Site: CRACKER ASPHALT
Break: 1.9
Other: V.1

SITE INVESTIGATION
CRACKER ASPHALT
TUSCALOOSA/HALE COUNTY, ALABAMA
EPA ID NO.: 000472712
SITE REF. NO.: 6243

Low Priority
BJ 2/6/96
ADEM planning add'l sampling
Need for ESI needs to be
evaluated again in future

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10449698

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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) and a cooperative agreement between the U. S. Environmental Protection Agency and the Alabama Department of Environmental Management (ADEM), a Site Investigation (SI) was conducted at the Cracker Asphalt site in Moundville, Tuscaloosa County, Alabama. The purpose of this investigation was 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 investigations under CERCLA or other authority, and, if appropriate, support site evaluation using the Hazardous Ranking System (HRS) for proposal to the National Priorities List (NPL). The investigation included reviewing previous information, sampling waste and environmental media to test Preliminary Assessment (PA) hypotheses and to evaluate and document HRS factors, Collecting additional non-sampling information, and interviewing nearby residents.

2.0 SITE DESCRIPTION

2.1 Location

The Cracker Asphalt Facility (CAF) is located in Moundville, Tuscaloosa County, Alabama. The geographic coordinates are 33° 00' 42.86" North latitude and 87° 37' 22.18" West longitude (Reference 1; Reference 2). The town of Moundville is a small incorporated community consisting of approximately 1,348 residents (Reference 3).

The Moundville area has a moist subtropical climate with precipitation well distributed throughout the year. Tuscaloosa County receives precipitation of 0.10 inch or more approximately 75 days out of each year and has an average yearly precipitation of 49.26 inches. (Reference 4, p. 76)

The mean annual temperature for Tuscaloosa County is approximately 63.4° *F*. On a monthly average, January is the coldest and July is the warmest. January has an average daily maximum temperature of 54.9° *F* and an average daily minimum temperature of 33.5° *F*. July has an average daily maximum temperature of 91.7° F and an average daily minimum of 70.2° *F*. (Reference 4, p. 76)

2.2 Site Description

The CAF site is located in the SW 1/4 of the NW 1/4 and the NW 1/4 of the SW 1/4 of Section 31, Township 24 North, Range 5 East in Tuscaloosa County, Alabama. The CAF site is bound on the north by pine forest and swamp land, and then by the Black Warrior River; on the south by rail road tracks, and then by residential property and farm land; on the east by a dirt methane well access road, and then by pine forest and swamp land; on the west by Lawter Chemical Plant, and then by the Mound State Monument. The nearest residential property is approximately 400 feet to the south of the site.

The CAF site is a 25-acre dogleg shaped parcel of land. It is presently improved with 9 buildings, 24 above ground storage tanks and a lagoon that captures much of the surface water runoff from the site. The site is accessible to the general public from all directions. The only part of the site currently being utilized are the buildings on the site.

The CAF site is approximately 100 to 175 feet above mean sea level with a 2 to 6 percent sloping topography. All the area surrounding the CAF site is at elevations lower than that of the site. Therefore, surface water runoff from the surrounding area would not flow across site under normal conditions. The Black Warrior River runs along the northwest boundary of the CAF site and is the nearest probable point of entry (PPE) into the surface water pathway for runoff exiting from the site.

2.3 Operational History and Waste Characteristics

During a bankruptcy sale that took place in 1968, Conrad Wesselhoeft purchased the CAF site. The CAF site was previously owned by Cracker Asphalt Company, an asphalt refining and storage company. The Cracker Asphalt Company left behind warehouses, shops, various types of petroleum and asphalt processing equipment, a cooling pond, a sediment pond and several large above ground storage tanks. After purchasing the

property, Mr. Wesselhoeft's metal fabrication business made use of the office, shops, warehouses and much of the open space on the site. Mr. Wesselhoeft also has occasionally leased one of the tanks (350,000 gallon capacity) on the site to Southern Resins Company (EPA ID #: ALD004034138) for storage of by-product petroleum solvents.

The possible sources of the documented and suspected contamination coming from the CAF site include a sludge pond, a cooling pond, two asphalt skimmer trenches, a tank that has occasionally been used to store petroleum solvents, and several other tanks that have not been used since the bankruptcy of the Cracker Asphalt Company.

3.0 GROUND WATER

3.1 Hydrogeology

The CAF site and the surrounding area lie within the Alluvial-Deltic Plain district of the East Gulf Coastal Plain physiographic section. The prominent physiographic feature of this area is the broad, well developed, flat flood plains and terraces that have been formed by the meandering Black Warrior River. (Reference 5, p. 3)

The geologic units that outcrop in Moundville and the surrounding area are of sedimentary origin and consist of gravel, sand, silt and

clay (Reference 6, p. 3-4). At the CAF site, alluvium and terrace deposits of Quaternary age overlie the Cretaceous age Gordo and Coker formations of the Tuscaloosa Group (Reference 5, p. 6-8).

The Quaternary flood plain deposits can be as much as 100 feet thick, and consist mainly of gravel, sand, silt and clay (Reference 7, p. 12). The Gordo Formation, which lies beneath the flood plain deposits, is as much as 400 feet thick, and consist of sand and gravel overlain by alternating lenticular beds of sand and mottled clay (Reference 5, p. 6-8 and 21). The Coker formation, which lies beneath the Gordo Formation, ranges in thickness from less than 100 feet to up to 1,000 feet. The Coker Formation consists of a nonmarine zone of gravel overlain by marine sand and clay. The nonmarine basal zone is generally separated from the marine sand beds by 50 feet or more of clay (Reference 5, p. 8).

Sand and gravel beds of the Tuscaloosa Group are the major sources of ground water in the study area. Alluvium and terrace deposits may also contain sand and gravel aquifers that are capable of yielding enough water for a private domestic or stock supply. (Reference 5, p. 12-15)

According to the outcrops along the river bank north of the site (Figure 4) and the bore hole logs from the property west of the site (Attachment 6), the terrace deposits consist of an upper fine-grained unit and a basal coarse-grained unit that lies

unconformably atop the eroded remnants of the Gordo Formation. The base of the terrace deposits is considered to be the lowest occurrence of gravel.

The Gordo Formation, as seen in the bore hole logs (Attachment 6), consist of an upper unit of sand having zones of high iron content intermingled with layers of sandy clay and clayey sand and a basal unit of fine to medium sand. The contact between the Gordo Formation and the Coker Formation, as seen in the outcrops along the river bank, is a 1/2 inch layer of iron cemented sandstone underlain by massive red, purple, gray and brown mottled clay.

The terrace and Gordo deposits thicken in a westward direction and are estimated to 35 to 120 feet in thickness underneath the CAF site.

3.2 Ground Water Targets

There are many private wells and two public water supply wells within the 4-mile ground water target radius (Attachment 1; Attachment 2; Plate 1). The water from the two public water supply wells are blended together to make up 100 percent of the Moundville Water Works system. The Moundville Water Works has 1,348 connections on its system. The Moundville Water Works also sells 300,000 gallons of water per day to the Hale County Water System (Reference 8).

The Hale County Water System purchases 40 percent of its systems water from Moundville Water Works and 60 percent from Greensboro Water System. The water that the Hale County Water System buys is blended together before it is used by 2,500 purchasers. (PA # 6243, Att. 5 & 6)

3.3 Ground Water Sampling Data

MONITORING WELLS SAMPLED OFF-SITE

(maximum concentration found in each well)

Constituent (ug/l = ppb)	Well Number										
	1	2	3	4	5	6	8	9	10	11	12
Benzene	---	---	---	---	105	379	7	---	44	232	133
Ethylbenzene	---	---	---	---	78	186	---	---	120	860	395
Napthalene	---	---	23	---	805	10100	39	17	2760	5590	1360
N-Propylbenzene	---	---	---	---	26	46	---	---	45	439	129
Styrene	10	7	---	---	16	328	---	---	152	815	339
Toluene	---	---	---	---	28	41	---	---	46	162	127
1,2,4-Trimethylbenzene	---	---	6	---	134	2700	11	9	715	5240	1850
1,3,5-Trimethylbenzene	---	---	---	---	46	347	---	---	199	1610	290
Total Xylene	---	---	19	---	361	1900	12	7	462	4760	5230
Dicyclopentadiene	---	---	22	---	26	1540	8	5	943	656	186

(see Appendix A for more data on these wells)

MONITORING WELLS SAMPLED ON-SITE

Constituent (ug/l = ppb)	Well Number				
	CA-MW1	CA-MW2	CA-MW4	CA-MW5	CA-MW7
1,2,4 - Trimethylbenzene	111.1	50.6	1.6	---	---
Benzene	139.9	37.5	---	---	---
Ethylbenzene	121.9	---	---	---	---
m+p Xylene	57.6	20.8	---	---	---
Naphthalene (VOC)	1134.0	662.7	---	1.7	0.9
Toluene	13.2	7.5	---	---	---
n - Propylbenzene	---	53.2	0.8	---	---
o - Xylene	---	88.0	---	---	---
Naphthalene (BNA)	558.69	338.064	---	---	---

(see Appendix B for more data on these wells)

3.4 Ground Water Conclusion

While there is evidence that the Terrace/Gordo aquifer at the CAF site and the adjacent Lawter site is contaminated, the likelihood of any known municipal wells becoming contaminated is thought to be minimal because: 1) The nearest public well is greater than a mile to the southwest of the site. 2) The flow direction of ground water in the shallow terrace deposit aquifer beneath the CAF site is thought to be towards the Black Warrior River and not towards the either one of the public wells. 3) The contaminated aquifer is horizontally discontinuous in nature and the aquifer discharges its ground water to the surface in areas where errosional features have cut the land surface to a depth below the Terrace/Gordo aquifer. 4) The public water supply wells located within the 4-mile target radius are screened in the Coker aquifer and not the Terrace/Gordo aquifer. 5) The upper units of the Coker Formation are massive clays that help protect the aquifer from the contaminants above. 6) The Coker aquifer has a higher water pressure than the Terrace/Gordo aquifer above. Therefore, ground water from the Terrace/Gordo aquifer can not migrate downward into Coker aquifer.

4.0 SURFACE WATER PATHWAY

4.1 Hydrologic Setting

The CAF site is outside of the 100-year flood plain (Reference 9) at an elevation of approximately 170 feet above mean sea level. The northern most part of the site is the lowest portion of the site. The northwest corner of the site has a 60 to 65 foot vertical drop-off to the Black Warrior River that makes it very unlikely that the river will overflow its southern bank in the vicinity of the site.

Overland drainage from the CAF site exits the site via 3 somewhat well defined discharge points as well as many other less defined points. The most probable point of entry (PPE) for any contaminated overland drainage from the site to enter into the surface water pathway is southwest of the site at a point on Carthage Branch. The previously mentioned PPE is approximately 1/10 a mile upstream of The Black Warrior River. The closest PPE is at the northwest corner of the site at the point where the CAF site meets with the Black Warrior River. In either case, once the overland drainage enters the Black Warrior River it remains in the river for the remainder of the targeted 15-mile downstream surface water pathway.

The CAF is located within the Black Warrior River Basin. The lowest flow to which the river will decline during 7 consecutive

days on an average of once every 2 years of normal flow (7-day Q2) is 935 cubic feet per second (Reference 10, p. 13-14).

4.2 Surface Water Targets

The 15-mile downstream surface water pathway (SWP) begins and ends on the Black Warrior River. There are no known drinking water intakes located along the SWP (Attachment 1). Approximately 26 of the 30 miles of river bank land along the SWP is considered to be wetlands (Attachment 3; Attachment 4; Plate 1). The adjacent wetlands to the east and the land along the surface water pathways may also be critical to the support of many threatened and endangered species (Attachment 3; Attachment 5).

4.3 Surface Water Sampling Data

SPRING SEEPS, SURFACE WATER AND WASTE WATER SAMPLED

Sample Number	Date	Contaminant	Concentration (ppb)
Seep A	11/85	Total Xylenes	1.1
Seep B	11/85	Chloroethane	7.5
Seep C	11/85	Chloroform	4.7
North Bluff Seep Middle	11/85	Benzene Toluene Ethyl Benzene Styrene Total Xylenes 1,3-Cyclopentadiene Propyl Benzene	150 28 54 37 320 3.9 19
North Bluff Seep West	11/85	VOC's	BDL
Lagoon	9/95	VOC's & BNA's	BDL
Tank Berm	9/95	VOC's & BNA's	BDL
T Pipe Discharge	9/95	VOC's & BNA's	BDL
Skimmer Trench	9/95	VOC's & BNA's	BDL
Drum West Berm	9/95	1,2,4 - Trimethylbenzene 1,3,5 - Trimethylbenzene m - Dichlorobenzene m + p Xylene Naphthalene (VOC's)	1055.0 313.72 32.56 1119.4 833.0

		0 - Xylene Naphthalene (BNA's)	1029.0 1013.1

(see Appendix C & D for more data on surface water samples)

4.4 Surface Water Conclusion

There is a good likelihood that contaminants from the CAF site have been released into the surface water pathway by means of both overland drainage and ground water to surface water discharge. The fisheries, wetlands and possibly critical habitats located along the 15-mile downstream surface water pathway (Reference 11, Attachment 3; Attachment 5), could be affected by contaminated ground water that is being discharged from seeps located along the south bank of the Black Warrior River and the east bank of Carthage Branch (Attachment 6; Appendix C).

5.0 SOIL EXPOSURE AND AIR PATHWAYS

5.1 Physical Conditions

Except for gates at all road entrances to the site, the CAF site has no manmade barricades to detour or prevent public access. Due to the natural river barrier north of the site and the expansive swamp and forest land to the east and northeast, most access to the site would occur along the south and west borders of the site.

The USDA Soil Survey indicates that the site is underlain by Bama Series soils. The soils of this complex are formed from loamy

marine sediments of fine sandy loam, loam and sandy clay loam texture. The Bama series consist of deep, well drained, moderately permeable soils that have a moderate available water capacity. Runoff is medium. (Reference 4, p. 13, 54 and Sheet Number 100)

5.2 Soil Sampling Data

SOIL, SEDIMENT AND WASTE SAMPLED ON-SITE

Sample Number	Contaminant (ug/g = ppm)	Concentration (ppm)
East Tank Sample 1	Toluene	0.27
East Side Flow	1,2,4 Trimethylbenzene	0.33
East Side Flow	1,3,5 Trimethylbenzene	0.36
East Side Flow	Toluene	0.46
Skimmer Trench	Toluene	2.0
Lagoon 1	1,2,4 Trimethylbenzene	1.7
Lagoon 1	1,3,5 Trimethylbenzene	0.18
Lagoon 1	Ethylbenzene	0.23
Lagoon 1	Isopropylbenzene	0.17
Lagoon 1	Naphthalene	48.3
Lagoon 1	n- Propylbenzene	0.81

(see Appendix E for more soil and sediment sample data)

5.3 Soil and Air Targets

There are approximately 20 people working on the CAF site, 60 people working at the adjacent Southern Resins Company and approximately 3 people living within 400 feet of the site. The nearest school, Moundville Elementary, is approximately 7/8 of a mile to the southwest of the site (Reference 12). No daycare facilities were seen within 1/2 of a mile of the site during the PA

site reconnaissance. According to the Alabama 1990 census records (Reference 3), the average number of people living in homes located in the counties of Hale and Tuscaloosa is 2.685 residents per household. In the following table, the total population within the target area has been broken down into sub-populations that live within the specified distance radius from the site:

DISTANCE FROM SITE	POPULATION
0 TO 1/4 MILE	3
>1/4 TO 1/2 MILE	6
>1/2 TO 1 MILE	453
>1 TO 2 MILES	821
>2 TO 3 MILES	629
>3 TO 4 MILES	558
TOTAL POPULATION	**2470**

None of the CAF site is considered to be a wetland environment. Within the 4-mile target area and the 15-mile surface water pathway are many wetland areas. The nearest wetlands are northwest of the site along the banks of the Black Warrior River. Approximately 35 percent of the total area within one mile of the site may possibly be considered wetlands.

It is not known if the CAF site itself is a critical habitat for federally designated endangered or threatened species. Attachment 3 and Attachment 5 list all of the endangered or threatened species that may utilize the land and surface waters located within the specified target areas.

5.4 Soil Exposure and Air Pathway Conclusion

Due to the Characteristics of the waste present at the CAF site, the soil and air exposure may pose a moderate threat to human health, wildlife and the environment. There are 20 workers employed at the site and the presence of a Native American burial mound on the north end of the site makes the site somewhat likely to be traveled across by trespassers.

6.0 SUMMARY AND CONCLUSION

The Cracker Asphalt Company operated an asphalt refining and storage company at the site in the late 1960's. During a bankruptcy sale that took place in 1968, Conrad Wesselhoeft purchased the old CAF site and started a metal fabricating business that produces metal tank heads and large boat anchors. Leakage and spillage from asphalt and diesel fuel storage tanks are believed to be the sources of known ground water and surface water contamination.

ADEM is currently planning to sample soil, ground water and surface water at the CAF site in order to determine if the source of contamination is the Cracker Asphalt site, the Lawter site or a combination of these two adjoining sites. Based on the current analytical data and the visible state of the Cracker Asphalt site, ADEM recommends that that the site be further evaluated in order

to determine what true threats the site poses on human health and the environment.

REFERENCES

1. U.S.G.S. 7.5 Minute Series Topographic Quadrangle Maps of Alabama: Englewood 1970 (Photorevised 1983); Foster 1969 (Photorevised 1978); Moundville West 1980; Moundville East 1980 (Photorevised 19843. Scale 1:24,000.

