404) 347-5065

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO	08 DATE
Jonathan Hughes	NUS	FIT	404-938-7710	08-28-89

PRELIMINARY ASSESSMENT

Date: September 28, 1989

Prepared by: Jonathan Hughes, NUS Corporation
NUS Corporation, FIT 4; Atlanta, Georgia

Site: SSC Industries
1550 East Taylor Avenue
East Point, Fulton County, Georgia
TDD No. F4-8908-31
EPA ID No. GAD003284049
Revision 0

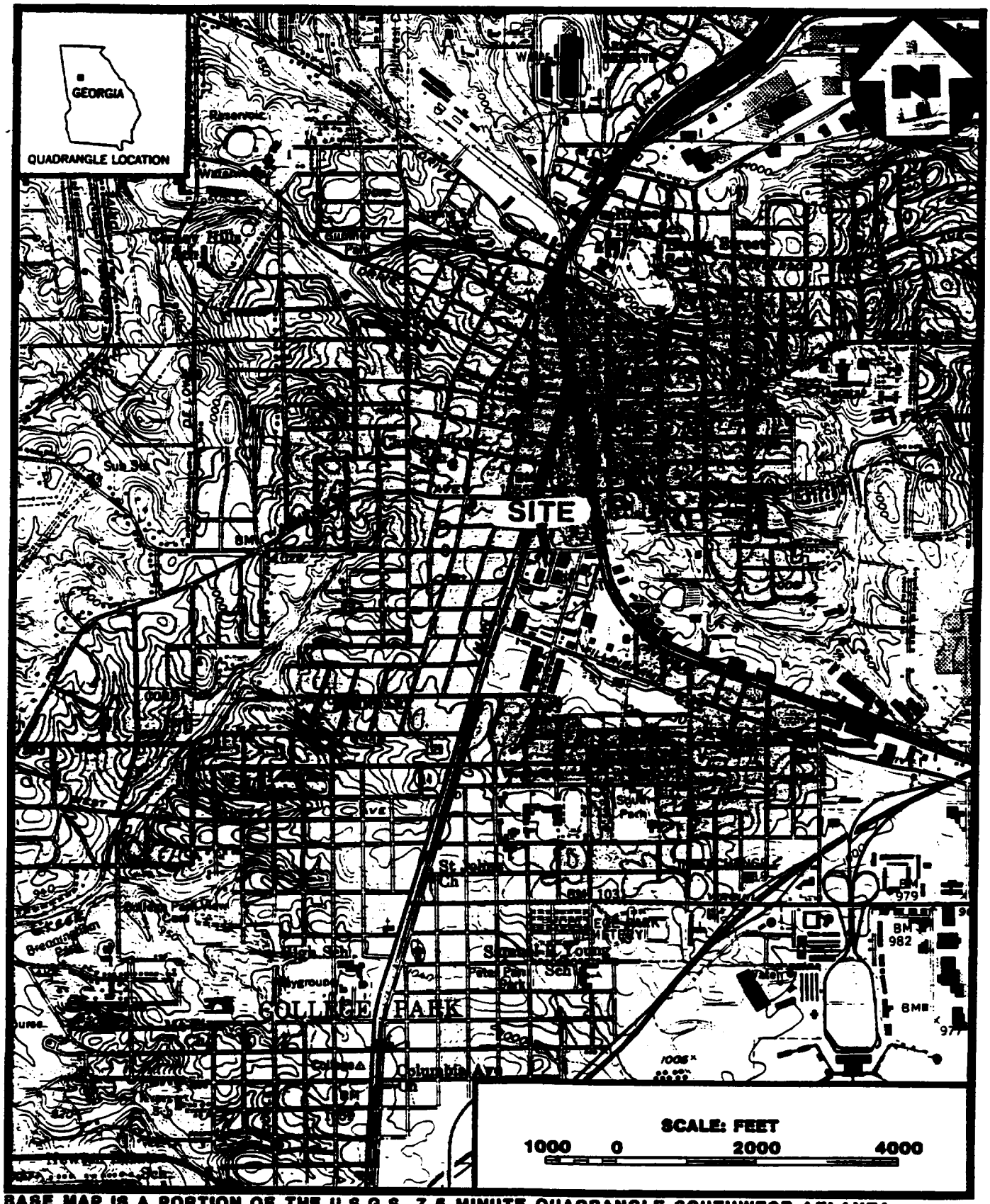
Recommendation and Justification

A screening site inspection of medium priority is recommended for the SSC Industries facility. This recommendation is based on the following concerns: the presence of lead contamination on site and the possibility of lead contamination off site; the presence of a nearby playground and residential area; and the presence of freshwater wetlands along the surface water migration route.

Site History

SSC Industries is located on 1550 East Taylor Avenue east of the Seaboard Railroad in an industrial area (Refs. 1, 2) (Figure 1). The property consists of approximately 12 acres (Ref. 3) (Figure 2). There are approximately 8135 persons living within a 1-mile radius of the facility. Two houses are within 300 feet (Refs. 3, 4).

Prior to 1968, the property was owned by Gould National Batteries. From 1968-1978, the property was owned by Southern Sizing Company. From 1978-1984, the property was owned by SSC Industries Inc. From December 3, 1984, to the present, the property has been owned by Chemtech Industries but has retained the name of SSC Industries (Ref. 5). SSC Industries manufactures textile and paper processing chemicals and foam control agents through blending and cooking in several reactors on site (Ref. 6).

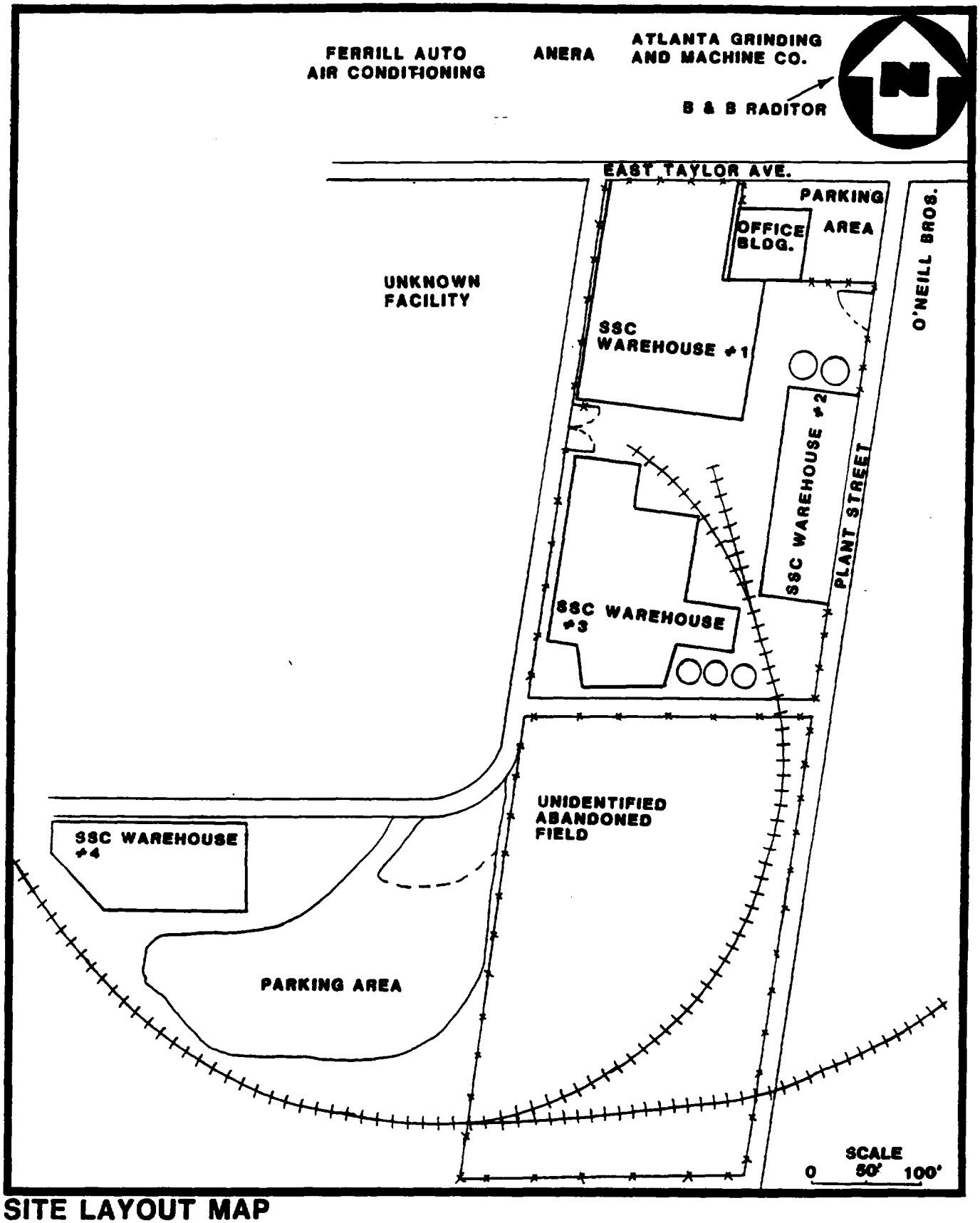


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE SOUTHWEST ATLANTA, GEORGIA 1983.

SITE LOCATION MAP
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORIGA

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
SSC INDUSTRIES
EAST POINT, FULTON COUNTY, GEORIGA

FIGURE 2

NUS CORPORATION

Disposal History and Waste Characteristics

Liquid waste produced at the facility consists of long-chain hydrocarbons, fatty acids, fatty esters, polyethylene, and surfactants in water, which are generated by reactor washdowns (Ref. 6). More specific chemicals produced at the facility are pentachlorophenol, tetrachloroethene, methyl isobutyl ketone, and maleic anhydride (Ref. 1).

SSC has had difficulty disposing of their liquid waste throughout their history. In 1980, O.E. Rylander, the liquid waste transporter for SSC, requested that the EPA investigate the liquid waste (oils, fats, and greases) that they were transporting to Rolling Hills Sanitary Landfill since they suspected it to be hazardous (Ref. 7). The results of this are unknown. In 1983, SSC improperly disposed of 300 55-gallon drums of homogenated animal fat in Meriwether County. SSC was notified by the Industrial and Hazardous Waste management program requiring them to rectify the improper disposal (Ref. 8).

In February 1986, Mr. Jack Westberry, Plant Manager for SSC, was contacted by the East Point Inspection Department regarding a white substance that was flowing off of the SSC facility to the southeast. Examination of examining the substance revealed that it was a surfactant-type material. SSC prevented flow of the substance and cleaned up the contaminated area (Ref. 9).

In March 1989, SSC Industries retained the services of a local consulting firm to evaluate the presence of lead contamination on their property from previous operations. The studies were to investigate the vertical and horizontal extent of contamination. The results from the study have yet to be completed (Ref. 5).

Regulatory History

SSC Industries filed a Notification of Hazardous Waste form in September 1980 (Ref. 1). The company filed for protection reasons and is presently classified as a small quantity generator (Refs. 7,10).

Groundwater Pathway

SSC Industries is located in the Piedmont Physiographic Province and hydrogeologic regime which is typified by a residual soil of variable thickness overlying folded, faulted, and fractured metamorphic and igneous crystalline bedrock of Paleozoic age (Ref. 11). The facility rests directly on the undifferentiated Tar Creek Member of the Clarkston Formation, which consists of a sillimanite mica schist interlayered with amphibolite (Ref. 12).

The source of groundwater in the area is from the surficial, unconfined residual soil/crystalline rock aquifer system. Although water levels are quite variable in this aquifer, the water table is locally located at an average depth of 70 feet below land surface (bls) in the vicinity of the facility (Refs. 3, 13).

The most common type of residual soil that develops from weathering of mica schists and amphibolites is a dense clay material. They clay residual soil represents the layer with the lowest hydraulic conductivity between underlying crystalline rocks and the surface, with typical values ranging from 1×10^{-6} to 1×10^{-7} cm/sec (Ref. 13). There is a net annual rainfall of 7 inches and a 1-year, 24-hour rainfall of 3.25 inches (Refs. 14, 15).

No private wells or springs were located during the offsite reconnaissance (Ref. 2). However, some irrigation wells have been reported in the area (Ref. 16).

Surface Water Pathway

Surface runoff drains in a southeasterly direction toward Mud Creek. Total overland flow is approximately 2.5 miles . Mud Creek is a tributary to the Flint River. It merges with the Flint River after approximately 5 miles (Ref. 3). The Flint River hosts recreational swimming, fishing, and boating (Ref. 18). Freshwater wetlands are located on Mud Creek and the Flint River. Wetlands begin approximately 5 miles from the facility (Ref. 3). There are no permitted intakes within 15 miles downstream of the site (Ref. 17).

All residences in the area of concern are served by municipal water systems. The city of East Point, where the facility is located, obtains its drinking water from Sweetwater Creek. The East Point Water Department's intake on Sweetwater Creek is approximately 10 miles northwest and upgradient of the facility. East Point Water Department also supplies water to College Park and Hapeville (Ref. 17). The remainder of south Fulton County, which is within the 4-mile site radius, is serviced by the Atlanta Water Department. The Atlanta Water Department intake is on the Chattahoochee River upgradient and north of the facility (Refs. 20, 21).

Air Pathway

There are no air emission sources on site; however, fugitive dust from contaminated surface soils could pose a threat to workers on site.

HRS2 Concerns

Access to the facility is difficult since the area is completely fenced (Ref. 2). However, soil contaminated with lead is present on site, and could have spread off site. SSC has retained an environmental consulting firm to determine the vertical and horizontal extent of lead contamination (Ref. 5). The samples have not returned from analysis.

There are approximately 9 schools, 15 churches, and 2143 residences within a 1-mile radius of the facility (Ref. 3). There is also a playground, community center, and residential area 900 feet east of the facility. No stressed vegetation was seen on site (Ref. 2).

Swimming, fishing, and boating occur along the extended surface water migration pathway (Ref. 18). Furthermore, there are freshwater wetlands along the extended pathway (Ref. 3). Although the ranges of some endangered or threatened species include the state of Georgia, no federally designated critical habitats are in Fulton County (Ref. 22).

REFERENCES

1. EPA Notification of Hazardous Waste Site (EPA Form 8900-1) for SSC Industries, East Point Georgia. Filed by Jack G. Westberry, Plant Manager, September 10,1980.

2. NUS Corporation Field Logbook No. F4-1582 for SSC Industries, TDD No. F4-8908-31. Documentation of facility reconnaissance, August 18, 1989.

3. U. S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Georgia: Ben Hill 1954 (Photorevised 1982), Southwest Atlanta 1954 (PR 1983), Southeast Atlanta 1954 (PR 1983), Riverdale 1954 (PR 1982), scale 1:24,000.

4. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base, compiled from U.S. Bureau of the Census data (1980).

5. Mario Villamarzo, memorandum to SSC Industries file, March 20, 1989. Subject: Ownership history of SSC Industries.

6. Inspection Report for SSC Industries, East Point, Georgia, Inspection Date: November 16, 1979; obtained from state file.

7. Inspection Report for SSC Industries, East Point, Georgia, Inspection Date: November 14, 1980; obtained from state file.

8. John D. Taylor, Jr., Program Manager, Industrial and Hazardous Waste Management Program, Georgia Department of Natural Resources, letter to Jack Westberry, Southern Sizing Company, October 20, 1983. Subject: Improper of disposal of drums.

9. Jack G. Westberry, Vice President - Operations, SSC Industries, letter to Terrell C. Rooks, Environmental Specialist, Georgia Department of Natural Resources, February 12, 1986. Subject: Acknowledgement of a spill.

10. Sue Matzuras, Environmental Specialist, Georgia Department of Natural Resources, letter to Terry Stewart, SSC Industries, May 31, 1988. Subject: Notification of changes in facility information.

11. H. E. LeGrand, 1967, Groundwater of the Piedmont and Blue Ridge Provinces in the Southeastern States; U.S. Geological Survey Circular 538 Washington, D.C., 11 pp.

12. Keith I. McConnell and Charlotte E. Abrams, 1984, Geology of the Greater Atlanta Region, Georgia Geological Survey, Department of Natural Resources, Environmental Protection Division, Atlanta, GA 126 pp. plates I, II.

13. C.W. Cressler, C.J. Thurmond, and W.G. Hester 1983, Groundwater In the Greater Atlanta Region, Georgia Geological Survey Information Circular 63, Department of Natural Resources, Environmental Protection Division, Atlanta, Georgia, 144 pp. 1 plate.

14. U.S. Department of Commerce, Climatic Atlas of the United States, (Washington, D.C.: GPO, June 1968) Reprint 1983, National Oceanic and Atmospheric Administration.

15. U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Washington, D.C., 141 pp.

16. Martha Pierce, RCRA Facility Assessment (RFA) Report for the Southern Wood Piedmont Company, East Point, Georgia, November 8, 1988.

17. "Water Availability and Use, Flint River Basin," Georgia Department of Natural Resources, Environmental Protection Division, 1984.

18. Chris Martin, Georgia DNR - State Game and Fish, telephone conversation with Jonathan Hughes, NUS Corporation, August 29, 1989. Subject: Recreational uses of the Flint River.

19. Mike Callahan, East Point Water Department, telephone conversation with Daniel Howard, NUS Corporation, January 3, 1989. Subject: Water Supply Intake.

20. "Water Availability and Use, Chattahoochee River Basin," Georgia Department of Natural Resource, Environmental Protection Division, 1984.

21. Tommy Fowler, City of Atlanta Water Department, telephone conversation with Walter Riley, NUS Corporation, March 20, 1989. Subject: City of Atlanta Water Department Service.

22. U.S. Fish and Wildlife Service, Endangered and Threatened Species of the Southeastern United States, (Atlanta, Georgia: 1988).

RECONNAISSANCE CHECKLIST FOR HRS2 CONCERNS

Instructions: Obtain as much "up front" information as possible prior to conducting fieldwork. Complete the form in as much detail as you can, providing attachments as necessary. Cite the source for all information obtained.

Site Name: SSC Industries
City, County, State: East Point, Fulton County, Georgia
EPA ID No.: GAD003284049
Person responsible for form: Jonathan Hughes
Date: 08/18/89

Air Pathway

Describe any potential air emission sources onsite: None

Identify any sensitive environments within 4 miles: Freshwater wetlands are locatedapproximately 5 miles southeast of the facility.

Identify the maximally exposed individual (nearest residence or regularly occupied building - workers do count): Workers on site

Groundwater Pathway

Identify any areas of karst terrain: None

Identify additional population due to consideration of wells completed in overlying aquifers to the AOC: None

Do significant targets exist between 3 and 4 miles from the site? No

Is the AOC a sole source aquifer according to Safe Drinking Water Act? (i.e. is the site located in Dade, Broward, Volusia, Putnam, or Flager County, Florida): No

Surface Water Pathway

Are there intakes located on the extended 15-mile migration pathway? No

Are there recreational areas, sensitive environments, or human food chain targets (fisheries) along the extended pathway? Freshwater wetlands are present along the extended pathway. Recreational fishing, swimming, and boating occur along the pathway. If human food chain targets exists, they are small; but they could exist.

Onsite Exposure Pathway

Is there waste or contaminated soil onsite at 2 feet below land surface or higher? Lead contamination is suspected onsite.

Is the site accessible to non-employees (workers do not count)? The facility is fenced in all areas. Placards indicating danger and flammability are approximately position around the facility.

Are there residences, schools, or day care centers onsite or in close proximity? There are approximately 9 schools, 15 churchs, and 195 residences within one (1) mile of the facility (According to a 1983 photorevised topographic map). Playground and community center is located approximately 900 feet to the east of the facility. (Field logbook F4-1582).

Are there barriers to travel (e.g., a river) within one mile? No.

CERCLA ELIGIBILITY QUESTIONNAIRE

Site Name: SSC Industries

City: East Point State: Georgia

EPA I.D. Number: GAD003284049

I. CERCLA ELIGIBILITY	YES	NO
Did the facility cease operations prior to November 19, 1980?	___	✓

If answer YES, STOP, facility is probably a CERCLA site
If answer NO, Continue to Part II

II. RCRA ELIGIBILITY	YES	NO
Did the facility file a RCRA Part A application?	___	✓
If YES:		
1) Does the facility currently have interim status?	___	✓
2) Did the facility withdraw its Part A application?	___	✓
3) Is the facility a known or possible protective filer? (facility filed in error)	___	✓
4) Type of facility: Generator ✓ Transporter___ Recycler___ TSD (Treatment/Storage/Disposal)___		
Does the facility have a RCRA operating or post closure permit?	___	✓
Is the facility a late (after 11/19/80) or non-filer that has been identified by the EPA or the State? (facility did not know it needed to file under RCRA)	___	✓

If all answers to questions in Part II are NO, STOP, the facility is a CERCLA eligible site.

If answer to #2 or #3 is YES, STOP, the facility is a CERCLA eligible site.

If #2 and #3 are NO and any OTHER answer is YES, site is RCRA, continue to Part III.

III: RCRA SITES ELIGIBLE FOR NPL	YES	NO
Has the facility owner filed for bankruptcy under federal or state laws?	___	___
Has the facility lost RCRA authorization to operate or shown probable unwillingness to carry out corrective action?	___	___
Is the facility a TSD that converted to a generator, transporter or recycler facility after November 19, 1980?	___	___

Please print or type with ELITE type (12 characters/inch) in the unshaded areas only.

Form Approved OMB No. 158-S70018
GSA No. 0246-EPA-OT

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.

I. NAME OF INSTALLATION

II. INSTALLATION MAILING ADDRESS

III. LOCATION OF INSTALLATION

Reference No. 1

PLEASE PLACE LABEL IN THIS SPACE

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law (Section 3010 of the Resource Conservation and Recovery Act).

FOR OFFICIAL USE ONLY

COMMENTS: C

INSTALLATION'S EPA I.D. NUMBER: F T/A C 1

APPROVED

DATE RECEIVED (yr., mo., & day)

I. NAME OF INSTALLATION

SSC INDUSTRIES, INC

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 3 PO BOX 90987

CITY OR TOWN: 4 EAST POINT

ST.: GA

ZIP CODE: 30344

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 5 1550 EAST TAYLOR AVE

CITY OR TOWN: 6 EAST POINT

ST.: GA

ZIP CODE: 30344

IV. INSTALLATION CONTACT

NAME AND TITLE (last, first, & job title): 7 WESTBERRY JACK PLANT MANAGER

PHONE NO. (area code & no.): 404-762-9651

V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER: 8 SSC INDUSTRIES, INC

B. TYPE OF OWNERSHIP (enter the appropriate letter into box): M

F = FEDERAL
M = NON-FEDERAL

VI. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

- [X] A. GENERATION
- [ ] B. TRANSPORTATION (complete item VII)
- [ ] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION (transporters only – enter "X" in the appropriate box(es))

- [ ] A. AIR
- [ ] B. RAIL
- [X] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER (specify):

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

- [X] A. FIRST NOTIFICATION
- [ ] B. SUBSEQUENT NOTIFICATION (complete item C)

C. INSTALLATION'S EPA I.D. NO.

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

I.D. – FOR OFFICIAL USE ONLY

W

DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

A. HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	8	9	10	11	12

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31 P090	32 U210	33 U147	34 U161	35	36
37	38	39	40	41	42
43	44	45	46	47	48

D. LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

E. CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☐ 4. TOXIC (D000)

F. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE *(type or print)*	DATE SIGNED
Jack G. Westbury	JACK G. WESTBURY PLANT MANAGER	9/10/80

DETACH A

DETACH A

Reference No. 2

"Rite in the Rain"®

ALL-WEATHER

LEVEL

Notebook No. 311

F4 - 1582
F4-8908-31
SSC Industries
East Point, Fulton Co., GA
Jonathan F. Hughes

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook: TDD No., Site Name, Site Location, Project Manager.
2. All entries are made using ink. Draw a single line through errors. Initial and date corrections.
3. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team members' signatures
4. Record weather conditions and general site information.
5. Sign and date each page. Project Manager is to review and sign off on each logbook daily.
6. Document all calibration and pre-operational checks of equipment. Provide serial numbers of equipment used onsite.
7. Provide reference to Sampling Field Sheets for detailed sampling information.
8. Describe sampling locations <u>in detail</u> and document all changes from project planning documents.
9. Provide a site sketch with sample locations and photo locations.
10. Maintain photo log by completing the stamped information at the end of the logbook.
11. If no site representative is on hand to accept the receipt for samples, an entry to that effect must be placed in the logbook.
12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.
13. Complete SMO information in the space provided.

I have read and understand the Phase I workplan for this facility.

Jonathan Fitzgerald 8/18/89

Elaine Finsley 8/18/89

[illegible] 8-18-89

Solomon Pollard Jr 8-18-89

Equipment serial numbers:

690779 - 35 mm

690780 - Polaroid

Arrived at site 1:00 PM
Hazy, hot + humid ≈ 90°F

Area is fenced with barbed wire.

Across street (East Taylor)
- Ferrill auto air cond.
- Ancra
- Atlanta Grinding and Machine Co.
- B + B Radiator (766-9967)

listed from W-E

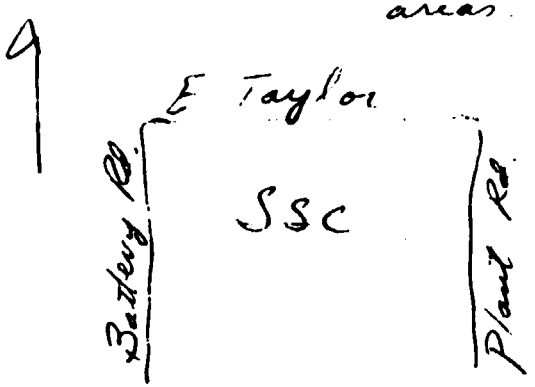
Driving around the facility, there were gates open and unattended.

There are adequate signs expressing danger and flammability.

Gates have chains.

Jonathan F. Fogus 8/8/89

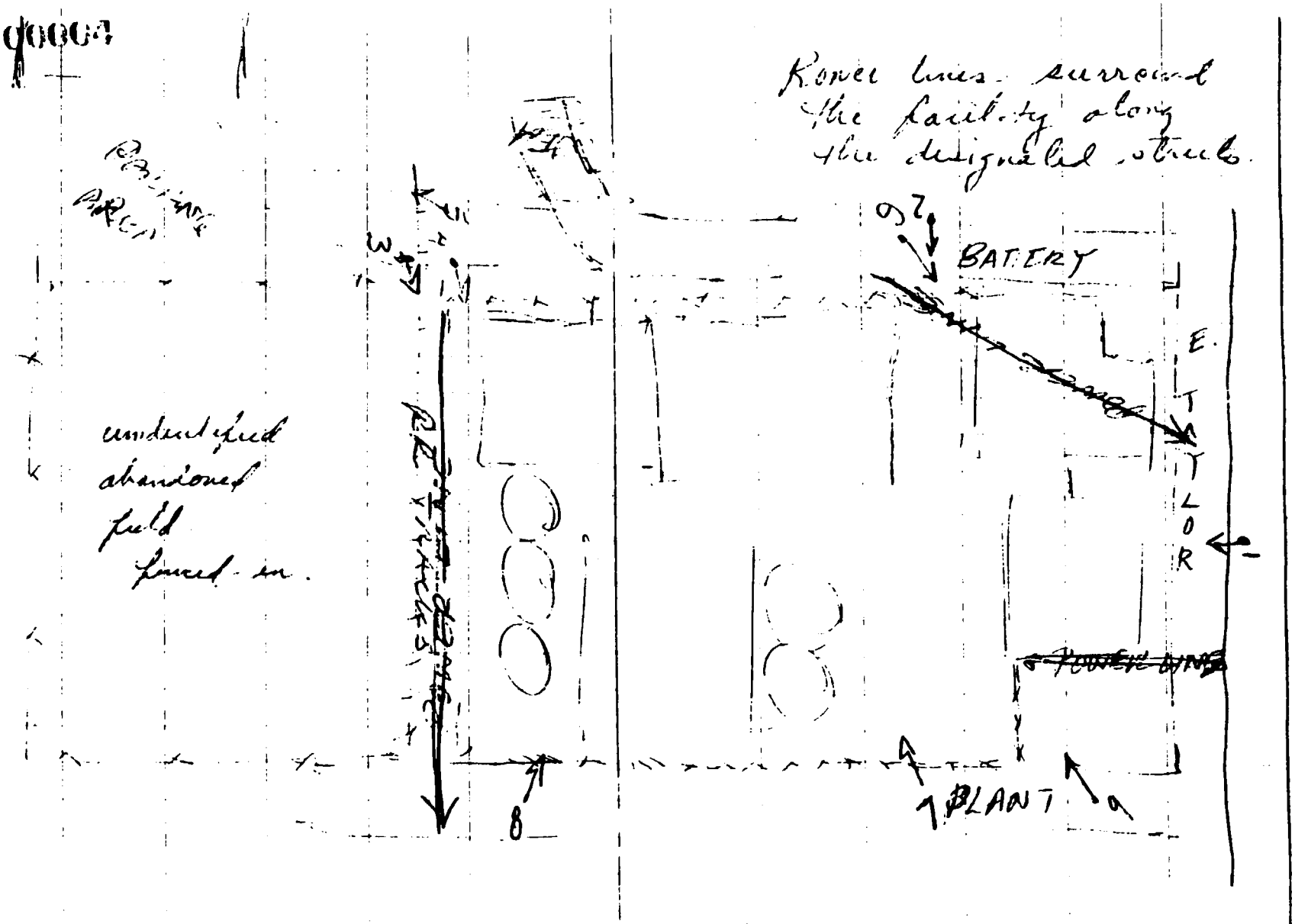
Separate, fenced in area located behind facility. Could be part of SSC facility. RR tracks separate these two fenced areas.