2. U.S. Environmental Protection Agency, Standard Operating Procedure to Determine Site Latitude and Longitude Coordinates, 1991. Calculation worksheet for the Cracker Asphalt Site.

3. Alabama State Data Center, Center for Business and Economic Research, College of Commerce and Business Administration, The University of Alabama. 1990 CENSUS Alabama Counties and Cities By Race.

4. Johnson, Kenneth W., et al., United States Department of Agriculture Soil Conservation Service and Forest Service in cooperation with Alabama Department of Agriculture and Industries and Alabama Agricultural Experiment Station, 1981, Soil Survey of Tuscaloosa County, Alabama.

5. DeJarnette, Sydney S., and Crownover, Jo E., 1987, Geohydrology and Susceptibility of Major Aquifers to Surface Contamination in Alabama; Area 6: U.S. Geological Survey Water-Resources Investigations Report 87-4113.

6. Davis, Martin E., et al., Geological Survey of Alabama, 1975, Water Availability and Geology of Hale County, Alabama, Map 136.

7. Mooty, Will S., 1987, Geohydrology and Susceptibility of Major Aquifers to Surface Contamination in Alabama; Area 7: U.S. Geological Survey Water-Resources Investigations Report 87-4109.

8. Alabama Department of Environmental Management, Federal Reporting Data System (FRDS-II), Public Water Supply Summary.

9. Federal Emergency Management Agency, Flood Insurance Rate Maps, Hale and Tuscaloosa Counties; Moundville, Alabama. Panel Number 010096 0005 B.

10. Moore, James D., et al, Geological Survey of Alabama, 1991, Water in Alabama, 1990: Circular 122H.

11. Alabama Department of Environmental Management; Water Division - Water Quality Program, 1993, Water Use Classification for Interstate and Intrastate Waters, Chapter 335-6-11.

12. State of Alabama-Department of Education, LEA Personnel System (EDLP471), 1992, Total Number of Pupils and Faculty by School and County.

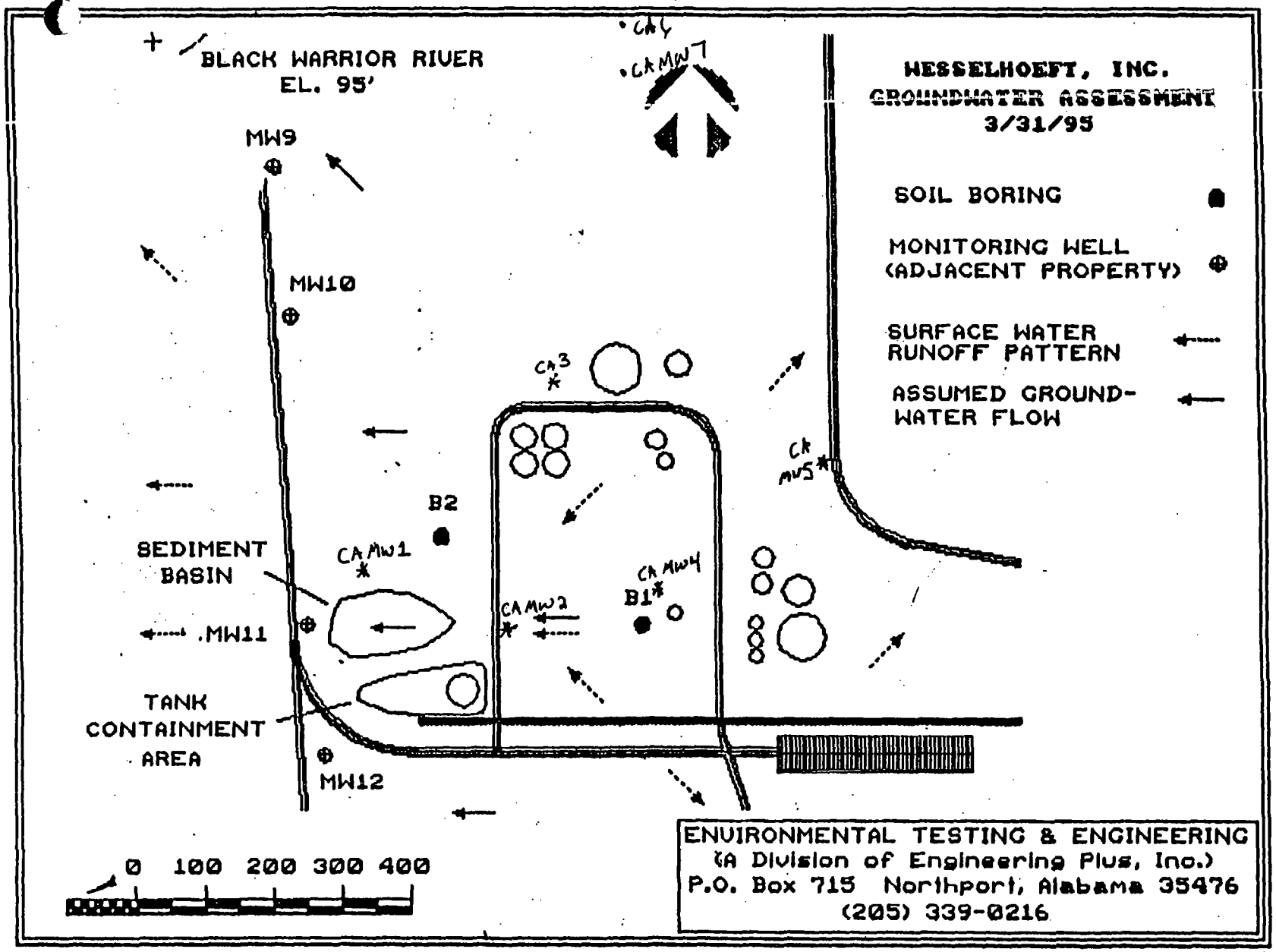
APPENDICES

APPENDIX B

CRACKER ASPHALT
GROUNDWATER
RESULTS

Constituents (ug/l = ppb)	Well Number				
	CA-MW1	CA-MW2	CA-MW4	CA-MW5	CA-MW7
1,2,4 - Trimethylbenzene	111.1	50.6	1.6	---	---
Benzene	139.9	37.5	---	---	---
Ethylbenzene	121.9	---	---	---	---
m+p Xylene	57.6	20.8	---	---	---
Naphthalene (VOC)	1134.0	662.7	---	1.7	0.9
Toluene	13.2	7.5	---	---	---
n - Propylbenzene	---	53.2	0.8	---	---
o - Xylene	---	88.0	---	---	---
Naphthalene (BNA)	558.69	338.064	---	---	---

well locations as of 10/25/95



ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

NOV 1995
RECEIVED
ADEM - FO
MONTGOMERY

Attn: Dan Cooper

Lab number : 6100453
Sample number : 348-9144
Sample matrix : WATER

Report Date: 11/03/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 2:10 SMITH
Location : CA. MW-1

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100453	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,1-Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,2Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethylene	0.5000	ug/L	U	10/31/95
	1,1-Dichloropropene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichloropropane	0.5000	ug/L	U	10/31/95
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,4-Trimethylbenzene	111.1000	ug/L		10/31/95
	1,2-Dicholoethane	0.5000	ug/L	U	10/31/95
	1,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropene	0.5000	ug/L	U	10/31/95
	2,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	Tetrachloroethylene	0.5000	ug/L	U	10/31/95
	Bromobenzene	0.5000	ug/L	U	10/31/95
	Bromochloromethane	0.5000	ug/L	U	10/31/95
	Bromodichloromethane	0.5000	ug/L	U	10/31/95

NOV 1995
ADEM
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COPY

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100453	Benzene	139.9000	ug/L	H	10/31/95
	Bromomethane	0.5000	ug/L	U	10/31/95
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	10/31/95
	Chlorobenzene	0.5000	ug/L	U	10/31/95
	Chlorodibromomethane	0.5000	ug/L	U	10/31/95
	Chloroethane	0.5000	ug/L	U	10/31/95
	Bromoform	0.5000	ug/L	U	10/31/95
	Chloroform	0.5000	ug/L	U	10/31/95
	Chloromethane	0.5000	ug/L	U	10/31/95
	Carbon Tetrachloride	0.5000	ug/L	U	10/31/95
	Dibromomethane	0.5000	ug/L	U	10/31/95
	Dichlorodifluoromethane	0.5000	ug/L	U	10/31/95
	Dichloromethane	0.5000	ug/L	U	10/31/95
	Ethylbenzene	121.9000	ug/L		10/31/95
	Fluorotrichloromethane	0.5000	ug/L	U	10/31/95
	Hexachlorobutadiene	0.5000	ug/L	U	10/31/95
	Isopropylbenzene	0.5000	ug/L	U	10/31/95
	m-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	m+p Xylene	57.6000	ug/L		10/31/95
	Naphthalene	1134.000	ug/L		10/31/95
	n-Butylbenzene	0.5000	ug/L	U	10/31/95
	n-Propylbenzene	0.5000	ug/L	U	10/31/95
	o-Chlorotoluene	0.5000	ug/L	U	10/31/95
	o-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	o-Xylene	0.5000	ug/L	U	10/31/95
	p-Chlorotoluene	0.5000	ug/L	U	10/31/95
	p-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	p-Isopropyltoluene	0.5000	ug/L	U	10/31/95
	Secbutylbenzene	0.5000	ug/L	U	10/31/95
	Styrene	0.5000	ug/L	U	10/31/95
	t-1,2-Dichloroethylene	0.5000	ug/L	U	10/31/95
	Tertbutylbenzene	0.5000	ug/L	U	10/31/95
	Trichloroethylene	0.5000	ug/L	U	10/31/95
	Toluene	13.2000	ug/L		10/31/95
	Vinyl Chloride	0.5000	ug/L	U	10/31/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/22/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

NOV 1995
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ADEM - FO
MONTGOMERY

Attn: Dan Cooper

Lab number : 6100458
Sample number : 348-9144
Sample matrix : WATER

Report Date: 11/22/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 2:10 SMITH
Location : CA, MW-1

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100458	1,2,4-Trichlorobenzene	<20	ug/L		11/17/95
	1,2-Dichlorobenzene	<20	ug/L		11/17/95
	1,2-Diphenylhydrazine	<20	ug/L		11/17/95
	1,3-Dichlorobenzene	<20	ug/L		11/17/95
	1,4-Dichlorobenzene	<20	ug/L		11/17/95
	2,3,7,8-Tetrachlorodibe	<20	ug/L		11/17/95
	2,4,6-Trichlorophenol	<20	ug/L		11/17/95
	2,4-Dichlorophenol	<20	ug/L		11/17/95
	2,4-Dimethylphenol	<20	ug/L		11/17/95
	2,4-Dinitrophenol	<200	ug/L		11/17/95
	2,4-Dinitrotoluene	<20	ug/L		11/17/95
	2,6-Dinitrotoluene	<20	ug/L		11/17/95
	2-Chloronaphthalene	<20	ug/L		11/17/95
	2-Chlorophenol	<20	ug/L		11/17/95
	2-Methyl-4,6-dinitrophe	<100	ug/L		11/17/95
	2-Nitrophenol	<20	ug/L		11/17/95
	3,3'-Dichlorobenzidine	<20	ug/L		11/17/95
	4-Bromophenyl phenyl et	<20	ug/L		11/17/95
	4-Chloro-3-methylphenol	<20	ug/L		11/17/95
	4-Chlorophenyl phenyl e	<20	ug/L		11/17/95
	4-Nitrophenol	<20	ug/L		11/17/95

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100458	Acenaphthylene	<20	ug/L		11/17/95
	Acenaphthene	<20	ug/L		11/17/95
	Anthracene	<20	ug/L		11/17/95
	Benzo(a)anthracene	<20	ug/L		11/17/95
	Benzo(a)pyrene	<20	ug/L		11/17/95
	Benzo(b)fluoranthene	<20	ug/L		11/17/95
	Butyl benzyl phthalate	<20	ug/L		11/17/95
	Bis(2-chlorethyl)ether	<20	ug/L		11/17/95
	Bis(2-chloroethoxy)meth	<20	ug/L		11/17/95
	Bis(2-chloroisopropyl)e	<20	ug/L		11/17/95
	Bis(2-ethylhexyl)phthal	<20	ug/L		11/17/95
	Benzo(g,h,i)perylene	<20	ug/L		11/17/95
	Benzidine	<20	ug/L		11/17/95
	Benzo(k)fluoranthene	<20	ug/L		11/17/95
	Chrysene	<20	ug/L		11/17/95
	Dibenzo(a,h)anthracene	<20	ug/L		11/17/95
	Dibutyl phthalate	<20	ug/L		11/17/95
	Diethyl phthalate	<20	ug/L		11/17/95
	Dimethylphthalate	<20	ug/L		11/17/95
	Di-n-octyl phthalate	<20	ug/L		11/17/95
	Fluoranthene	<20	ug/L		11/17/95
	Fluorene	<20	ug/L		11/17/95
	Hexachlorobutadiene	<20	ug/L		11/17/95
	Hexachlorobenzene	<20	ug/L		11/17/95
	Hexachlorocyclopentadie	<20	ug/L		11/17/95
	Hexachloroethane	<20	ug/L		11/17/95
	Isophorone	<20	ug/L		11/17/95
	Indeno(1,2,3-cd)pyrene	<20	ug/L		11/17/95
	Naphthalene	558.6900	ug/L		11/17/95
	Nitrobenzene	<20	ug/L		11/17/95
	N-nitroso-di-n-propylam	<20	ug/L		11/17/95
	N-nitrosodimethylamine	<20	ug/L		11/17/95
	N-nitrosodiphenylamine	<20	ug/L		11/17/95
	Pyrene	<20	ug/L		11/17/95
	Phenanthrene	<20	ug/L		11/17/95
	Pentachlorophenol	<20	ug/L		11/17/95
	Phenol	<20	ug/L		11/17/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

Attn: Dan Cooper

Lab number : 6100454
Sample number : 348-9144
Sample matrix : WATER

Report Date: 11/03/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 2:25 SMITH
Location : CA, MW-2

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100454	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,1-Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,2Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethylene	0.5000	ug/L	U	10/31/95
	1,1-Dichloropropene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichloropropane	0.5000	ug/L	U	10/31/95
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,4-Trimethylbenzene	50.6000	ug/L		10/31/95
	1,2-Dicholoethane	0.5000	ug/L	U	10/31/95
	1,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropene	0.5000	ug/L	U	10/31/95
	2,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	Tetrachloroethylene	0.5000	ug/L	U	10/31/95
	Bromobenzene	0.5000	ug/L	U	10/31/95
	Bromochloromethane	0.5000	ug/L	U	10/31/95
	Bromodichloromethane	0.5000	ug/L	U	10/31/95

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* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
8100454	Benzene	9.8000	ug/L	H	10/31/95
	Bromomethane	0.5000	ug/L	U	10/31/95
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	10/31/95
	Chlorobenzene	0.5000	ug/L	U	10/31/95
	Chlorodibromomethane	0.5000	ug/L	U	10/31/95
	Chloroethane	0.5000	ug/L	U	10/31/95
	Bromoform	0.5000	ug/L	U	10/31/95
	Chloroform	0.5000	ug/L	U	10/31/95
	Chloromethane	0.5000	ug/L	U	10/31/95
	Carbon Tetrachloride	0.5000	ug/L	U	10/31/95
	Dibromomethane	0.5000	ug/L	U	10/31/95
	Dichlorodifluoromethane	0.5000	ug/L	U	10/31/95
	Dichloromethane	0.5000	ug/L	U	10/31/95
	Ethylbenzene	37.5000	ug/L		10/31/95
	Fluorotrichloromethane	0.5000	ug/L	U	10/31/95
	Hexachlorobutadiene	0.5000	ug/L	U	10/31/95
	Isopropylbenzene	0.5000	ug/L	U	10/31/95
	m-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	m+p Xylene	20.8000	ug/L		10/31/95
	Naphthalene	662.7000	ug/L		10/31/95
	n-Butylbenzene	0.5000	ug/L	U	10/31/95
	n-Propylbenzene	53.2000	ug/L		10/31/95
	o-Chlorotoluene	0.5000	ug/L	U	10/31/95
	o-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	o-Xylene	88.0000	ug/L		10/31/95
	p-Chlorotoluene	0.5000	ug/L	U	10/31/95
	p-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	p-Isopropyltoluene	0.5000	ug/L	U	10/31/95
	Secbutylbenzene	0.5000	ug/L	U	10/31/95
	Styrene	0.5000	ug/L	U	10/31/95
	t-1,2-Dichloroethylene	0.5000	ug/L	U	10/31/95
	Tertbutylbenzene	0.5000	ug/L	U	10/31/95
	Trichloroethylene	0.5000	ug/L	U	10/31/95
	Toluene	7.5000	ug/L		10/31/95
	Vinyl Chloride	0.5000	ug/L	U	10/31/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/22/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

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MONTGOMERY

Attn: Dan Cooper

Lab number : 6100459
Sample number : 348-9144
Sample matrix : WATER

Report Date: 11/22/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 2:25 SMITH
Location : CA, MW-2

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100459	1,2,4-Trichlorobenzene	<20	ug/L		11/17/95
	1,2-Dichlorobenzene	<20	ug/L		11/17/95
	1,2-Diphenylhydrazine	<20	ug/L		11/17/95
	1,3-Dichlorobenzene	<20	ug/L		11/17/95
	1,4-Dichlorobenzene	<20	ug/L		11/17/95
	2,3,7,8-Tetrachlorodibe	<20	ug/L		11/17/95
	2,4,6-Trichlorophenol	<20	ug/L		11/17/95
	2,4-Dichlorophenol	<20	ug/L		11/17/95
	2,4-Dimethylphenol	<20	ug/L		11/17/95
	2,4-Dinitrophenol	<200	ug/L		11/17/95
	2,4-Dinitrotoluene	<20	ug/L		11/17/95
	2,6-Dinitrotoluene	<20	ug/L		11/17/95
	2-Chloronaphthalene	<20	ug/L		11/17/95
	2-Chlorophenol	<20	ug/L		11/17/95
	2-Methyl-4,6-dinitrophe	<100	ug/L		11/17/95
	2-Nitrophenol	<20	ug/L		11/17/95
	3,3'-Dichlorobenzidine	<20	ug/L		11/17/95
	4-Bromophenyl phenyl et	<20	ug/L		11/17/95
	4-Chloro-3-methylphenol	<20	ug/L		11/17/95
	4-Chlorophenyl phenyl e	<20	ug/L		11/17/95
	4-Nitrophenol	<20	ug/L		11/17/95

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SPECIAL PROJECTS

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	UnitsDL*	Analdate
6100459	Acenaphthylene	<20	ug/L	11/17/95
	Acenaphthene	<20	ug/L	11/17/95
	Anthracene	<20	ug/L	11/17/95
	Benzo(a)anthracene	<20	ug/L	11/17/95
	Benzo(a)pyrene	<20	ug/L	11/17/95
	Benzo(b)fluoranthene	<20	ug/L	11/17/95
	Butyl benzyl phthalate	<20	ug/L	11/17/95
	Bis(2-chlorethyl)ether	<20	ug/L	11/17/95
	Bis(2-chloroethoxy)meth	<20	ug/L	11/17/95
	Bis(2-chloroisopropyl)e	<20	ug/L	11/17/95
	Bis(2-ethylhexyl)phthal	<20	ug/L	11/17/95
	Benzo(g,h,i)perylene	<20	ug/L	11/17/95
	Benzidine	<20	ug/L	11/17/95
	Benzo(k)fluoranthene	<20	ug/L	11/17/95
	Chrysene	<20	ug/L	11/17/95
	Dibenzo(a,h)anthracene	<20	ug/L	11/17/95
	Dibutyl phthalate	<20	ug/L	11/17/95
	Diethyl phthalate	<20	ug/L	11/17/95
	Dimethylphthalate	<20	ug/L	11/17/95
	Di-n-octyl phthalate	<20	ug/L	11/17/95
	Fluoranthene	<20	ug/L	11/17/95
	Fluorene	<20	ug/L	11/17/95
	Hexachlorobutadiene	<20	ug/L	11/17/95
	Hexachlorobenzene	<20	ug/L	11/17/95
	Hexachlorocyclopentadie	<20	ug/L	11/17/95
	Hexachloroethane	<20	ug/L	11/17/95
	Isophorone	<20	ug/L	11/17/95
	Indeno(1,2,3-cd)pyrene	<20	ug/L	11/17/95
	Naphthalene	338.0640	ug/L	11/17/95
	Nitrobenzene	<20	ug/L	11/17/95
	N-nitroso-di-n-propylam	<20	ug/L	11/17/95
	N-nitrosodimethylamine	<20	ug/L	11/17/95
	N-nitrosodiphenylamine	<20	ug/L	11/17/95
	Pyrene	<20	ug/L	11/17/95
	Phenanthrene	<20	ug/L	11/17/95
	Pentachlorophenol	<20	ug/L	11/17/95
	Phenol	<20	ug/L	11/17/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

Attn: Dan Cooper

Lab number : 6100455
Sample number : 348-9144
Sample matrix : WATER

Report Date: 11/03/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 2:40 SMITH
Location : CA, MW-4

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100455	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,1-Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,2Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethylene	0.5000	ug/L	U	10/31/95
	1,1-Dichloropropene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichloropropane	0.5000	ug/L	U	10/31/95
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,4-Trimethylbenzene	1.6000	ug/L		10/31/95
	1,2-Dicholoethane	0.5000	ug/L	U	10/31/95
	1,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropene	0.5000	ug/L	U	10/31/95
	2,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	Tetrachloroethylene	0.5000	ug/L	U	10/31/95
	Bromobenzene	0.5000	ug/L	U	10/31/95
	Bromochloromethane	0.5000	ug/L	U	10/31/95
	Bromodichloromethane	0.5000	ug/L	U	10/31/95

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* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
8100455	Benzene	0.5000	ug/L	U	10/31/95
	Bromomethane	0.5000	ug/L	U	10/31/95
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	10/31/95
	Chlorobenzene	0.5000	ug/L	U	10/31/95
	Chlorodibromomethane	0.5000	ug/L	U	10/31/95
	Chloroethane	0.5000	ug/L	U	10/31/95
	Bromoform	0.5000	ug/L	U	10/31/95
	Chloroform	0.5000	ug/L	U	10/31/95
	Chloromethane	0.5000	ug/L	U	10/31/95
	Carbon Tetrachloride	0.5000	ug/L	U	10/31/95
	Dibromomethane	0.5000	ug/L	U	10/31/95
	Dichlorodifluoromethane	0.5000	ug/L	U	10/31/95
	Dichloromethane	0.5000	ug/L	U	10/31/95
	Ethylbenzene	0.5000	ug/L	U	10/31/95
	Fluorotrichloromethane	0.5000	ug/L	U	10/31/95
	Hexachlorobutadiene	0.5000	ug/L	U	10/31/95
	Isopropylbenzene	0.5000	ug/L	U	10/31/95
	m-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	m+p Xylene	0.5000	ug/L	U	10/31/95
	Naphthalene	0.5000	ug/L	U	10/31/95
	n-Butylbenzene	0.5000	ug/L	U	10/31/95
	n-Propylbenzene	0.8000	ug/L		10/31/95
	o-Chlorotoluene	0.5000	ug/L	U	10/31/95
	o-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	o-Xylene	0.5000	ug/L	U	10/31/95
	p-Chlorotoluene	0.5000	ug/L	U	10/31/95
	p-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	p-Isopropyltoluene	0.5000	ug/L	U	10/31/95
	Secbutylbenzene	0.5000	ug/L	U	10/31/95
	Styrene	0.5000	ug/L	U	10/31/95
	t-1,2-Dichloroethylene	0.5000	ug/L	U	10/31/95
	Tertbutylbenzene	0.5000	ug/L	U	10/31/95
	Trichloroethylene	0.5000	ug/L	U	10/31/95
	Toluene	0.5000	ug/L	U	10/31/95
	Vinyl Chloride	0.5000	ug/L	U	10/31/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/22/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

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MONTGOMERY

Attn: Dan Cooper

Lab number : 6100460
Sample number : 348-9144
Sample matrix : WATER

Report Date: 11/22/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 2:40 SMITH
Location : CA, MW-4

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100460	1,2,4-Trichlorobenzene	<20	ug/L		11/17/95
	1,2-Dichlorobenzene	<20	ug/L		11/17/95
	1,2-Diphenylhydrazine	<20	ug/L		11/17/95
	1,3-Dichlorobenzene	<20	ug/L		11/17/95
	1,4-Dichlorobenzene	<20	ug/L		11/17/95
	2,3,7,8-Tetrachlorodibe	<20	ug/L		11/17/95
	2,4,6-Trichlorophenol	<20	ug/L		11/17/95
	2,4-Dichlorophenol	<20	ug/L		11/17/95
	2,4-Dimethylphenol	<20	ug/L		11/17/95
	2,4-Dinitrophenol	<200	ug/L		11/17/95
	2,4-Dinitrotoluene	<20	ug/L		11/17/95
	2,6-Dinitrotoluene	<20	ug/L		11/17/95
	2-Chloronaphthalene	<20	ug/L		11/17/95
	2-Chlorophenol	<20	ug/L		11/17/95
	2-Methyl-4,6-dinitrophe	<100	ug/L		11/17/95
	2-Nitrophenol	<20	ug/L		11/17/95
	3,3'-Dichlorobenzidine	<20	ug/L		11/17/95
	4-Bromophenyl phenyl et	<20	ug/L		11/17/95
	4-Chloro-3-methylphenol	<20	ug/L		11/17/95
	4-Chlorophenyl phenyl e	<20	ug/L		11/17/95
	4-Nitrophenol	<20	ug/L		11/17/95

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100460	Acenaphthylene	<20	ug/L		11/17/95
	Acenaphthene	<20	ug/L		11/17/95
	Anthracene	<20	ug/L		11/17/95
	Benzo(a)anthracene	<20	ug/L		11/17/95
	Benzo(a)pyrene	<20	ug/L		11/17/95
	Benzo(b)fluoranthene	<20	ug/L		11/17/95
	Butyl benzyl phthalate	<20	ug/L		11/17/95
	Bis(2-chlorethyl)ether	<20	ug/L		11/17/95
	Bis(2-chloroethoxy)meth	<20	ug/L		11/17/95
	Bis(2-chloroisopropyl)e	<20	ug/L		11/17/95
	Bis(2-ethylhexyl)phthal	<20	ug/L		11/17/95
	Benzo(g,h,i)perylene	<20	ug/L		11/17/95
	Benzidine	<20	ug/L		11/17/95
	Benzo(k)fluoranthene	<20	ug/L		11/17/95
	Chrysene	<20	ug/L		11/17/95
	Dibenzo(a,h)anthracene	<20	ug/L		11/17/95
	Dibutyl phthalate	<20	ug/L		11/17/95
	Diethyl phthalate	<20	ug/L		11/17/95
	Dimethylphthalate	<20	ug/L		11/17/95
	Di-n-octyl phthalate	<20	ug/L		11/17/95
	Fluoranthene	<20	ug/L		11/17/95
	Fluorene	<20	ug/L		11/17/95
	Hexachlorobutadiene	<20	ug/L		11/17/95
	Hexachlorobenzene	<20	ug/L		11/17/95
	Hexachlorocyclopentadie	<20	ug/L		11/17/95
	Hexachloroethane	<20	ug/L		11/17/95
	Isophorone	<20	ug/L		11/17/95
	Indeno(1,2,3-cd)pyrene	<20	ug/L		11/17/95
	Naphthalene	<20	ug/L		11/17/95
	Nitrobenzene	<20	ug/L		11/17/95
	N-nitroso-di-n-propylam	<20	ug/L		11/17/95
	N-nitrosodimethylamine	<20	ug/L		11/17/95
	N-nitrosodiphenylamine	<20	ug/L		11/17/95
	Pyrene	<20	ug/L		11/17/95
	Phenanthrene	<20	ug/L		11/17/95
	Pentachlorophenol	<20	ug/L		11/17/95
	Phenol	<20	ug/L		11/17/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

Attn: Dan Cooper

Lab number : 6100456
Sample number : 348-9144
Sample matrix : WATER

Report Date: 11/03/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 2:55 SMITH
Location : CA, MW-5

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100456	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,1-Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,2Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethylene	0.5000	ug/L	U	10/31/95
	1,1-Dichloropropene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichloropropane	0.5000	ug/L	U	10/31/95
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,4-Trimethylbenzene	0.5000	ug/L	U	10/31/95
	1,2-Dicholoethane	0.5000	ug/L	U	10/31/95
	1,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropene	0.5000	ug/L	U	10/31/95
	2,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	Tetrachloroethylene	0.5000	ug/L	U	10/31/95
	Bromobenzene	0.5000	ug/L	U	10/31/95
	Bromochloromethane	0.5000	ug/L	U	10/31/95
	Bromodichloromethane	0.5000	ug/L	U	10/31/95

4 NOV 1995 ADEM SPECIAL PROJECTS

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* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
8100456	Benzene	0.5000	ug/L	U	10/31/95
	Bromomethane	0.5000	ug/L	U	10/31/95
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	10/31/95
	Chlorobenzene	0.5000	ug/L	U	10/31/95
	Chlorodibromomethane	0.5000	ug/L	U	10/31/95
	Chloroethane	0.5000	ug/L	U	10/31/95
	Bromoform	0.5000	ug/L	U	10/31/95
	Chloroform	0.5000	ug/L	U	10/31/95
	Chloromethane	0.5000	ug/L	U	10/31/95
	Carbon Tetrachloride	0.5000	ug/L	U	10/31/95
	Dibromomethane	0.5000	ug/L	U	10/31/95
	Dichlorodifluoromethane	0.5000	ug/L	U	10/31/95
	Dichloromethane	0.5000	ug/L	U	10/31/95
	Ethylbenzene	0.5000	ug/L	U	10/31/95
	Fluorotrichloromethane	0.5000	ug/L	U	10/31/95
	Hexachlorobutadiene	0.5000	ug/L	U	10/31/95
	Isopropylbenzene	0.5000	ug/L	U	10/31/95
	m-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	m+p Xylene	0.5000	ug/L	U	10/31/95
	Naphthalene	1.7000	ug/L		10/31/95
	n-Butylbenzene	0.5000	ug/L	U	10/31/95
	n-Propylbenzene	0.5000	ug/L	U	10/31/95
	o-Chlorotoluene	0.5000	ug/L	U	10/31/95
	o-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	o-Xylene	0.5000	ug/L	U	10/31/95
	p-Chlorotoluene	0.5000	ug/L	U	10/31/95
	p-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	p-Isopropyltoluene	0.5000	ug/L	U	10/31/95
	Secbutylbenzene	0.5000	ug/L	U	10/31/95
	Styrene	0.5000	ug/L	U	10/31/95
	t-1,2-Dichloroethylene	0.5000	ug/L	U	10/31/95
	Tertbutylbenzene	0.5000	ug/L	U	10/31/95
	Trichloroethylene	0.5000	ug/L	U	10/31/95
	Toluene	0.5000	ug/L	U	10/31/95
	Vinyl Chloride	0.5000	ug/L	U	10/31/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/22/95

NOV 1995
RECEIVED
ADEM - FO
MONTGOMERY

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

Attn: Dan Cooper

Lab number : 6100461
Sample number : 348-9144
Sample matrix : WATER

Report Date: 11/22/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 2:55 SMITH
Location : CA, MW-5

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

NOV 1995
ADEM
SPECIAL PROJECTS

Lab#	Test	Result	Units	DL*	Analdate
6100461	1,2,4-Trichlorobenzene	<10	ug/L		11/17/95
	1,2-Dichlorobenzene	<10	ug/L		11/17/95
	1,2-Diphenylhydrazine	<10	ug/L		11/17/95
	1,3-Dichlorobenzene	<10	ug/L		11/17/95
	1,4-Dichlorobenzene	<10	ug/L		11/17/95
	2,3,7,8-Tetrachlorodibe	<10	ug/L		11/17/95
	2,4,6-Trichlorophenol	<10	ug/L		11/17/95
	2,4-Dichlorophenol	<10	ug/L		11/17/95
	2,4-Dimethylphenol	<10	ug/L		11/17/95
	2,4-Dinitrophenol	<100	ug/L		11/17/95
	2,4-Dinitrotoluene	<10	ug/L		11/17/95
	2,6-Dinitrotoluene	<10	ug/L		11/17/95
	2-Chloronaphthalene	<10	ug/L		11/17/95
	2-Chlorophenol	<10	ug/L		11/17/95
	2-Methyl-4,6-dinitrophe	<50	ug/L		11/17/95
	2-Nitrophenol	<10	ug/L		11/17/95
	3,3'-Dichlorobenzidine	<10	ug/L		11/17/95
	4-Bromophenyl phenyl et	<10	ug/L		11/17/95
	4-Chloro-3-methylphenol	<10	ug/L		11/17/95
	4-Chlorophenyl phenyl e	<10	ug/L		11/17/95
	4-Nitrophenol	<10	ug/L		11/17/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100461	Acenaphthylene	<10	ug/L		11/17/95
	Acenaphthene	<10	ug/L		11/17/95
	Anthracene	<10	ug/L		11/17/95
	Benzo(a)anthracene	<10	ug/L		11/17/95
	Benzo(a)pyrene	<10	ug/L		11/17/95
	Benzo(b)fluoranthene	<10	ug/L		11/17/95
	Butyl benzyl phthalate	<10	ug/L		11/17/95
	Bis(2-chlorethyl)ether	<10	ug/L		11/17/95
	Bis(2-chloroethoxy)meth	<10	ug/L		11/17/95
	Bis(2-chloroisopropyl)e	<10	ug/L		11/17/95
	Bis(2-ethylhexyl)phthal	<10	ug/L		11/17/95
	Benzo(g,h,i)perylene	<10	ug/L		11/17/95
	Benzidine	<10	ug/L		11/17/95
	Benzo(k)fluoranthene	<10	ug/L		11/17/95
	Chrysene	<10	ug/L		11/17/95
	Dibenzo(a,h)anthracene	<10	ug/L		11/17/95
	Dibutyl phthalate	<10	ug/L		11/17/95
	Diethyl phthalate	<10	ug/L		11/17/95
	Dimethylphthalate	<10	ug/L		11/17/95
	Di-n-octyl phthalate	<10	ug/L		11/17/95
	Fluoranthene	<10	ug/L		11/17/95
	Fluorene	<10	ug/L		11/17/95
	Hexachlorobutadiene	<10	ug/L		11/17/95
	Hexachlorobenzene	<10	ug/L		11/17/95
	Hexachlorocyclopentadie	<10	ug/L		11/17/95
	Hexachloroethane	<10	ug/L		11/17/95
	Isophorone	<10	ug/L		11/17/95
	Indeno(1,2,3-cd)pyrene	<10	ug/L		11/17/95
	Naphthalene	<10	ug/L		11/17/95
	Nitrobenzene	<10	ug/L		11/17/95
	N-nitroso-di-n-propylam	<10	ug/L		11/17/95
	N-nitrosodimethylamine	<10	ug/L		11/17/95
	N-nitrosodiphenylamine	<10	ug/L		11/17/95
	Pyrene	<10	ug/L		11/17/95
	Phenanthrene	<10	ug/L		11/17/95
	Pentachlorophenol	<10	ug/L		11/17/95
	Phenol	<10	ug/L		11/17/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