3 large storage tanks at rear of facility.

Water Tower is located across Battery Rd. from SSC

Jonathan F. Fogus 8/8/89



Jonathan F. Hugh 8/18/89 Jonathan F. Hugh 8/18/89

Area is accessible.
Not overgrown

Vegetation seems to be healthy.

There was seen to be no dead fauna on site.

Located in an industrial area.

No private wells were located.

No air emission sources seen on site

playground community and and residential area are located approx 900 feet [illegible] east.

Jonathan T. Hughes 8/18/89

Reference No. 4

COVERAGE

STATE	COUNTY	STATE NAME	COUNTY NAME
13	63	Georgia	Clayton Co
13	67	Georgia	Cobb Co
13	121	Georgia	Fulton Co

CENTER POINT AT STATE : 13 Georgia
COUNTY : 121 Fulton Co

Press RETURN key to continue...

REGION OF THE COUNTRY

Zipcode found: 30344 at a distance of 0.9 Km

STATE	CITY NAME	COMMUNITY	FIPSCODE	LATITUDE	LONGITUDE
GA	ATLANTA	EAST POINT	13121	33.6810	84.4417

Press RETURN key to continue ...

CENSUS DATA

SSC Industries
LATITUDE 33:40:20 LONGITUDE 84:26:25 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	347	1680	8571	10028	20626
S 2	0	480	1004	3316	6920	10394	22114
S 3	0	474	2051	4112	7919	9053	23609
S 4	328	0	540	78	508	961	2415
S 5	0	1127	815	1251	36	3849	7078
S 6	0	0	841	4166	11128	3091	19226
S 7	0	1154	1157	4877	3242	5451	15881
S 8	0	0	1380	5586	6928	6282	20176
RING TOTALS	328	3235	8135	25066	45252	49109	131125

Press RETURN key to continue ...

STAR STATION

Reference No. 5

MEMO TO FILE

MARCH 20, 1989

FROM: MARIO VILLAMARZO
TO: SSC INDUSTRIES FILE
GAD003284049

The attached SSC Industries letter was received on March 20, 1989

As notification of the existence of the situation, a copy of the letter was provided to Jan Rogers of Region 4 ERCS.

I spoke with Mr. J. Dwight Bell, Jr. (of SSC Industries) per telc of 3/20/89. Mr. Bell provided the following history of the facil at the address where SSC Industries is located:

pre-1968.....owned by Gould National Batteries
1968-1978.....owned by Southern Sizing Company
1978-1984.....owned by SSC Industries Inc.
Dec 3, 1984
to present.....owned by Chemtech and called SSC Industrie

The site is listed in WASTELAN as of 3/20/89.

Table 2.—Concentrations of chemical constituents and their characteristic effects on water use in the region

[Concentration in parts per million except as indicated. Occurrence, where noted, is given in parenthesis after concentrations]

Constituents	Concentration	Characteristic effects on water use
Silica (SiO_2)	Rarely less than 15 or more than 45, commonly 20 to 35.	Forms hard scale in pipes and boilers but not normally a serious problem in the region.
Iron (Fe)	Commonly less than 0.3 in natural water, but corrosion of iron pipes from water with pH less than 6.8 causes a fairly common iron problem.	More than 0.3 ppm stains laundry, utensils, and fixtures reddish brown.
Calcium (Ca) and magnesium (Mg)	Rarely less than 5 or more than 60 (commonly 5 to 30 in water beneath light-colored soils and 15 to 50 in water beneath dark-colored soils).	Cause most of the hardness and scale-forming properties of water. (See hardness below.)
Bicarbonate (HCO_3)	Rarely less than 15 or more than 150, commonly 30 to 100.	Concentrations in region are not generally high enough to cause trouble.
Sulfate (SO_4)	Rarely less than 1 or more than 100, commonly 1 to 40.	Concentrations in region are not generally high enough to cause trouble.
Chloride (Cl)	Rarely less than 1 or more than 40, commonly 1 to 20.	Salty taste to water having more than a few hundred parts per million.
Fluoride (F)	Rarely more than 1, commonly 0.0 to 0.6.	Concentration between 0.6 and 1.7 ppm in water retards decay of teeth, but amounts in excess of 1.5 ppm may cause mottled enamel of teeth.
Nitrate (NO_3)	Rarely more than 20, commonly less than 10.	Where concentration is greater than 20 ppm, contamination from sewage may be suspected. Water of concentrations greater than 45 ppm may be harmful to babies.
Dissolved solids	Total of all mineral matter rarely exceeds 250, commonly 70 to 150.	Water containing more than 1,000 ppm of dissolved solids is unsuitable for most purposes.
Hardness as equivalent $CaCO_3$	Rarely less than 10 or more than 150 (commonly 10 to 30 in water beneath light-colored soils and 40 to 200 in water beneath dark-colored soils).	Causes consumption of soap before lather will form. Hard water forms scale in boilers and hot water heaters. Water whose hardness is less than 60 ppm is considered soft; 61 to 120 ppm, moderately hard; 121 to 180 ppm, hard; more than 180 ppm, very hard.
pH	Rarely less than pH of 5.5 or more than 7.5 (commonly 5.5 to 6.8 in water beneath light-colored soils and 6.8 to 7.5 in water beneath dark-colored soils).	Values less than 7.0 indicate acidity, and corrosiveness of water generally increases with decreasing pH.

at the end of the year is at about the same level as at the beginning of the year. Wells drilled into rock may, when pumped at full capacity, yield slightly less during the driest part of the year when the water table is low. Yet there appears to be no evidence to support the general belief that the water table has been declining during recent years.

CHEMICAL QUALITY OF THE WATER

In comparison with ground water in widely scattered regions of the world, the water in the Piedmont and Blue Ridge provinces ranks among the best in chemical quality. (See table 3.) Most of the water is low in total dissolved solids and is generally soft, but some is moderately hard.

Iron in water is the most common complaint. As little as 0.4 ppm (parts per million) will cause a red stain on plumbing fixtures. About 2 of every 10 wells yield water with less than 0.3 ppm of iron. About 4 of 10 wells yield water with just enough iron to cause a slight stain, and about 1 of 10 wells yields water that has considerable iron. Some iron problems result when iron is dissolved from rocks, and other problems result when water, moving through iron pipes, consequently picks up a brown iron stain by corrosion. It is important to determine the source of the iron, whether dissolved from the rocks or from the pipes, before methods for its removal are employed. Most of the water is satisfactory for use without any type of treatment (table 3). Yet an analysis of the water should be made as soon as a well is drilled to determine if treatment is necessary. It is not possible to determine the quality of water before a well is drilled.

CONTAMINATION OF GROUND WATER

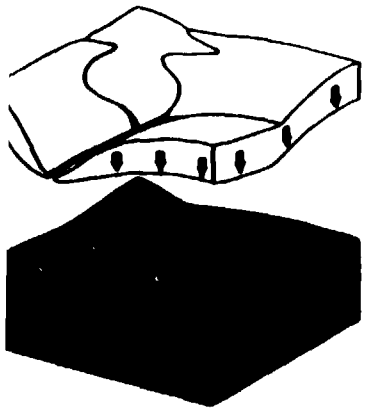
In view of the many hundreds of thousands of wells that are interspersed with about an equal number of septic tanks and other waste sites, it is proper to give serious attention to the possibility of contaminating an individual water supply. The tendency for ground water—and contaminants that might be in it—to move naturally from upland areas toward stream valleys offers help in planning wells and waste sites to avoid contamination. A well that is pumped may modify the natural movement of water and draw contaminated water toward it; this condition is more likely where the soil is thin or absent than where it is thick. Care should be taken to see that no water from the land surface can seep easily into the well around the casing. Not only is the well site important but so is the waste site. In most cases the chances of contaminated water from a waste site moving into a well are not easy to predict, but a few general statements can be made. For example, at a waste site (1) a deep water table is safer than a shallow water table, (2) thick soil is safer than thin soil or rock outcrops, (3) sandy soil with some clay may be better than a clean sandy soil or a sticky clay soil, and (4) a slope of both the land surface and the water table away from a well is better than one toward it.

The soil and weathered rock are generally effective in preventing waste materials from passing through to underlying rock fractures, but the combination of (1) certain types of wastes, (2) excessive quantities of disposed wastes, and (3) thin soils may result in contaminated water reaching bedrock fractures. Once in the bedrock fractures the contaminated water may move easily to water supplies. Only a small percentage of wells have been contaminated, but proper care in locating and constructing wells and waste sites must be taken to minimize the risk of contamination. Minimum standards specified by health officials, such as those relating to permeability of the soil, distance between a well and a waste site, and depth of the water table, must be followed.

GENERAL STATEMENTS ABOUT GROUND WATER IN THE REGION

1. Ground water may be considered as occurring in an underground reservoir, the water being held in the open spaces of the rock materials. The water table, representing the top of the reservoir, generally lies in the clay, or disintegrated rock materials. In the lower part of the reservoir, water occurs in interconnecting fractures in bedrock; the fractures diminish in number and size with increasing depth. Water enters the fractures by seeping through the overlying clay, and drilled wells draw water from these fractures. The source of this water is precipitation in the general area of a well and not in some remote place.

2. A layer of residual soil and weathered rock lies on the fresh rock in most places; the thickness of the soil and weathered rock ranges from zero to slightly more than 150 feet.



n 12.—Dry zone (above water table) lifted up to show water ble or surface of saturated zone. Movement of water (arrows) ards to be discharged in the dry zone and toward streams the saturated zone.

). The water table has a hill and valley re- lem that approximately conforms with sur- e topography, although the water table is newhat flatter. (See fig. 12.) For example, reek or river is the surface expression of water table in a valley, but beneath a hill water table may be 30 to 70 feet below the ound surface. Ground water, like surface ter, has the tendency to drain away from hills to the valleys. This tendency helps planning the location of wells in relation to ter wells and to sources of possible con- mination.

4. A close network of streams prevails, and most places on an upland area a perennial ream is less than 1 mile away.

5. Toward the streams is a continuous flow ground water. Some of the outflowing round water is used up by evaporation and by anspiration of plants in the valley areas; the mainder of the water discharges as small prings and as bank and channel seepage into e streams.

6. The natural movement of ground water is elatively short and is almost everywhere re- tricted to the zone underlying the gross topo- graphic slope extending from a particular ound-surface divide to the adjacent streams.

7. In ideal cases the pumping of a well causes the water table to be depressed smooth- ly in the shape of an inverted cone, the apex of the cone being in the well; however, the er- ratic distribution of rock fractures and the contrasting nature of permeability between rock fractures and overlying soils cause the depressed part of the water table to extend unevenly around a well. Where two heavily pumped wells are within a few hundred feet of each other, there is a strong likelihood of some interference of pumping level between the two, but in most cases there is not any ap- preciable interference between low-yielding wells a few hundred feet apart. From a pump- ed well the depressed part of the water table rarely extends beneath a perennial stream or beneath a hilltop to a slope on the opposite side. Well interference is local, and there is no regional lowering of the water table be- cause of pumping.

8. The relation of the depth of a well to yield of the aquifer is not simple. In spite of some beliefs, water already available to a well is rarely lost by drilling deeper; therefore, there is always a chance of getting a larger supply by increasing the depth of the well. Yet this chance becomes poorer as the well deep- ens because the interconnecting fractures and the ability of the rocks to store and transmit water decrease significantly with depth. More than 90 percent of all ground water occurs in the first 100 feet below the water table. Gen- erally two wells 200 feet deep each will yield more water than one well 400 feet deep.

9. The relationship of topography to yield is emphasized. The great majority of wells are located on hills or smooth upland slopes because of convenience and because these lo- cations appear safe from sources of contam- ination. Yet the percentage of low-yielding wells is much greater on hills and upland con- vex slopes than in lowlands or draws (concave slopes that lead upward from a valley to a saddle or away-backed position in a ridge). Steep-sided depressions, such as gullies and ravines, should not be considered acceptable sites for wells.

10. In general, wells are more productive and tend to have a more stable year-round yield where there is a thick mantle of soil than where bare rock crops out. The presence of a soil cover and the absence of rock outcrop

suggest that water moves downward into the rock and is not readily shunted toward the ad- jacent valley; in fact, the soil cover suggests that interconnecting rock fractures are avail- able to store water and to transmit it to wells. Where there is a good soil cover, the water table generally lies in it; therefore, the stor- age capacity in the vicinity is much greater than where bare rock is exposed and where the only water in storage is in the rock frac- tures that might be quickly drained.

11. Simple clear-cut statements about the water-yielding properties of the various types of rocks are not easy to make. There are many varieties of igneous and metamorphic rocks, but for a discussion of their ground- water properties they may be grouped as fol- lows: (1) somewhat massive igneous rocks, such as granite, and (2) metamorphic rocks, such as schists, gneisses, and slates, which may show an alinement of minerals or an alinement of cleavage planes or openings along which water may move. In some places a type of rock may have distinctive water- bearing characteristics, but, if so, it is also likely to show distinctive topographic and soil- mantle features. Topography and soil-mantle features are readily observed and may be used as criteria for predicting the water- yielding potential of a well site, whereas the water-bearing characteristics of a type of rock by itself may be obscure. At any rate, there are too many complex factors involved to justify generalizations about the yield of wells in individual types of rock.

12. Whenever water is pumped from a well, the water level is lowered in and around the well. The drawdown increases with an in- crease in the rate of pumping, although this relation is not simple. For example, a well yielding 20 gpm with a drawdown of 50 feet will not double its yield by increasing the drawdown to 100 feet. Instead, it will yield less than 40 gpm and perhaps no more than 30 to 30 gpm with a drawdown of 100 feet.

13. Some wells that are pumped heavily tend to decline gradually in yield. This fact may be due to the following circumstances. The size and setting of a pump are determined from a short bailer or pumping test when the well is completed. Such a short test may not indicate the long-term yield of the well be- cause the first water is withdrawn form stor- age in the rock materials, and many hours, days, or even months may pass before there is a stable adjustment between the amount of water that the fractures can feed into the well and the amount of water available to drain through the overlying clay into the fractures feeding the well. Failure to have knowledge of water-level fluctuations as a result of pump- ing is the cause of many well problems and of the erroneous conclusion that well supplies are not dependable. If a well tends to have an unstable yield, it is probably overpumped. A reduction in the rate of pumping and conse- quently a raising of the water level will result in a perennially safe yield. Constant pumping at a moderate rate does not damage a well.

14. There is a tendency for rocks under- lying a light-colored soil to yield water that is low in dissolved mineral matter and is soft. On the other hand, rocks underlying darker soils (dark red, brown, and yellow) tend to yield water that is slightly hard, or hard, and that may contain objectionable amounts of iron.

15. Many people think that a shallow depth to the water table is an indication of a good yield of a potential well, but this is not a rule to follow. In fact, where the water table is only a few feet beneath the land surface on an upland area, the rock fractures may be so scarce that water may not be able to move downward in the rock; it is held near the ground surface and perhaps is shunted out to the land surface as a wet seepage spot on a steep slope.

16. There are many mistaken notions about the availability of ground water in the region. These notions arise from lack of knowledge of the occurrence and movement of ground water and of the behavior of wells. The common er- roneous statement that a certain town in the region could not depend on well water stems from the existence of a limited number of wells; never has the underground reservoir beneath any town or city in the region been completely depleted of its water. There has been a tendency for towns of about 2,000 people to convert from well supplies to a treated surface-water supply; such conversion commonly occurs when the town requires more than 100,000 gallons of water per day, an amount which only a few wells in aggregate may not produce. Few towns have the experi- enced persons with diversified knowledge of wells and ground-water conditions to provide the good management comparable to that of municipal surface-water supplies.

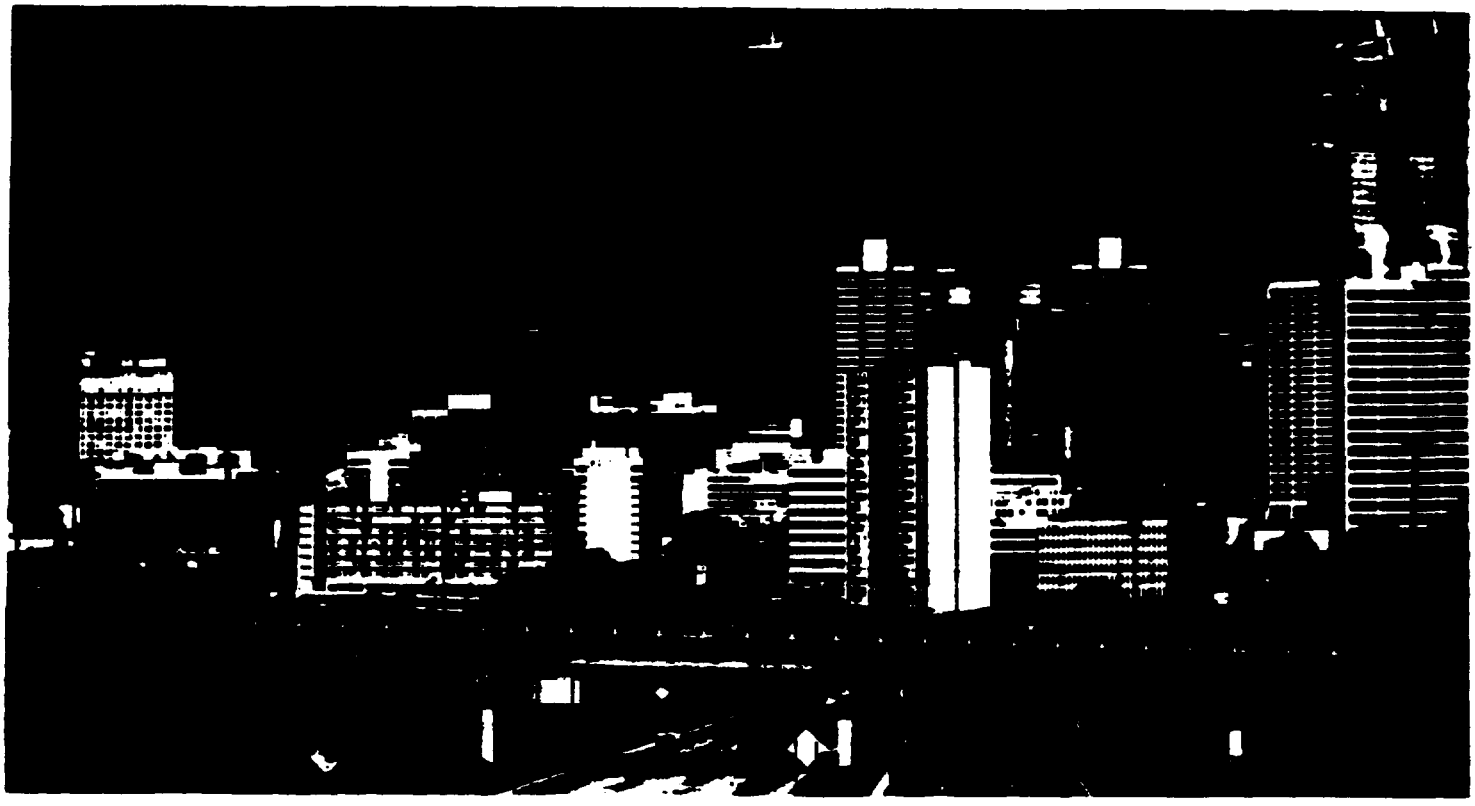
SOURCES OF INFORMATION

There are many sources of information on ground-water conditions in specific areas of the region. At least one agency in each State has cooperated financially with the U.S. Geological Survey, and these agencies have contributed in some way to the results of this report. Further information about reports published or work in progress may be obtained from the district offices of the Geological Survey in each State or from the respective State cooperating agencies.

Reference No. 12

GEOLOGY OF THE GREATER ATLANTA REGION

Keith I. McConnell and Charlotte E. Abrams

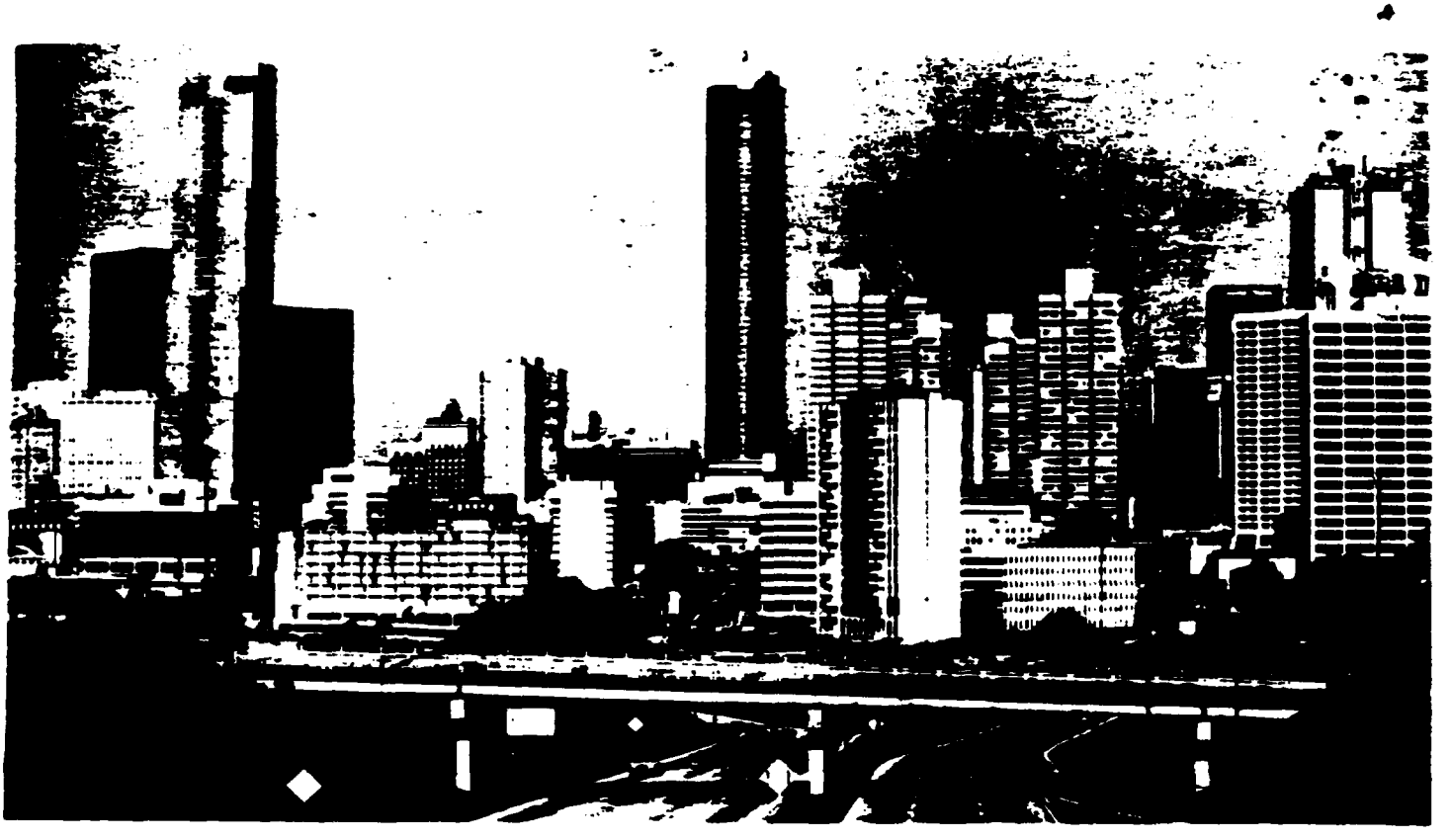


Department of Natural Resources
Environmental Protection Division
Georgia Geologic Survey

BULLETIN 96

GEOLOGY OF THE GREATER ATLANTA REGION

Keith I. McConnell and Charlotte E. Abrams



Department of Natural Resources
J. Leonard Ledbetter, Commissioner

Environmental Protection Division
Harold F. Reheis, Assistant Director

Georgia Geologic Survey
William H. McLemore, State Geologist

Atlanta
1984

BULLETIN 96

ag	**Austell Gneiss** (Abrams and McConnell, 1981a; Abrams, 1983): fine- to coarse-grained blastoporphyritic to nonporphyritic orthogneiss composed of muscovite, biotite, oligoclase, quartz and microcline.
shg	**Sand Hill Gneiss** (this report): fine- to coarse-grained blastoporphyritic to nonporphyritic orthogneiss composed of muscovite, biotite, oligoclase, quartz and microcline. Generally contains more muscovite, quartz and plagioclase and less microcline than Austell Gneiss.
mrg	**Mulberry Rock Gneiss** (this report): medium-grained, equigranular muscovite-quartz-microcline-plagioclase orthogneiss.
d	**Diabase dikes**

SOUTHERN PIEDMONT PROVINCE AND BREVARD FAULT ZONE

Atlanta Group (late Precambrian to early Paleozoic)
(stratigraphic order revised after Higgins and Atkins, 1981):

cc	**Camp Creek Formation** (Higgins and Atkins, 1981): massive granite gneiss interlayered with thin, fine-grained, dark-green hornblende-plagioclase amphibolite.
icq	**Intrenchment Creek Quartzite** (Higgins and Atkins, 1981): spessartine quartzite and spessartine-mica schist interpreted in this report to be banded iron formation.
bci	**Big Cotton Indian Formation** (Higgins and Atkins, 1981): intercalated biotite-plagioclase gneiss (locally porphyritic), hornblende-plagioclase amphibolite, and biotite-muscovite schist.
ca tc f	**Clarkston Formation** (Higgins and Atkins, 1981): sillimanite-garnet-quartz-plagioclase-biotite-muscovite schist interlayered with hornblende-plagioclase amphibolite (ca). Includes a unit composed only of schist termed the Fairburn Member (f); and a unit similar to Clarkston undifferentiated termed the Tar Creek Member (tc).
st	**Stonewall Formation** (Higgins and Atkins, 1981): intercalated fine-grained biotite gneiss, hornblende-plagioclase amphibolite and sillimanite-biotite schist.
wac	**Wahoo Creek Formation** (Higgins and Atkins, 1981): includes slabby, medium-grained muscovite-plagioclase-quartz gneiss, amphibolite, mica schist and epidote-calcite-diopside gneiss (calc-silicate).
se	**Senoia Formation** (Atkins and Higgins, 1981): garnet-biotite-muscovite schist interlayered with fine-grained amphibolite, local thin layers of spessartine quartzite (iron formation?), sillimanite schist and biotite gneiss.
cl	**Clairmont Formation** (Higgins and Atkins, 1981): interlayered medium-grained biotite-plagioclase gneiss and fine- to medium-grained hornblende-plagioclase amphibolite.
pl h	**Promised Land Formation** (Higgins and Atkins, 1981): includes massive to thinly layered, medium-grained, gray, banded biotite granite gneiss interlayered with fine-grained, dark-green to greenish black, blocky amphibolite. A thin quartzite and muscovite quartz schist unit near top of the Promised Land Formation is termed the Hannah Member (h).
wc	**Wolf Creek Formation** (Higgins and Atkins, 1981): thinly laminated, fine-grained amphibolite interlayered with lustrous, silvery gray, biotite-muscovite schist.

Reference No. 13

$7.00

GROUND WATER IN THE GREATER ATLANTA REGION, GEORGIA

by

C. W. Cressler, C. J. Thurmond, and W. G. Hester

Prepared in cooperation with the U. S. Geological Survey

Department of Natural Resources
Environmental Protection Division
Georgia Geologic Survey

INFORMATION CIRCULAR 63

GROUND WATER

IN THE GREATER ATLANTA REGION,

GEORGIA

By

C. W. Cressler, C. J. Thurmond, and W. G. Hester

Georgia Department of Natural Resources

Joe D. Tanner, Commissioner

Environmental Protection Division

J. Leonard Ledbetter, Director

Georgia Geologic Survey

William H. McLemore, State Geologist

Prepared in cooperation with the

U.S. Geological Survey

PROP[illegible] OF EPA

Atlanta

1983

INFORMATION
CIRCULAR

Reference No. 14

RCE . Environmental Science Services Administration . Environmental Data Service

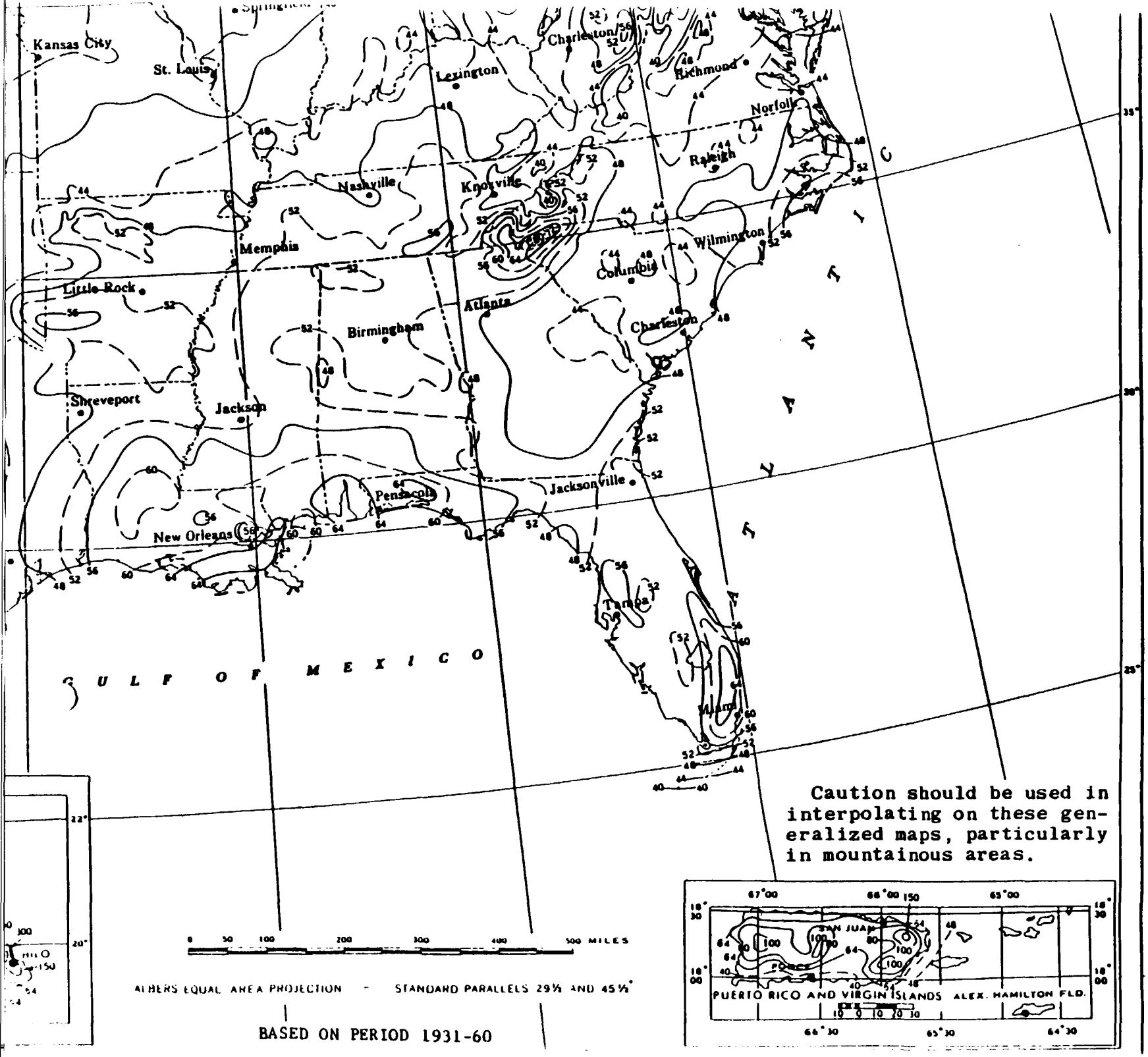
U.S. DEPARTMENT OF COMMERCE
C. R. Smith, Secretary

ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
Robert M. White, Administrator

ENVIRONMENTAL DATA SERVICE
Woodrow C. Jacobs, Director

JUNE 1968

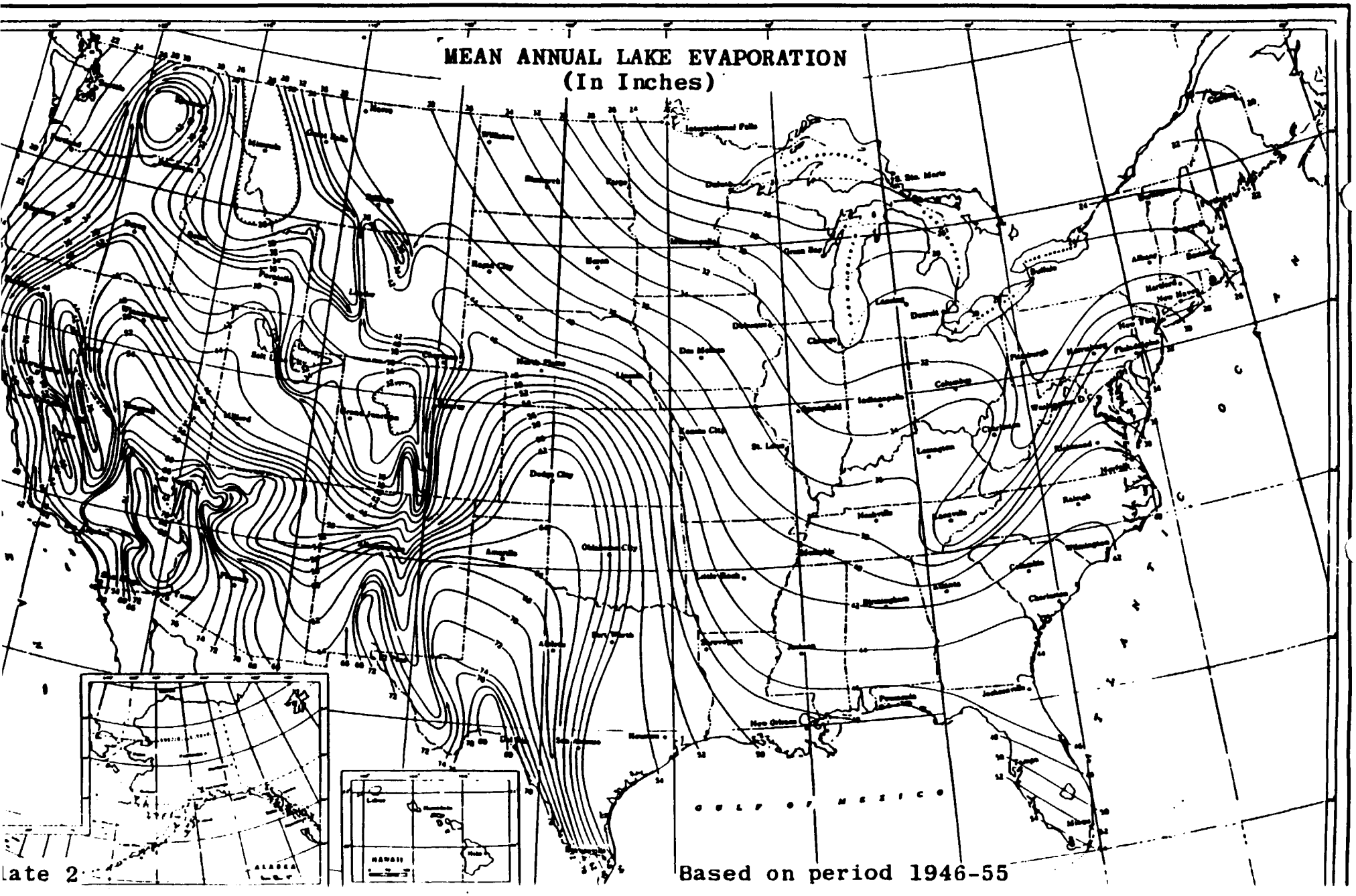
REPRINTED BY THE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
1983



Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.

BASED ON PERIOD 1931-60

KE EVAPORATION



late 2

Based on period 1946-55

F COMMERCE
y

WEATHER
F. W. REICH.

TECHNICAL PAPER NO. 40

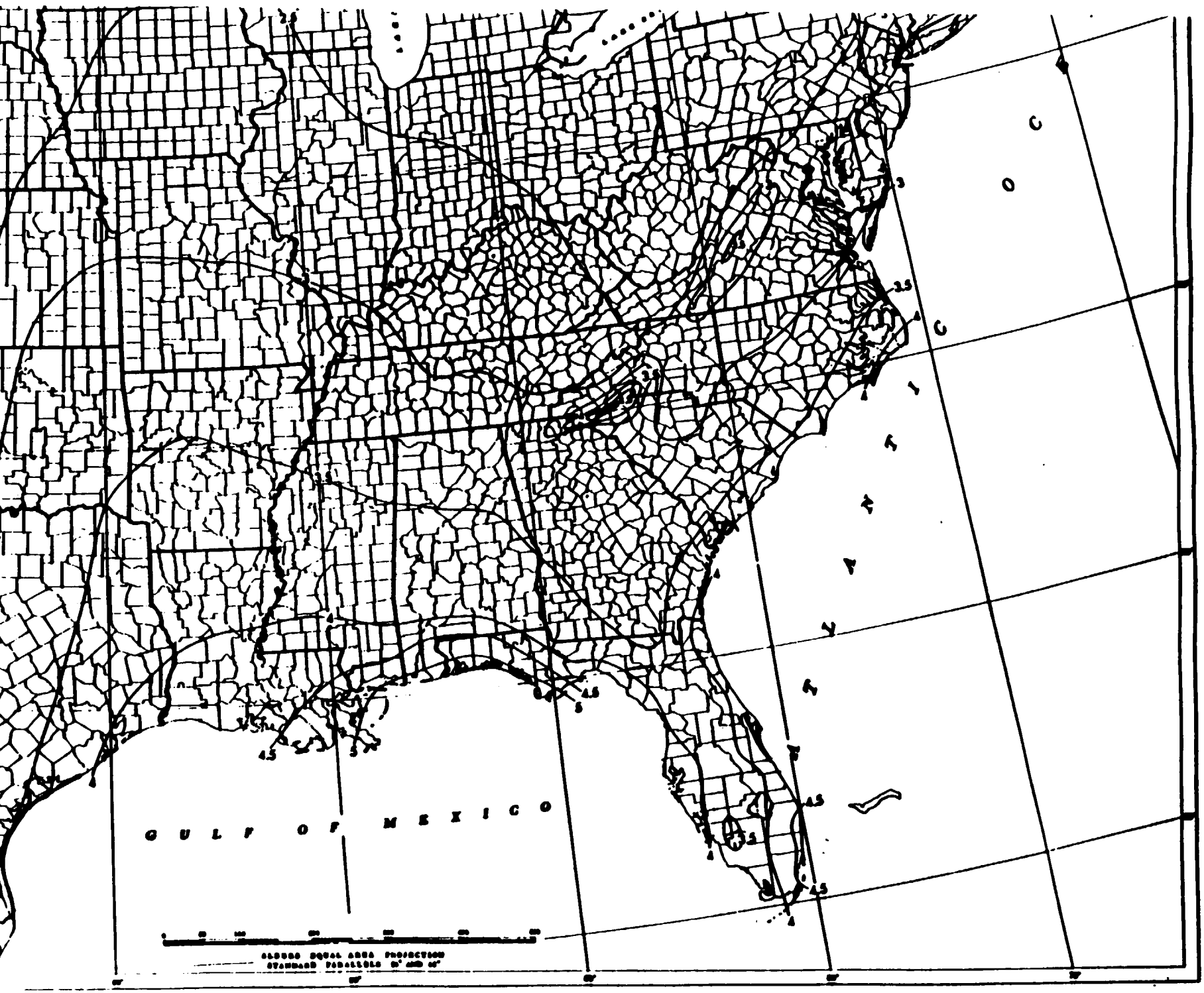
RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Year

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

Reference No. 15

PROPERTY
FILE


GULF OF MEXICO
ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS

Reference No. 16

RFA REPORT

Southern Wood Piedmont Company
East Point, Georgia

GAD067560870

I. INTRODUCTION

OBJECTIVE/SCOPE

The objective of this RCRA Facility Assessment (RFA) is to:

1. Identify all Solid Waste Management Units (SWMUs) which have operated at Southern Wood Piedmont Company, East Point, Georgia;

2. Collect SWMU-related data from file reviews and a site visit and evaluate these data to assess the potential for release of hazardous constituents from each SWMU; and,

3. For each unit, determine what course of action, if any, should be followed to safeguard human health and the environment from a SWMU release. When further remedial investigation or corrective action not already underway is deemed appropriate, provide a site-specific conceptual plan (e.g., a sampling plan) that may be used to initiate necessary clean-up and/or restoration.

ASSESSMENT BASIS

The findings, conclusions, and suggested actions contained in this report are based on:

1. A desktop study of the existing files and Part B permit application.

2. A site inspection performed on September 17, 1987.

SITE CONDITIONS

General Conditions

The Southern Wood Piedmont Company, East Point, Georgia facility (SWP-EP) is located on a 65 acre site in the Lawrence Avenue Industrial District of Fulton County, approximately six miles southwest of downtown Atlanta. The street address of the facility is:

Southern Wood Piedmont Company
1745 Connally Drive
East Point, Georgia 30364

The facility is now closed and all contact should be made to the following mailing address:

Southern Wood Piedmont Company
Post Office Box 5447
Spartanburg, South Carolina 29304

Topographic Map

Figure 1 is a topographic map of the Southern Wood Piedmont Company, East Point (SWP-EP) facility and a graphic representation of the plant site.

a) 100-Year Floodplain Area

The SWP-EP hazardous waste surface impoundment is located at an elevation of 1015 feet (at bottom of impoundment). The impoundment is not located within the 100-year floodplain as shown in the Federal Emergency Management Agency (FEMA) Flood Insurance Program (FIA) Flood Insurance Rate Map provided as Figure 2. As shown, the highest 100-year floodplain elevation is approximately 908 feet.

b) Surface Waters

The SWP-EP facility is located on a northwest-trending ridge. Local relief is on the order of 70 feet. The northeast slope of the ridge is relatively steeper than the southwest slope and is occupied by the northwest-flowing, unnamed tributary No. 3 to South Utoy Creek (Figure 2). This unnamed tributary normally has flowing surface water. The southwest slope (west side of the facility) is dissected by two relatively gentle swales which intersect the same unnamed tributary northwest of the site. Several culverts transporting surface runoff from the western portion of the site discharge into the most southern of these swales. Off-site drainage from this swale extends to the northwest in a culvert beneath Stanton Road. Drainage into this swale occurs only during heavy rainfall. Surface runoff from the site flows along these features which discharge into South Utoy Creek near the Lakewood Freeway. The entire site constitutes only about 2 percent of the South Utoy Creek watershed, upstream of Campbellton Road. South Utoy and North Utoy Creeks merge near Fairburn Road west of I-285 to form Utoy Creek which empties into the Chattahoochee Rive about 8 to 10 miles northwest of the facility. Flows on the Tributary No. 3 are measured at a gauging station (Figure 3). Unnamed Tributary No. 2 may also collect surface run-off from the facility. Tributary No. 2 originates about 1,000 to 1,200 feet west of the facility.

Drinking water for the City of East Point is supplied from surface water (Sweetwater Creek) by the municipal water system. Atlanta Regional Commission data show that more than 99.6% of the water used in Fulton County is derived from surface water sources such as the Chattahoochee River used by Atlanta and College Park. The nearest surface water withdrawal point is approximately eight miles west of the SWP-EP facility.

The mean annual precipitation, reported by state climatic division (1931-1955) and the mean annual Class A pan evaporation (1946-1955) from the surface of a body of water for the area is as follows:

Annual Precipitation	46.34
Pan Evaporation	55.00
Net Precipitation	- 8.66

c) Surrounding Land Use

The area within four miles of the SWP-EP facility includes unincorporated areas in Fulton and Clayton County and parts of the cities of East Point, College Park, Hapeville and Atlanta. This area can be characterized as heavily developed mixed use zone with some open areas southwest of the facility. The four mile radius around the facility also contains a part of

Hartsfield International Airport. Over 200,000 people live within four miles of the facility.

The Atlanta Regional Commission (ARC) projects little growth in the area surrounding the facility and development that does occur will be concentrated around the airport facility. Local development in East Point has been limited to commercial development along Main Street in East Point. Main Street runs north and south (U.S. Highway 29) and is just east of the facility. Contiguous to the facility on the north and northeast are industrial properties. Contiguous to the west is a cemetery. Single family residential and commercial development is located to the southwest across Connally Drive from the facility.

d) Injection and Withdrawal Wells

The locations of water supply wells within a three-mile radius of the site are shown on Figure 4. The primary source of information pertaining to these wells, Ground Water in the Greater Atlanta Region, Georgia by Cressler, C.W., et al, 1983, Georgia Geologic Survey, Information Circular No. 63, shows that most of these wells are no longer in service. Wells owned by National Biscuit Company are permitted by the State of Georgia. Wells located at Fort MacPherson, no longer used for drinking water supply, are now primarily used for landscape watering.

Eleven private water wells in the East Point area have been reported to exist using data from the 1980 Census summary Statistics (Detailed Housing Characteristics of Georgia; Table 87). Seven of the eleven wells have been reported in Block group 4 of tract 112.01 (1980 Census STF 3A/3C Microfiche Product Description) located to the west of the site past Stanton Drive (Figure 4). The exact location of these wells and the number of users cannot be completely ascertained, as that information was not available to the Information Officer from the U.S. Census Bureau (personal communication, Ms. B. Richardson). A survey of residences and businesses within the area of block group 4 within 1,000 feet of the SWP property boundary was conducted on January 22, 1988 to determine the location of off-site private groundwater wells. Two such private wells (Ms. Fuller's and Mr. Gardner's) were located (Figure 4). The results of the groundwater analysis from Mr. Gardner's well, used for irrigation only, did not detect the presence of any site-specific constituents. Ms. Fuller's well could not be sampled as there was an obstruction in the well twenty feet below ground surface. Additionally, the well appeared to be plugged, as the water depth was not evident at 100 feet below the ground surface. There are no injection wells on, or in the vicinity of the SWP-EP facility.

e) Building and Structures

The primary buildings and structures at the SWP-EP facility are the treating cylinders and building, chemical storage tanks, chemical recovery and cooling water tanks and ponds, the pilot laboratory, the drip track area, the floor block buildings, and the overhead crane (Figure 1). Other structures include the boiler, adzing and boring mill, two controlled air seasoning units (kilns), the shop building, seasoning and storage sheds, and two office buildings at the front entrance. All of the structures such as the cylinders, tanks, ponds, and piping are empty. All buildings and structures are being

demolished and removed from the facility except for the small office building, a cross tie storage shed, and two storage tanks to be used during implementation of corrective actions.

f) Sewers

Connections to the East Point and Atlanta Sewer Systems are shown on Figure 5. SWP-EP has a POTW discharge permit for wastewaters from the treating process and from corrective action activities. The facility does not have an NPDES permit.

g) Run-off Control Facilities

Collection drains located throughout the facility collect run-off from the track areas and other processing and storage areas (Figures 5 and 6).

h) Loading and Unloading Areas

A concrete loading pad was provided on the west side of the preservative storage areas. There are no designated loading areas for hazardous waste or materials being shipped off-site for reclamation or disposal. Since all hazardous waste was stored in the surface impoundment and hazardous materials are generated at the sources of corrective action cleanup, loading of trucks is accomplished in areas immediately adjacent to the sources. However, no specific areas have been designated for this purpose.

Site Geology and Hydrogeology

The SWP-EP facility lies within the Greenville Slope District of the Piedmont Physiographic Province. The site is on a northwest-southeast trending ridge, flanked by a steep-sided gully to the northeast and by relatively gentle swales along the southwest slope.

The site is underlain by metamorphic rocks of the Clarkston Formation of the Atlanta Group (Cressler, et al., 1983). The mineralogy of the Clarkston Formation consists of sillimanite-garnet-quartz-plagioclase amphibolite (McConnel and Abrams, 1984). Core borings made both on-site and off-site during the monitoring well installation encountered biotite-muscovite schists with occasional hornblende-plagioclase amphibolite.

Available geologic information indicates that the local structure is genetically related to the Brevard Lineament. Lineations related to the Brevard Lineament (i.e., with a general strike of N 35° to 55° E) strike either parallel to or normal to the strike of the Brevard. Linears interpreted from topographic maps of the area in the vicinity of the SWP facility exhibit this range of strike directions. Because of the proximity of the site to Brevard Lineament, the local geologic structure at the site is probably a result of the tectonism which produced the Brevard.

Although the Brevard is probably the major structural controlling factor in the area, other influences include the intrusion of granite bodies, such as the Ben Hill Granite, and stress relief due to weathering and overburden removal.

Thus geologic structure in the vicinity of the site is complex and is the result of multi-phase deformation and tectonism. The stresses thus imposed caused intense jointing and faulting which have produced a very irregular top-of-rock profile due to preferred weathering along the tectonically-imposed discontinuities. Other geologic factors which have contributed to the differential weathering are the orientation of foliations, geologic contacts, and mineralogical variations.

The subsurface immediately underlying the site can be readily subdivided as follows:

- residual soil (i.e., micaceous sandy silt)
- partially weathered rock
- upper fractured rock
- competent rock
- lower fractured rock

Uppermost Aquifer

At the site the uppermost aquifer occurs under water table conditions. The depth to ground water is on the order of 30 to 40 feet throughout the topographically higher portions of the site. As is common for unconfined water table aquifers, the potentiometric surface presents a subdued reflection of the topographic surface and the directions of ground-water flow are, in general, coincident with surface water flow. The axis of the ridge upon which the site is located appears to be a ground-water divide with ground-water flows to the northeast, north, and northwest along the northern portion of the site and to the west and northwest along the southern portions of the site. The unnamed tributary which flows through the northeast corner of the facility is also interpreted as being a ground-water divide.

The uppermost aquifer consists of water-bearing zones in both the residual soil and the upper fractured rock which are hydraulically interconnected. Ground-water occurring in the soils and partially weathered rock which mantle the upper fractured rock is typically a component of the small scale (or local) ground-water flow sub-system. Ground-water within the upper fractured rock flows along tortuous pathways created by discontinuities within the rock mass. Many, if not most, of these discontinuities are a result of regional stress imposed by past tectonic activity. Geologic contacts (which are numerous in the study area) may serve as pathways for ground water flow. Stress relief fractures form pathways for the movement of ground water and the horizontal stress relief fractures serve as discontinuous subsurface reservoirs of varying capacity.

Recharge of the ground-water regime within the site boundaries is limited due to the local topographic relief and the presence of man-made features (i.e., paved roads, buildings) which retard infiltration. Other factors present which limit the amount of recharge include the limited areal extent of the recharge area and the nature of the residual soils which mantle the site.

Estimates of the amount of recharge expected rely upon typical total runoff values for similar geographic settings which are on the order of 20 inches per year. Assuming that one-half of the total run-off occurs as subsurface flow yields 10 inches per year infiltrations. This, in turn,

results in an average flow through Segment W-W' (less than 500' long) on the northwest side of the facility of less than 10 gpm. This result is based upon the assumption that the site is homogeneous for infiltration capacity and is isotropic for flow direction and velocity. A ground-water plume of contamination occurs along segment W-W'.

The majority of the precipitation falling on the site which enters the ground-water regime discharges into tributaries of South Utoy Creek.

Soil and Partially Weathered Rock

The soil and partially weathered rock that overlie the rock in the area within and around the site can be grouped together. The primary difference between these two strata are the number of blow counts required to perform the standard penetration test. The soil is considered to be partially weathered rock whenever the blow count exceeds 100 per foot of penetration (Figure 7).

The soil is typically a tan, fine micaceous silty sand to sandy silt, with fragments of partially weathered rock. The partially weathered rock is typically mottled tan to grey micaceous silty fine to course sand, with rock fragments. The total thickness of the soil and partially weathered rock is variable throughout the area, ranging from an average of 58 feet in the center of the site, to an average of 80 feet along the northern boundary of the site before the land elevations fall sharply into the creek in the northeast corner and the property adjacent to the northern site boundary. The total thickness of the soil and partially weathered rock decreases west of the site at MW-34. These variations in the total thickness of the soil and partially weathered rock are important in assessing ground-water flow through the strata in the vicinity of the western boundary of the site.

The ground-water level measurements for the soil and partially weathered rock were used to produce potentiometric maps of the site and nearby areas, and are shown in Figure 8. The potentiometric surface exhibits a pattern similar to the topographic contours for the area. The axis of the ridge upon which the site is located appears to be a ground-water divide with ground-water flow to the northwest, north and northeast in the northern half of the site.

The range of hydraulic conductivity (k values) probably reflects the degree of weathering and the resulting silt and clay content. The more highly weathered soils contain more silt and clay than those soils of limited weathering. The soils with higher k values contain larger amounts of sand-size quartz or have undergone less weathering due to increased depth below the surface or to a lack of tectonic discontinuities which would allow localized weathering. Rocks containing relatively large amounts of mica and feldspars are more susceptible to weathering compared to those rocks containing quartz.

The average ground-water flow velocity is 150 feet per year for the north slope and 75 (range, 55 to 125) feet per year for the western area of the site. The calculation of these ground-water velocities assumes that the soil and partially weathered rock are homogeneous and isotropic. The constituent migration rate calculated for the north slope is bout 3 feet/year in the flow direction towards the northeast. The constituent migration rates calculated

for the western area are about 3 feet/year towards the west and about 2 feet/year towards the northwest. More recent calculations indicate a contaminant migration of typically less than 20 feet/year.

Rock

The rock underlying the soil and partially weathered rock is a soft to hard, severely to slightly weathered biotite-muscovite schist with low to high angle joints. The top of the rock is identified as the depth at which the auger bit is no longer capable of advancing into the formation.

The top of rock contours (Figure 9) exhibit a large variation along the western boundary of the site, from a high of 984 feet above mean sea level (MSL) to 919 feet above msl in the northwest corner. In the area adjacent to the stream in the northeast corner of the site there is another bedrock low with a bottom elevation of 919 feet above msl. There is more than 50 feet of competent rock separating the upper fractured rock zone from the deeper water-bearing zone. Competent rock is identified as having hydraulic conductivities less than 10^{-6} cm per second.

The ground-water level measurements were used to produce potentiometric maps for the rock at the site as shown in Figure 10. The potentiometric surface exhibits a pattern similar to both the site topography and the potentiometric contours for the soil and partially weathered rock. The ridge upon which the site is located appears to be a ground-water divide.

A comparison of the potentiometric maps for both the rock and the overlying soil and partially weathered rock material reveals that in some areas the ground-water elevations in the rock are higher than those in the overlying soil and in other areas the ground-water elevations are higher in the soil and partially weathered rock than the underlying rock. In Figure 11 the shaded area identifies those regions in which the potentiometric levels in the rock are higher than those in the overlying strata. Therefore within these regions the ground-water tends to move upwards, from the rock into the overlying strata. The area in which the ground-water may potentially flow from the rock into the overlying strata are located around the eastern and western sides, and across the northern end of the site. This upward gradient is interpreted as being indicative of discharge into the small unnamed tributary which flows along the northeastern boundary.

Within the central area of the site, the vertical movement of ground-water tends to be downward from the partially weathered rock into the rock. Therefore, the central area of the site is generally a recharge area for the rock.

The hydraulic conductivity data (k values) for the upper fractured rock exhibits a narrower data range than for the overlying strata. The k values calculated for the upper fractured rock wells fall into two sets. These two sets are interpreted to represent two different sets of geologic structure elements (joints, foliations, etc.) which have different physical characteristics. The less permeable set ($k = 10^{-5}$ cm/sec) may represent flow in slightly fracture foliated rock, while the more permeable set ($k = 10^{-4}$ cm/sec) may represent rocks that are both fractured and foliated. Generally more than 50 feet of competent rock with hydraulic conductivities of less than 10^{-6} cm/sec separates the upper fractured rock fr

rock zones. The deeper rock water-bearing zones are characterized by hydraulic conductivities on the order of 10^{-4} cm per second. Within fractured rock the hydraulic conductivity data represents the degree of interconnection between the fractures. Therefore, the vertical hydraulic conductivity in fractured zone is assumed to be there same as the horizontal hydraulic conductivity.