Attn: Dan Cooper

Lab number : 6100457 Report Date: 11/03/95
Sample number : 348-9144
Sample matrix : WATER

COLLECTION INFORMATION
Date/Time/By: 10/25/95 3:10 SMITH
Location : CA. MW-7

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100457	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,1-Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	10/31/95
	1,1,2Trichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethane	0.5000	ug/L	U	10/31/95
	1,1-Dichloroethylene	0.5000	ug/L	U	10/31/95
	1,1-Dichloropropene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,3-Trichloropropane	0.5000	ug/L	U	10/31/95
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	10/31/95
	1,2,4-Trimethylbenzene	0.5000	ug/L	U	10/31/95
	1,2-Dicholoethane	0.5000	ug/L	U	10/31/95
	1,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropane	0.5000	ug/L	U	10/31/95
	1,3-Dichloropropene	0.5000	ug/L	U	10/31/95
	2,2-Dichloropropane	0.5000	ug/L	U	10/31/95
	Tetrachloroethylene	0.5000	ug/L	U	10/31/95
	Bromobenzene	0.5000	ug/L	U	10/31/95
	Bromochloromethane	0.5000	ug/L	U	10/31/95
	Bromodichloromethane	0.5000	ug/L	U	10/31/95

4 NOV 1995 ADEM SPECIAL PROJECTS

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* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
[illegible]	Benzene	0.5000	ug/L	U	10/31/95
	Bromomethane	0.5000	ug/L	U	10/31/95
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	10/31/95
	Chlorobenzene	0.5000	ug/L	U	10/31/95
	Chlorodibromomethane	0.5000	ug/L	U	10/31/95
	Chloroethane	0.5000	ug/L	U	10/31/95
	Bromoform	0.5000	ug/L	U	10/31/95
	Chloroform	0.5000	ug/L	U	10/31/95
	Chloromethane	0.5000	ug/L	U	10/31/95
	Carbon Tetrachloride	0.5000	ug/L	U	10/31/95
	Dibromomethane	0.5000	ug/L	U	10/31/95
	Dichlorodifluoromethane	0.5000	ug/L	U	10/31/95
	Dichloromethane	0.5000	ug/L	U	10/31/95
	Ethylbenzene	0.5000	ug/L	U	10/31/95
	Fluorotrichloromethane	0.5000	ug/L	U	10/31/95
	Hexachlorobutadiene	0.5000	ug/L	U	10/31/95
	Isopropylbenzene	0.5000	ug/L	U	10/31/95
	m-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	m+p Xylene	0.5000	ug/L	U	10/31/95
	Naphthalene	0.9000	ug/L		10/31/95
	n-Butylbenzene	0.5000	ug/L	U	10/31/95
	n-Propylbenzene	0.5000	ug/L	U	10/31/95
	o-Chlorotoluene	0.5000	ug/L	U	10/31/95
	o-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	o-Xylene	0.5000	ug/L	U	10/31/95
	p-Chlorotoluene	0.5000	ug/L	U	10/31/95
	p-Dichlorobenzene	0.5000	ug/L	U	10/31/95
	p-Isopropyltoluene	0.5000	ug/L	U	10/31/95
	Secbutylbenzene	0.5000	ug/L	U	10/31/95
	Styrene	0.5000	ug/L	U	10/31/95
	t-1,2-Dichloroethylene	0.5000	ug/L	U	10/31/95
	Tertbutylbenzene	0.5000	ug/L	U	10/31/95
	Trichloroethylene	0.5000	ug/L	U	10/31/95
	Toluene	0.5000	ug/L	U	10/31/95
	Vinyl Chloride	0.5000	ug/L	U	10/31/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/01/95

To: Alabama Hazardous Cleanup
1751-W.L. Dickinson Drive
Montgomery AL 36109

DEC 1995
RECEIVED
ADEM - FO
MONTGOMERY

Attn: Dan Cooper

Lab number : 6100462
Sample number : 348-9144
Sample matrix : WATER

Report Date: 12/01/95

COLLECTION INFORMATION
Date/Time/By: 10/25/95 3:10 SMITH
Location : CA, MW-7

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 1, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100462	1,2,4-Trichlorobenzene	5.0000	ug/L	U	11/29/95
	1,2-Dichlorobenzene	5.0000	ug/L	U	11/29/95
	1,2-Diphenylhydrazine	5.0000	ug/L	U	11/29/95
	1,3-Dichlorobenzene	5.0000	ug/L	U	11/29/95
	1,4-Dichlorobenzene	5.0000	ug/L	U	11/29/95
	2,3,7,8-Tetrachlorodibe	5.0000	ug/L	U	11/29/95
	2,4,6-Trichlorophenol	5.0000	ug/L	U	11/29/95
	2,4-Dichlorophenol	5.0000	ug/L	U	11/29/95
	2,4-Dimethylphenol	5.0000	ug/L	U	11/29/95
	2,4-Dinitrophenol	50.0000	ug/L	U	11/29/95
	2,4-Dinitrotoluene	5.0000	ug/L	U	11/29/95
	2,6-Dinitrotoluene	5.0000	ug/L	U	11/29/95
	2-Chloronaphthalene	5.0000	ug/L	U	11/29/95
	2-Chlorophenol	5.0000	ug/L	U	11/29/95
	2-Methyl-4,6-dinitrophe	25.0000	ug/L	U	11/29/95
	2-Nitrophenol	5.0000	ug/L	U	11/29/95
	3,3'-Dichlorobenzidine	5.0000	ug/L	U	11/29/95
	4-Bromophenyl phenyl et	5.0000	ug/L	U	11/29/95
	4-Chloro-3-methylphenol	5.0000	ug/L	U	11/29/95
	4-Chlorophenyl phenyl e	5.0000	ug/L	U	11/29/95
	4-Nitrophenol	5.0000	ug/L	U	11/29/95

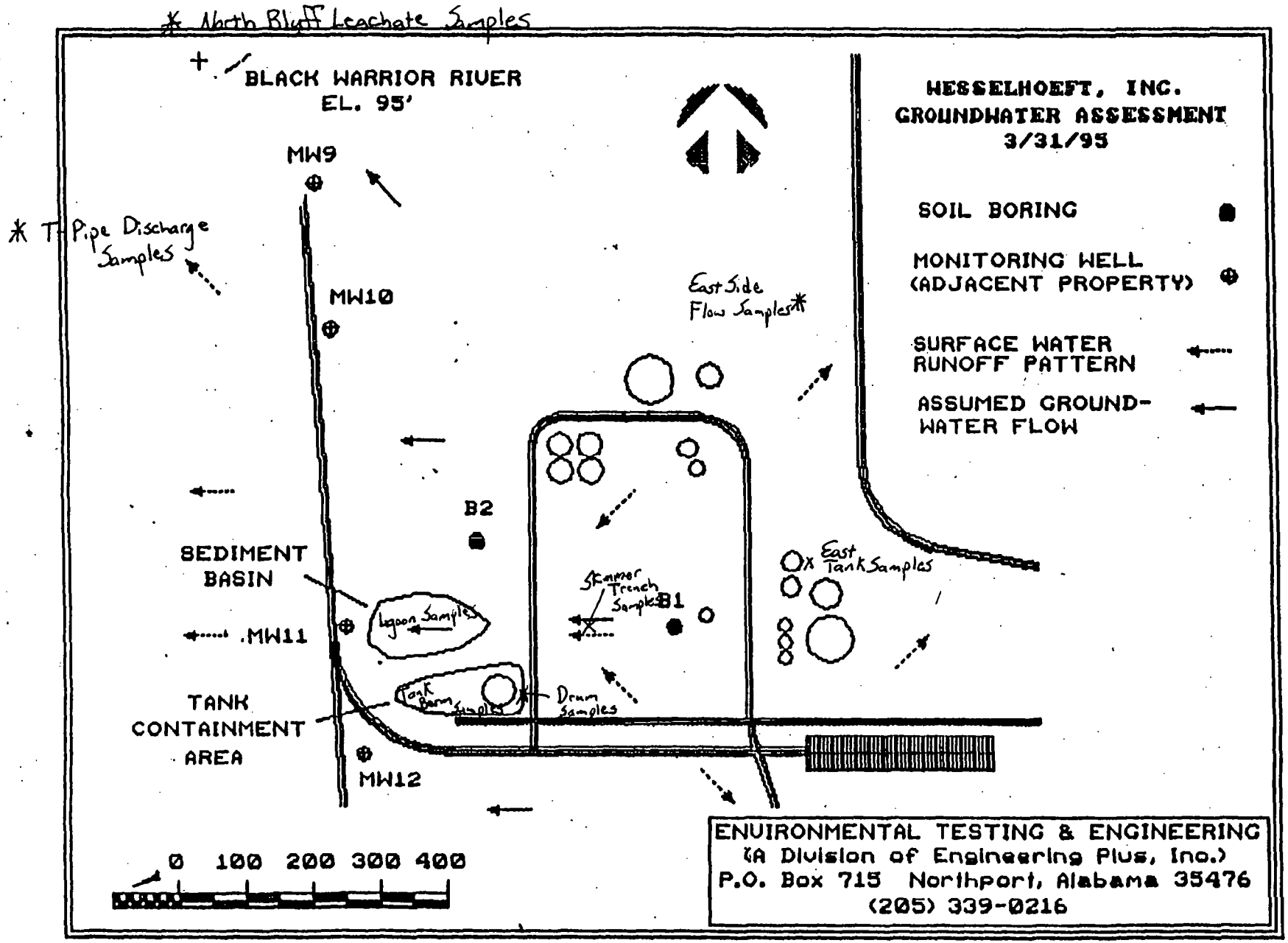
* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 1, 1995

Lab#	Test	Result	Units	DL*	Analdate
6100462	Acenaphthylene	5.0000	ug/L	U	11/29/95
	Acenaphthene	5.0000	ug/L	U	11/29/95
	Anthracene	5.0000	ug/L	U	11/29/95
	Benzo(a)anthracene	5.0000	ug/L	U	11/29/95
	Benzo(a)pyrene	5.0000	ug/L	U	11/29/95
	Benzo(b)fluoranthene	5.0000	ug/L	U	11/29/95
	Butyl benzyl phthalate	5.0000	ug/L	U	11/29/95
	Bis(2-chlorethyl)ether	5.0000	ug/L	U	11/29/95
	Bis(2-chloroethoxy)meth	5.0000	ug/L	U	11/29/95
	Bis(2-chloroisopropyl)e	5.0000	ug/L	U	11/29/95
	Bis(2-ethylhexyl)phthal	5.0000	ug/L	U	11/29/95
	Benzo(g,h,i)perylene	5.0000	ug/L	U	11/29/95
	Benzidine	5.0000	ug/L	U	11/29/95
	Benzo(k)fluoranthene	5.0000	ug/L	U	11/29/95
	Chrysene	5.0000	ug/L	U	11/29/95
	Dibenzo(a,h)anthracene	5.0000	ug/L	U	11/29/95
	Dibutyl phthalate	5.0000	ug/L	U	11/29/95
	Diethyl phthalate	5.0000	ug/L	U	11/29/95
	Dimethylphthalate	5.0000	ug/L	U	11/29/95
	Di-n-octyl phthalate	5.0000	ug/L	U	11/29/95
	Fluoranthene	5.0000	ug/L	U	11/29/95
	Fluorene	5.0000	ug/L	U	11/29/95
	Hexachlorobutadiene	5.0000	ug/L	U	11/29/95
	Hexachlorobenzene	5.0000	ug/L	U	11/29/95
	Hexachlorocyclopentadie	5.0000	ug/L	U	11/29/95
	Hexachloroethane	5.0000	ug/L	U	11/29/95
	Isophorone	5.0000	ug/L	U	11/29/95
	Indeno(1,2,3-cd)pyrene	5.0000	ug/L	U	11/29/95
	Naphthalene	5.0000	ug/L	U	11/29/95
	Nitrobenzene	5.0000	ug/L	U	11/29/95
	N-nitroso-di-n-propylam	5.0000	ug/L	U	11/29/95
	N-nitrosodimethylamine	5.0000	ug/L	U	11/29/95
	N-nitrosodiphenylamine	5.0000	ug/L	U	11/29/95
	Pyrene	5.0000	ug/L	U	11/29/95
	Phenanthrene	5.0000	ug/L	U	11/29/95
	Pentachlorophenol	5.0000	ug/L	U	11/29/95
	Phenol	5.0000	ug/L	U	11/29/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

APPENDIX D


* North Bluff Leachate Samples
BLACK WARRIOR RIVER
EL. 95'
MW9
* T-Pipe Discharge Samples
MW10
East Side Flow Samples*
B2
SEDIMENT BASIN
Lagoon Samples
MW11
Skimmer Trench Samples
B1
East Tank Samples
TANK CONTAINMENT AREA
Tank Berm Samples
Drum Samples
MW12
0 100 200 300 400
HESSELHOEFT, INC.
GROUNDWATER ASSESSMENT
3/31/95
SOIL BORING
MONITORING WELL (ADJACENT PROPERTY)
SURFACE WATER RUNOFF PATTERN
ASSUMED GROUND-WATER FLOW
ENVIRONMENTAL TESTING & ENGINEERING
(A Division of Engineering Plus, Inc.)
P.O. Box 715 Northport, Alabama 35476
(205) 339-0216

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
10/04/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

OCT 1995
RECEIVED
ADEM - FO
MONTGOMERY

Attn:

Lab number : 5109202
Sample number : 521-6243
Sample matrix : WATER

Report Date: 10/04/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:10 STAMPS
Location : LAGOON LAGVS CRACKER ASPH

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 4, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109202	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	10/02/95
	1,1,1-Trichloroethane	5.0000	ug/L	U	10/02/95
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	10/02/95
	1,1,2Trichloroethane	5.0000	ug/L	U	10/02/95
	1,1-Dichloroethane	5.0000	ug/L	U	10/02/95
	1,1-Dichloroethylene	5.0000	ug/L	U	10/02/95
	1,1-Dichloropropene	5.0000	ug/L	U	10/02/95
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	10/02/95
	1,2,3-Trichloropropane	5.0000	ug/L	U	10/02/95
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	10/02/95
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	10/02/95
	1,2-Dicholoethane	5.0000	ug/L	U	10/02/95
	1,2-Dichloropropane	5.0000	ug/L	U	10/02/95
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	10/02/95
	1,3-Dichloropropane	5.0000	ug/L	U	10/02/95
	1,3-Dichloropropene	5.0000	ug/L	U	10/02/95
	2,2-Dichloropropane	5.0000	ug/L	U	10/02/95
	Tetrachloroethylene	5.0000	ug/L	U	10/02/95
	Bromobenzene	5.0000	ug/L	U	10/02/95
	Bromochloromethane	5.0000	ug/L	U	10/02/95
	Bromodichloromethane	5.0000	ug/L	U	10/02/95

OCT 1995
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SPECIAL PROJECTS

* U denotes results less than the instrument detection limit. < less than sample detection limit.