It is also noted that fractures that can transmit water may have very limited (typically in range of 10's and 100's of feet) spatial extent. Pump tests at other locations have demonstrated the limited (typically less than 500 feet) radius of influence of wells in similar rock.

The average ground-water flow velocity in the severely weathered upper fractured rock is 500 feet per year for the north slope and 300 (range, 185 to 400) feet per year for the area in the vicinity of western boundary of the site. The calculation of these ground-water velocities assumes that the rock formation is homogeneous and isotropic. Similar to the overlying soil, the higher flow velocities are representative of the ground-water flow regime beyond the site.

Nature of Operations

a. Manufacturing Process

The SWP-EP facility was a wood treating (preserving) plant engaged in treatment of railroad cross-ties, utility poles, switch-ties, cross-arms and floor block from the 1920's until 1984. Wood raw materials were delivered by rail or truck to the facility for processing by the following general steps:

1. Wood raw materials were shaped to the desired product dimensions (e.g., ties, poles, blocks).

2. Shaped wood products were seasoned by a natural drying process, closed steaming, and controlled air seasoning.

3. Seasoned wood was treated with a preservative. Treatment preservatives were creosote or pentachlorophenol.

4. Following treatment, final wood products were stored on the plant site until needed by a customer or were shipped directly by rail or truck to customers.

Process water from the SWP-EP facility operations consisted of steam condensate and moisture extracted from wood generated during the seasoning process, vacuum pump seal water, and waste steam condensate from the creosote/pentachlorophenol treatment process. These wastes were transferred to equipment used for transfer of treatment chemicals and as a result became contaminated with small quantities of creosote and pentachlorophenol. Process water from these sources was collected at various locations in the processing area and was piped directly to an API separator, installed before 1950, for recovery of organic wood treatment preservatives for recycling to the wood preserving operation. Wastewater generated from the API separator flowed to the surface impoundment, installed by 1940. This surface impoundment was aerated to provide biological treatment, increase evaporation and provide sufficient residence time to allow settling of organics and solids

The treatment process generated one waste listed as hazardous: "K001: Bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol." These sludges were generated in and stored only in the surface impoundment.

After wood treating stopped, the use of the impoundment was discontinued and it was cleaned out by March 1985. Of the 1890 cubic yards of material manifested off-site to an approved hazardous waste facility from the impoundment, approximately 945 cubic yards were K001 sludge. SWP-EP implemented closure from February to October 1986. The impoundment was backfilled with clean soil and a synthetic membrane and clay cap were installed on top of the soil. SWP-EP does not foresee this facility returning to operation in the future. Current use of the facility is limited to storage of treated wood products produced at other locations.

b. Use of Hazardous Materials and Generation of Solid and Hazardous Waste (Figure 12).

Only creosote and pentachlorophenol have been used to preserve wood at the SWP-EP facility. The treatment of the wastewater from this process generated hazardous waste sludge in the surface impoundment. Due to past operating practices associated with the process, other wastes were also generated. The following paragraphs identify how the handling of hazardous materials has created solid and hazardous waste management units. Not all of the materials discussed are regulated as hazardous waste materials under RCRA. The clean-up of all of the identified unit is or will be addressed in the corrective action program of the Part B Post-Closure Care Permit application or in accordance with permit conditions.

1. Landfill (Unit M)
   Nineteen monitoring wells have been installed along the northern border of the facility to assist in determining the presence of contaminant migration. Early topographic maps and aerial photographs indicate that a ravine previously existed in the immediate area of the K001 pond trending northeast from near monitoring well MW-5 and the adjacent slope in the northeast corner of the site. The ravine and north slope of the ridge upon which the plant is situated have been filled with waste wood and other debris and generally covered by soil over a period of many years to provide a relatively level area for access roads and outdoor storage. Three soil test pits/trenches have been sampled in the landfill unit. Oily residues were encountered in the ravine area.

2. K001 Impoundment (Unit A)
   Wells MW-1, MW-2, MW-5, and MW-6 were installed downgradient of this regulated unit to monitor ground-water contamination. K001 sludge was removed and sent to a permitted hazardous waste landfill in the winter of 1984-1985. The impoundment was backfilled with clean soil and a synthetic membrane and clay cap were installed.

3. Abandoned Sump (Unit O)
   Wells MW-14, MW-14A, and MW-14B were installed to evaluate conditions downgradient of the buried sump which contained wood preserving compounds ("tank bottoms"). These compounds were removed

and manifested off-site to an approved hazardous waste facility in 1987. The sump was backfilled with clean soil and seeded with grass.

4. Drip Track Area (Unit L)
As the railroad track area appears to be located along the ground-water divide, it is felt that monitoring wells MW-16 and MW-16A represent downgradient conditions along the northeastern flank of the ridge while wells MW-18 and MW-18A represent downgradient conditions along the southwestern flank of the ridge. Monitoring wells MW-15 and MW-17 represent upgradient conditions at the source of contamination and help determine if contamination from the drip track area has reached the water table and provide hydrogeologic data necessary to determine the location of the ground-water divide. Thirteen soil test pits (TP)have been sampled in the drip track unit. Along the length of the drip tracks, extending from the treating cylinder building to approximately 700 feet east of the cylinder building, there was an approximately 6-inch thick layer of tar-like residual wood treating materials. Below these tar-like materials there was a layer of tar mixed with ballast to a depth of approximately 1.0 foot (1.5 feet at test pit TP-26). Soil fill varying in thickness from 0.5 feet to as much as 9 feet (TP-6) underlies much of the drip track area. The fill, consisting micaceous sandy silt, appears to thicken away from the treating room area where partially weathered rock is present at relatively shallow depth (2 to 3 feet). No obvious contamination of the soil fill was noted. Old, oily ballast about 0.5 feet thick was encountered in the soil fill 1.75 and 2.0 feet below the surface at two of the nine test pits excavated in the drip track area (TP-2 and TP-5). Heavily contaminated ballast and soil was removed from the drip track area in 1986 and manifested off-site to an approved hazardous waste facility. The drip track area is tilled regularly. Contamination has been found 10 to 20 feet deep in the overhead crane area. The methods to handle this material will be included in the permit application.

5. Production and Storage Area (Units C, D, E, F, G, H, and I)
Sixteen monitoring wells and four soil testing pits have been installed and sampled in this area to assist in determining the presence of contamination. Units C, D, E, F, G, H, and I consist of production and storage areas within the main plant area. These areas comprise those portions of the plant where the past potential for spills of product was greatest. Heavily contaminated surface deposits and deposits in old sumps in the area of the previous storage and unloading facilities and in the area of the old cooling and were removed. All buildings and structures are being demolished and removed from the facility. This will allow sources of contamination to be assessed further.

6. Old Surface Impoundment (Unit B)
Wells MW-20 and MW-20A and soil test pit TP-17 are adjacent to the abandoned surface impoundment. The impoundment contained up to 3.0 feet of oily waste below a thin 0.2 to 1 foot thick surface soil veneer. A sample of black oil impregnated soil from this

impoundment was analyzed. The visually contaminated material was removed and manifested off-site to an approved hazardous waste facility.

7. Slope Sprayed with Creosote (Unit K)
Four wells (MW-33 through MW-34A) have been installed to assist in determining the presence of contaminant migration. A soil hand auger sample (HA) was collected adjacent to this unit. Surface deposits along this embankment are apparent. However, samples from HA-3 resulted in non-detectable concentrations at this location. The thin coating of creosote sprayed on the slope will be removed and the slope stabilized with grass or crushed stone.

8. Surface Spill (Unit J)
Four wells (MW-33 through MW-34A) have been installed to assist in determining the presence of contaminant migration. A soil hand auger sample (HA) was collected adjacent to this unit. Surface deposits along this embankment are apparent. However, samples from HA-3 resulted in non-detectable concentrations at this location. The thin coating of creosote sprayed on the slope will be removed and the slope stabilized with grass or crushed stone.

8. Surface Spill (Unit J)
Four wells (MW-33 through MW-34A) have been installed to assist in determining the presence of contaminant migration. Samples from wells MW-36 and MW-36A and a soil hand auger located within the spill area have been collected to assess the area further.

9. Treated Wood Storage Areas (Unit N)
Six monitoring wells and eight soil test pits/hand augers have been installed and sampled in these areas to assist in determining the presence and migration of contamination.

10. Old Pond
Near the east property line at tributary #3.

11. Overhead Crane Area
Approximately 10,000 to 12,000 cubic yards of contaminated material about 10 feet below ground surface.

12. Old Ravine and Drainage Discharge
Trended northeast from about MW-5 to MW-10. Wood preserving constituents and free oil detected in soil test pits TP-32 and 34 along the ravine, p. E4-21.

13. Potential Areas of Concern Identified in the Permit Application

a. MW-8A and 16A. Limited source control proposed, p. E4-8 & 12.
b. Free oil found in PW-2, p. E4-3 & 13.
c. Free oil found in MW-2, 3, 6, 26, 26A, 43, and 43A. Proposed seismic refraction surveys to map the top of the rock lows p[illegible] exploratory borings to map oil, and oil recovery, p. E8-3, [illegible], 20, & 22.
d. Fill material along east and west slopes, p. E-4 18 and 19.

Wastewater Treatment and Disposal

Wastewater generated during the wood treating process flowed to the surface impoundment where it was stored prior to treatment and discharge to the sanitary sewer. The facility ceased treating operations in 1984 and the surface impoundment was closed in 1986.

Air Emission Control

The facility ceased treating operations in 1984. All process equipment is being dismantled and removed from the site. There are no sources of air emissions at the facility.

Release Pathways

1. Normal Plant Operations

   a. Soil and Groundwater
   SWP-EP has verified and confirmed the presence of hazardous and solid waste management units and contaminated groundwater. Corrective action plans are proposed in the permit application. Large volumes of contaminated material have already been removed from the site and manifested to approved hazardous waste facilities. Pilot projects have also begun to assess contaminated ground-water recovery.

   b. Surface Waters
   There is a potential for releases to affect the Unnamed Tributary No. 3. Hazardous constituents have been detected in water samples collected from the tributary. Assessment and investigation will continue in accordance with conditions of the permit. In addition surface drainage culverts, features, and paths identified in Figure B-2.2 of the permit application will be sampled regularly.

2. Spills
   Two spills of potentially hazardous materials have been documented in the facility file. Both spills occurred within the waste management area (WMA) and are addressed in the permit application. Some soil contamination has been found outside the WMA at test pits TP-37 and TP-13. These areas are also being addressed in the permit application.

SUMMARY AND CONCLUSIONS

Due to the extensive assessment performed by SWP-EP, many SWMUs have been identified and addressed in the permit application. The corrective action plan proposes clean-up of sources and recovery of contaminated ground-water. Assessment and investigation of potential SWMUs and releases will continue in accordance with conditions of the permit.

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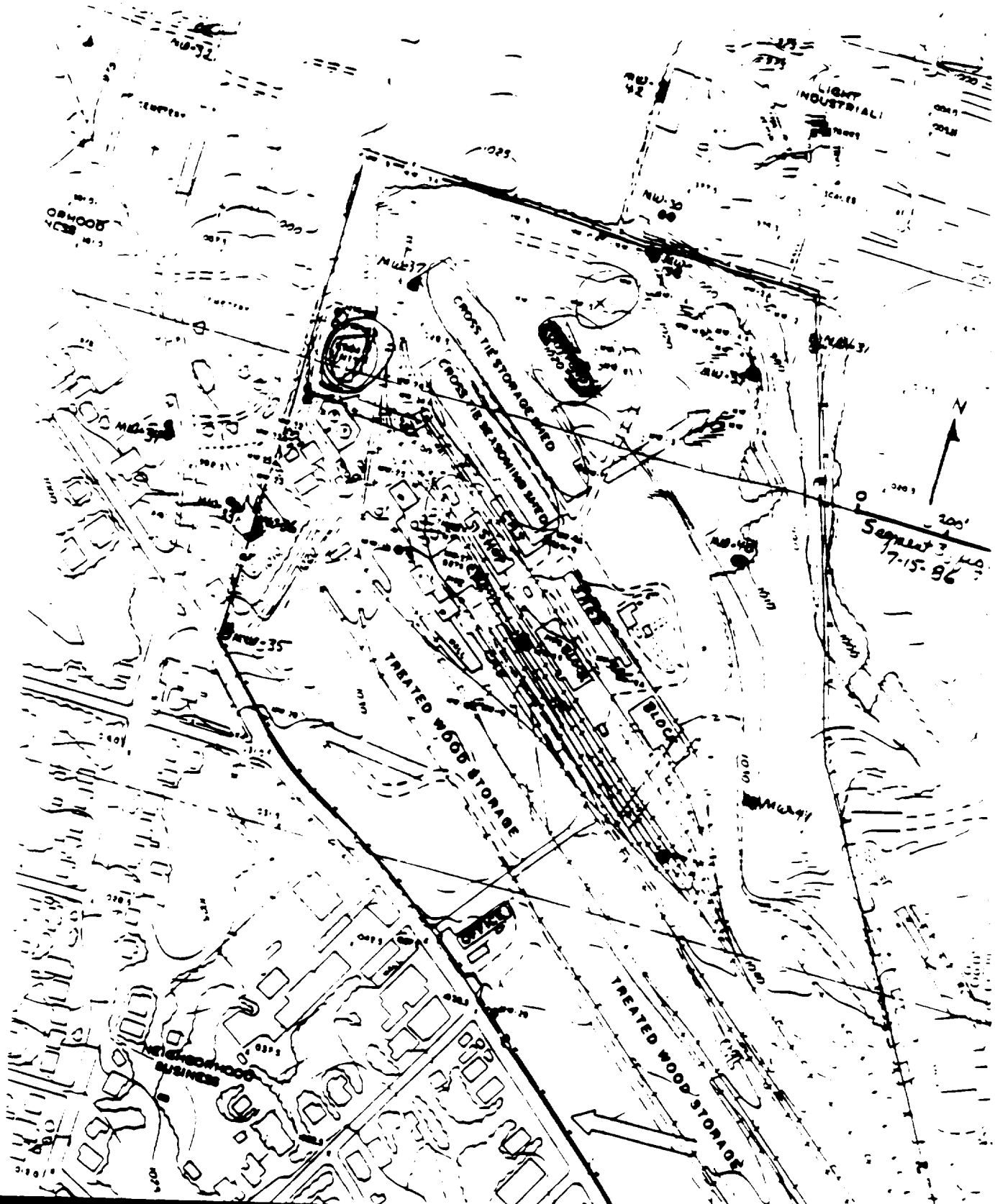


Topographic Map of Plant

Primary Buildings + Structures

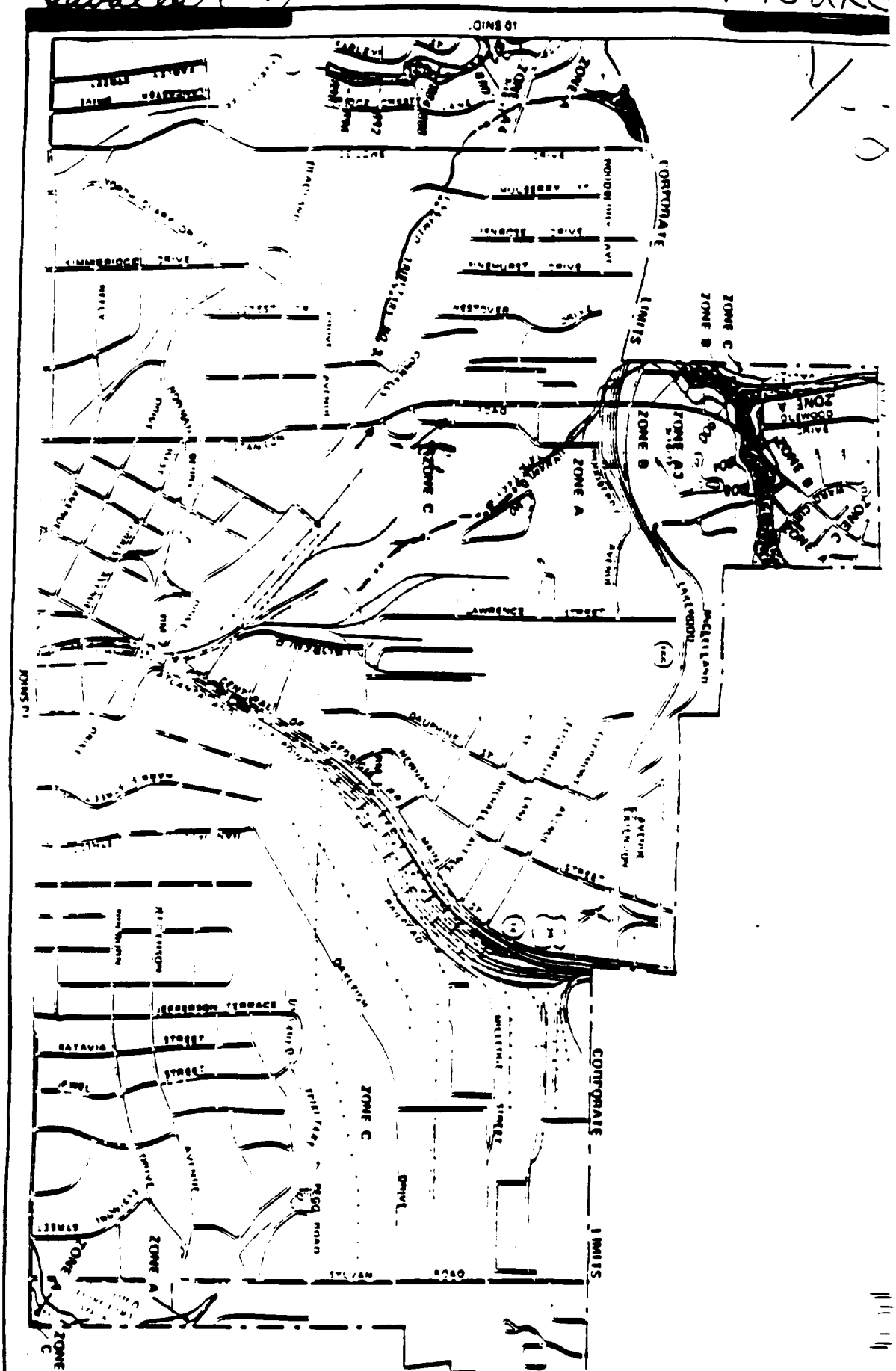
Other Structures

K001 Surface Impoundment

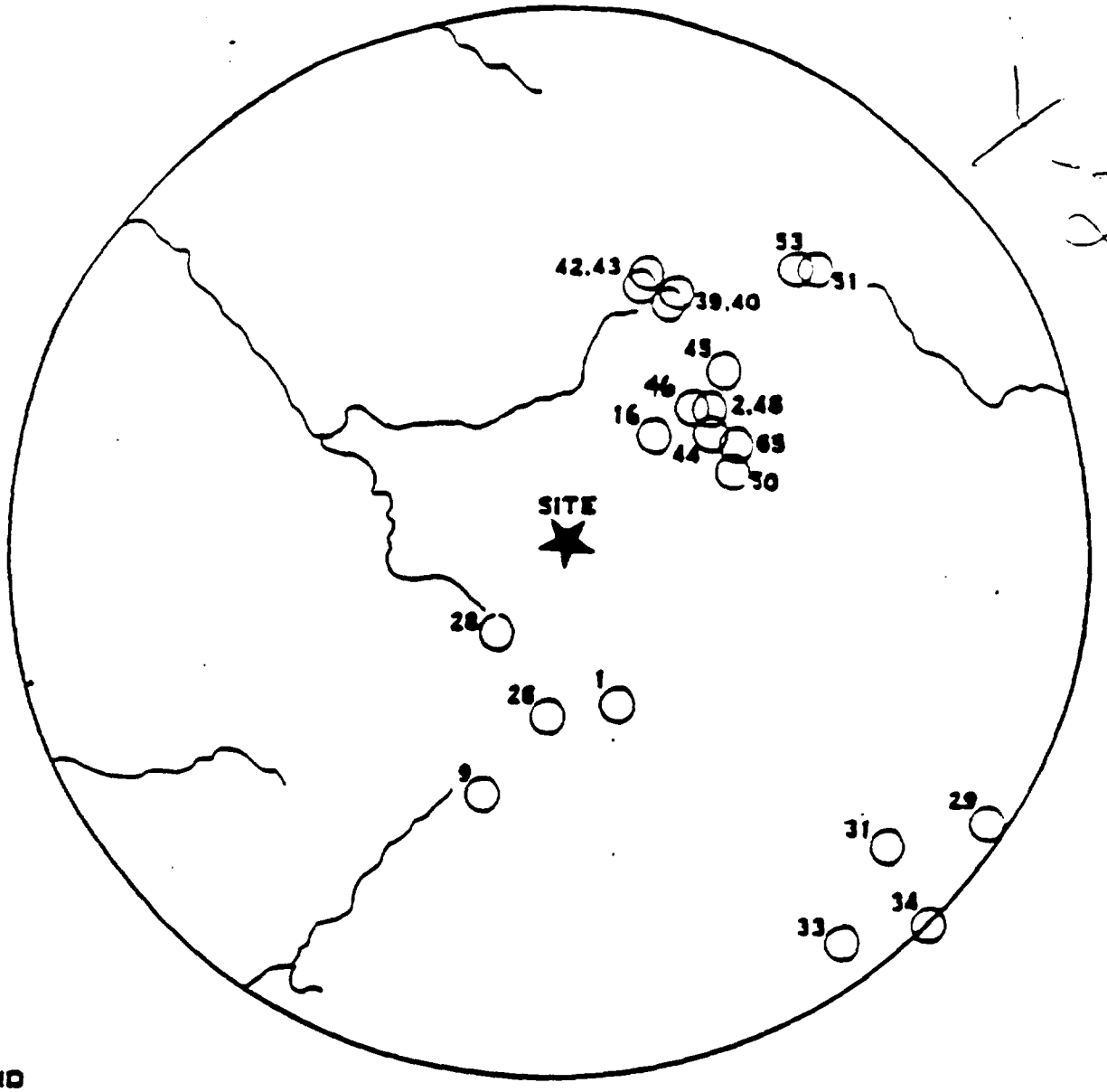
Old Surface Impoundment

Flood [illegible] with Unnamed [illegible] tributaries an[illegible]
Swales (→)

FIGURE



Location of Water Supply Wells, FIGURE 4A



LEGEND

42 ○ WATER WELL LOCATIONS

0 1
SCALE IN MILES

NOTE: REFER TO TABLE 1
FOR WELL DATA

Reference: Cressler, C.W., C.J. Thurmond and W.G. Hester, 1983, Ground water in the Greater Atlanta Region, Georgia: Georgia Geologic Survey Information Circular 63.

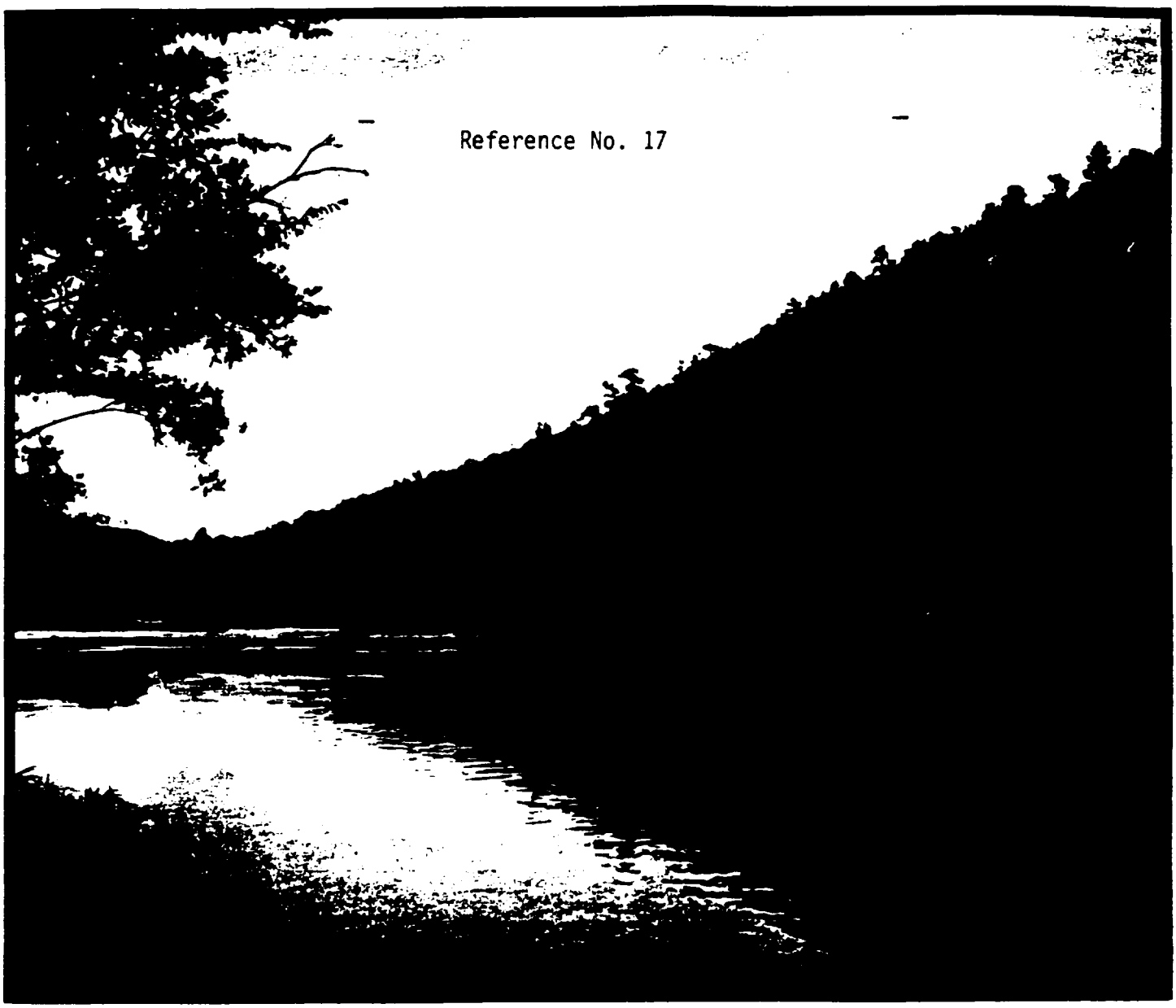
SOUTHERN WOOD PIEDMONT COMPANY	LAW ENVIRONMENTAL SERVICES	WATER WELLS AND STREAMS WITHIN 3 MILES OF SITE

FIGURE 4B

Well Number	Owner
* 1	O'Neil Bros., East Point
* 2	Fort MacPherson
16	City of East Point
26	?
28	City of College Park
* 39	Fort MacPherson
* 40	Fort MacPherson
* 42	Fort MacPherson
* 43	Fort MacPherson
44	?
* 45	Fort MacPherson
* 46	Fort MacPherson
48	City of College Park
50	Central of Georgia Rail Road
o 51	National Biscuit Company
o 53	National Biscuit Company
65	Central of Georgia Rail Road

* High-yielding wells that currently (1980) are unused and could provide emergency water supplies.

o Active wells in use longer than 30 years.