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ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 4, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109202	Benzene	5.0000	ug/L	U	10/02/95
	Bromomethane	5.0000	ug/L	U	10/02/95
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	10/02/95
	Chlorobenzene	5.0000	ug/L	U	10/02/95
	Chlorodibromomethane	5.0000	ug/L	U	10/02/95
	Chloroethane	5.0000	ug/L	U	10/02/95
	Bromoform	5.0000	ug/L	U	10/02/95
	Chloroform	5.0000	ug/L	U	10/02/95
	Chloromethane	5.0000	ug/L	U	10/02/95
	Carbon Tetrachloride	5.0000	ug/L	U	10/02/95
	Dibromomethane	5.0000	ug/L	U	10/02/95
	Dichlorodifluoromethane	5.0000	ug/L	U	10/02/95
	Dichloromethane	5.0000	ug/L	U	10/02/95
	Ethylbenzene	5.0000	ug/L	U	10/02/95
	Fluorotrichloromethane	5.0000	ug/L	U	10/02/95
	Hexachlorobutadiene	5.0000	ug/L	U	10/02/95
	Isopropylbenzene	5.0000	ug/L	U	10/02/95
	m-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	m+p Xylene	5.0000	ug/L	U	10/02/95
	Naphthalene	5.0000	ug/L	U	10/02/95
	n-Butylbenzene	5.0000	ug/L	U	10/02/95
	n-Propylbenzene	5.0000	ug/L	U	10/02/95
	o-Chlorotoluene	5.0000	ug/L	U	10/02/95
	o-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	o-Xylene	5.0000	ug/L	U	10/02/95
	p-Chlorotoluene	5.0000	ug/L	U	10/02/95
	p-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	p-Isopropyltoluene	5.0000	ug/L	U	10/02/95
	Secbutylbenzene	5.0000	ug/L	U	10/02/95
	Styrene	5.0000	ug/L	U	10/02/95
	t-1,2-Dichloroethylene	5.0000	ug/L	U	10/02/95
	Tertbutylbenzene	5.0000	ug/L	U	10/02/95
	Trichloroethylene	5.0000	ug/L	U	10/02/95
	Toluene	5.0000	ug/L	U	10/02/95
	Vinyl Chloride	5.0000	ug/L	U	10/02/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/16/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

NOV 1995
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MONTGOMERY

Attn:

Lab number : 5109208
Sample number : 521-6243
Sample matrix : WATER

Report Date: 11/16/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:10 STAMPS
Location : LAGOON LAG WS-CRACKER ASP

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 16, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109208	1,2,4-Trichlorobenzene	<50	ug/L		11/03/95
	1,2-Dichlorobenzene	<50	ug/L		11/03/95
	1,2-Diphenylhydrazine	<50	ug/L		11/03/95
	1,3-Dichlorobenzene	<50	ug/L		11/03/95
	1,4-Dichlorobenzene	<50	ug/L		11/03/95
	2,3,7,8-Tetrachlorodibe	<50	ug/L		11/03/95
	2,4,6-Trichlorophenol	<50	ug/L		11/03/95
	2,4-Dichlorophenol	<50	ug/L		11/03/95
	2,4-Dimethylphenol	<50	ug/L		11/03/95
	2,4-Dinitrophenol	<500	ug/L		11/03/95
	2,4-Dinitrotoluene	<50	ug/L		11/03/95
	2,6-Dinitrotoluene	<50	ug/L		11/03/95
	2-Chloronaphthalene	<50	ug/L		11/03/95
	2-Chlorophenol	<50	ug/L		11/03/95
	2-Methyl-4,6-dinitrophe	<250	ug/L		11/03/95
	2-Nitrophenol	<50	ug/L		11/03/95
	3,3'-Dichlorobenzidine	<50	ug/L		11/03/95
	4-Bromophenyl phenyl et	<50	ug/L		11/03/95
	4-Chloro-3-methylphenol	<50	ug/L		11/03/95
	4-Chlorophenyl phenyl e	<50	ug/L		11/03/95
	4-Nitrophenol	<50	ug/L		11/03/95

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 16, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109208	Acenaphthylene	<50	ug/L		11/03/95
	Acenaphthene	<50	ug/L		11/03/95
	Anthracene	<50	ug/L		11/03/95
	Benzo(a)anthracene	<50	ug/L		11/03/95
	Benzo(a)pyrene	<50	ug/L		11/03/95
	Benzo(b)fluoranthene	<50	ug/L		11/03/95
	Butyl benzyl phthalate	<50	ug/L		11/03/95
	Bis(2-chlorethyl)ether	<50	ug/L		11/03/95
	Bis(2-chloroethoxy)meth	<50	ug/L		11/03/95
	Bis(2-chloroisopropyl)e	<50	ug/L		11/03/95
	Bis(2-ethylhexyl)phthal	<50	ug/L		11/03/95
	Benzo(g,h,i)perylene	<50	ug/L		11/03/95
	Benzidine	<50	ug/L		11/03/95
	Benzo(k)fluoranthene	<50	ug/L		11/03/95
	Chrysene	<50	ug/L		11/03/95
	Dibenzo(a,h)anthracene	<50	ug/L		11/03/95
	Dibutyl phthalate	<50	ug/L		11/03/95
	Diethyl phthalate	<50	ug/L		11/03/95
	Dimethylphthalate	<50	ug/L		11/03/95
	Di-n-octyl phthalate	<50	ug/L		11/03/95
	Fluoranthene	<50	ug/L		11/03/95
	Fluorene	<50	ug/L		11/03/95
	Hexachlorobutadiene	<50	ug/L		11/03/95
	Hexachlorobenzene	<50	ug/L		11/03/95
	Hexachlorocyclopentadie	<50	ug/L		11/03/95
	Hexachloroethane	<50	ug/L		11/03/95
	Isophorone	<50	ug/L		11/03/95
	Indeno(1,2,3-cd)pyrene	<50	ug/L		11/03/95
	Naphthalene	<50	ug/L		11/03/95
	Nitrobenzene	<50	ug/L		11/03/95
	N-nitroso-di-n-propylam	<50	ug/L		11/03/95
	N-nitrosodimethylamine	<50	ug/L		11/03/95
	N-nitrosodiphenylamine	<50	ug/L		11/03/95
	Pyrene	<50	ug/L		11/03/95
	Phenanthrene	<50	ug/L		11/03/95
	Pentachlorophenol	<50	ug/L		11/03/95
	Phenol	<50	ug/L		11/03/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
10/04/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

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MONTGOMERY

Attn:

Lab number : 5109199
Sample number : 521-6243
Sample matrix : WATER

Report Date: 10/04/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:25 STAMPS
Location : WEST BERM DRUM DUP

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 4, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109199	1,1,1,2-Tetrachloroetha	<22	ug/L		10/02/95
	1,1,1-Trichloroethane	<22	ug/L		10/02/95
	1,1,2,2-Tetrachloroetha	<22	ug/L		10/02/95
	1,1,2Trichloroethane	<22	ug/L		10/02/95
	1,1-Dichloroethane	<22	ug/L		10/02/95
	1,1-Dichloroethylene	<22	ug/L		10/02/95
	1,1-Dichloropropene	<22	ug/L		10/02/95
	1,2,3-Trichlorobenzene	<22	ug/L		10/02/95
	1,2,3-Trichloropropane	<22	ug/L		10/02/95
	1,2,4-Trichlorobenzene	<22	ug/L		10/02/95
	1,2,4-Trimethylbenzene	1055.000	ug/L		10/02/95
		0			
	1,2-Dicholoethane	<22	ug/L		10/02/95
	1,2-Dichloropropane	<22	ug/L		10/02/95
	1,3,5-Trimethylbenzene	313.7200	ug/L		10/02/95
	1,3-Dichloropropane	<22	ug/L		10/02/95
	1,3-Dichloropropene	<22	ug/L		10/02/95
	2,2-Dichloropropane	<22	ug/L		10/02/95
	Tetrachloroethylene	<22	ug/L		10/02/95
	Bromobenzene	<22	ug/L		10/02/95
	Bromochloromethane	<22	ug/L		10/02/95

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 4, 1995

Lab#	Test	Result	UnitsDL*	Analdate
5109199	Bromodichloromethane	<22	ug/L	10/02/95
	Benzene	<22	ug/L	10/02/95
	Bromomethane	<22	ug/L	10/02/95
	cis-1,2-Dichloroethylen	<22	ug/L	10/02/95
	Chlorobenzene	<22	ug/L	10/02/95
	Chlorodibromomethane	<22	ug/L	10/02/95
	Chloroethane	<22	ug/L	10/02/95
	Bromoform	<22	ug/L	10/02/95
	Chloroform	<22	ug/L	10/02/95
	Chloromethane	<22	ug/L	10/02/95
	Carbon Tetrachloride	<22	ug/L	10/02/95
	Dibromomethane	<22	ug/L	10/02/95
	Dichlorodifluoromethane	<22	ug/L	10/02/95
	Dichloromethane	<22	ug/L	10/02/95
	Ethylbenzene	<22	ug/L	10/02/95
	Fluorotrichloromethane	<22	ug/L	10/02/95
	Hexachlorobutadiene	<22	ug/L	10/02/95
	Isopropylbenzene	<22	ug/L	10/02/95
	m-Dichlorobenzene	32.5600	ug/L	10/02/95
	m+p Xylene	1119.400	ug/L	10/02/95
		0		
	Naphthalene	833.0000	ug/L	10/02/95
	n-Butylbenzene	<22	ug/L	10/02/95
	n-Propylbenzene	<22	ug/L	10/02/95
	o-Chlorotoluene	<22	ug/L	10/02/95
	o-Dichlorobenzene	<22	ug/L	10/02/95
	o-Xylene	1029.000	ug/L	10/02/95
		0		
	p-Chlorotoluene	<22	ug/L	10/02/95
	p-Dichlorobenzene	<22	ug/L	10/02/95
	p-Isopropyltoluene	<22	ug/L	10/02/95
	Secbutylbenzene	<22	ug/L	10/02/95
	Styrene	<22	ug/L	10/02/95
	t-1,2-Dichloroethylene	<22	ug/L	10/02/95
	Tertbutylbenzene	<22	ug/L	10/02/95
	Trichloroethylene	<22	ug/L	10/02/95
	Toluene	<22	ug/L	10/02/95
	Vinyl Chloride	<22	ug/L	10/02/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
10/31/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

OCT 1995
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MONTGOMERY

Attn:

Lab number : 5109204
Sample number : 521-6243
Sample matrix : WATER

Report Date: 10/31/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:25 STAMPS
Location : DRUM-WEST BERM

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 31, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109204	1,2,4-Trichlorobenzene	<250	ug/L		10/19/95
	1,2-Dichlorobenzene	<250	ug/L		10/19/95
	1,2-Diphenylhydrazine	<250	ug/L		10/19/95
	1,3-Dichlorobenzene	<250	ug/L		10/19/95
	1,4-Dichlorobenzene	<250	ug/L		10/19/95
	2,3,7,8-Tetrachlorodibe	<250	ug/L		10/19/95
	2,4,6-Trichlorophenol	<250	ug/L		10/19/95
	2,4-Dichlorophenol	<250	ug/L		10/19/95
	2,4-Dimethylphenol	<250	ug/L		10/19/95
	2,4-Dinitrophenol	<2500	ug/L		10/19/95
	2,4-Dinitrotoluene	<250	ug/L		10/19/95
	2,6-Dinitrotoluene	<250	ug/L		10/19/95
	2-Chloronaphthalene	<250	ug/L		10/19/95
	2-Chlorophenol	<250	ug/L		10/19/95
	2-Methyl-4,6-dinitrophe	<1250	ug/L		10/19/95
	2-Nitrophenol	<250	ug/L		10/19/95
	3,3'-Dichlorobenzidine	<250	ug/L		10/19/95
	4-Bromophenyl phenyl et	<250	ug/L		10/19/95
	4-Chloro-3-methylphenol	<250	ug/L		10/19/95
	4-Chlorophenyl phenyl e	<250	ug/L		10/19/95
	4-Nitrophenol	<250	ug/L		10/19/95

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 31, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109204	Acenaphthylene	<250	ug/L		10/19/95
	Acenaphthene	<250	ug/L		10/19/95
	Anthracene	<250	ug/L		10/19/95
	Benzo(a)anthracene	<250	ug/L		10/19/95
	Benzo(a)pyrene	<250	ug/L		10/19/95
	Benzo(b)fluoranthene	<250	ug/L		10/19/95
	Butyl benzyl phthalate	<250	ug/L		10/19/95
	Bis(2-chlorethyl)ether	<250	ug/L		10/19/95
	Bis(2-chloroethoxy)meth	<250	ug/L		10/19/95
	Bis(2-chloroisopropyl)e	<250	ug/L		10/19/95
	Bis(2-ethylhexyl)phthal	<250	ug/L		10/19/95
	Benzo(g,h,i)perylene	<250	ug/L		10/19/95
	Benzidine	<250	ug/L		10/19/95
	Benzo(k)fluoranthene	<250	ug/L		10/19/95
	Chrysene	<250	ug/L		10/19/95
	Dibenzo(a,h)anthracene	<250	ug/L		10/19/95
	Dibutyl phthalate	<250	ug/L		10/19/95
	Diethyl phthalate	<250	ug/L		10/19/95
	Dimethylphthalate	<250	ug/L		10/19/95
	Di-n-octyl phthalate	<250	ug/L		10/19/95
	Fluoranthene	<250	ug/L		10/19/95
	Fluorene	<250	ug/L		10/19/95
	Hexachlorobutadiene	<250	ug/L		10/19/95
	Hexachlorobenzene	<250	ug/L		10/19/95
	Hexachlorocyclopentadie	<250	ug/L		10/19/95
	Hexachloroethane	<250	ug/L		10/19/95
	Isophorone	<250	ug/L		10/19/95
	Indeno(1,2,3-cd)pyrene	<250	ug/L		10/19/95
	Naphthalene	1013.100	ug/L		10/19/95
		0			
	Nitrobenzene	<250	ug/L		10/19/95
	N-nitroso-di-n-propylam	<250	ug/L		10/19/95
	N-nitrosodimethylamine	<250	ug/L		10/19/95
	N-nitrosodiphenylamine	<250	ug/L		10/19/95
	Pyrene	<250	ug/L		10/19/95
	Phenanthrene	<250	ug/L		10/19/95
	Pentachlorophenol	<250	ug/L		10/19/95
	Phenol	<250	ug/L		10/19/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
10/04/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

OCT 1995
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MONTGOMERY

Attn:

Lab number : 5109203
Sample number : 521-6243
Sample matrix : WATER

Report Date: 10/04/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:20 STAMPS
Location : TANK BERM TB VS CRACKER A

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 4, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109203	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	10/02/95
	1,1,1-Trichloroethane	5.0000	ug/L	U	10/02/95
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	10/02/95
	1,1,2Trichloroethane	5.0000	ug/L	U	10/02/95
	1,1-Dichloroethane	5.0000	ug/L	U	10/02/95
	1,1-Dichloroethylene	5.0000	ug/L	U	10/02/95
	1,1-Dichloropropene	5.0000	ug/L	U	10/02/95
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	10/02/95
	1,2,3-Trichloropropane	5.0000	ug/L	U	10/02/95
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	10/02/95
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	10/02/95
	1.2-Dicholoethane	5.0000	ug/L	U	10/02/95
	1,2-Dichloropropane	5.0000	ug/L	U	10/02/95
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	10/02/95
	1,3-Dichloropropane	5.0000	ug/L	U	10/02/95
	1,3-Dichloropropene	5.0000	ug/L	U	10/02/95
	2,2-Dichloropropane	5.0000	ug/L	U	10/02/95
	Tetrachloroethylene	5.0000	ug/L	U	10/02/95
	Bromobenzene	5.0000	ug/L	U	10/02/95
	Bromochloromethane	5.0000	ug/L	U	10/02/95
	Bromodichloromethane	5.0000	ug/L	U	10/02/95

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* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 4, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109203	Benzene	5.0000	ug/L	U	10/02/95
	Bromomethane	5.0000	ug/L	U	10/02/95
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	10/02/95
	Chlorobenzene	5.0000	ug/L	U	10/02/95
	Chlorodibromomethane	5.0000	ug/L	U	10/02/95
	Chloroethane	5.0000	ug/L	U	10/02/95
	Bromoform	5.0000	ug/L	U	10/02/95
	Chloroform	5.0000	ug/L	U	10/02/95
	Chloromethane	5.0000	ug/L	U	10/02/95
	Carbon Tetrachloride	5.0000	ug/L	U	10/02/95
	Dibromomethane	5.0000	ug/L	U	10/02/95
	Dichlorodifluoromethane	5.0000	ug/L	U	10/02/95
	Dichloromethane	5.0000	ug/L	U	10/02/95
	Ethylbenzene	5.0000	ug/L	U	10/02/95
	Fluorotrichloromethane	5.0000	ug/L	U	10/02/95
	Hexachlorobutadiene	5.0000	ug/L	U	10/02/95
	Isopropylbenzene	5.0000	ug/L	U	10/02/95
	m-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	m+p Xylene	5.0000	ug/L	U	10/02/95
	Naphthalene	5.0000	ug/L	U	10/02/95
	n-Butylbenzene	5.0000	ug/L	U	10/02/95
	n-Propylbenzene	5.0000	ug/L	U	10/02/95
	o-Chlorotoluene	5.0000	ug/L	U	10/02/95
	o-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	o-Xylene	5.0000	ug/L	U	10/02/95
	p-Chlorotoluene	5.0000	ug/L	U	10/02/95
	p-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	p-Isopropyltoluene	5.0000	ug/L	U	10/02/95
	Secbutylbenzene	5.0000	ug/L	U	10/02/95
	Styrene	5.0000	ug/L	U	10/02/95
	t-1,2-Dichloroethylene	5.0000	ug/L	U	10/02/95
	Tertbutylbenzene	5.0000	ug/L	U	10/02/95
	Trichloroethylene	5.0000	ug/L	U	10/02/95
	Toluene	5.0000	ug/L	U	10/02/95
	Vinyl Chloride	5.0000	ug/L	U	10/02/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

NOV 1995
RECEIVED
ADEM - FO
MONTGOMERY

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

Attn:

Lab number : 5109206
Sample number : 521-6243
Sample matrix : WATER

Report Date: 11/03/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:20 STAMPS
Location : TANK BERM TB WS

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109206	1,2,4-Trichlorobenzene	<25	ug/L		10/17/95
	1,2-Dichlorobenzene	<25	ug/L		10/17/95
	1,2-Diphenylhydrazine	<25	ug/L		10/17/95
	1,3-Dichlorobenzene	<25	ug/L		10/17/95
	1,4-Dichlorobenzene	<25	ug/L		10/17/95
	2,3,7,8-Tetrachlorodibe	<25	ug/L		10/17/95
	2,4,6-Trichlorophenol	<25	ug/L		10/17/95
	2,4-Dichlorophenol	<25	ug/L		10/17/95
	2,4-Dimethylphenol	<25	ug/L		10/17/95
	2,4-Dinitrophenol	<250	ug/L		10/17/95
	2,4-Dinitrotoluene	<25	ug/L		10/17/95
	2,6-Dinitrotoluene	<25	ug/L		10/17/95
	2-Chloronaphthalene	<25	ug/L		10/17/95
	2-Chlorophenol	<25	ug/L		10/17/95
	2-Methyl-4,6-dinitrophe	<125	ug/L		10/17/95
	2-Nitrophenol	<25	ug/L		10/17/95
	3,3'-Dichlorobenzidine	<25	ug/L		10/17/95
	4-Bromophenyl phenyl et	<25	ug/L		10/17/95
	4-Chloro-3-methylphenol	<25	ug/L		10/17/95
	4-Chlorophenyl phenyl e	<25	ug/L		10/17/95
	4-Nitrophenol	<25	ug/L		10/17/95

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SPECIAL PROJECTS

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* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109206	Acenaphthylene	<25	ug/L		10/17/95
	Acenaphthene	<25	ug/L		10/17/95
	Anthracene	<25	ug/L		10/17/95
	Benzo(a)anthracene	<25	ug/L		10/17/95
	Benzo(a)pyrene	<25	ug/L		10/17/95
	Benzo(b)fluoranthene	<25	ug/L		10/17/95
	Butyl benzyl phthalate	<25	ug/L		10/17/95
	Bis(2-chlorethyl)ether	<25	ug/L		10/17/95
	Bis(2-chloroethoxy)meth	<25	ug/L		10/17/95
	Bis(2-chloroisopropyl)e	<25	ug/L		10/17/95
	Bis(2-ethylhexyl)phthal	<25	ug/L		10/17/95
	Benzo(g,h,i)perylene	<25	ug/L		10/17/95
	Benzidine	<25	ug/L		10/17/95
	Benzo(k)fluoranthene	<25	ug/L		10/17/95
	Chrysene	<25	ug/L		10/17/95
	Dibenzo(a,h)anthracene	<25	ug/L		10/17/95
	Dibutyl phthalate	<25	ug/L		10/17/95
	Diethyl phthalate	<25	ug/L		10/17/95
	Dimethylphthalate	<25	ug/L		10/17/95
	Di-n-octyl phthalate	<25	ug/L		10/17/95
	Fluoranthene	<25	ug/L		10/17/95
	Fluorene	<25	ug/L		10/17/95
	Hexachlorobutadiene	<25	ug/L		10/17/95
	Hexachlorobenzene	<25	ug/L		10/17/95
	Hexachlorocyclopentadie	<25	ug/L		10/17/95
	Hexachloroethane	<25	ug/L		10/17/95
	Isophorone	<25	ug/L		10/17/95
	Indeno(1,2,3-cd)pyrene	<25	ug/L		10/17/95
	Naphthalene	<25	ug/L		10/17/95
	Nitrobenzene	<25	ug/L		10/17/95
	N-nitroso-di-n-propylam	<25	ug/L		10/17/95
	N-nitrosodimethylamine	<25	ug/L		10/17/95
	N-nitrosodiphenylamine	<25	ug/L		10/17/95
	Pyrene	<25	ug/L		10/17/95
	Phenanthrene	<25	ug/L		10/17/95
	Pentachlorophenol	<25	ug/L		10/17/95
	Phenol	<25	ug/L		10/17/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
10/31/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

OCT 1995
RECEIVED
ADEM - FO
MONTGOMERY

Attn:

Lab number : 5109207
Sample number : 521-6243
Sample matrix : WATER

Report Date: 10/31/95

COLLECTION INFORMATION
Date/Time/By: 09/27/95 3:45 STAMPS
Location : T PIPE DISCHARGE-LAWTER

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 31, 1995

Lab#	Test	Result	UnitsDL*	Analdate
5109207	1,2,4-Trichlorobenzene	<125	ug/L	10/29/95
	1,2-Dichlorobenzene	<125	ug/L	10/29/95
	1,2-Diphenylhydrazine	<125	ug/L	10/29/95
	1,3-Dichlorobenzene	<125	ug/L	10/29/95
	1,4-Dichlorobenzene	<125	ug/L	10/29/95
	2,3,7,8-Tetrachlorodibe	<125	ug/L	10/29/95
	2,4,6-Trichlorophenol	<125	ug/L	10/29/95
	2,4-Dichlorophenol	<125	ug/L	10/29/95
	2,4-Dimethylphenol	<125	ug/L	10/29/95
	2,4-Dinitrophenol	<1250	ug/L	10/29/95
	2,4-Dinitrotoluene	<125	ug/L	10/29/95
	2,6-Dinitrotoluene	<125	ug/L	10/29/95
	2-Chloronaphthalene	<125	ug/L	10/29/95
	2-Chlorophenol	<125	ug/L	10/29/95
	2-Methyl-4,6-dinitrophe	<625	ug/L	10/29/95
	2-Nitrophenol	<125	ug/L	10/29/95
	3,3'-Dichlorobenzidine	<125	ug/L	10/29/95
	4-Bromophenyl phenyl et	<125	ug/L	10/29/95
	4-Chloro-3-methylphenol	<125	ug/L	10/29/95
	4-Chlorophenyl phenyl e	<125	ug/L	10/29/95
	4-Nitrophenol	<125	ug/L	10/29/95

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 31, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109207	Acenaphthylene	<125	ug/L		10/29/95
	Acenaphthene	<125	ug/L		10/29/95
	Anthracene	<125	ug/L		10/29/95
	Benzo(a)anthracene	<125	ug/L		10/29/95
	Benzo(a)pyrene	<125	ug/L		10/29/95
	Benzo(b)fluoranthene	<125	ug/L		10/29/95
	Butyl benzyl phthalate	<125	ug/L		10/29/95
	Bis(2-chlorethyl)ether	<125	ug/L		10/29/95
	Bis(2-chloroethoxy)meth	<125	ug/L		10/29/95
	Bis(2-chloroisopropyl)e	<125	ug/L		10/29/95
	Bis(2-ethylhexyl)phthal	<125	ug/L		10/29/95
	Benzo(g,h,i)perylene	<125	ug/L		10/29/95
	Benzidine	<125	ug/L		10/29/95
	Benzo(k)fluoranthene	<125	ug/L		10/29/95
	Chrysene	<125	ug/L		10/29/95
	Dibenzo(a,h)anthracene	<125	ug/L		10/29/95
	Dibutyl phthalate	<125	ug/L		10/29/95
	Diethyl phthalate	<125	ug/L		10/29/95
	Dimethylphthalate	<125	ug/L		10/29/95
	Di-n-octyl phthalate	<125	ug/L		10/29/95
	Fluoranthene	<125	ug/L		10/29/95
	Fluorene	<125	ug/L		10/29/95
	Hexachlorobutadiene	<125	ug/L		10/29/95
	Hexachlorobenzene	<125	ug/L		10/29/95
	Hexachlorocyclopentadie	<125	ug/L		10/29/95
	Hexachloroethane	<125	ug/L		10/29/95
	Isophorone	<125	ug/L		10/29/95
	Indeno(1,2,3-cd)pyrene	<125	ug/L		10/29/95
	Naphthalene	<125	ug/L		10/29/95
	Nitrobenzene	<125	ug/L		10/29/95
	N-nitroso-di-n-propylam	<125	ug/L		10/29/95
	N-nitrosodimethylamine	<125	ug/L		10/29/95
	N-nitrosodiphenylamine	<125	ug/L		10/29/95
	Pyrene	<125	ug/L		10/29/95
	Phenanthrene	<125	ug/L		10/29/95
	Pentachlorophenol	<125	ug/L		10/29/95
	Phenol	<125	ug/L		10/29/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
10/11/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

Attn:

Lab number : 5109201
Sample number : 521-6243
Sample matrix : WATER

Report Date: 10/11/95

COLLECTION INFORMATION
Date/Time/By: 09/27/95 3:45 STAMPS
Location : LAWTER T-PIPE DISCHARGE

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 11, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109201	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	10/03/95
	1,1,1-Trichloroethane	5.0000	ug/L	U	10/03/95
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	10/03/95
	1,1,2Trichloroethane	5.0000	ug/L	U	10/03/95
	1,1-Dichloroethane	5.0000	ug/L	U	10/03/95
	1,1-Dichloroethylene	5.0000	ug/L	U	10/03/95
	1,1-Dichloropropene	5.0000	ug/L	U	10/03/95
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	10/03/95
	1,2,3-Trichloropropane	5.0000	ug/L	U	10/03/95
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	10/03/95
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	10/03/95
	1,2-Dicholoethane	5.0000	ug/L	U	10/03/95
	1,2-Dichloropropane	5.0000	ug/L	U	10/03/95
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	10/03/95
	1,3-Dichloropropane	5.0000	ug/L	U	10/03/95
	1,3-Dichloropropene	5.0000	ug/L	U	10/03/95
	2,2-Dichloropropane	5.0000	ug/L	U	10/03/95
	Tetrachloroethylene	5.0000	ug/L	U	10/03/95
	Bromobenzene	5.0000	ug/L	U	10/03/95
	Bromochloromethane	5.0000	ug/L	U	10/03/95
	Bromodichloromethane	5.0000	ug/L	U	10/03/95

OCT 1995
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SPECIAL PROJECTS

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 11, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109201	Benzene	5.0000	ug/L	U	10/03/95
	Bromomethane	5.0000	ug/L	U	10/03/95
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	10/03/95
	Chlorobenzene	5.0000	ug/L	U	10/03/95
	Chlorodibromomethane	5.0000	ug/L	U	10/03/95
	Chloroethane	5.0000	ug/L	U	10/03/95
	Bromoform	5.0000	ug/L	U	10/03/95
	Chloroform	5.0000	ug/L	U	10/03/95
	Chloromethane	5.0000	ug/L	U	10/03/95
	Carbon Tetrachloride	5.0000	ug/L	U	10/03/95
	Dibromomethane	5.0000	ug/L	U	10/03/95
	Dichlorodifluoromethane	5.0000	ug/L	U	10/03/95
	Dichloromethane	5.0000	ug/L	U	10/03/95
	Ethylbenzene	5.0000	ug/L	U	10/03/95
	Fluorotrichloromethane	5.0000	ug/L	U	10/03/95
	Hexachlorobutadiene	5.0000	ug/L	U	10/03/95
	Isopropylbenzene	5.0000	ug/L	U	10/03/95
	m-Dichlorobenzene	5.0000	ug/L	U	10/03/95
	m+p Xylene	5.0000	ug/L	U	10/03/95
	Naphthalene	5.0000	ug/L	U	10/03/95
	n-Butylbenzene	5.0000	ug/L	U	10/03/95
	n-Propylbenzene	5.0000	ug/L	U	10/03/95
	o-Chlorotoluene	5.0000	ug/L	U	10/03/95
	o-Dichlorobenzene	5.0000	ug/L	U	10/03/95
	o-Xylene	5.0000	ug/L	U	10/03/95
	p-Chlorotoluene	5.0000	ug/L	U	10/03/95
	p-Dichlorobenzene	5.0000	ug/L	U	10/03/95
	p-Isopropyltoluene	5.0000	ug/L	U	10/03/95
	Secbutylbenzene	5.0000	ug/L	U	10/03/95
	Styrene	5.0000	ug/L	U	10/03/95
	t-1,2-Dichloroethylene	5.0000	ug/L	U	10/03/95
	Tertbutylbenzene	5.0000	ug/L	U	10/03/95
	Trichloroethylene	5.0000	ug/L	U	10/03/95
	Toluene	5.0000	ug/L	U	10/03/95
	Vinyl Chloride	5.0000	ug/L	U	10/03/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
10/04/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

OCT 1995
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MONTGOMERY

Attn:

Lab number : 5109200
Sample number : 521-6243
Sample matrix : WATER

Report Date: 10/04/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:35 STAMPS
Location : SKIMMER TRENCH-CRACKER AS

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 4, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109200	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	10/02/95
	1,1,1-Trichloroethane	5.0000	ug/L	U	10/02/95
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	10/02/95
	1,1,2Trichloroethane	5.0000	ug/L	U	10/02/95
	1,1-Dichloroethane	5.0000	ug/L	U	10/02/95
	1,1-Dichloroethylene	5.0000	ug/L	U	10/02/95
	1,1-Dichloropropene	5.0000	ug/L	U	10/02/95
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	10/02/95
	1,2,3-Trichloropropane	5.0000	ug/L	U	10/02/95
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	10/02/95
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	10/02/95
	1,2-Dicholoethane	5.0000	ug/L	U	10/02/95
	1,2-Dichloropropane	5.0000	ug/L	U	10/02/95
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	10/02/95
	1,3-Dichloropropane	5.0000	ug/L	U	10/02/95
	1,3-Dichloropropene	5.0000	ug/L	U	10/02/95
	2,2-Dichloropropane	5.0000	ug/L	U	10/02/95
	Tetrachloroethylene	5.0000	ug/L	U	10/02/95
	Bromobenzene	5.0000	ug/L	U	10/02/95
	Bromochloromethane	5.0000	ug/L	U	10/02/95
	Bromodichloromethane	5.0000	ug/L	U	10/02/95

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SPECIAL PROJECTS

* U denotes results less than the instrument detection limit, < less than sample detection limit.

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ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 4, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109200	Benzene	5.0000	ug/L	U	10/02/95
	Bromomethane	5.0000	ug/L	U	10/02/95
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	10/02/95
	Chlorobenzene	5.0000	ug/L	U	10/02/95
	Chlorodibromomethane	5.0000	ug/L	U	10/02/95
	Chloroethane	5.0000	ug/L	U	10/02/95
	Bromoform	5.0000	ug/L	U	10/02/95
	Chloroform	5.0000	ug/L	U	10/02/95
	Chloromethane	5.0000	ug/L	U	10/02/95
	Carbon Tetrachloride	5.0000	ug/L	U	10/02/95
	Dibromomethane	5.0000	ug/L	U	10/02/95
	Dichlorodifluoromethane	5.0000	ug/L	U	10/02/95
	Dichloromethane	5.0000	ug/L	U	10/02/95
	Ethylbenzene	5.0000	ug/L	U	10/02/95
	Fluorotrichloromethane	5.0000	ug/L	U	10/02/95
	Hexachlorobutadiene	5.0000	ug/L	U	10/02/95
	Isopropylbenzene	5.0000	ug/L	U	10/02/95
	m-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	m+p Xylene	5.0000	ug/L	U	10/02/95
	Naphthalene	5.0000	ug/L	U	10/02/95
	n-Butylbenzene	5.0000	ug/L	U	10/02/95
	n-Propylbenzene	5.0000	ug/L	U	10/02/95
	o-Chlorotoluene	5.0000	ug/L	U	10/02/95
	o-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	o-Xylene	5.0000	ug/L	U	10/02/95
	p-Chlorotoluene	5.0000	ug/L	U	10/02/95
	p-Dichlorobenzene	5.0000	ug/L	U	10/02/95
	p-Isopropyltoluene	5.0000	ug/L	U	10/02/95
	Secbutylbenzene	5.0000	ug/L	U	10/02/95
	Styrene	5.0000	ug/L	U	10/02/95
	t-1,2-Dichloroethylene	5.0000	ug/L	U	10/02/95
	Tertbutylbenzene	5.0000	ug/L	U	10/02/95
	Trichloroethylene	5.0000	ug/L	U	10/02/95
	Toluene	5.0000	ug/L	U	10/02/95
	Vinyl Chloride	5.0000	ug/L	U	10/02/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

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ADEM - FO
MONTGOMERY

Attn:

Lab number : 5109205
Sample number : 521-6243
Sample matrix : WATER

Report Date: 11/03/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:35 STAMPS
Location : SKIMMER TRENCH TRWS-CRACK

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109205	1,2,4-Trichlorobenzene	<25	ug/L		10/17/95
	1,2-Dichlorobenzene	<25	ug/L		10/17/95
	1,2-Diphenylhydrazine	<25	ug/L		10/17/95
	1,3-Dichlorobenzene	<25	ug/L		10/17/95
	1,4-Dichlorobenzene	<25	ug/L		10/17/95
	2,3,7,8-Tetrachlorodibe	<25	ug/L		10/17/95
	2,4,6-Trichlorophenol	<25	ug/L		10/17/95
	2,4-Dichlorophenol	<25	ug/L		10/17/95
	2,4-Dimethylphenol	<25	ug/L		10/17/95
	2,4-Dinitrophenol	<250	ug/L		10/17/95
	2,4-Dinitrotoluene	<25	ug/L		10/17/95
	2,6-Dinitrotoluene	<25	ug/L		10/17/95
	2-Chloronaphthalene	<25	ug/L		10/17/95
	2-Chlorophenol	<25	ug/L		10/17/95
	2-Methyl-4,6-dinitrophe	<125	ug/L		10/17/95
	2-Nitrophenol	<25	ug/L		10/17/95
	3,3'-Dichlorobenzidine	<25	ug/L		10/17/95
	4-Bromophenyl phenyl et	<25	ug/L		10/17/95
	4-Chloro-3-methylphenol	<25	ug/L		10/17/95
	4-Chlorophenyl phenyl e	<25	ug/L		10/17/95
	4-Nitrophenol	<25	ug/L		10/17/95