Water Availability & Use

Flint River Basin

Georgia Department of Natural Resources
Environmental Protection Division

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
1-010 (ISD)	Ford Motor Co.	Fulton	Atlanta	Mud Creek	338.8	0.20		0.20	0.0	
1-020 (ISD)	Delta Airlines Inc.	Clayton	Atlanta	Flint River	338.8	1.00		3.00	0.0	
1-030 (MSD)	Atlanta Flint R. WPCP	Clayton	Atlanta	Flint River	337.5	6.00		4.93	0.2	
1-050 (ISD)	Vulcan Materials Co.	Fulton	Red Oak	Kimberly Cr.	338.03	1.60		1.91	0.08	
1-060 (MSD)	Ful. Co. Morn. Cr. WPCP	Fulton	Union City	Morning Cr.	336.35	3.00		3.64	0.14	
1-070 (MSD)	Fayetteville E. Pond	Fayette	Fayetteville	Nash Creek	322.33	0.12		1.80	0.10	
1-080 (MSD)	Hampton WPCP	Henry	Hampton	Bear Cr., Trib.	317.19	0.50		6.00	0.24	
1-090 (MSW)	City of Griffin	Spalding	Griffin	Flint River	307.40		8.00	194.00	10.70	≥ 99
1-100 (MSD)	Griffin WPCP	Spalding	Griffin	Shoal Creek	309.20	0.60		4.35	0.21	
1-110 (MSD)	Fairburn WPCP	Fayette	Fairburn	Whitewater Cr.	326.79	0.60		3.96	0.16	
1-130 (MSW)	City of Fayetteville	Fayette	Fayetteville	Gingercake Cr.	318.12		0.15	5.29	0.21	≥ 99*
1-140 (MSD)	Fayetteville W. Pond	Fayette	Fayetteville	Gingercake Cr.	318.47	0.10		5.29	1.00	
1-150 (MSD)	Fayetteville WPCP	Fayette	Fayetteville	Whitewater Cr.	315.74	1.23		30.00	3.00	
1-160 (MSW)	City of Newman	Coweta	Newnan	Line Cr.	316.00		7.5		1.50	60*
1-170 (MSD)	Peachtree City WPCP	Fayette	P'tree City	Line Cr.	310.06	1.00		70.00	3.15	
1-180 (MSW)	Fayette Co. Water Sys.	Fayette	Fayetteville	Lake P'tree	312.30		0.50	18.58	1.10	≥ 90*
1-190 (MSD)	Peachtree City WPCP	Fayette	P'tree City	Flat Creek	311.77	0.90		19.00	1.14	
1-200 (MSW)	City of Senoia	Coweta	Senoia	Hutchins Lake	305.97		0.30	14.70	1.50	≥ 99*
1-210 (MGW)	City of Senoia	Coweta	Senoia	n/a			0.20			
1-230 (MSW)	City of Greenville	Meriwether	Greenville	Town Creek	293.01		0.15	1.11	0.13	97*
1-240 (MSD)	Greenville South WPCP	Meriwether	Greenville	Kennel Cr.	291.65	0.13		2.00	3.00	

* No Minimum Flow Requirement

FLINT RIVER
WATER AVAILABILITY
AND USE REPORT

GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES
IN HYDROLOGIC UNIT 1
FIGURE 5

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
2-010 (MSW)	City of Zebulon	Pike	Zebulon	Elkins Cr.	292.94		0.30	21.40	0.72	≥99*
2-020 (MSD)	Zebulon Pond	Pike	Zebulon	Town Branch	293.33	0.28		2.24	0.09	
2-030 (MSD)	Concord Pond #2	Pike	Concord	Concord Br.	287.2	0.10		1.23	0.05	
2-040 (MSW)	City of Woodbury	Meriwether	Woodbury	Pound Cr.	279.05		0.50	6.00	0.50	≥99*
2-050 (IGW)	Nabisco	Meriwether	Woodbury	n/a			0.25			
2-060 (MSW)	City of Manchester	Meriwether	Manchester	Pigeon Cr. Tr.	258.36		0.75	1.73	0.17	54*
2-070 (MSD)	Manchester WPCP	Meriwether	Manchester	Pigeon Cr.	254.52	0.75		17.10	1.70	
2-080 (MGW)	City of Talbotton	Talbot	Talbotton	n/a			0.10			
2-090 (MSD)	Talbotton WPCP	Talbot	Talbotton	Edwards Cr.	269.30	0.10		0.05	0.00	
2-100 (ISD)	Pomona Products Co.	Spalding	Griffin	Ison Br.	294.26	0.35		1.00	0.00	
2-110 (MSD)	Griffin WPCP	Spalding	Griffin	Potato Cr.	289.65	2.00		10.00	1.30	
2-120 (ISW)	BF Goodrich	Upson	Thomaston	Potato Cr.	262.82		0.40	154.00	11.00	≥99
2-130 (ISD)	BF Goodrich	Upson	Thomaston	Drake Br.	263.18	0.26		1.55	0.09	
2-140 (MSW)	City of Thomaston	Upson	Thomaston	Potato Cr.	260.32		3.00	176.00	10.60	≥99*
2-150 (ISW)	Thomaston Mills Inc.	Upson	Thomaston	Potato Cr.	262.82		3.40	154.00	11.00	≥99*
2-160 (ISD)	Thomaston Mills Inc.	Upson	Thomaston	Dye Branch	258.21	2.50		0.27	0.00	
2-170 (MSD)	Thomaston Town Br. WPCP	Upson	Thomaston	Bell Cr. Trib.	256.01	0.75		2.00	0.50	
2-180 (MSD)	Thomston Bell Cr. WPCP	Upson	Thomaston	Bell Cr.	256.60	1.50		8.20	0.60	

* No Minimum Flow Requirement

FLINT RIVER
WATER AVAILABILITY
AND USE REPORT

GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES
IN HYDROLOGIC UNIT 2
FIGURE 6

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
3-010 (MGW)	City of Roberta	Crawford	Roberta	n/a			0.20			
3-020 (MSD)	Roberta WPCP	Crawford	Roberta	Matt. Cr. Trib.	216.8	0.20		0.61	0.20	
3-030 (MGW)	City of Butler	Taylor	Butler	n/a			0.50			
3-040 (MSD)	City of Butler	Taylor	Butler	Beaver Cr. Tr.	227.14	0.20		1.00	0.00	
3-050 (MGW)	City of Reynolds	Taylor	Reynolds	n/a			0.17			
3-060 (MSD)	City of Reynolds	Taylor	Reynolds	Patsiliga Cr.	213.63	0.16		139.00	31.00	
3-070 (IGW)	Bibb Co. Plant	Coweta	Newnan	n/a			0.11			
3-080 (ISD)	Bibb Mfg. Co. Potterdale	Taylor	Potterdale	Horse Cr.	202.44	0.12		22.10	17.60	
3-090 (MGW)	City of Marshallville	Macon	Marshallville	n/a			0.50			

* No Minimum Flow Requirement

FLINT RIVER
WATER AVAILABILITY
AND USE REPORT

GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES
IN HYDROLOGIC UNIT 3
FIGURE 7

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
4-010 (MGW)	City of Oglethorpe	Macon	Oglethorpe	n/a	177.63		0.13	39.00	16	
4-020 (MSD)	Oglethorpe WPCP	Macon	Oglethorpe	Mills Cr.	177.33	0.13		13.20	14	
4-025 (MGW)	City of Oglethorpe	Macon	Oglethorpe	n/a			0.15			
4-030 (IGW)	Southern Frozen Foods	Macon	Montezuma	n/a			2.50			
4-040 (MSD)	Montezuma WPCP #2	Macon	Montezuma	Spring Cr.	178.4	2.2		0.60	0.18	
4-050 (MSD)	Montezuma WPCP #1	Macon	Montezuma	Spring Cr.	176.56	0.84		7.70	3.60	
4-060 (MGW)	City of Montezuma	Macon	Montezuma	n/a			0.78			
4-070 (IGW)	Buckeye Cellulose	Macon	Oglethorpe	n/a			1.80			
4-080 (ISW)	Buckeye Cellulose Corp.	Macon	Oglethorpe	Flint River	172.51		10.00		693.00	≥99*
4-090 (ISD)	Buckeye Cellulose Corp.	Macon	Oglethorpe	Flint River	172.51	9.70		2950		
4-100 (MSD)	Ellaville Pond	Schley	Ellaville	Lt. M'lee Trib.	136.33	0.16		0.54	0.15	
4-110 (MGW)	City of Ellaville	Schley	Ellaville	n/a			0.25			
4-120 (IGW)	American Cyanamid	Macon	Andersonville	n/a			0.14			
4-130 (MSD)	Byronville WPCP	Dooly	Byronville	Turkey Cr.	166.06	0.10		45.00	2.4	
4-140 (MGW)	City of Vienna	Dooly	Vienna	n/a			0.62			
4-150 (MSD)	City of Vienna WPCP	Dooly	Vienna	Pennahatchee Cr.	165.5	0.28		22.50	0.0	
4-160 (MGW)	City of Cordele	Crisp	Cordele	n/a			1.62			
4-170 (MSD)	Cordele WPCP	Crisp	Cordele	Gum Creek	150.77	5.00		48.00	0.5	
4-180 (ISW)	Crisp County Power Co.	Worth	Warwick	Flint River	132.5		4.90	3700.00	745	≥99
4-190 (ISD)	Crisp County Power Co.	Worth	Warwick	Flint River	132.5	4.90		3700.00	745	
4-200 (IGW)	Firestone Tire Co.	Dougherty	Albany	n/a			0.65			
4-210 (ISD)	Albany Naval Air Station	Dougherty	Albany	Flint River	105.9	0.75		4900	900	
4-220 (IGW)	Miller Brewing Co.	Dougherty	Albany	n/a			3.00			
4-230 (MGW)	City of Buena Vista	Marion	Buena Vista	n/a			1.30			
4-240 (MSD)	Buena Vista WPCP	Marion	Buena Vista	Oochee Cr. Tr.	214.23	0.25		0.10	0.0	
4-250 (ISD)	Cargill Inc - Buena Vista	Marion	Buena Vista	Muckalee Cr.	174	0.25		0.13	0.10	
4-260 (MSD)	Plains WPCP	Sumter	Plains	Pepell Cr.	139.99	0.12		0.86	0.08	
4-280 (MSD)	City of Richland WPCP	Stewart	Richland	Bear Cr.	154.52	0.19		0.76	0.08	
4-290 (MGW)	City of Leesburg	Lee	Leesburg	n/a			0.18			
4-300 (MSD)	Leesburg WPCP	Lee	Leesburg	Kinchafoonee Cr.	114.61	0.10		590.00	110	
4-320 (ISD)	Martin Marietta Aggregates	Dougherty	Albany	Fowltown Cr. Tr.	114.29	0.84		5310.00	•	
4-340 (MGW)	Town of Plains	Sumter	Plains	n/a			0.12			
4-350 (MGW)	City of Americus	Sumter	Americus	n/a			4.40			
4-360 (MSD)	Americus-M'lee Cr. WPCP	Sumter	Americus	Muckalee Cr.	147.6	2.00		165.00	16.00	
4-370 (MSD)	Americus-Willets Br. WPCP	Sumter	Americus	Willets Br.	148.48	0.70		3.00	0.3	
4-380 (ISD)	Miller Brewing Co.	Dougherty	Albany	Flint River	101.90	2.30		5310.00		

* No Minimum Flow Requirement

FLINT RIVER
WATER AVAILABILITY
AND USE REPORT

GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES
IN HYDROLOGIC UNIT 4
FIGURE 8

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (cfs)	LEVEL OF SERVICE (%)
5-010 (MGW)	City of Albany	Dougherty	Albany	n/a			27.0			
5-020 (ISD)	Firestone Tire & Rubber Co.	Dougherty	Albany	Flint River	97.67	0.63		5322.00	1087	
5-030 (ISD)	USMC Support	Dougherty	Albany	Flint River	97.67	0.63		5322.00	1087	
5-040 (IGW)	USMC	Dougherty	Albany	n/a			2.20			
5-050 (IGW)	Proctor & Gamble	Dougherty	Albany	n/a			6.00			
5-060 (MSD)	Albany WPCP	Dougherty	Albany	Flint River	98.05	20.00		5322.00	1087	
5-070 (IGW)	Southern Concrete	Dougherty	Albany	n/a			0.24			
5-080 (IGW)	Merck & Co., Inc.	Dougherty	Albany	n/a			9.00			
5-090 (ISD)	Merck & Co., Albany	Dougherty	Albany	Flint River	94.20	1.00		5393.00	1133	
5-100 (ISW)	GA. Power Plant Mitchell	Dougherty	Albany	Flint River	89.2		255.00	5450.00	1215	≥99*
5-110 (ISD)	GA. Power Plant Mitchell	Dougherty	Albany	Flint River	89.2	252.00		5450.00	1215	
5-130 (MSD)	City of Shellman	Randolph	Shellman	Icwynowy. Cr. Tr.	99.14	0.15		5.00	0.0	
5-140 (MGW)	City of Shellman	Randolph	Shellman	n/a			0.15			
5-150 (MGW)	City of Cuthbert	Randolph	Cuthbert	n/a			0.60			
5-160 (MSD)	Cuthbert Pond	Randolph	Cuthbert	Town Branch	98.03	0.41		5.61	2.7	
5-170 (MGW)	City of Edison	Calhoun	Edison	n/a			0.25			
5-180 (MSD)	Edison Pond	Calhoun	Edison	Bay Branch Trib.	80.96	0.15		0.89	0.18	
5-190 (MGW)	City of Dawson	Terrell	Dawson	n/a			1.20			
5-200 (MSD)	Dawson WPCP	Terrell	Dawson	Brantley Cr.	104.0	1.00		9.00	0.7	
5-210 (MGW)	City of Leary	Calhoun	Leary	n/a			0.10			
5-220 (MSD)	Leary WPCP	Calhoun	Leary	Keel Cr.	83.82	0.10		0.50	0.05	
5-230 (ISD)	ITT United Plastics Div.	Decatur	Bainbridge	Flint River	34.38	0.14		7200.00	2181	
5-240 (ISD)	Decatur Co. Ind. Airpark	Decatur	Bainbridge	Flint River	34.11	0.50		7200.00	2181	
5-250 (IGW)	Flint Concrete Products	Decatur	Bainbridge	n/a			0.36			
5-260 (MGW)	City of Camilla	Mitchell	Camilla	n/a			2.50			
5-270 (MSD)	Camilla WPCP	Mitchell	Camilla	Bib Slough Cr.	39.26	3.00		2.00	0	
5-280 (MGW)	City of Bainbridge	Decatur	Bainbridge	n/a			2.10			
5-290 (MSD)	Bainbridge WPCP	Decatur	Bainbridge	Flint R.	27	2.50		7600.00	2320	
5-300 (MSD)	Arlington Pond #2	Calhoun	Arlington	Mill Cr.	70.34	0.13		0.60	0	
5-310 (MGW)	City of Arlington	Calhoun	Arlington	n/a			0.20			
5-320 (MGD)	Arlington Pond #1	Calhoun	Arlington	Perry Cr. Trib.	73.10	0.10		0.44	0	
5-330 (MSD)	Blakely Pond B	Early	Blakely	Breastwork Br.	90.91	0.12		15.00	0.5	
5-340 (MSD)	Blakely WPCP	Early	Blakely	Baptist Br.	69.95	1.2		3.00	0.1	
5-350 (MSD)	Blakely Pond A	Early	Blakely	Blue Creek	67.36	0.12		2.20	0.1	
5-360 (MSD)	Colquitt WPCP	Miller	Colquitt	Spring Cr.	46.12	0.40		284.00	10.0	
5-370 (MGW)	City of Donaldsonville	Seminole	Donaldsonv'l	n/a			0.97			
5-380 (MSD)	Donaldsonville WPCP	Seminole	Donaldsonv'l	Fishpond Drain	19.68	0.40		13.64	0	
5-390 (IGW)	Decatur Co. Inc. Airpack	Decatur	Bainbridge	n/a			0.77			
5-400 (IGW)	Patchogue Plymouth	Decatur	Bainbridge	n/a			2.00			

* No Minimum Flow Requirement

FLINT RIVER WATER AVAILABILITY AND USE REPORT

GEORGIA ENVIRONMENTAL PROTECTION DIVISION

MAJOR FACILITIES IN HYDROLOGIC UNIT 5

FIGURE 9

Reference No. 18

REFERENCE 7

NUS CORPORATION AND SUBSIDIARIES ***TELECON NOTE***

CONTROL NO.	DATE: January 3, 1989	TIME: 15:45

DISTRIBUTION:

BETWEEN: Mike Callahan	OF: East Point Water Department	PHONE: (404) 765-1039

AND: Daniel L. Howard, NUS Corporation DL. Ho

DISCUSSION:

Mr. Callahan said that he does not know of any private wells in the East Point area. He also said that East Poin Water Department supplies water to College Park and Hapeville. East Point Water Department obtains its wate from Sweetwater Creek which is 10 miles northwest and upgradient of the facility in question.

ACTION ITEMS:

Reference No. 19

Water Availability & Use
CHATTAHOOCHEE RIVER BASIN

Georgia Department of Natural Resources
Environmental Protection Division

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ.MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
010(MSW)	City of Sugar Hill MWS	Gwinnett	Sugar Hill	Richland Creek	5.8/L.0.2		0.14	N/A	N/A	
015(ISW)	Bona Allen, Inc.	Gwinnett	Buford	Suwanee Creek	14.7		0.28	5.8	1.0	≥99*
020(ISD)	Bona Allen, Inc.	Gwinnett	Buford	Suwanee Creek	14.6	0.14		5.8	0.1	
030(MSD)	City of Buford Westside WPCP	Gwinnett	Buford	Suwanee Creek	7.9	0.25		3.23	0.54	
040(MSD)	City of Buford Southside WPCP	Gwinnett	Buford	Suwanee Creek	5.9	1.0		14.0		
050(MSW)	Gwinnett County Water Auth.	Gwinnett	Lawrenceville	Chat. River	338.0		12.0	1100	670	≥99*
060(MSW)	DeKalb County Water & Sewer Dept.	DeKalb	Decatur	Chat. River	325.5		96.0	1210	720	≥99*
070(MSD)	Crooked Creek WPCP	Gwinnett	Norcross	Crooked Creek	1.7	2.0				
080(MSD)	Johns Creek WPCP	Fulton	Roswell	Chat. River	324.0	4.0		1214	700	
090(MSD)	City of Cumming WPCP	Forsyth	Cumming	Big Creek	24.2	0.25		0.49	0.04	
095(MSW)	City of Roswell MWS	Fulton	Roswell	Big Creek	2.0		0.62	96.4	7.9	≥99*
100(ISW)	Horseshoe Bend Prop., Inc.	Fulton	Roswell	Chat. River	315.6		0.25	1250	760	≥99*
110(MSD)	Big Creek WPCP	Fulton	Roswell	Chat. River	315	6.0		1255	740	
120(MSW)	Cobb Co. Marietta Water Auth.	Cobb	Acworth	Chat. River	310		48	1390	810	≥99*
130(MSW)	City of Atlanta MWS	Fulton	Atlanta	Chat. River	299.6		160	1460	900	88-99
140(MSD)	Chattahoochee WPCP	Cobb	Smyrna	Chat. River	299.1	20		1461	781	
150(MSD)	R.M. Clayton WPCP	Fulton	Atlanta	Chat. River	298.8	120		1462	701	
160(ISW)	Ga. Power Plant McDonough	Cobb	Atlanta	Chat. River	298.6		394	1600	915	50-58
170(ISW)	Ga. Power Plant Atkinson	Cobb	Atlanta	Chat. River	298.6		432	1600	915	50-58
180(ISD)	Ga. Power Plant McDonough Atkinson	Cobb	Atlanta	Chat. River	298.0	818		1600	855	
190(MSD)	South Cobb WPCP	Cobb	Mableton	Chat. River	294.5	24		1650	943	
200(IGW)	Anaconda Aluminum Co.	Fulton	Atlanta	Chat. River	293.0		0.33	N/A	N/A	

* Calculated without minimum streamflow requirement

CHATTAHOOCHEE RIVER WATER AVAILABILITY AND USE REPORT

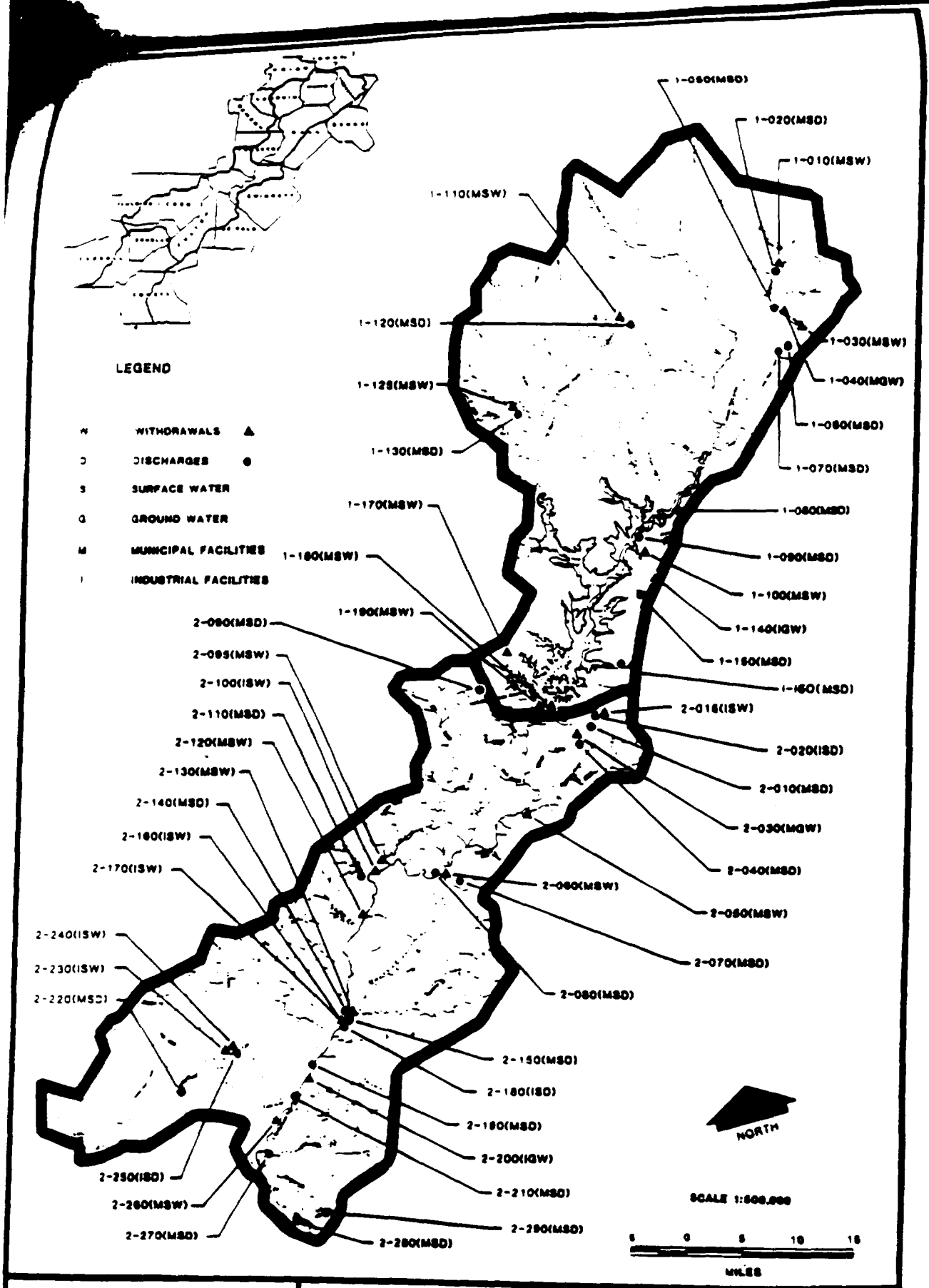
GEORGIA ENVIRONMENTAL PROTECTION DIVISION

MAJOR FACILITIES IN HYDROLOGIC UNIT #2

FIGURE 6

ILITY I.D. MBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ.MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
10(MSD)	Utoy Creek WPCP	Fulton	Atlanta	Chat. River	291.7	30		1680	981	
20(MSD)	Douglasville-North WPCP	Douglas	Douglasville	Gothards Creek	4.0	1.0		9.9		
30(ISW)	Sweetwater Paper Board	Cobb	Austell	Sweetwater Creek	16.2		0.20	150	9	≥99*
40(ISW)	Austell Box Board Company	Cobb	Austell	Sweetwater Creek	14.4		0.70	153	9	≥99*
50(ISD)	Austell Box Board Company	Cobb	Austell	Sweetwater Creek	14.0	0.18		153	9	
60(MSW)	City of East Point MWS	Douglas	East Point	Sweetwater Creek	1.0		11.5	246	15	≥99*
70(MSD)	Camp Creek WPCP	Fulton	College Park	Chat. River	283.5	15		1715	1090	
80(MSD)	Line Creek WPCP	Fulton	Fairburn	Line Creek	6.9	0.22		2.4		
90(MSD)	City of Union WPCP	Fulton	Union City	Deep Creek	8.0	0.25		1.0		

* Calculated without minimum streamflow requirement



CHATTAHOOCHEE RIVER WATER AVAILABILITY AND USE REPORT

GEORGIA ENVIRONMENTAL

MAJOR WATER USERS

Reference No. 20

NUS CORPORATION AND SUBSIDIARIES

TELECON NOTE

CONTROL NO.	DATE: March 20, 1989	TIME: 9:35

DISTRIBUTION:

BETWEEN: Tommy Fowler	OF: City of Atlanta Water	PHONE: (404) 658-7280

AND: Walter Riley, NUS Corporation

Walter Riley Jr. 3/20/89

DISCUSSION:

City of Atlanta Water Department Service. The water department supplies water to all areas of the city of Atlanta. All water comes from the intake located at Marietta Blvd. and Plant Road. There are no emergency connections to other systems but provide water to other smaller systems. All areas within the city have water service.

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

Reference No. 21

CONTROL NO. F$-8908-31	**DATE:** 8/29/89	**TIME:** 11:10

DISTRIBUTION: SSC Industries
East Point, Fulton County, Georgia

BETWEEN: Chris Martin	**OF:** Georgia, State Game and Fish Division	**PHONE:** (404)

AND: Jonathan Hughes, NUS Corporation

DISCUSSION:

Called Chris Martin to inquire about recreational or commercial activities that occur on the Flint River. He stated that:

- Recreational fishing, swimming, and boating occur.
- If commercial fishing is practiced on the Flint River, Mr. Martin claimed that it would be minimal.

Reference No. 22

REFERENCE 10

ENDANGERED AND THREATENED SPECIES

U.S. FISH AND WILDLIFE SERVICE

REGION 4 - ATLANTA

SSC INDUSTRIES
a division of CHEMTECH

November 3, 1989

Mr. Jonathan F. Hughes
Project Manager
NUS Corporation
1927 Lakeside Parkway
Suite 614
Tucker, GA 30064

RE: SSC Industries, Inc. (SSC) Facility in East Point, GA

Dear Mr. Hughes:

This letter is in response to your correspondence of September 25, 1989, and recent phone conversations concerning the technical work that has been conducted on the above-referenced property. As you know, during routine testing for soil disposal after a small oil spill, SSC discovered that elevated levels of lead were present on the property. Upon discovery of these results, SSC retained the consulting firm Applied Engineering and Science (AES) to conduct further sampling at the facility.

AES gathered additional samples onsite using a grid system spreading out from the source where the original soil samples were taken. These samples were analyzed by IT Corporation's laboratory in Knoxville, Tennessee. The results of this further work are attached for your review.

SSC does not use lead or lead compounds in any of its processes. Thus, the company has investigated the source of the lead on the property and found that, prior to 1968, the property was owned and operated by Gould, Inc. (Gould). Gould apparently operated an automotive battery manufacturing and storage facility for a number of years at the site, a fact confirmed by the presence of numerous battery caps and casings found near sampling points where lead was detected.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

SSC is currently negotiating with Gould to have Gould conduct a cleanup at the facility. Meanwhile, SSC is conducting additional investigatory work so that an appropriate remedial alternative can be selected shortly. We will provide further reports to you and EPA as they become available. In addition, SSC will consult with EPA before a final remedial option is chosen.