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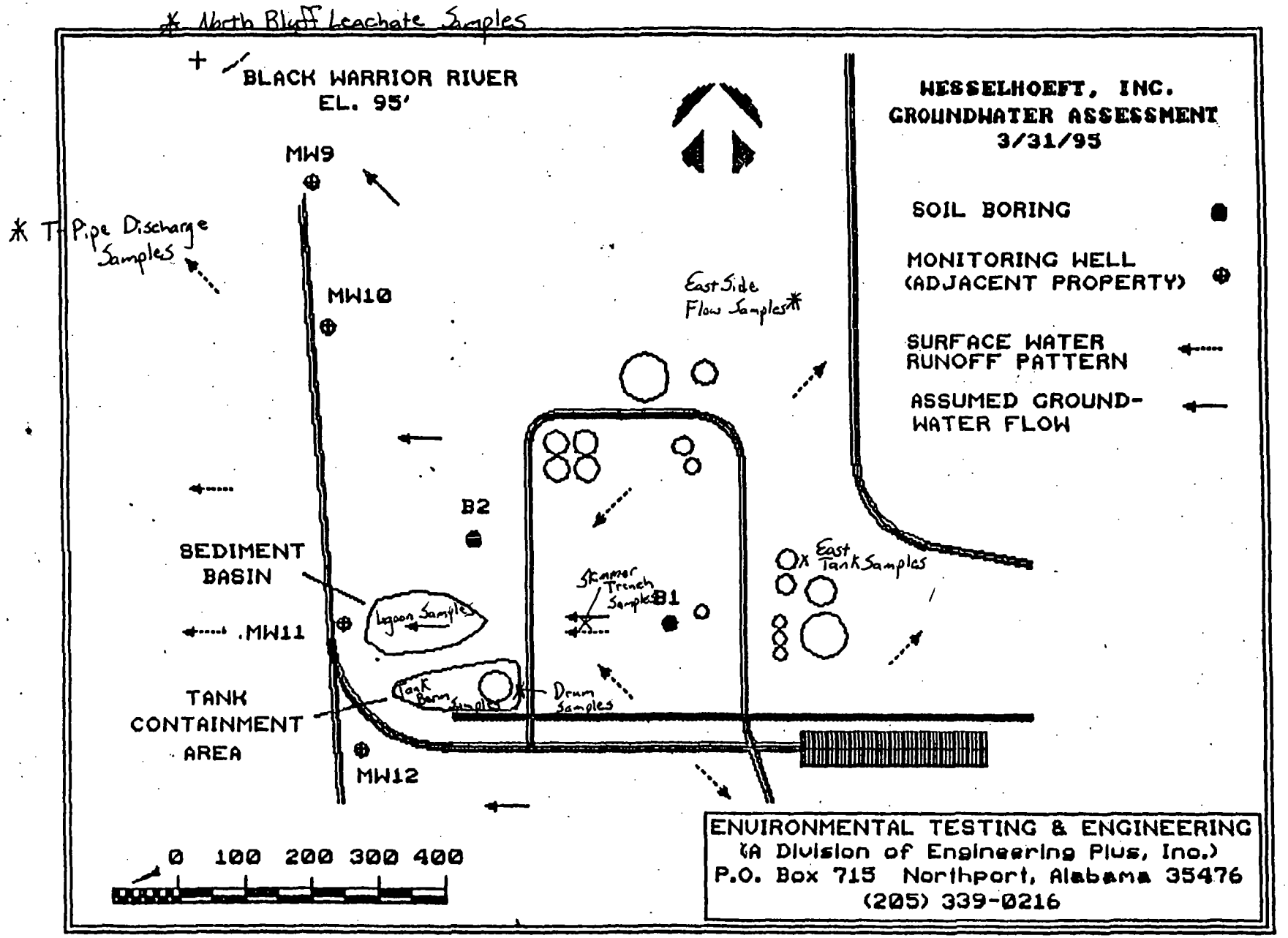
*, U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109205	Acenaphthylene	<25	ug/L		10/17/95
	Acenaphthene	<25	ug/L		10/17/95
	Anthracene	<25	ug/L		10/17/95
	Benzo(a)anthracene	<25	ug/L		10/17/95
	Benzo(a)pyrene	<25	ug/L		10/17/95
	Benzo(b)fluoranthene	<25	ug/L		10/17/95
	Butyl benzyl phthalate	<25	ug/L		10/17/95
	Bis(2-chlorethyl)ether	<25	ug/L		10/17/95
	Bis(2-chloroethoxy)meth	<25	ug/L		10/17/95
	Bis(2-chloroisopropyl)e	<25	ug/L		10/17/95
	Bis(2-ethylhexyl)phthal	<25	ug/L		10/17/95
	Benzo(g.h.i)perylene	<25	ug/L		10/17/95
	Benzidine	<25	ug/L		10/17/95
	Benzo(k)fluoranthene	<25	ug/L		10/17/95
	Chrysene	<25	ug/L		10/17/95
	Dibenzo(a.h)anthracene	<25	ug/L		10/17/95
	Dibutyl phthalate	<25	ug/L		10/17/95
	Diethyl phthalate	<25	ug/L		10/17/95
	Dimethylphthalate	<25	ug/L		10/17/95
	Di-n-octyl phthalate	<25	ug/L		10/17/95
	Fluoranthene	<25	ug/L		10/17/95
	Fluorene	<25	ug/L		10/17/95
	Hexachlorobutadiene	<25	ug/L		10/17/95
	Hexachlorobenzene	<25	ug/L		10/17/95
	Hexachlorocyclopentadie	<25	ug/L		10/17/95
	Hexachloroethane	<25	ug/L		10/17/95
	Isophorone	<25	ug/L		10/17/95
	Indeno(1.2.3-cd)pyrene	<25	ug/L		10/17/95
	Naphthalene	<25	ug/L		10/17/95
	Nitrobenzene	<25	ug/L		10/17/95
	N-nitroso-di-n-propylam	<25	ug/L		10/17/95
	N-nitrosodimethylamine	<25	ug/L		10/17/95
	N-nitrosodiphenylamine	<25	ug/L		10/17/95
	Pyrene	<25	ug/L		10/17/95
	Phenanthrene	<25	ug/L		10/17/95
	Pentachlorophenol	<25	ug/L		10/17/95
	Phenol	<25	ug/L		10/17/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

APPENDIX E


* North Bluff Leachate Samples
BLACK WARRIOR RIVER
EL. 95'
MW9
* T-Pipe Discharge Samples
MW10
East Side Flow Samples *
B2
SEDIMENT BASIN
Lagoon Samples
MW11
Skimmer Trench Samples
B1
East Tank Samples
TANK CONTAINMENT AREA
Tank Berm Samples
Drum Samples
MW12
0 100 200 300 400
HESSELHOEFT, INC.
GROUNDWATER ASSESSMENT
3/31/95
SOIL BORING
MONITORING WELL (ADJACENT PROPERTY)
SURFACE WATER RUNOFF PATTERN
ASSUMED GROUND-WATER FLOW
ENVIRONMENTAL TESTING & ENGINEERING
(A Division of Engineering Plus, Inc.)
P.O. Box 715 Northport, Alabama 35476
(205) 339-0216

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/22/95

NOV 1995
RECEIVED
ADEM - FO
MONTGOMERY

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

Attn:

Lab number : 5109212
Sample number : 521-6243
Sample matrix : SOIL

Report Date: 11/22/95

COLLECTION INFORMATION
Date/Time/By: 09/27/95 11:30 STAMPS
Location : EAST TANKS SAMPLE 1

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109212	1,1,1,2-Tetrachloroetha	<.14	ug/g		10/17/95
	1,1,1-Trichloroethane	<.14	ug/g		10/17/95
	1,1,2,2-Tetrachloroetha	<.14	ug/g		10/17/95
	1,1,2Trichloroethane	<.14	ug/g		10/17/95
	1,1-Dichloroethane	<.14	ug/g		10/17/95
	1,1-Dichloroethylene	<.14	ug/g		10/17/95
	1,1-Dichloropropene	<.14	ug/g		10/17/95
	1,2,3-Trichlorobenzene	<.14	ug/g		10/17/95
	1,2,3-Trichloropropane	<.14	ug/g		10/17/95
	1,2,4-Trichlorobenzene	<1000	ug/g		11/15/95
	1,2,4-Trichlorobenzene	<1000	ug/g		11/15/95
	1,2,4-Trimethylbenzene	<.14	ug/g		10/17/95
	1,2-Dichlorobenzene	<1000	ug/g		11/15/95
	1,2-Dicholoethane	<.14	ug/g		10/17/95
	1,2-Dichloropropane	<.14	ug/g		10/17/95
	1,2-Diphenylhydrazine	<1000	ug/g		11/15/95
	1,3,5-Trimethylbenzene	<.14	ug/g		10/17/95
	1,3-Dichloropropane	<.14	ug/g		10/17/95
	1,3-Dichlorobenzene	<1000	ug/g		11/15/95
	1,3-Dichloropropene	<.14	ug/g		10/17/95
	1,4-Dichlorobenzene	<1000	ug/g		11/15/95

NOV 1995
ADEM
SPECIAL PROJECTS

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109212	2,2-Dichloropropane	<.14	ug/g		10/17/95
	2,3,7,8-Tetrachlorodibe	<1000	ug/g		11/15/95
	2,4,6-Trichlorophenol	<1000	ug/g		11/15/95
	2,4-Dichlorophenol	<1000	ug/g		11/15/95
	2,4-Dimethylphenol	<1000	ug/g		11/15/95
	2,4-Dinitrophenol	<10000	ug/g		11/15/95
	2,4-Dinitrotoluene	<1000	ug/g		11/15/95
	2,6-Dinitrotoluene	<1000	ug/g		11/15/95
	2-Chloronaphthalene	<1000	ug/g		11/15/95
	2-Chlorophenol	<1000	ug/g		11/15/95
	2-Methyl-4,6-dinitrophe	<5000	ug/g		11/15/95
	2-Nitrophenol	<1000	ug/g		11/15/95
	3,3'-Dichlorobenzidine	<1000	ug/g		11/15/95
	4-Bromophenyl phenyl et	<1000	ug/g		11/15/95
	4-Chloro-3-methylphenol	<1000	ug/g		11/15/95
	Tetrachloroethylene	<.14	ug/g		10/17/95
	4-Chlorophenyl phenyl e	<1000	ug/g		11/15/95
	4-Nitrophenol	<1000	ug/g		11/15/95
	Acenaphthylene	<1000	ug/g		11/15/95
	Acenaphthene	<1000	ug/g		11/15/95
	Anthracene	<1000	ug/g		11/15/95
	Benzo(a)anthracene	<1000	ug/g		11/15/95
	Benzo(a)pyrene	<1000	ug/g		11/15/95
	Bromobenzene	<.14	ug/g		10/17/95
	Benzo(b)fluoranthene	<1000	ug/g		11/15/95
	Butyl benzyl phthalate	<1000	ug/g		11/15/95
	Bis(2-chlorethyl)ether	<1000	ug/g		11/15/95
	Bis(2-chloroethoxy)meth	<1000	ug/g		11/15/95
	Bis(2-chloroisopropyl)e	<1000	ug/g		11/15/95
	Bromochloromethane	<.14	ug/g		10/17/95
	Bromodichloromethane	<.14	ug/g		10/17/95
	Bis(2-ethylhexyl)phthal	<1000	ug/g		11/15/95
	Benzene	0.1400	ug/g		10/17/95
	Benzo(g,h,i)perylene	<1000	ug/g		11/15/95
	Benzidine	<1000	ug/g		11/15/95
	Benzo(k)fluoranthene	<1000	ug/g		11/15/95
	Bromomethane	<.14	ug/g		10/17/95
	cis-1,2-Dichloroethylen	<.14	ug/g		10/17/95
	Chlorobenzene	<.14	ug/g		10/17/95
	Chlorodibromomethane	<.14	ug/g		10/17/95
	Chloroethane	<.14	ug/g		10/17/95
	Bromoform	<.14	ug/g		10/17/95
	Chloroform	<.14	ug/g		10/17/95
	Chloromethane	<.14	ug/g		10/17/95
	Chrysene	<1000	ug/g		11/15/95
	Carbon Tetrachloride	<.14	ug/g		10/17/95
	Dibenzo(a,h)anthracene	<1000	ug/g		11/15/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109212	Dibromomethane	<.14	ug/g		10/17/95
	Dibutyl phthalate	<1000	ug/g		11/15/95
	Dichlorodifluoromethane	<.14	ug/g		10/17/95
	Dichloromethane	<.14	ug/g		10/17/95
	Diethyl phthalate	<1000	ug/g		11/15/95
	Dimethylphthalate	<1000	ug/g		11/15/95
	Di-n-octyl phthalate	<1000	ug/g		11/15/95
	Ethylbenzene	<.14	ug/g		10/17/95
	Fluoranthene	<1000	ug/g		11/15/95
	Fluorene	<1000	ug/g		11/15/95
	Fluorotrichloromethane	<.14	ug/g		10/17/95
	Hexachlorobutadiene	<1000	ug/g		11/15/95
	Hexachlorobutadiene	<.14	ug/g		10/17/95
	Hexachlorobenzene	<1000	ug/g		11/15/95
	Hexachlorocyclopentadie	<1000	ug/g		11/15/95
	Hexachloroethane	<1000	ug/g		11/15/95
	Isophorone	<1000	ug/g		11/15/95
	Indeno(1,2,3-cd)pyrene	<1000	ug/g		11/15/95
	Isopropylbenzene	<.14	ug/g		10/17/95
	m-Dichlorobenzene	<.14	ug/g		10/17/95
	m+p-Xylene	<.14	ug/g		10/17/95
	Naphthalene	<1000	ug/g		11/15/95
	Naphthalene	<1000	ug/g		11/15/95
	Nitrobenzene	<1000	ug/g		11/15/95
	n-Butylbenzene	<.14	ug/g		10/17/95
	N-nitroso-di-n-propylam	<1000	ug/g		11/15/95
	N-nitrosodimethylamine	<1000	ug/g		11/15/95
	N-nitrosodiphenylamine	<1000	ug/g		11/15/95
	n-Propylbenzene	<.14	ug/g		10/17/95
	o-Chlorotoluene	<.14	ug/g		10/17/95
	o-Dichlorobenzene	<.14	ug/g		10/17/95
	o-Xylene	<.14	ug/g		10/17/95
	Pyrene	<1000	ug/g		11/15/95
	Phenanthrene	<1000	ug/g		11/15/95
	Pentachlorophenol	<1000	ug/g		11/15/95
	p-Chlorotoluene	<.14	ug/g		10/17/95
	p-Dichlorobenzene	<.14	ug/g		10/17/95
	Phenol	<1000	ug/g		11/15/95
	p-Isopropyltoluene	<.14	ug/g		10/17/95
	Secbutylbenzene	<.14	ug/g		10/17/95
	Styrene	<.14	ug/g		10/17/95
	t-1,2-Dichloroethylene	<.14	ug/g		10/17/95
	Tertbutylbenzene	<.14	ug/g		10/17/95
	Trichloroethylene	<.14	ug/g		10/17/95
	Toluene	0.2700	ug/g		10/17/95
	Vinyl Chloride	<.14	ug/g		10/17/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/22/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

NOV 1995
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ADEM - FO
MONTGOMERY

Attn:

Lab number : 5109214
Sample number : 521-6243
Sample matrix : SOIL

Report Date: 11/22/95

COLLECTION INFORMATION
Date/Time/By: 09/27/95 11:40 STAMPS
Location : EAST SIDE FLOW CRACKER AS

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109214	1,1,1,2-Tetrachloroetha	<.20	ug/g		10/17/95
	1,1,1-Trichloroethane	<.20	ug/g		10/17/95
	1,1,2,2-Tetrachloroetha	<.20	ug/g		10/17/95
	1,1,2Trichloroethane	<.20	ug/g		10/17/95
	1,1-Dichloroethane	<.20	ug/g		10/17/95
	1,1-Dichloroethylene	<.20	ug/g		10/17/95
	1,1-Dichloropropene	<.20	ug/g		10/17/95
	1,2,3-Trichlorobenzene	<.20	ug/g		10/17/95
	1,2,3-Trichloropropane	<.20	ug/g		10/17/95
	1,2,4-Trichlorobenzene	<1000	ug/g		11/15/95
	1,2,4-Trichlorobenzene	<1000	ug/g		11/15/95
	1,2,4-Trimethylbenzene	0.3300	ug/g		10/17/95
	1,2-Dichlorobenzene	<1000	ug/g		11/15/95
	1,2-Dicholoethane	<.20	ug/g		10/17/95
	1,2-Dichloropropane	<.20	ug/g		10/17/95
	1,2-Diphenylhydrazine	<1000	ug/g		11/15/95
	1,3,5-Trimethylbenzene	0.3600	ug/g		10/17/95
	1,3-Dichloropropane	<.20	ug/g		10/17/95
	1,3-Dichlorobenzene	<1000	ug/g		11/15/95
	1,3-Dichloropropene	<.20	ug/g		10/17/95
	1,4-Dichlorobenzene	<1000	ug/g		11/15/95