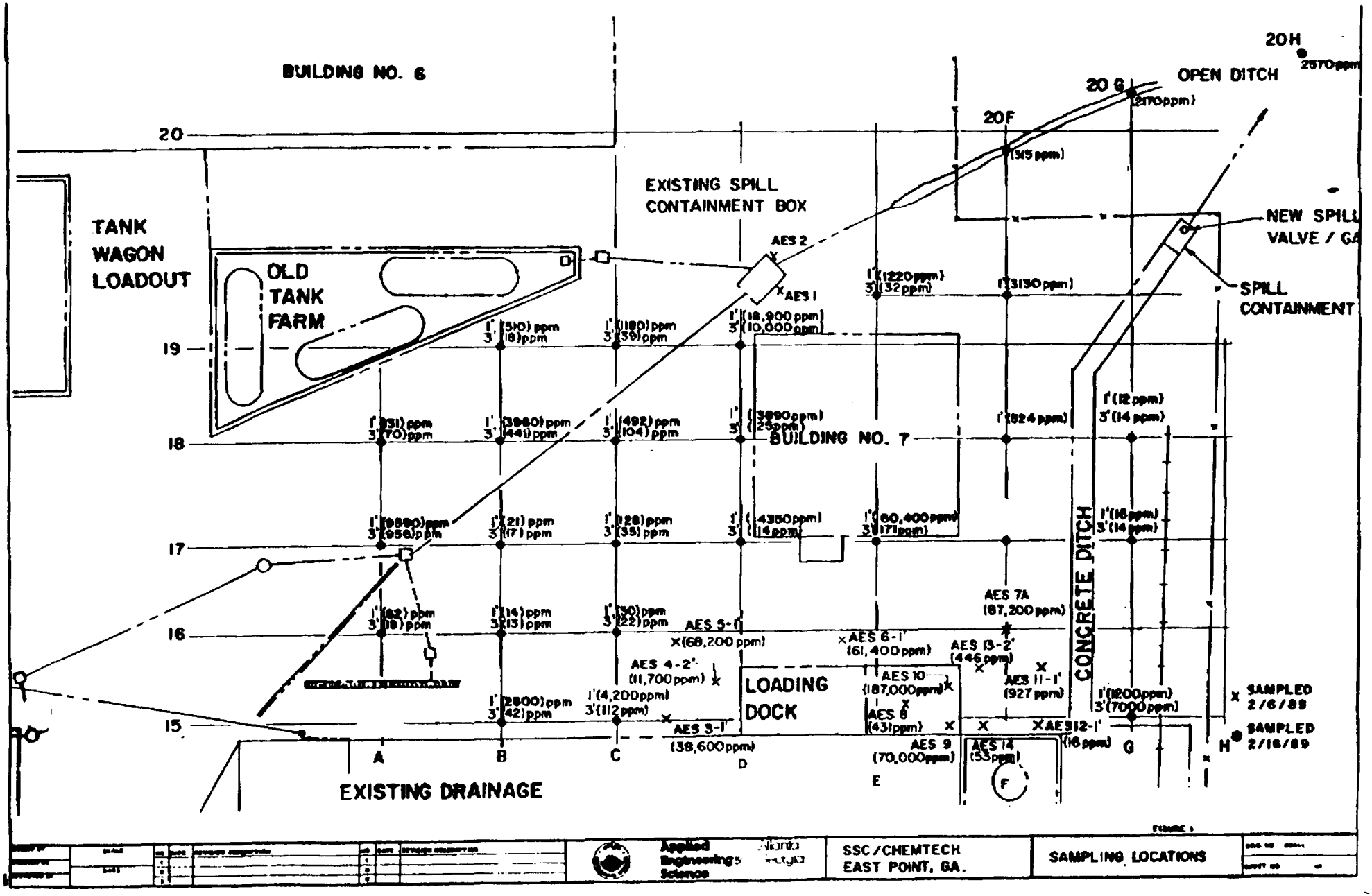
Sincerely,

J. Dwight Bell, Jr.

J. Dwight Bell, Jr.
Vice President - General Manager

/jlr

Attach:


BUILDING NO. 6
TANK WAGON LOADOUT
OLD TANK FARM
EXISTING SPILL CONTAINMENT BOX
OPEN DITCH
20H
2570ppm
20G
(2170ppm)
20F
(345 ppm)
NEW SPILL VALVE / GA
SPILL CONTAINMENT
AES 2
AES 1
1' (1220ppm) 3' (32ppm)
1' (3130 ppm)
1' (510) ppm 3' (19)ppm
1' (1180) ppm 3' (39) ppm
1' (18,900 ppm) 3' (10,000 ppm)
1' (12 ppm) 3' (14 ppm)
1' (31) ppm 3' (70) ppm
1' (3980) ppm 3' (441) ppm
1' (492) ppm 3' (104) ppm
1' (3890 ppm) 3' (25ppm)
1' (524 ppm)
BUILDING NO. 7
1' (9890) ppm 3' (956) ppm
1' (21) ppm 3' (17) ppm
1' (128) ppm 3' (35) ppm
1' (4350 ppm) 3' (14 ppm)
1' (60,400 ppm) 3' (171 ppm)
1' (16 ppm) 3' (14 ppm)
CONCRETE DITCH
1' (82) ppm 3' (18) ppm
1' (14) ppm 3' (13) ppm
1' (30) ppm 3' (22) ppm
AES 5-1' (68,200 ppm)
AES 6-1' (61,400 ppm)
AES 7A (87,200 ppm)
AES 13-2' (446 ppm)
AES 4-2' (11,700 ppm)
LOADING DOCK
AES 10 (187,000 ppm)
AES 11-1' (927 ppm)
1' (2900) ppm 3' (42) ppm
1' (4,200 ppm) 3' (112 ppm)
AES 8 (431 ppm)
1' (1200 ppm) 3' (7000 ppm)
SAMPLED 2/6/89
SAMPLED 2/16/89
AES 3-1' (38,600 ppm)
AES 9 (70,000 ppm)
AES 14 (53 ppm)
AES 12-1' (16 ppm)
A
B
C
D
E
F
G
H
EXISTING DRAINAGE
20
19
18
17
16
15
Applied Engineering Science
SSC/CHEMTECH
EAST POINT, GA.
SAMPLING LOCATIONS

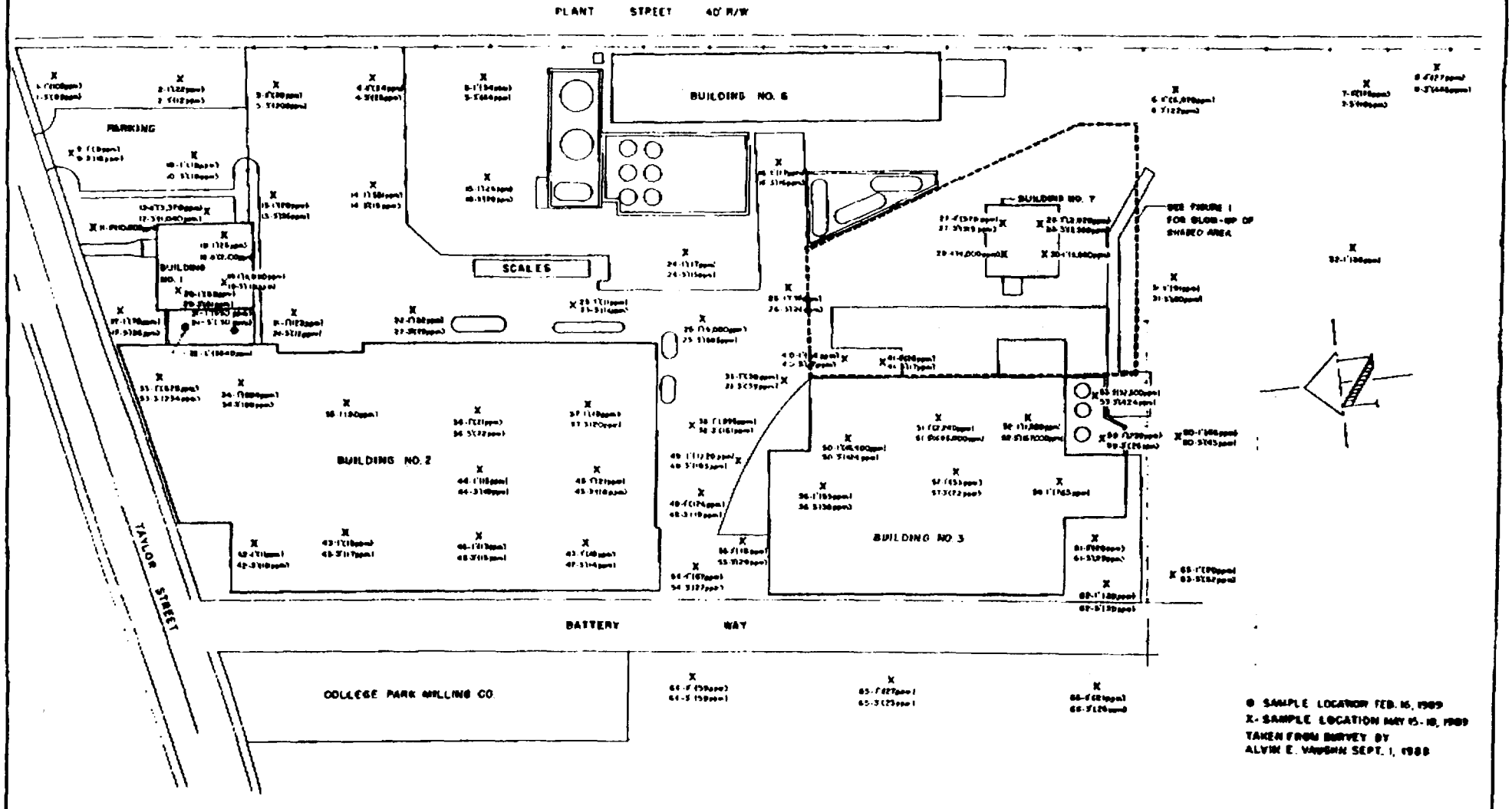


FIGURE 2

Applied Engineering Science	SSC / CHEMTECH EAST POINT, GA	SOIL SAMPLE LOCATIONS	JUNE 1989

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 1 through 14
February 6, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 27, 1989
PROJECT CODE: APE 42827
ORDER NUMBER:
PAGE 1 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/kg (ppm)

	AES #1	AES #2
Lead	553	2,600

MAR 1 1989

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical testing as listed in the current AALA Directory of Accredited Laboratories

93-9-1

OCT-30-1989 15:45 FROM SWIDLEPO TO P.07

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 27, 1989
PROJECT CODE: APE 42827
ORDER NUMBER:
PAGE 2 OF 3

Sample Description: Four (4) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #1	AES #2	AES #3-4	AES #5-4
Lead	0.04	5.6	0.94	0.44

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93-9-6

OCT-30-1989 15:46 FROM SWIDLERO TO P.08

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 27, 1989
PROJECT CODE: APE 42827
ORDER NUMBER:
PAGE 3 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #11-2	AES #14-3
Lead	3.7	0.12

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

6099L

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 10, 1989
PROJECT CODE: APE 42750
ORDER NUMBER
PAGE 1 OF 4

Sample Description: Twenty (20) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #3-1	38,600
AES #3-2	1,520
AES #3-3	57
AES #3-4	452
AES #4-1	2,570
AES #4-2	11,700
AES #5-1	68,200
AES #5-2	4,390
AES #5-3	1,580
AES #5-4	96
AES #6-1	61,400
AES #6-2	5
AES #6-3	211
AES #6-4	4,600
AES #7-1A	87,200
AES #7-4A	645
AES #8-1	58,200
AES #8-2	25,200
AES #8-3	37,700
AES #8-4	5,470

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical

03-0-03

OCT-30-1989 15:46 FROM SWIDLERPO TO P.10

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER:
PAGE 3 OF 4

Sample Description: Seventeen (17) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #3-1	222
AES #3-2	1.7
AES #3-3	1.1
AES #4-1	40.8
AES #4-2	114
AES #5-1	2,900
AES #5-2	69.7
AES #5-3	6.3
AES #6-1	1,210
AES #6-2	53.9
AES #6-3	0.52
AES #7-1A	838
AES #7-4A	0.37
AES #8-1	431
AES #8-2	561
AES #8-3	312
AES #8-4	12.3

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing. Listed in the current AALA Directory of Accredited Laboratories

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 2 OF 4

Sample Description: Fourteen (14) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #9	70,700
AES #10	187,000
AES #11-1	927
AES #11-2	92
AES #11-3	204
AES #12-1	16
AES #12-2	15
AES #12-3	6
AES #13-1	246
AES #13-2	446
AES #13-3	424
AES #14-1	23
AES #14-2	53
AES #14-3	<3

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical

OCT-30-1989 15:47 FROM SWIDLERO TO P.12

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 10, 1989
PROJECT CODE: APE 42750
ORDER NUMBER:
PAGE 4 OF 4

Sample Description: Thirteen (13) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #9	381
AES #10	873
AES #11-1	1.4
AES #11-2	0.36
AES #11-3	0.04
AES #12-1	0.15
AES #12-2	0.04
AES #12-3	0.03
AES #13-1	0.54
AES #13-2	0.12
AES #14-1	0.13
AES #14-2	<0.03
AES #14-3	0.10

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical:

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 15 through 22
February 16, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

MAR 1 0 1989

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED March 8, 1989
PROJECT CODE APE 42826
ORDER NUMBER
PAGE 1 OF 3

Sample Description: Twenty-four (24) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
15 B-1	2,600
15 B-3	42
15 C-1	4,230
15 C-3	112
15 G-1	1,260
15 G-3	7,000
16 A-1	62
16 A-3	18
16 B-1	14
16 B-3	13
16 C-1	30
16 C-3	22
17 A-1	9,590
17 A-3	956
17 B-1	21
17 B-3	17
17 C-1	128
17 C-3	35
17 D-1	4,350
17 D-3	14
17 E-1	60,400
17 E-3	171
17 F-1	39,500
17 F-3	130

Alyce R. Moore
Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

93-9

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: March 8, 1989
PROJECT CODE: APE 42826
ORDER NUMBER:
PAGE 2 OF 3

Sample Description: Twenty-two (22) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
17 G-1	16
17 G-3	14
18 A-1	131
18 A-3	70
18 B-1	3,960
18 B-3	441
18 C-1	492
18 C-3	104
18 D-1	3,890
18 D-3	25
18 F-1	524
18 G-1	12
18 G-3	9
19 B-1	510
19 B-3	18
19 C-1	1,180
19 C-3	39
19 D-1	16,900
19 D-3	10,000
19 E-1	1,220
19 E-3	32
19 F-1	3,130

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical testing fields, as listed in the current AALA Directory of Accredited Laboratories

93-9-1

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: March 8, 1989
PROJECT CODE: APE 42826
ORDER NUMBER:
PAGE 3 OF 3

Sample Description: Six (6) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
20 F	315
20 G	2,170
20 H	2,570
21-1	550
21-3	30
22-1	5,540

Approved by: Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93-9

OCT-30-1989 15:49 FROM SWIDLEPO TO P.17

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 1 through 66
May 15, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 1 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

RECEIVED
JUN 20 1989
[illegible] CORPORATION, INC.

	Total Lead
1-1'	100
1-3'	98
2-1'	22
2-3'	12
3-1'	20
3-3'	209
4-1'	24
4-3'	23
5-1'	34
5-3'	84
6-1'	6,920
6-3'	22
7-1'	178
7-3'	10
8-1'	21
8-3'	488
9-1'	8
9-3'	18
10-1'	19
10-3'	10
11-1'	10,800
12-1'	3,370
12-3'	1,040

Approved by: Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical fields of testing as listed in the current AALA Directory of Accredited Laboratories

83-9

OCT-30-1989 15:49 FROM SWIDLEPO TO P.19

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO: AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 2 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
13-1'	29
13-3'	26
14-1'	551
14-3'	15
15-1'	24
15-3'	28
16-1'	17
16-3'	16
17-1'	78
17-3'	36
21-1'	123
21-3'	12
22-1'	22
22-3'	29
23-1'	11
23-3'	11
24-1'	17
24-3'	15
25-1'	5,000
25-3'	386
26-1'	36
26-3'	26
27-1'	378

Alyce K. Rivers
Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93-6

OCT-30-1989 15:50 FROM SWIDLEPO TO P.20

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43384
ORDER NUMBER: 6099L
PAGE 3 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
27-3'	319
28-1'	3,920
28-3'	7,350
30-1'	3,660
38-1'	895
38-3'	161
39-1'	38
39-3'	39
40-1'	34
40-3'	17
41-1'	25
41-3'	17
48-1'	124
48-3'	18
49-1'	1,120
49-3'	183
52-1'	1,580
52-3'	167,000
53-1'	82,500
53-3'	424
54-1'	67
54-3'	27
55-1'	18

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93-9-

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO: Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43407
ORDER NUMBER:
PAGE 1 OF 3

Sample Description: Twenty-three (23) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

RECEIVED
JUN 19 1989
[illegible] CONSTRUCTION, INC.

	Total Lead
18-1'	25
18-2'	2,100
19-1'	1,990
19-3'	19
20-1'	69
20-3'	81
29-1'	4,000
31-1'	91
31-3'	80
32-1'	28
33-1'	328
33-3'	234
34-1'	604
34-3'	89
35-1'	20
36-1'	21
36-3'	72
37-1'	19
37-3'	20
42-1'	11
42-3'	10
43-1'	15
43-3'	17

Alyce R. Moore
Approved by Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO: Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: June 15, 1989
PROJECT CODE: APE 43407
ORDER NUMBER:
PAGE 2 OF 3

Sample Description: Twenty-three (23) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

	Total Lead
44-1'	12
44-3'	10
45-1'	21
45-3'	18
46-1'	13
46-3'	13
47-1'	18
47-3'	14
50-1'	16,400
50-3'	124
51-1'	2,240
51-3'	698,000
56-1'	55
56-3'	38
57-1'	33
57-3'	22
59-1'	239
59-3'	26
60-1'	66
60-3'	45
61-3'	29
62-1'	28
62-3'	30

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

93-8-6

OCT-30-1989 15:51 FROM SWIDLEPO TO P.24

SSC INDUSTRIES
a division of CHEMTECH

March 28, 1989

Mr. Warren Dixon
Environmental Emergency Branch
U.S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, GA 30308

RE: SSC Industries, East Point, GA

Dear Mr. Dixon:

As requested, enclosed are:

- a map of Southwest Atlanta with our location identified.

- a site map that shows the area that we have thus far tested for lead contaminated soil.

- copies of test results from Law & Company and the International Technology Corporation.

- a map that identifies where the soil samples were taken by AES and the test results from International Technology Corporation. Where you see one number it is from a sample that was taken after coring one foot and, where you see two numbers, the lower number is after coring three feet. All numbers shown are total lead.

We have contracted with MKC Corporation for the bulking, transporting and disposal in the Alabama landfill of the lead contaminated soil that we previously excavated - estimated to be 25 to 40 cubic yards.

Applied Engineering Science (AES) are now preparing a testing pattern for our site, including testing under the concrete in our buildings and the paved areas on our site, to determine the extent of contamination.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

We will keep you appraised of our activity and we will appreciate any comments that you provide.

Sincerely,

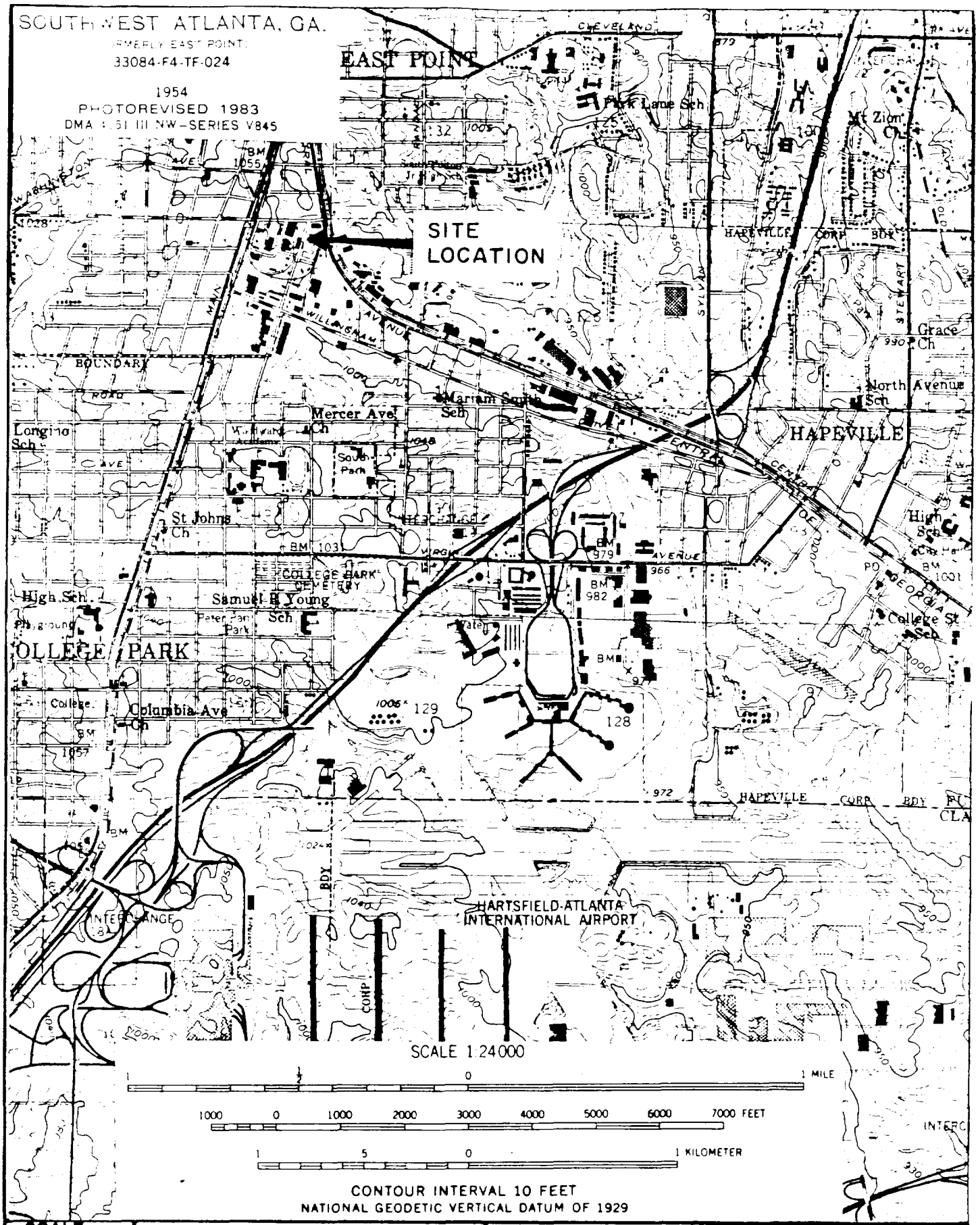
J. Dwight Bell, Jr.
Vice President - General Manager
SSC Industries - a Division of Chemtech

/jlr

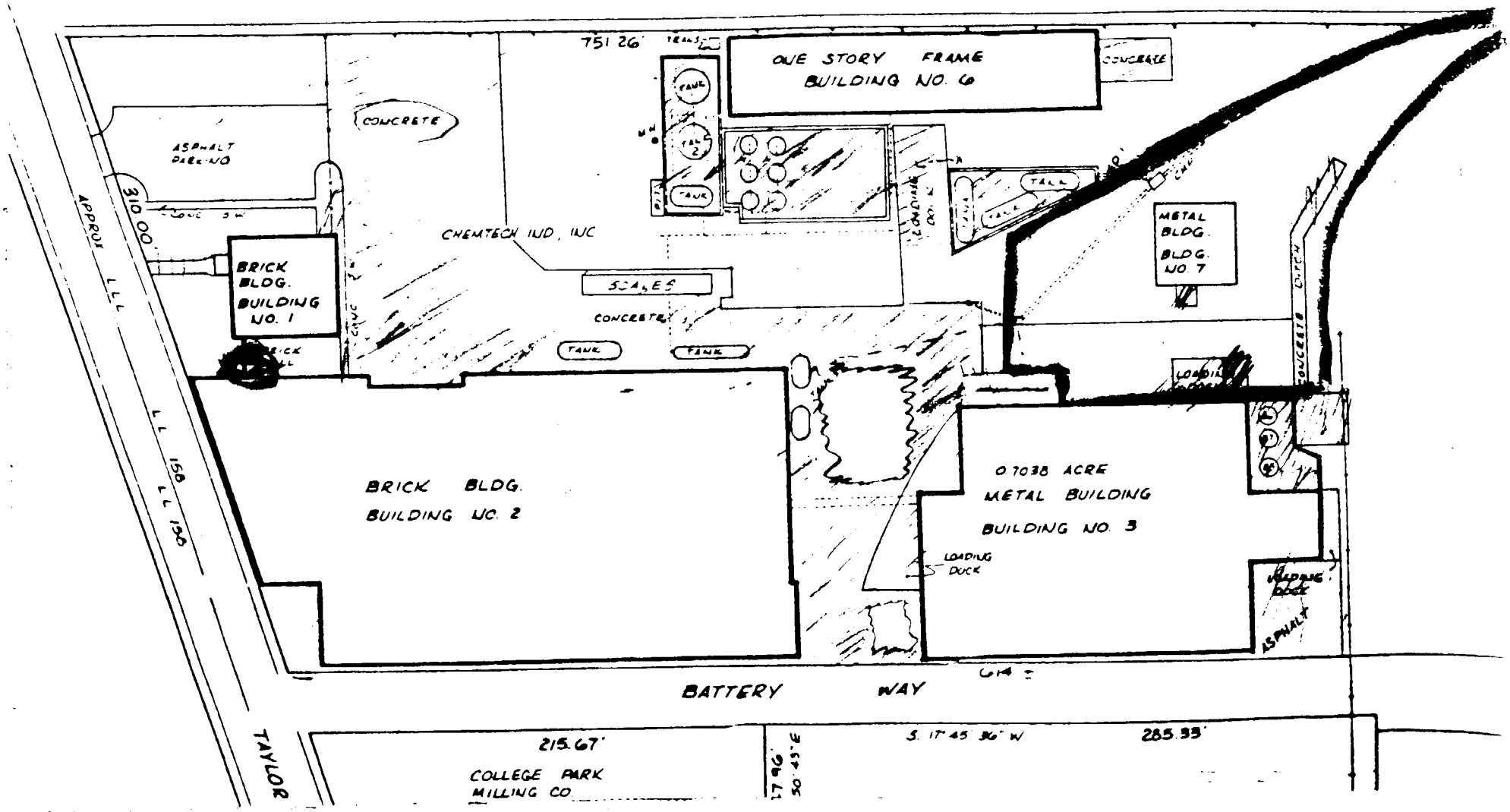
Encl:

cc: Mr. Mario Villamarzo, Jr. - U.S. EPA (w/o attach)

Mr. John Taylor (w/attach)
Branch Chief-Land Protection Branch
Georgia Environmental Protection Division
205 Butler Street
Atlanta, GA 30344



SCALE AS NOTED	Applied Engineering & Science	SITE LOCATION MAP SSC INDUSTRIES EAST POINT, GA	DATE MAR 1989
DWN. BY TER			DWG. NO. 6099
CHK'D. BY JTS			SHEET NO.
APPR. BY JTS			


PLANT STREET (F.K.A. MILLER ST. & SPRING ST.)
40' R/W
751.26'
ONE STORY FRAME BUILDING NO. 6
CONCRETE
ASPHALT PARKING
CONCRETE
310.00'
APPROX L.L.L.
BRICK BLDG. BUILDING NO. 1
CHEMTECH IND., INC
SCALES
CONCRETE
TANK
TANK
TANK
TANK
TANK
TANK
METAL BLDG. BLDG. NO. 7
CONCRETE DITCH
BRICK BLDG. BUILDING NO. 2
0.7038 ACRE METAL BUILDING BUILDING NO. 3
LOADING DOCK
LOADING DOCK
ASPHALT
614 ±
BATTERY WAY
TAYLOR
215.67'
COLLEGE PARK MILLING CO.
S. 17°45'36" W
285.33'

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
[illegible] MONTREAL CIRCLE
TUCKER, GEORGIA [illegible]
[illegible] 934-[illegible]

Chemical Report

12/30/88

Number: 907463-73

Received: 12/19

34030
MKC Enterprises
5856 New Peachtree Road
Doraville, GA 30340

Description: 10 Soil Samples, 12/19, 1 Water Sample

	Oil and Grease (mg/l)
#1 Defoamer Tanks[1]	3,000
#2 Oil drum near flammable storage[1]	17,500
#3 on/off site, stream sediment[1]	9,300
#4 excavated from near building 3[1]	56
#5 Soil mound near building 3[1]	430
#6 Soil mound near building 3[1]	1,600
#7 Soil mound near building 3[1]	750
#8 Soil mound by building 3[1]	5,700
#9 Building 3 loading dock[1]	5,200
#10 R&D parking lot[1]	6,400
Water, #3L on/off site stream liquid	320

[1]EPA Method 413.2 was modified for soils.

*****

Respectfully submitted,
LAW & COMPANY

BY Thomas E. Fanty

6 38500ej

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
[illegible] MONTREAL CIRCLE
TUCKER, GEORGIA [illegible]
([illegible]) [illegible]-[illegible]

Chemical Report

1/6/89

3

Number 907463-72AT

Received:

34030
MKC Enterprises
5856 New Peachtree Road
Doraville, GA 30340

escription: Composite of 10 soil samples

Flash Point (Pensky-Martens) ..... >200°F
pH 6.4

The material was extracted and analyzed using the procedure in the code of Federal regulations, Title 40, part 261, (40 CFR 261). The analysis of the extraction procedure is as follows:

	Results (mg/l)
Arsenic (As)	<0.05
Barium (Ba)	<1.0
Cadmium (Cd)	0.13
Chromium (Cr)	<0.05
Lead (Pb)	120
Mercury (Hg)	<0.002
Selenium (Se)	<0.01
Silver (Ag)	<0.05

According to the methods and procedures set out by the Environmental Protection Agency in the Code of Federal Regulations, Title 40, part 261
(40 CFR 261):

This material is not considered ignitable.
This material is not considered corrosive.
This material is not considered reactive.
This material is considered toxic according to the extraction procedure.

*****

Respectfully submitted,
LAW & COMPANY

By Thomas E. Fanty

5 9000ej

"LAC
Re, Contaminated Soil

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
[illegible] MONTREAL CIRCLE
TUCKER, GEORGIA 30084
[illegible] 934-0300

Chemical Report

1/18/89

(3)

Number: 907463-72AT

Received: 1/6

34030
Mr. Mike Hodgson
MKC Enterprises
5856 New Peachtree Road
Doraville, GA 30340

Description: 10 Soil Samples

#		Lead (Pb) (mg/l)
1	907463AT	1.15
2	907464AT	0.19
3	907465AT	1.30
4*	907466AT	16.9*
5*	907467AT	85.6*
6*	907468AT	150*
7*	907469AT	63.4*
8*	907470AT	8.33*
9	907471AT	0.21
10	907472AT	0.10

*These soils are considered toxic according to the Extraction Procedure in the Code of Federal Regulations, Title 40, part 261, (40 CFR 261). All others are not considered toxic according to extraction procedure.

*****

Respectfully submitted,
LAW & COMPANY

BY Thomas E. Fanty

5 40000ej

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 1 OF 4

Sample Description: Twenty (20) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #3-1	38,600
AES #3-2	1,520
AES #3-3	57
AES #3-4	452
AES #4-1	2,570
AES #4-2	11,700
AES #5-1	68,200
AES #5-2	4,390
AES #5-3	1,580
AES #5-4	96
AES #6-1	61,400
AES #6-2	5
AES #6-3	211
AES #6-4	4,600
AES #7-1A	87,200
AES #7-4A	645
AES #8-1	58,200
AES #8-2	25,200
AES #8-3	37,700
AES #8-4	5,470

Approved by Alyce L. Moore
Laboratory Manager

Title

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 2 OF 4

Sample Description: Fourteen (14) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #9	70,700
AES #10	187,000
AES #11-1	927
AES #11-2	92
AES #11-3	204
AES #12-1	16
AES #12-2	15
AES #12-3	6
AES #13-1	246
AES #13-2	446
AES #13-3	424
AES #14-1	23
AES #14-2	53
AES #14-3	<3

Alyce L. Moore
Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

03-9-85

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 3 OF 4

Sample Description: Seventeen (17) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #3-1	222
AES #3-2	1.7
AES #3-3	1.1
AES #4-1	40.8
AES #4-2	114
AES #5-1	2,900
AES #5-2	69.7
AES #5-3	6.3
AES #6-1	1,210
AES #6-2	53.9
AES #6-3	0.52
AES #7-1A	838
AES #7-4A	0.37
AES #8-1	431
AES #8-2	561
AES #8-3	312
AES #8-4	12.3

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 4 OF 4

Sample Description: Thirteen (13) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #9	381
AES #10	873
AES #11-1	1.4
AES #11-2	0.36
AES #11-3	0.04
AES #12-1	0.15
AES #12-2	0.04
AES #12-3	0.03
AES #13-1	0.54
AES #13-2	0.12
AES #14-1	0.13
AES #14-2	<0.03
AES #14-3	0.10

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

6099L

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 27, 1989
PROJECT CODE APE 42827
ORDER NUMBER
PAGE 1 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/kg (ppm) "Total Lead"

	AES #1	AES #2
Lead	553	2,600

RECEIVED
MAR 1 1989
[illegible] CONSTRUCTION, INC.

Alyce L. Moore
Approved by Laboratory Manager

Title

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 27, 1989
PROJECT CODE: APE 42827
ORDER NUMBER:
PAGE 2 OF 3

Sample Description: Four (4) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #1	AES #2	AES #3-4	AES #5-4
Lead	0.04	5.6	0.94	0.44

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Alyce L. Moore
Approved by Laboratory Manager

Title

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 27, 1989
PROJECT CODE APE 42827
ORDER NUMBER
PAGE 3 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #11-2	AES #14-3
Lead	3.7	0.12

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Alyce K. Moore
Approved by Laboratory Manager

Title

A 11/30/89 —

Ms Anne Asbell

Bill - will you handle?

Would you ask one of the attorney to Please look this Correspondence from SCC. Industries to see if they can claim this information is Confidential

Already
f
11/30

Should you have any questions please call me at 347 5065

Janice P Thomas

Nothing in the 11/3/89 letter or attachments may validly be claimed as confidential.
Bill Phillips 11/30/89

SSC INDUSTRIES
CHEMTECH

~~PRIVILEGED AND CONFIDENTIAL~~ Approved Not Confidential 11-30-89 By ORC

November 3, 1989

Mr. Jonathan F. Hughes
Project Manager
NUS Corporation
1927 Lakeside Parkway
Suite 614
Tucker, GA 30064

RE: SSC Industries, Inc. (SSC) Facility in East Point, GA

Dear Mr. Hughes:

This letter is in response to your correspondence of September 25, 1989, and recent phone conversations concerning the technical work that has been conducted on the above-referenced property. As you know, during routine testing for soil disposal after a small oil spill, SSC discovered that elevated levels of lead were present on the property. Upon discovery of these results, SSC retained the consulting firm Applied Engineering and Science (AES) to conduct further sampling at the facility.

AES gathered additional samples onsite using a grid system spreading out from the source where the original soil samples were taken. These samples were analyzed by IT Corporation's laboratory in Knoxville, Tennessee. The results of this further work are attached for your review.

SSC does not use lead or lead compounds in any of its processes. Thus, the company has investigated the source of the lead on the property and found that, prior to 1968, the property was owned and operated by Gould, Inc. (Gould). Gould apparently operated an automotive battery manufacturing and storage facility for a number of years at the site, a fact confirmed by the presence of numerous battery caps and casings found near sampling points where lead was detected.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

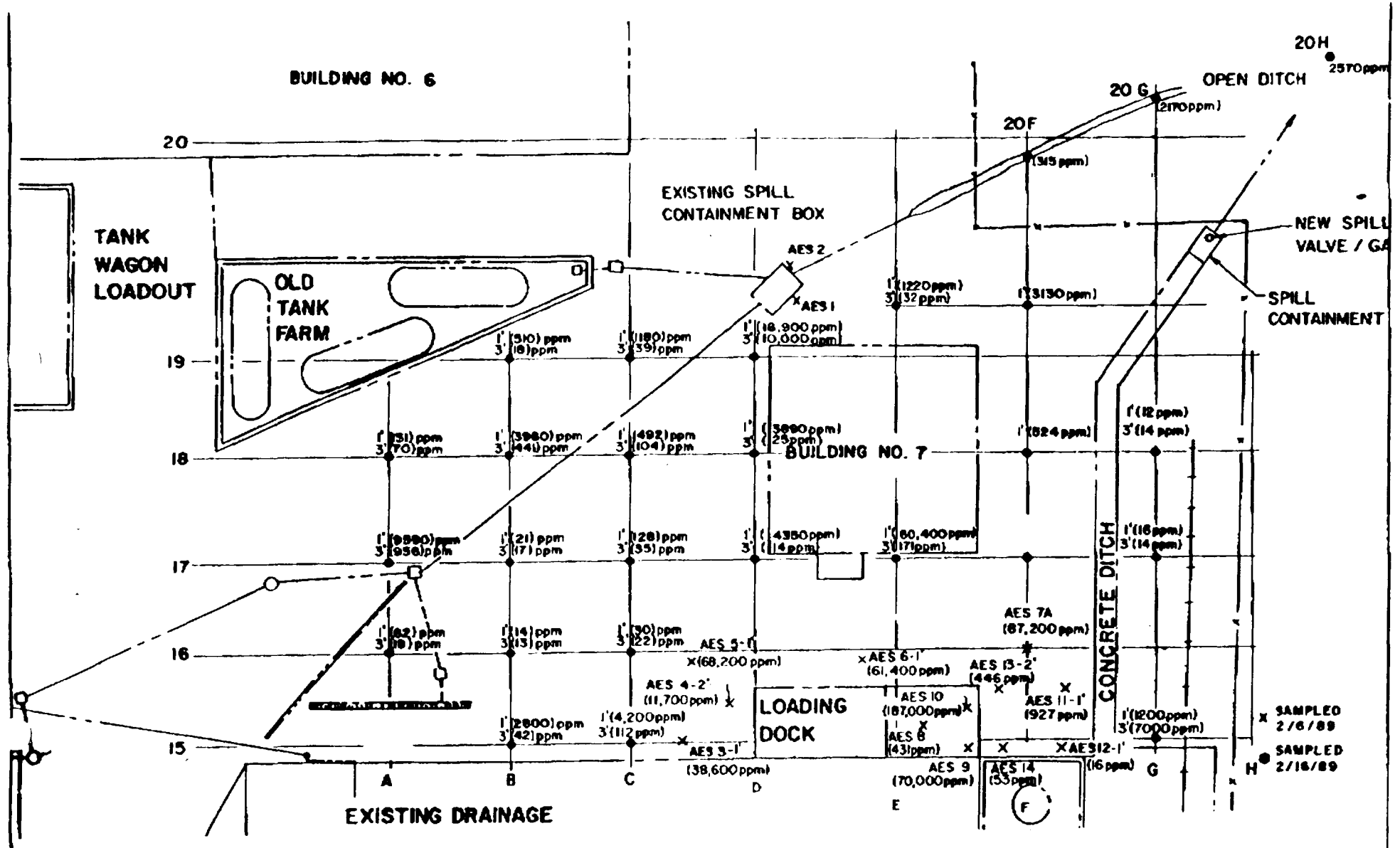
SSC is currently negotiating with Gould to have Gould conduct a cleanup at the facility. Meanwhile, SSC is conducting additional investigatory work so that an appropriate remedial alternative can be selected shortly. We will provide further reports to you and EPA as they become available. In addition, SSC will consult with EPA before a final remedial option is chosen.

Sincerely,

J. Dwight Bell, Jr.
Vice President - General Manager

/jlr

Attach:


BUILDING NO. 6
TANK WAGON LOADOUT
OLD TANK FARM
EXISTING SPILL CONTAINMENT BOX
AES 2
AES 1
20H
2570ppm
OPEN DITCH
20 G
(2170ppm)
20F
(345 ppm)
NEW SPILL VALVE / GA
SPILL CONTAINMENT
1'(1220ppm) 3'(32 ppm)
1'(3130ppm)
1'(510) ppm 3'(18)ppm
1'(180)ppm 3'(39)ppm
1'(18,900 ppm) 3'(10,000 ppm)
1'(31) ppm 3'(70) ppm
1'(3980) ppm 3'(441) ppm
1'(492) ppm 3'(104) ppm
1'(3890ppm) 3'(25ppm)
BUILDING NO. 7
1'(824 ppm)
1'(12 ppm) 3'(14 ppm)
1'(9590) ppm 3'(956) ppm
1'(21) ppm 3'(17) ppm
1'(128) ppm 3'(35) ppm
1'(4350ppm) 3'(14 ppm)
1'(60,400ppm) 3'(171ppm)
1'(16ppm) 3'(14 ppm)
CONCRETE DITCH
AES 7A (87,200 ppm)
1'(62) ppm 3'(18) ppm
1'(14) ppm 3'(13) ppm
1'(30) ppm 3'(22) ppm
AES 5-1' (68,200 ppm)
AES 6-1' (61,400 ppm)
AES 13-2' (446 ppm)
AES 4-2' (11,700 ppm)
LOADING DOCK
AES 10 (187,000ppm)
AES 11-1' (927 ppm)
1'(1200ppm) 3'(7000ppm)
SAMPLED 2/6/89
SAMPLED 2/16/89
1'(2800) ppm 3'(42) ppm
1'(4,200ppm) 3'(112 ppm)
AES 3-1' (38,600 ppm)
AES 8 (431ppm)
AES 12-1' (16 ppm)
AES 9 (70,000ppm)
AES 14 (53 ppm)
20
19
18
17
16
15
A
B
C
D
E
F
G
H
EXISTING DRAINAGE
Applied Engineering & Science
SSC/CHEMTECH
EAST POINT, GA.
SAMPLING LOCATIONS

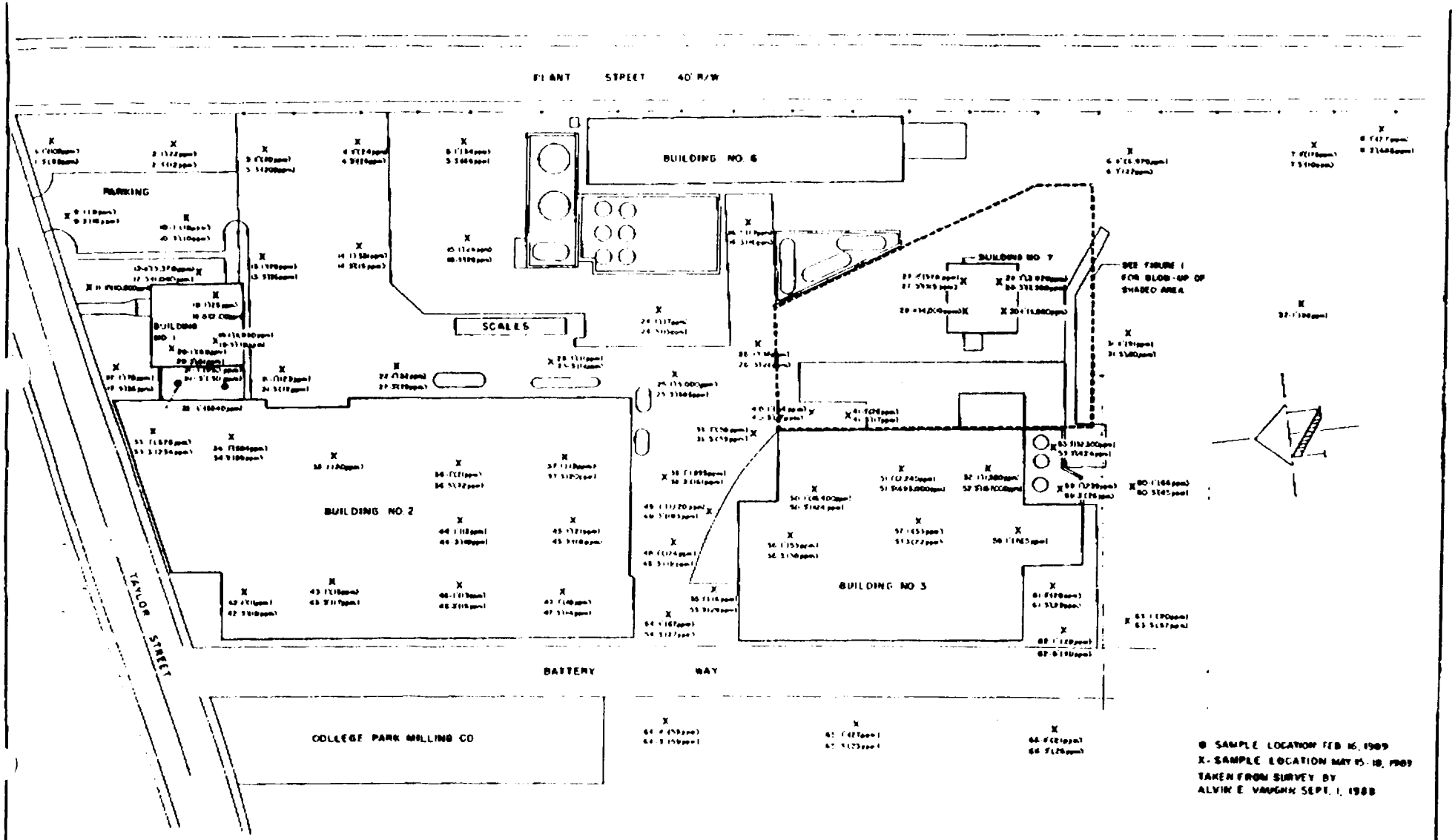


FIGURE 2

SCALE 1" = 25'	REVISION DESCRIPTION	REVISION DESCRIPTION	Applied Engineering Science	SSC/CHEMTECH EAST POINT, GA	SOIL SAMPLE LOCATIONS
DATE JUNE 1989					

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 1 through 14
February 6, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 27, 1989
PROJECT CODE APE 42827
ORDER NUMBER
PAGE 1 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/kg (ppm)

	AES #1	AES #2
Lead	553	2,600

MAR 1 1989
CHAMER CONSTRUCTION, INC.

Alyce R. Moore
Approved by Laboratory Manager

Title

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 27, 1989
PROJECT CODE APE 42827
ORDER NUMBER
PAGE 2 OF 3

Sample Description: Four (4) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #1	AES #2	AES #3-4	AES #5-4
Lead	0.04	5.6	0.94	0.44

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 27, 1989
PROJECT CODE APE 42827
ORDER NUMBER
PAGE 3 OF 3

Sample Description: Two (2) soil samples received February 8, 1989

Concentration units are mg/liter (ppm) in the extract

	AES #11-2	AES #14-3
Lead	3.7	0.12

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

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6099L

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrock Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED: February 10, 1989
PROJECT CODE: APE 42750
ORDER NUMBER:
PAGE 1 OF 4

Sample Description: Twenty (20) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #3-1	38,600
AES #3-2	1,520
AES #3-3	57
AES #3-4	452
AES #4-1	2,570
AES #4-2	11,700
AES #5-1	68,200
AES #5-2	4,390
AES #5-3	1,580
AES #5-4	96
AES #6-1	61,400
AES #6-2	5
AES #6-3	211
AES #6-4	4,600
AES #7-1A	87,200
AES #7-4A	645
AES #8-1	58,200
AES #8-2	25,200
AES #8-3	37,700
AES #8-4	5,470

Approved by Laboratory Manager

Title

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 3 OF 4

Sample Description: Seventeen (17) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #3-1	222
AES #3-2	1.7
AES #3-3	1.1
AES #4-1	40.8
AES #4-2	114
AES #5-1	2,900
AES #5-2	69.7
AES #5-3	6.3
AES #6-1	1,210
AES #6-2	53.9
AES #6-3	0.52
AES #7-1A	838
AES #7-4A	0.37
AES #8-1	431
AES #8-2	661
AES #8-3	312
AES #8-4	12.3

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 2 OF 4

Sample Description: Fourteen (14) soil samples received February 7, 1989

Concentration units are mg/kg (ppm)

	Lead
AES #9	70,700
AES #10	187,000
AES #11-1	927
AES #11-2	92
AES #11-3	204
AES #12-1	16
AES #12-2	15
AES #12-3	6
AES #13-1	246
AES #13-2	446
AES #13-3	424
AES #14-1	23
AES #14-2	53
AES #14-3	<3

Alyce L. Moore
Approved by Laboratory Manager
Title

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ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED February 10, 1989
PROJECT CODE APE 42750
ORDER NUMBER
PAGE 4 OF 4

Sample Description: Thirteen (13) soil samples received February 7, 1989

Concentration units are mg/liter (ppm)

	Lead
AES #9	381
AES #10	873
AES #11-1	1.4
AES #11-2	0.36
AES #11-3	0.04
AES #12-1	0.15
AES #12-2	0.04
AES #12-3	0.03
AES #13-1	0.54
AES #13-2	0.12
AES #14-1	0.13
AES #14-2	<0.03
AES #14-3	0.10

Sample extracted in accordance with "EP Toxicity Test - Extraction Procedure," Federal Register, Vol. 45, No. 98, p. 33127-33128.

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Report
Soil Samples 15 through 22
February 16, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED March 8, 1989
PROJECT CODE APE 42826
ORDER NUMBER
PAGE 1 OF 3

Sample Description: Twenty-four (24) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
15 B-1	2,600
15 B-3	42
15 C-1	4,230
15 C-3	112
15 G-1	1,260
15 G-3	7,000
16 A-1	62
16 A-3	18
16 B-1	14
16 B-3	13
16 C-1	30
16 C-3	22
17 A-1	9,590
17 A-3	956
17 B-1	21
17 B-3	17
17 C-1	128
17 C-3	35
17 D-1	4,350
17 D-3	14
17 E-1	60,400
17 E-3	171
17 F-1	39,500
17 F-3	130

Alyce R. Moore

Approved by Laboratory Manager

Title

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED March 8, 1989
PROJECT CODE APE 42826
ORDER NUMBER
PAGE 2 OF 3

Sample Description: Twenty-two (22) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
17 G-1	16
17 G-3	14
18 A-1	131
18 A-3	70
18 B-1	3,960
18 B-3	441
18 C-1	492
18 C-3	104
18 D-1	3,890
18 D-3	25
18 F-1	524
18 G-1	12
18 G-3	9
19 B-1	510
19 B-3	18
19 C-1	1,180
19 C-3	39
19 D-1	16,900
19 D-3	10,000
19 E-1	1,220
19 E-3	32
19 F-1	3,130

Approved by Laboratory Manager

Title

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: Joe Surowiec
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED March 8, 1989
PROJECT CODE APE 42826
ORDER NUMBER
PAGE 3 OF 3

Sample Description: Six (6) soil samples received February 17, 1989

Concentration units are mg/kg (ppm)

	Lead
20 F	315
20 G	2,170
20 H	2,570
21-1	550
21-3	30
22-1	5,540

Approved by: Laboratory Manager

Title

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93-9

INTERNATIONAL TECHNOLOGY
CORPORATION

Analytical Report
Soil Samples 1 through 66
May 15, 1989

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED June 15, 1989
PROJECT CODE APE 43384
ORDER NUMBER 6099L
PAGE 1 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

RECEIVED
JUN 20 1989
[illegible] CONSTRUCTION, INC.

	Total Lead
1-1'	100
1-3'	98
2-1'	22
2-3'	12
3-1'	20
3-3'	209
4-1'	24
4-3'	23
5-1'	34
5-3'	84
6-1'	6,920
6-3'	22
7-1'	178
7-3'	10
8-1'	21
8-3'	488
9-1'	8
9-3'	18
10-1'	19
10-3'	10
11-1'	10,800
12-1'	3,370
12-3'	1,040

Alyce L. Moore
Approved by Laboratory Manager

Title

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ANALYTICAL SERVICES

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

CERTIFICATE OF ANALYSIS

TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED June 15, 1989
PROJECT CODE APE 43384
ORDER NUMBER 6099L
PAGE 2 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
13-1'	29
13-3'	26
14-1'	551
14-3'	15
15-1'	24
15-3'	28
16-1'	17
16-3'	16
17-1'	78
17-3'	36
21-1'	123
21-3'	12
22-1'	22
22-3'	29
23-1'	11
23-3'	11
24-1'	17
24-3'	15
25-1'	5,000
25-3'	386
26-1'	36
26-3'	26
27-1'	378

Alyce K. Miller
Approved by Laboratory Manager

Title

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO AES
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED June 15, 1989
PROJECT CODE APE 43384
ORDER NUMBER 6099L
PAGE 3 OF 4

Sample Description: Twenty-three (23) soil samples received May 18, 1989

Concentration units are mg/kg (ppm)

	Total Lead
27-3'	319
28-1'	3,920
28-3'	7,350
30-1'	3,660
38-1'	895
38-3'	161
39-1'	38
39-3'	39
40-1'	34
40-3'	17
41-1'	25
41-3'	17
48-1'	124
48-3'	18
49-1'	1,120
49-3'	183
52-1'	1,580
52-3'	167,000
53-1'	82,500
53-3'	424
54-1'	67
54-3'	27
55-1'	18

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO: Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED June 15, 1989
PROJECT CODE APE 43407
ORDER NUMBER
PAGE 1 OF 3

Sample Description: Twenty-three (23) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

RECEIVED
JUN 19 1989
[illegible] CONSTRUCTION INC.

	Total Lead
18-1'	25
18-2'	2,100
19-1'	1,990
19-3'	19
20-1'	69
20-3'	81
29-1'	4,000
31-1'	91
31-3'	80
32-1'	28
33-1'	328
33-3'	234
34-1'	604
34-3'	89
35-1'	20
36-1'	21
36-3'	72
37-1'	19
37-3'	20
42-1'	11
42-3'	10
43-1'	15
43-3'	17

Alyce R. Moore
Approved by ✓ Laboratory Manager

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ANALYTICAL SERVICES

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TO Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED June 15, 1989
PROJECT CODE APE 43407
ORDER NUMBER
PAGE 2 OF 3

Sample Description: Twenty-three (23) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

	Total Lead
44-1'	12
44-3'	10
45-1'	21
45-3'	18
46-1'	13
46-3'	13
47-1'	18
47-3'	14
50-1'	16,400
50-3'	124
51-1'	2,240
51-3'	698,000
56-1'	55
56-3'	38
57-1'	33
57-3'	22
59-1'	239
59-3'	26
60-1'	66
60-3'	45
61-3'	29
62-1'	28
62-3'	30

Approved by Laboratory Manager

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ANALYTICAL SERVICES

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TO Applied Engineering and Science
ATTN: LaDonna Manning
5404 Peachtree Rd.
Chamblee, GA 30341

DATE REPORTED June 15, 1989
PROJECT CODE APE 43407
ORDER NUMBER
PAGE 3 OF 3

Sample Description: Eight (8) soil samples received May 20, 1989

Concentration units are mg/kg (ppm)

	Total Lead
63-1'	20
63-3'	52
64-1'	59
64-3'	59
65-1'	27
65-3'	23
66-1'	21
66-3'	25

Approved by Laboratory Manager

Title

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SSC INDUSTRIES
a division of CHEMTECH

March 28, 1989

Mr. Warren Dixon
Environmental Emergency Branch
U.S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, GA 30308

RE: SSC Industries, East Point, GA

Dear Mr. Dixon:

As requested, enclosed are:

- a map of Southwest Atlanta with our location identified.

- a site map that shows the area that we have thus far tested for lead contaminated soil.

- copies of test results from Law & Company and the International Technology Corporation.

- a map that identifies where the soil samples were taken by AES and the test results from International Technology Corporation. Where you see one number it is from a sample that was taken after coring one foot and, where you see two numbers, the lower number is after coring three feet. All numbers shown are total lead.

We have contracted with MKC Corporation for the bulking, transporting and disposal in the Alabama landfill of the lead contaminated soil that we previously excavated - estimated to be 25 to 40 cubic yards.

Applied Engineering Science (AES) are now preparing a testing pattern for our site, including testing under the concrete in our buildings and the paved areas on our site, to determine the extent of contamination.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

We will keep you appraised of our activity and we will appreciate any comments that you provide.

Sincerely,

J. Dwight Bell, Jr.

J. Dwight Bell, Jr.
Vice President - General Manager
SSC Industries - a Division of Chemtech

/jlr

Encl:

cc: Mr. Mario Villamarzo, Jr. - U.S. EPA (w/o attach)

Mr. John Taylor (w/attach)
Branch Chief-Land Protection Branch
Georgia Environmental Protection Division
205 Butler Street
Atlanta, GA 30344

SSC INDUSTRIES
CHEMTECH

March 16, 1989

Mr. Mario Villamarzo, Jr.
Emergency Response and Control Section
U.S. Environmental Protection Agency
345 Courtland Street
Atlanta, GA 30365

RE: SSC Industries, East Point, GA

Dear Mr. Villamarzo:

Please be advised that SSC Industries, located at 1550 East Taylor Street, East Point, Georgia, 30344 wishes to report the presence of an undetermined volume of surface and subsurface soils on our property contaminated with lead. The present owner of the property, SSC Industries, has not contributed in any way to this condition and is currently investigating the responsibility of prior owners and operators.

We have retained the services of Applied Engineering and Science, Inc., ("AES") an Atlanta based consulting firm experienced in hazardous waste management, to fully investigate both the vertical and horizontal extent of lead contamination on our property. These studies are presently underway. It is the opinion of AES that the presence of lead does not present a safety hazard to our employees or to the surrounding residents.

The presence of the lead in the soil was discovered when SSC Industries was in the process of excavating soil on its property. The soil was tested prior to disposal and the lead was discovered. This soil is presently secured on our property. We are at this time receiving proposals from several contractors for the proper transportation and disposal of this material in a secured, permitted, hazardous waste landfill.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

ENVIRONMENTAL PROTECTION DIVISION
SOLID WASTE MANAGEMENT SECTION
ACTION REPORT

Reference No. 6

1-4-80

FACILITY ID	REGION	COUNTY	HOURS	REVIEWED BY	COD
	North 4	Fulton 060	4	HK	

FACILITY NAME Southern Sizing Company

ADDRESS Box 90987 CITY East Point ZIP 30344

PERSON(S) CONTACTED Jack Westberry TITLE Plant Engineer

TRIP BY Jennifer Kaduck ACCOMPANIED BY none

INVESTIGATION DATE 11-16-79 FOLLOW-UP DATE 3-1-80

REFERENCE Request by Rylander to evaluate landfilled liquid waste

PROGRAM ACTIVITY Inspection & Compliance - Industrial (03)

ACTIONS	FINDINGS/DECISIONS	NEXT ACTIONS
Office Meeting 43	Insufficient Info 85	Review Plans 42
Facility requested to submit plans 40		Telephone call 44

COMMENTS, CONCLUSIONS, AND RECOMMENDATIONS:

1. O. E. Rylander reported this facility has been his customer for hauling 1,000 gal/2 weeks of liquid wastes containing oils, fats, and greases. Previously, the waste has been disp of in Rolling Hills SLF, but has been rejected as of November 30, 1979.

2. Meeting with Mr. Westberry of SSC revealed the company plans to work off most of this liq waste and store "non-work-off" portions in a 4500 gal storage tank. The liquid waste con sists of long chain hydrocarbons, fatty acids, fatty esters, polyethylene, and surfactants in water which is generated by reactor washdowns. SSC manufactures textile and paper pro cessing chemicals and foam control agents ~~in a~~ through blending and cooking in several reactors on site.

3. I explained to Mr. Westberry that continuous disposal of liquid wastes at local SLF's was becoming increasingly difficult and SSC needed to

CONCLUSIONS AND RECOMMENDATIONS CONT.

He indicated that the facility will try a combination of work-off, H_2O removal, sewer discharge, and incineration in their #2 fuel oil boiler. He reported that he will contact this office prior to any future land disposal so the waste can be analyzed and classified as hazardous or non-hazardous.

CONCLUSIONS:

SSC is attempting to discontinue land disposal of this liquid waste.

RECOMMENDATIONS: Review SSC's final solution upon receipt. Telephone Mr. Westberry by 3-1-80 to monitor disposal activities.

ENVIRONMENTAL PROTECTION DIVIS
SOLID WASTE MANAGEMENT SECTION
ACTION REPORT

11-26-80 Reference No. 7

FACILITY ID	REGION	COUNTY	HOURS	REVIEWED BY	CODE
	North 4	Fulton 060	1	HB	

FACILITY NAME Southern Sizing Co.

ADDRESS Box 90987 CITY East Point ZIP 30344

PERSON(S) CONTACTED Jack Westberry TITLE Plant Engineer

762-9651

TRIP BY Telecom by Jennifer Kaduck JLK ACCOMPANIED BY

INVESTIGATION DATE 11-14-80 FOLLOW-UP DATE 12-14-80

REFERENCE AR dated 11-16-79

PROGRAM ACTIVITY Inspection and Compliance - Industrial (03)

ACTIONS	FINDINGS/DECISIONS	NEXT ACTIONS
elephone Call 44	Insufficient info 85	Review plans 42
	Request further info 41	

COMMENTS, CONCLUSIONS, AND RECOMMENDATIONS:

1. Rylander continues to haul SSC's liquid waste from their oil-water separator to Crymes SLF both Rylander and Crymes wish to know classification of this material.
2. Mr. Westberry said SSC has notified EPA as a hazardous waste generator "just to make sure" although he claims the material is non-hazardous under the new regulations.
3. I requested Mr. Westberry be letter to send copies of their EPA Notification form, chemica analyses for pH, % solids, FP, Phenolics, and EP Toxicity, and lists of E or F list chemic used in their processes.

CONCLUSIONS: Generator claims the material is non-hazardous but this should be confirmed by analysis and production records. We may want to classify the material as a "Special Waste" un the Georgia SWMA if it contains toxic materials presently not covered by RCRA Part 261.

RECOMMENDATIONS: Review data upon receipt & classify waste.

Reference No. 8

Department of Natural Resources

ENVIRONMENTAL PROTECTION DIVISION
270 WASHINGTON STREET S.W.
ATLANTA, GEORGIA 30334

JOE D. TANNER
Commissioner

J. LEONARD LEDBETTER
Division Director

October 20, 1983

Mr. Jack Westbury
Southern Sizing Company
Post Office Box 90987
East Point, Georgia 30364

Dear Mr. Westbury:

This letter references our telephone conversation of October 5, 1983, and the improper disposal of 300 fifty-five gallon drums of homogenated animal fat in Meriwether County.

The method by which these wastes have been placed on this site constitutes "open dumping" as defined in Section .01, paragraph (q) of Georgia's Rules and Regulations for Solid Waste Management. Further, under Section .04, paragraph (4)(c), of the Rules, open dumping is listed as a prohibited act and is consequently a violation of Section 7 of the Solid Waste Management Act.

In an effort to absolve the violation referenced above, this office is requiring that you submit for approval of the Director, a written plan by November 21, 1983, delineating the following:

1. An inventory of the wastes on site to include the name and quantity of each;

2. Disposal plans of non-hazardous wastes in a permitted sanitary landfill;

3. Date for completing all clean-up operations.

Upon approval of the plan by this Division, a staff member will contact you for arrangements to conduct a follow-up inspection.

If you have questions or desire any assistance, please contact Ms. Gwendolyn Glass at (404) 656-7802.

Sincerely,

Howard Bamford

for John D. Taylor, Jr.
Program Manager
Industrial & Hazardous Waste
Management Program

JDT:gg:rw
Enclosures
cc: Meriwether County File
Mr. James Smith

Reference No. 9

SSC INDUSTRIES
CHEMTECH

RECEIVED

FEB 13 1986

AND PROTECTION BRANCH

February 12, 1986

Mr. Terrell C. Rooks
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
270 Washington Street, S.W.
Atlanta, GA 30334

Dear Mr. Rooks:

This correspondence will summarize our knowledge of a spill event detected at our East Point facility on Friday, February 7, 1986.

At approximately 3:00 P.M. on Friday, I was contacted by Mr. Homer Jones of the East Point Inspection Department to discuss a white substance exiting our property to the southeast. He and I went out and examined the liquid and determined that it was, indeed, originating from SSC and was obviously a surfactant type material that was mixing with water to yield the white appearance. We immediately prevented the flow and began clean-up procedures, emptying the liquid content from the storm drainage system. In pumping out an oil separation unit that we have placed in the drainage line, it was apparent that a high percentage of surfactant was contained therein. This was also properly emptied and disposed of.

To this point, we have had no one acknowledge that a spill occurred at our facility; however, the evidence indicates that at some time a spill did occur and that the spilled surfactant was allowed to enter the storm drainage system. We have again spoken with each of our employees and stressed the seriousness of such an event. They have been reminded that in the event of a spill, the proper procedure is to contain the spill and to get up the material, minimizing the entrance of any of the spilled material into any drainage system.

1550 E. TAYLOR • ATLANTA, GA • 30344 • (404) 762-9651

If we acquire any additional information regarding this spill, we will so inform you and should you have additional questions, please contact us.

Sincerely,

Jack G. Westberry
Vice President - Operations

JGW/jm
cc: Mr. Dwight Bell
Mr. Art Goldmann

Georgia Department of Natural Resources
205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334
J. Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division

Reference No. 10

May 31, 1988

Mr. Terry Stewart
[redacted] Industries Inc.
Post Office Box 90987
East Point, Georgia 30344

Re: GAD003284049
~~1530~~ East Taylor Avenue
1550

Dear Mr. Stewart:

Your recent notification of changes in facility information obtained from the Georgia Biennial report form has been processed. The Hazardous Waste Management data files are updated for the above referenced facility(ies) to cover items indicated here under:

/_/ Change of corporate name.

/_/ Change of address:
[ ] Mail address
[ ] Location address - requiring subsequent notification

/_/ Change of ownership:

/X/ Change of facility contact.

/_/ Change in waste streams.

/X/ Change of generator status:
[ ] Generator
[X] SQG
[ ] Conditionally Exempt SQG
[ ] Non-Generator

/_/ Facility has been closed.

Your interest in protecting Georgia's environment is appreciated.

Sincerely,

Sue Matzuras

Sue Matzuras
Environmental Specialist
Hazardous Waste Management Program

SM:mcw(2081R)(006)

Ground Water of the Piedmont and Blue Ridge Provinces in the Southeastern States

By H. E. LeGrand

GEOLOGICAL SURVEY CIRCULAR 538

Washington 1967

Reference No. 11

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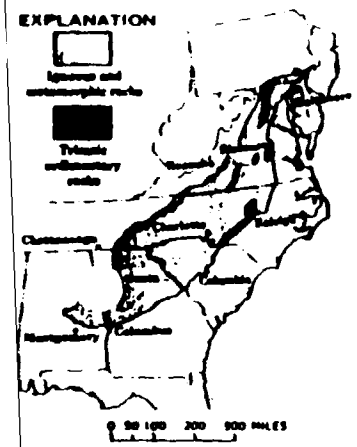
Ground Water of the Piedmon[illegible] [illegible]nd Blue Ridge Provinces in the Southeastern States

By H. E. LeGrand

INTRODUCTION

This circular summarizes the underground [illegible]ater conditions in the Piedmont and Blue [illegible]idge pro[illegible]ces of the Southeastern States—[illegible]he regi[illegible]n on the geologic map (fig. 1).

There are several ways of developing water [illegible]om the ground in this region. In earlier days [illegible]prings were used because they are common [illegible] coves or on lowland slopes. Almost all [illegible]rings in the region yield between ½ to 3 gal[illegible]ns per minute and rarely show a significant [illegible]cline in yield during dry weather. Dug wells [illegible]re common in the past, but they are being [illegible]placed by bored and drilled wells. Bored [illegible]lls, like dug wells, are as much as 2 feet in diameter and are commonly lined with concrete or terra cotta pipe; these wells do not extend into hard rock and go dry if the water table falls below the bottom of the well. Drilled wells, which are now the most common source of ground-water supply and which are the chief concern of this report, are cased to the hard rock and extend as open holes into the rock. Although some drilled wells are as small as 2 inches in diameter and others are as large as 10 inches, the most common size is about 5 or 6 inches. Almost every well in recent years has been properly constructed to prevent water on the ground from running down the outside of the casing into the well.



[illegible] 1.—Generalized geologic map. Areas underlain by igneous [illegible] metamorphic rocks are lumped to numerical rating of [illegible] 20 and areas underlain by Triassic sedimentary rocks [illegible]

EVALUATING SITES

A special attempt is made to help those who are interested in the yields of wells. Because yields of individual wells in the region vary greatly within distances as short as 100 feet, estimates of potential yields of prospective wells are difficult to make. This fact has led frequently to water shortages, excessive costs, inconveniences, or undue anxiety in many cases. As the yield of a well is unpredictable, the next best approach is to attempt to show, on a percentage basis, the chance for a certain yield from a well for different conditions.

Although many factors determine the yield of a well, two ground conditions, when used together, serve as a good index for rating a well site. These conditions are topography and soil thickness. The ratings are based on the following statement: High-yielding wells are common where thick residual soils and relatively low topographic areas are combined, and low-yielding wells are common where thin soils and hilltops are combined. By comparing conditions of a site according to the topographic and soil conditions one gets a relative

rating value. For example, the following topographic conditions are assigned point values:

Points	Topography
0	Steep ridge top
2	Upland steep slope
4	Pronounced rounded upland
5	Midslope ridge slope
7	Gentle upland slope
8	Broad flat upland
9	Lower part of upland slope
12	Valley bottom or flood plain
15	Below to narrow northeast area
18	Below to large northeast area

Figure 3 shows values for certain topographic conditions. Figure 3 shows rating values for soil thickness. The soil zone in this report includes the normal soils and also the relatively soft or weathered rock. The topographic conditions and soil conditions are separately rated, and the points for each are added to get the total points which may be used in table 1 to rate a site.

Using two well sites, A and B, as examples, we can evaluate each as to the potential yield of a well. Site A, a pronounced rounded upland (4-point rating for topography in fig. 3) having a relatively thin soil (8-point rating for soil characteristic in fig. 3), has a total of 10 points. In table 1 the average yield for site A is 6 gpm (gallons per minute). This site has a 85-percent chance of yielding 3 gpm and a 40-percent chance of yielding 10 gpm. Site B, a

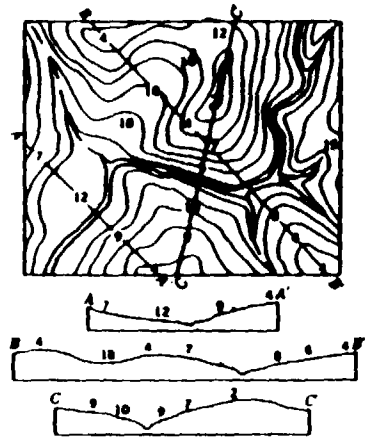
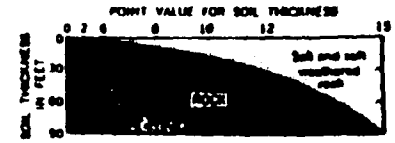


Figure 2.—Topographic map and profiles of ground surface showing rating in points for various topographic positions.



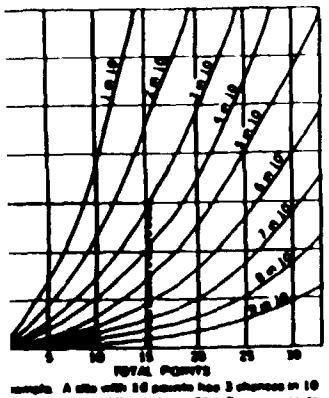
POINT VALUE	CHARACTER OF SOIL AND ROCK
0-2	Bare rock—almost no soil
2-6	Very thin soil—some rock outcrops
6-9	Soil thin—a few rock outcrops
9-12	Moderately thick soil—no fresh outcrops
12-15	Thick soil—no rock outcrops

Figure 3.—Rating in points for various conditions of soil thickness.

Table 1.—*Use of numerical rating of well site to estimate the percent chance of success of a well*

[Data are based on maximum depth of 300 feet or maximum drawdown of water level of about 200 feet. No interference from pumping is assumed. Numerical rating is obtained by adding rating in points for topography and soil thickness]

Total points of a site	Average yield (gpm)	Chance of success, in percent, for a well to yield at least—				
		3 gpm	10 gpm	25 gpm	50 gpm	75 gpm
5	2	48	18	6	2	------
6	3	50	20	7	3	------
7	3	55	25	8	3	------
8	4	55	30	11	3	------
9	5	60	35	12	4	------
10	6	65	40	15	5	------
11	7	70	43	18	7	------
12	9	73	46	22	10	------
13	11	77	50	26	12	------
14	13	80	52	30	14	------
15	14	83	54	33	16	------
16	16	85	57	36	18	------
17	17	86	60	40	20	12
18	20	87	63	45	24	15
19	23	88	66	50	25	18
20	26	89	70	53	27	20
21	28	90	72	54	30	22
22	31	91	74	58	35	24
23	34	92	76	58	38	26
24	37	92	78	60	40	29
25	38	93	80	62	43	32
26	41	93	81	64	46	36
27	43	94	82	66	48	40
28	45	95	83	68	50	42
29	48	95	84	71	53	44
30	50	96	87	73	56	47
30+	50	97	91	75	60	50



Example. A site with 10 points has 3 chances in 10 of yielding at least 20 gallons per minute and 6 chances in 10 of yielding 10 gallons per minute.

—Probability of getting a certain yield from a well at different sites having various total-point ratings.

draw or slight sag in topography (18-point rating) having a moderately thick soil (12-point rating), has a total of 30 points, an average yield of 50 gpm, and a 73-percent chance of yielding 25 gpm. Referring to figure 4, we see that the 10-point site has less than 1 chance in 10 of yielding 40 gpm whereas the 30-point site has better than an even chance of yielding 40 gpm.

Some topographic conditions of the region and a few topographic ratings are shown in figure 5. Wells located on concave slopes are commonly more productive than wells on convex slopes or straight slopes. Broad but slight concave slopes near saddles in gently rolling upland areas are especially good sites for potentially high-yielding wells. On the other hand, steep V-shaped valleys of the gully type may not be especially good sites, and they should be avoided if surface drainage near the well is so poor that contamination is possible.

More difficulty is likely to occur in rating character of soil and rock than in rating

Figure 5.—Catastrophic in the Blue Ridge province showing approximate ratings for topography.

Figure 6.—The soil zone is likely very thin zone shown with ratings (soil-thickness rating 0 to 4 points).

topography. Everyone should be able to determine by observation if the soil is thin (less than 7 soil and rock points as shown in figure 6) and if the soil is fairly thick (more than 10 soil and rock points), but the intermediate ratings are difficult to make. If the observer is unsure of the soil and rock rating above the 0-point (thin soil) value he may choose a 10-point value for the site with assurance that he is fairly correct. White quartz of flint, which occurs as veins and as rock fragments on the ground, is not considered a true rock in this report because it persists in the soil zone; a quartz vein in many cases is considered to be a slightly favorable indication of a good well site.

The numerical rating system is not intended to be precise. One person may rate a particular site at 15 points, whereas another person may rate it at 17 points; such a small difference in rating would not be misleading. Almost everyone's rating will be within 5 points of an average rating for a site.

YIELD

The term "yield" is not definite but is the reported capacity of a well to produce water, generally during a short pumping test. The water level in a well will stabilize if a certain limited yield or withdrawal of water is maintained; however, a greater withdrawal or yield will cause the water level to fall. In many cases the water level continues to fall until the pumping stops so that continuous pumping would result in a smaller yield than that estimated earlier. The percentage of relative yield is not directly proportionate to the percentage of drawdown of the water level, but the greater percentage of yield is reached before the greater percentage of drawdown. Figure 7 shows an approximate relation of drawdown to yield for an average well in the region. Note that the yield-drawdown relationships of all wells lie within the shaded zone and that average conditions occur on or near the heavy line. As an example of the relation between yield and drawdown, we may consider a well 320 feet deep having a static water level of 20 feet below land surface. (See fig. 8.) This well yields 40 gpm with a pumping level at a depth of nearly 220 feet; the pump might better be set at 120 feet (50 percent of drawdown or half the thickness of the water) where about 30 gpm or 80 percent of the relative yield could be realized. It is unnecessary and uneconomical to lower the water level of a well to a position near the bottom unless the yield is so poor that the water stored in the well is needed.

There is no simple definition of the yield of a well—especially in the Blue Ridge and Piedmont provinces. Yields for various levels of the water in the pumped well are rarely known. The yields in this report are considered to be standard for wells about 300 feet deep which are pumped about 12 hours each day and in which drawdown of the water level is about 200 feet. It is assumed that there is no interference by pumping from other wells, which would increase drawdown.

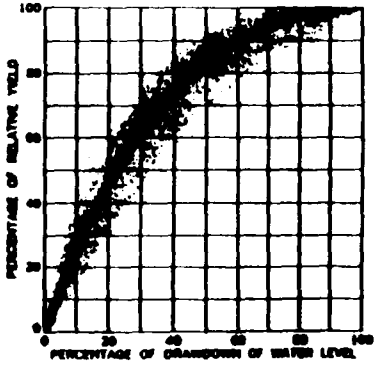


Figure 7.—The curve shows that an increase in yield of a well is not directly proportionate to an increase in drawdown of the water level. A yield of nearly 80 percent of the total capacity of a well results from lowering the water level only 40 percent of the available drawdown.

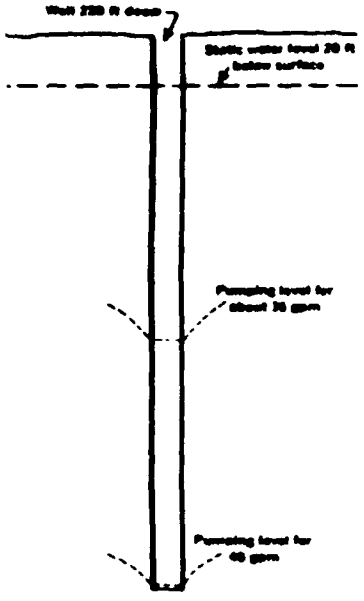


Figure 9.—Yield of a well at two different pumping rates.

DEPTH OF WELLS

low deep should a well be drilled? This stion is not easy to answer for an individ- well. In most places fractures in the rock smaller and fewer with depth and deep ling may not be economical. Figure 9 ws the percentage of total yield for certain ths in an average well.

he following table shows the percentage of is that reach their maximum yields at cer- depths below which drilling is useless. As

Depth (feet)	Percentage of wells
0	25
100	30
200	50
300	70
400	85
500	93

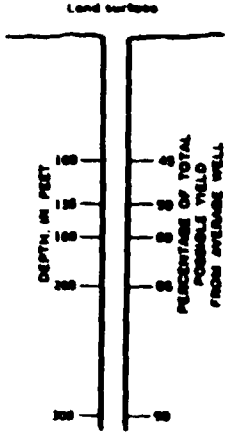


Figure 9.—Extent to which deepening of average well increases the yield.

most of the interconnecting fractures occur in a zone no deeper than 150 feet below the land surface, it may be wise to drill no deeper than 150 feet if the yield is very poor, or no deeper than 300 feet in almost all cases.

FRACTURES IN THE ROCK

Figure 10 illustrates six different fracture patterns in rocks penetrated by wells. To simplify the illustrations the water table and soil thickness are considered uniform, and each well, cased to 50 feet, is 250 feet deep. The approximate number of times each general pattern of fractures occurs in 100 wells is shown in percentage beneath each type. Well A penetrates no fractures below the casing; therefore, the well yields no water. Well B penetrates a fracture zone in which two or more fractures occur a few feet below the casing. This type of well is common. It may yield as much as 10 to 20 gpm for a period of several minutes until the fractures are drained. Then its yield will likely decline suddenly, and the amount of decline will depend upon the amount of water transmitted to the well by the soil and the underlying thin zone of fractured rock. That part of the well below the fracture zone contributes no water and acts only as a storage reservoir into which water drains. The yield of this well does not increase with increased drawdown. Well C penetrates only one fracture, a large one near the

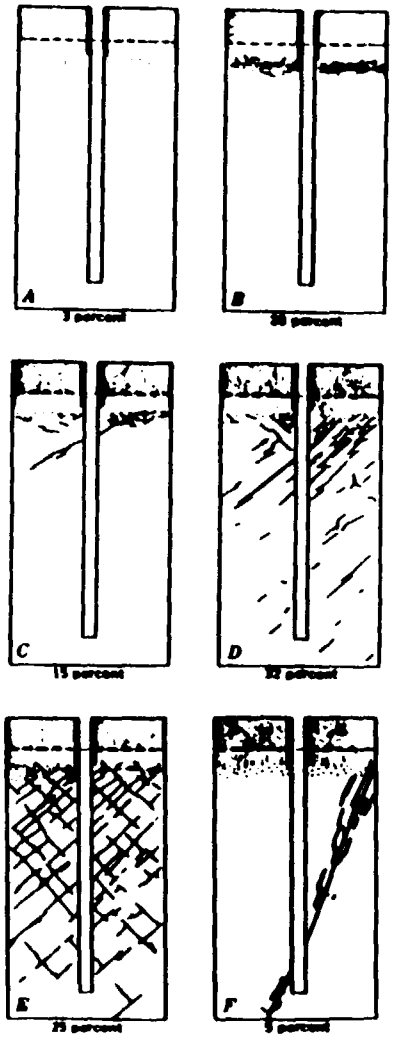


Figure 10.—Six types of ground conditions showing distribution of fractures that influence the yields of wells. The stippled pattern represents soil and silt rock; the dashed line is the water table. The degree of frequency of the different types is shown in percentage.

top of the fresh rock. This well is similar to well B. It may yield considerable water for a few minutes until the stored water in the fracture is drained. The perennial yield, under continuous pumping, will depend on the permeability of the soil and weathered rock and on the amount of water that is released to the fracture. Well D penetrates several fractures, which contribute small amounts of water, and a large fracture at a depth of about 90 feet. Well E penetrates several small- to medium-sized fractures. These fractures are larger and more closely spaced in the upper part of the bedrock. Well F penetrates only one fracture—a large one below a depth of 200 feet.

WATER TABLE

The water table, or upper surface of the underground reservoir, continuously fluctuates and reflects changes in underground storage. During droughts we see evidence of a falling water table when many shallow wells go dry. We also can detect a lowering of the water table locally around wells from which water is pumped. There is a continual discharge of ground water by seepage into streams, by evaporation, and by transpiration through vegetation. The discharge causes a gradual lowering of the water table except for periods during and immediately after significant precipitation when recharge to the underground reservoir exceeds the discharge from it and the water table rises. Figure 11 shows the trends of water-level fluctuation in a well at Chapel Hill, N. C. The water level in this well is controlled entirely by natural conditions, and its fluctuation is typical of that in the region. There is a characteristic seasonal change in the water table, which begins to decline in April or May owing to the increasing amount of evaporation and transpiration of plants. In November or December, when much of the vegetation has become dormant, the precipitation first makes up the summertime soil-moisture deficiency and then again becomes effective in producing recharge, and the water table begins to rise. In a year of normal rainfall the recharge to the underground reservoir is approximately equal to the discharge from it, so that the water table

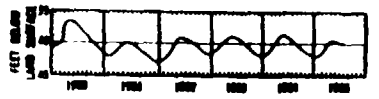


Figure 11.—The water table generally declines in summer and fall but rises to a high level in early spring, as shown by the record of of this well in Chapel Hill, N. C.

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°                                                                              °
°    FMS Id Number:*04                               EPA Site Id:*GAD003284049 °
°             Name:*SSC INDUSTRIES, DIV OF CHEMTECH                            °
°           Street:*1550 EAST TAYLOR STREET                                    °
°             City:*EAST POINT                            State:*GA            °
°           County:*FULTON                             Zip Code:*30344-        °
° Owner. Indicator:*PR       Federal Facility Indicator:*N                     °
°         Category:*B                   Further Action:*                       °
°NPL Status Indic.:*N                    Incident Type:*                       °
°         Latitude:*00 00 00.0                 Longitude:*000 00 00.0          °
°       Site Class:*ND                SARA Mandate (SI):                       °
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°             Lead:*EP                Reported By Name: VILLAMARZO             °
°   Discovery Date:*03/20/89                Phone Number: (404) 347-5065       °
°           Agency: EPA R4                                                     °
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ÖááááááááááááááááááááááááááááááááááREFERRALáááááááááááááááááááááááááááááááááááá¢
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SSC INDUSTRIES
EAST POINT, GA

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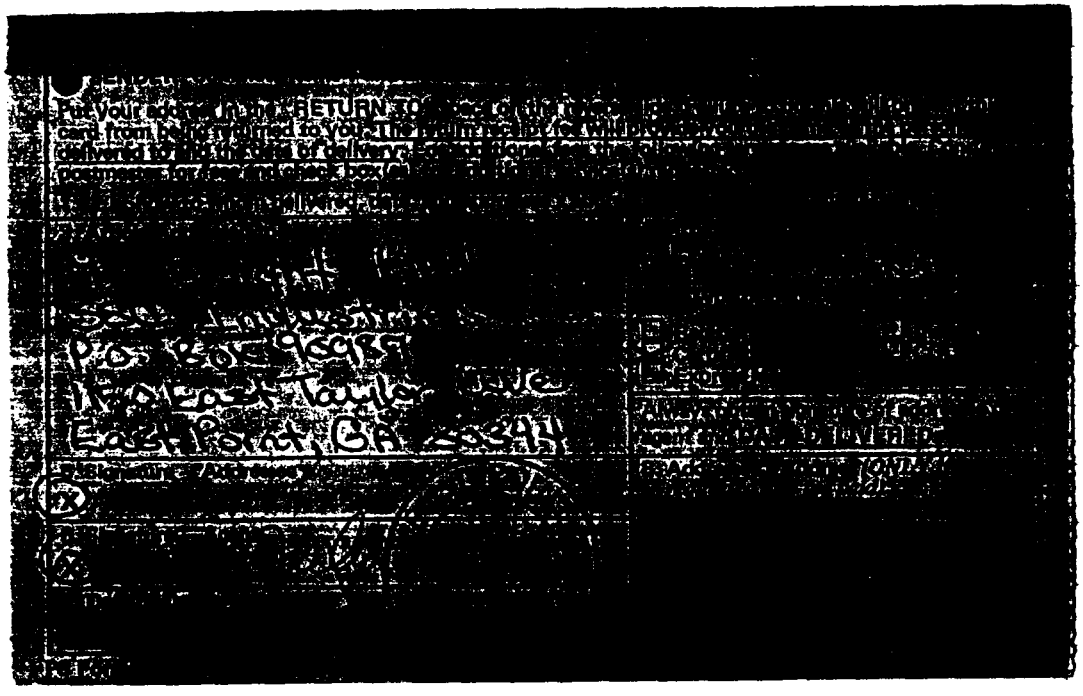

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P.O., State and ZIP Code East Point, GA 30344	
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Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

Letter requesting that SSC cooperate with FIT.

Mario E. Villamar
9-26-89

SSC INDUSTRIES
a division of CHEMTECH

Mr. Mario Villamarzo, Jr.
Emergency Response and Control Section
U.S. Environmental Protection Agency
345 Courtland Street
Atlanta, Georgia 30365

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Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date 4/16/91	

PS Form 3800, June 1985

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5. Signature — Addressee X	8. Addressee's Address *(ONLY if requested and fee paid)* 1550 E. Taylor Ave E.P. GA 30344
6. Signature — Agent X Barbara Shelton	
7. Date of Delivery 4/18/91	

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