NOV 1995
ADEM
SPECIAL PROJECTS

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	UnitsDL*	Analdate
5109214	2,2-Dichloropropane	<.20	ug/g	10/17/95
	2,3,7,8-Tetrachlorodibe	<1000	ug/g	11/15/95
	2,4,6-Trichlorophenol	<1000	ug/g	11/15/95
	2,4-Dichlorophenol	<1000	ug/g	11/15/95
	2,4-Dimethylphenol	<1000	ug/g	11/15/95
	2,4-Dinitrophenol	<10000	ug/g	11/15/95
	2,4-Dinitrotoluene	<1000	ug/g	11/15/95
	2,6-Dinitrotoluene	<1000	ug/g	11/15/95
	2-Chloronaphthalene	<1000	ug/g	11/15/95
	2-Chlorophenol	<1000	ug/g	11/15/95
	2-Methyl-4,6-dinitrophe	<5000	ug/g	11/15/95
	2-Nitrophenol	<1000	ug/g	11/15/95
	3,3'-Dichlorobenzidine	<1000	ug/g	11/15/95
	4-Bromophenyl phenyl et	<1000	ug/g	11/15/95
	4-Chloro-3-methylphenol	<1000	ug/g	11/15/95
	Tetrachloroethylene	<.20	ug/g	10/17/95
	4-Chlorophenyl phenyl e	<1000	ug/g	11/15/95
	4-Nitrophenol	<1000	ug/g	11/15/95
	Acenaphthylene	<1000	ug/g	11/15/95
	Acenaphthene	<1000	ug/g	11/15/95
	Anthracene	<1000	ug/g	11/15/95
	Benzo(a)anthracene	<1000	ug/g	11/15/95
	Benzo(a)pyrene	<1000	ug/g	11/15/95
	Bromobenzene	<.20	ug/g	10/17/95
	Benzo(b)fluoranthene	<1000	ug/g	11/15/95
	Butyl benzyl phthalate	<1000	ug/g	11/15/95
	Bis(2-chlorethyl)ether	<1000	ug/g	11/15/95
	Bis(2-chloroethoxy)meth	<1000	ug/g	11/15/95
	Bis(2-chloroisopropyl)e	<1000	ug/g	11/15/95
	Bromochloromethane	<.20	ug/g	10/17/95
	Bromodichloromethane	<.20	ug/g	10/17/95
	Bis(2-ethylhexyl)phthal	<1000	ug/g	11/15/95
	Benzene	<.20	ug/g	10/17/95
	Benzo(g,h,i)perylene	<1000	ug/g	11/15/95
	Benzidine	<1000	ug/g	11/15/95
	Benzo(k)fluoranthene	<1000	ug/g	11/15/95
	Bromomethane	<.20	ug/g	10/17/95
	cis-1,2-Dichloroethylen	<.20	ug/g	10/17/95
	Chlorobenzene	<.20	ug/g	10/17/95
	Chlorodibromomethane	<.20	ug/g	10/17/95
	Chloroethane	<.20	ug/g	10/17/95
	Bromoform	<.20	ug/g	10/17/95
	Chloroform	<.20	ug/g	10/17/95
	Chloromethane	<.20	ug/g	10/17/95
	Chrysene	<1000	ug/g	11/15/95
	Carbon Tetrachloride	<.20	ug/g	10/17/95
	Dibenzo(a,h)anthracene	<1000	ug/g	11/15/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 22, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109214	Dibromomethane	<.20	ug/g		10/17/95
	Dibutyl phthalate	<1000	ug/g		11/15/95
	Dichlorodifluoromethane	<.20	ug/g		10/17/95
	Dichloromethane	<.20	ug/g		10/17/95
	Diethyl phthalate	<1000	ug/g		11/15/95
	Dimethylphthalate	<1000	ug/g		11/15/95
	Di-n-octyl phthalate	<1000	ug/g		11/15/95
	Ethylbenzene	<.20	ug/g		10/17/95
	Fluoranthene	<1000	ug/g		11/15/95
	Fluorene	<1000	ug/g		11/15/95
	Fluorotrichloromethane	<.20	ug/g		10/17/95
	Hexachlorobutadiene	<1000	ug/g		11/15/95
	Hexachlorobutadiene	<.20	ug/g		10/17/95
	Hexachlorobenzene	<1000	ug/g		11/15/95
	Hexachlorocyclopentadie	<1000	ug/g		11/15/95
	Hexachloroethane	<1000	ug/g		11/15/95
	Isophorone	<1000	ug/g		11/15/95
	Indeno(1,2,3-cd)pyrene	<1000	ug/g		11/15/95
	Isopropylbenzene	<.20	ug/g		10/17/95
	m-Dichlorobenzene	<.20	ug/g		10/17/95
	m+p-Xylene	<.20	ug/g		10/17/95
	Naphthalene	<1000	ug/g		11/15/95
	Naphthalene	<1000	ug/g		11/15/95
	Nitrobenzene	<1000	ug/g		11/15/95
	n-Butylbenzene	<.20	ug/g		10/17/95
	N-nitroso-di-n-propylam	<1000	ug/g		11/15/95
	N-nitrosodimethylamine	<1000	ug/g		11/15/95
	N-nitrosodiphenylamine	<1000	ug/g		11/15/95
	n-Propylbenzene	<.20	ug/g		10/17/95
	o-Chlorotoluene	<.20	ug/g		10/17/95
	o-Dichlorobenzene	<.20	ug/g		10/17/95
	o-Xylene	<.20	ug/g		10/17/95
	Pyrene	<1000	ug/g		11/15/95
	Phenanthrene	<1000	ug/g		11/15/95
	Pentachlorophenol	<1000	ug/g		11/15/95
	p-Chlorotoluene	<.20	ug/g		10/17/95
	p-Dichlorobenzene	<.20	ug/g		10/17/95
	Phenol	<1000	ug/g		11/15/95
	p-Isopropyltoluene	<.20	ug/g		10/17/95
	Secbutylbenzene	<.20	ug/g		10/17/95
	Styrene	<.20	ug/g		10/17/95
	t-1,2-Dichloroethylene	<.20	ug/g		10/17/95
	Tertbutylbenzene	<.20	ug/g		10/17/95
	Trichloroethylene	<.20	ug/g		10/17/95
	Toluene	0.4600	ug/g		10/17/95
	Vinyl Chloride	<.20	ug/g		10/17/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/14/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

Attn:

Lab number : 5109211
Sample number : 521-6243
Sample matrix : SOIL

Report Date: 11/14/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:40 STAMPS
Location : SKIMMER TRENCH TR-1

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 14, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109211	1,1,1,2-Tetrachloroetha	<.2	ug/g		10/11/95
	1,1,1-Trichloroethane	<.2	ug/g		10/11/95
	1,1,2,2-Tetrachloroetha	<.2	ug/g		10/11/95
	1,1,2Trichloroethane	<.2	ug/g		10/11/95
	1,1-Dichloroethane	<.2	ug/g		10/11/95
	1,1-Dichloroethylene	<.2	ug/g		10/11/95
	1,1-Dichloropropene	<.2	ug/g		10/11/95
	1,2,3-Trichlorobenzene	<.2	ug/g		10/11/95
	1,2,3-Trichloropropane	<.2	ug/g		10/11/95
	1,2,4-Trichlorobenzene	<50	ug/g		11/03/95
	1,2,4-Trichlorobenzene	<50	ug/g		11/03/95
	1,2,4-Trimethylbenzene	<.2	ug/g		10/11/95
	1,2-Dichlorobenzene	<50	ug/g		11/03/95
	1,2-Dicholoethane	<.2	ug/g		10/11/95
	1,2-Dichloropropane	<.2	ug/g		10/11/95
	1,2-Diphenylhydrazine	<50	ug/g		11/03/95
	1,3,5-Trimethylbenzene	<.2	ug/g		10/11/95
	1,3-Dichloropropane	<.2	ug/g		10/11/95
	1,3-Dichlorobenzene	<50	ug/g		11/03/95
	1,3-Dichloropropene	<.2	ug/g		10/11/95
	1,4-Dichlorobenzene	<50	ug/g		11/03/95

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SPECIAL PROJECTS

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 14, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109211	2,2-Dichloropropane	<.2	ug/g		10/11/95
	2,3,7,8-Tetrachlorodibe	<50	ug/g		11/03/95
	2,4,6-Trichlorophenol	<50	ug/g		11/03/95
	2,4-Dichlorophenol	<50	ug/g		11/03/95
	2,4-Dimethylphenol	<50	ug/g		11/03/95
	2,4-Dinitrophenol	<500	ug/g		11/03/95
	2,4-Dinitrotoluene	<50	ug/g		11/03/95
	2,6-Dinitrotoluene	<50	ug/g		11/03/95
	2-Chloronaphthalene	<50	ug/g		11/03/95
	2-Chlorophenol	<50	ug/g		11/03/95
	2-Methyl-4,6-dinitrophe	<250	ug/g		11/03/95
	2-Nitrophenol	<50	ug/g		11/03/95
	3,3'-Dichlorobenzidine	<50	ug/g		11/03/95
	4-Bromophenyl phenyl et	<50	ug/g		11/03/95
	4-Chloro-3-methylphenol	<50	ug/g		11/03/95
	Tetrachloroethylene	<.2	ug/g		10/11/95
	4-Chlorophenyl phenyl e	<50	ug/g		11/03/95
	4-Nitrophenol	<50	ug/g		11/03/95
	Acenaphthylene	<50	ug/g		11/03/95
	Acenaphthene	<50	ug/g		11/03/95
	Anthracene	<50	ug/g		11/03/95
	Benzo(a)anthracene	<50	ug/g		11/03/95
	Benzo(a)pyrene	<50	ug/g		11/03/95
	Bromobenzene	<.2	ug/g		10/11/95
	Benzo(b)fluoranthene	<50	ug/g		11/03/95
	Butyl benzyl phthalate	<50	ug/g		11/03/95
	Bis(2-chlorethyl)ether	<50	ug/g		11/03/95
	Bis(2-chloroethoxy)meth	<50	ug/g		11/03/95
	Bis(2-chloroisopropyl)e	<50	ug/g		11/03/95
	Bromochloromethane	<.2	ug/g		10/11/95
	Bromodichloromethane	<.2	ug/g		10/11/95
	Bis(2-ethylhexyl)phthal	<50	ug/g		11/03/95
	Benzene	<.2	ug/g		10/11/95
	Benzo(g,h,i)perylene	<50	ug/g		11/03/95
	Benzidine	<50	ug/g		11/03/95
	Benzo(k)fluoranthene	<50	ug/g		11/03/95
	Bromomethane	<.2	ug/g		10/11/95
	cis-1,2-Dichloroethylen	<.2	ug/g		10/11/95
	Chlorobenzene	<.2	ug/g		10/11/95
	Chlorodibromomethane	<.2	ug/g		10/11/95
	Chloroethane	<.2	ug/g		10/11/95
	Bromoform	<.2	ug/g		10/11/95
	Chloroform	<.2	ug/g		10/11/95
	Chloromethane	<.2	ug/g		10/11/95
	Chrysene	<50	ug/g		11/03/95
	Carbon Tetrachloride	<.2	ug/g		10/11/95
	Dibenzo(a,h)anthracene	<50	ug/g		11/03/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 14, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109211	Dibromomethane	<.2	ug/g		10/11/95
	Dibutyl phthalate	<50	ug/g		11/03/95
	Dichlorodifluoromethane	<.2	ug/g		10/11/95
	Dichloromethane	<.2	ug/g		10/11/95
	Diethyl phthalate	<50	ug/g		11/03/95
	Dimethylphthalate	<50	ug/g		11/03/95
	Di-n-octyl phthalate	<50	ug/g		11/03/95
	Ethylbenzene	<.2	ug/g		10/11/95
	Fluoranthene	<50	ug/g		11/03/95
	Fluorene	<50	ug/g		11/03/95
	Fluorotrichloromethane	<.2	ug/g		10/11/95
	Hexachlorobutadiene	<50	ug/g		11/03/95
	Hexachlorobutadiene	<.2	ug/g		10/11/95
	Hexachlorobenzene	<50	ug/g		11/03/95
	Hexachlorocyclopentadie	<50	ug/g		11/03/95
	Hexachloroethane	<50	ug/g		11/03/95
	Isophorone	<50	ug/g		11/03/95
	Indeno(1,2,3-cd)pyrene	<50	ug/g		11/03/95
	Isopropylbenzene	<.2	ug/g		10/11/95
	m-Dichlorobenzene	<.2	ug/g		10/11/95
	m+p-Xylene	<.2	ug/g		10/11/95
	Naphthalene	<50	ug/g		11/03/95
	Naphthalene	<50	ug/g		11/03/95
	Nitrobenzene	<50	ug/g		11/03/95
	n-Butylbenzene	<.2	ug/g		10/11/95
	N-nitroso-di-n-propylam	<50	ug/g		11/03/95
	N-nitrosodimethylamine	<50	ug/g		11/03/95
	N-nitrosodiphenylamine	<50	ug/g		11/03/95
	n-Propylbenzene	<.2	ug/g		10/11/95
	o-Chlorotoluene	<.2	ug/g		10/11/95
	o-Dichlorobenzene	<.2	ug/g		10/11/95
	o-Xylene	<.2	ug/g		10/11/95
	Pyrene	<50	ug/g		11/03/95
	Phenanthrene	<50	ug/g		11/03/95
	Pentachlorophenol	<50	ug/g		11/03/95
	p-Chlorotoluene	<.2	ug/g		10/11/95
	p-Dichlorobenzene	<.2	ug/g		10/11/95
	Phenol	<50	ug/g		11/03/95
	p-Isopropyltoluene	<.2	ug/g		10/11/95
	Secbutylbenzene	<.2	ug/g		10/11/95
	Styrene	<.2	ug/g		10/11/95
	t-1,2-Dichloroethylene	<.2	ug/g		10/11/95
	Tertbutylbenzene	<.2	ug/g		10/11/95
	Trichloroethylene	<.2	ug/g		10/11/95
	Toluene	2.0000	ug/g		10/11/95
	Vinyl Chloride	<.2	ug/g		10/11/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

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MONTGOME

Attn:

Lab number : 5109210
Sample number : 521-6243
Sample matrix : SOIL

Report Date: 11/03/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 2:00 STAMPS
Location : TANK BERM TB-1 CRACKER AS

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109210	1,1,1,2-Tetrachloroetha	<.22	ug/g		10/11/95
	1,1,1-Trichloroethane	<.22	ug/g		10/11/95
	1,1,2,2-Tetrachloroetha	<.22	ug/g		10/11/95
	1,1,2Trichloroethane	<.22	ug/g		10/11/95
	1,1-Dichloroethane	<.22	ug/g		10/11/95
	1,1-Dichloroethylene	<.22	ug/g		10/11/95
	1,1-Dichloropropene	<.22	ug/g		10/11/95
	1,2,3-Trichlorobenzene	<.22	ug/g		10/11/95
	1,2,3-Trichloropropane	<.22	ug/g		10/11/95
	1,2,4-Trichlorobenzene	<1.65	ug/g		10/30/95
	1,2,4-Trichlorobenzene	<1.65	ug/g		10/30/95
	1,2,4-Trimethylbenzene	<.22	ug/g		10/11/95
	1,2-Dichlorobenzene	<1.65	ug/g		10/30/95
	1,2-Dicholoethane	<.22	ug/g		10/11/95
	1,2-Dichloropropane	<.22	ug/g		10/11/95
	1,2-Diphenylhydrazine	<1.65	ug/g		10/30/95
	1,3,5-Trimethylbenzene	<.22	ug/g		10/11/95
	1,3-Dichloropropane	<.22	ug/g		10/11/95
	1,3-Dichlorobenzene	<1.65	ug/g		10/30/95
	1,3-Dichloropropene	<.22	ug/g		10/11/95
	1,4-Dichlorobenzene	<1.65	ug/g		10/30/95

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* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109210	2,2-Dichloropropane	<.22	ug/g		10/11/95
	2,3,7,8-Tetrachlorodibe	<1.65	ug/g		10/30/95
	2,4,6-Trichlorophenol	<1.65	ug/g		10/30/95
	2,4-Dichlorophenol	<1.65	ug/g		10/30/95
	2,4-Dimethylphenol	<1.65	ug/g		10/30/95
	2,4-Dinitrophenol	<16.5	ug/g		10/30/95
	2,4-Dinitrotoluene	<1.65	ug/g		10/30/95
	2,6-Dinitrotoluene	<1.65	ug/g		10/30/95
	2-Chloronaphthalene	<1.65	ug/g		10/30/95
	2-Chlorophenol	<1.65	ug/g		10/30/95
	2-Methyl-4,6-dinitrophe	<8.25	ug/g		10/30/95
	2-Nitrophenol	<1.65	ug/g		10/30/95
	3,3'-Dichlorobenzidine	<1.65	ug/g		10/30/95
	4-Bromophenyl phenyl et	<1.65	ug/g		10/30/95
	4-Chloro-3-methylphenol	<1.65	ug/g		10/30/95
	Tetrachloroethylene	<.22	ug/g		10/11/95
	4-Chlorophenyl phenyl e	<1.65	ug/g		10/30/95
	4-Nitrophenol	<1.65	ug/g		10/30/95
	Acenaphthylene	<1.65	ug/g		10/30/95
	Acenaphthene	<1.65	ug/g		10/30/95
	Anthracene	<1.65	ug/g		10/30/95
	Benzo(a)anthracene	<1.65	ug/g		10/30/95
	Benzo(a)pyrene	<1.65	ug/g		10/30/95
	Bromobenzene	<.22	ug/g		10/11/95
	Benzo(b)fluoranthene	<1.65	ug/g		10/30/95
	Butyl benzyl phthalate	<1.65	ug/g		10/30/95
	Bis(2-chlorethyl)ether	<1.65	ug/g		10/30/95
	Bis(2-chloroethoxy)meth	<1.65	ug/g		10/30/95
	Bis(2-chloroisopropyl)e	<1.65	ug/g		10/30/95
	Bromochloromethane	<.22	ug/g		10/11/95
	Bromodichloromethane	<.22	ug/g		10/11/95
	Bis(2-ethylhexyl)phthal	<1.65	ug/g		10/30/95
	Benzene	<.22	ug/g		10/11/95
	Benzo(g,h,i)perylene	<1.65	ug/g		10/30/95
	Benzidine	<1.65	ug/g		10/30/95
	Benzo(k)fluoranthene	<1.65	ug/g		10/30/95
	Bromomethane	<.22	ug/g		10/11/95
	cis-1,2-Dichloroethylen	<.22	ug/g		10/11/95
	Chlorobenzene	<.22	ug/g		10/11/95
	Chlorodibromomethane	<.22	ug/g		10/11/95
	Chloroethane	<.22	ug/g		10/11/95
	Bromoform	<.22	ug/g		10/11/95
	Chloroform	<.22	ug/g		10/11/95
	Chloromethane	<.22	ug/g		10/11/95
	Chrysene	<1.65	ug/g		10/30/95
	Carbon Tetrachloride	<.22	ug/g		10/11/95
	Dibenzo(a,h)anthracene	<1.65	ug/g		10/30/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109210	Dibromomethane	<.22	ug/g		10/11/95
	Dibutyl phthalate	<1.65	ug/g		10/30/95
	Dichlorodifluoromethane	<.22	ug/g		10/11/95
	Dichloromethane	<.22	ug/g		10/11/95
	Diethyl phthalate	<1.65	ug/g		10/30/95
	Dimethylphthalate	<1.65	ug/g		10/30/95
	Di-n-octyl phthalate	<1.65	ug/g		10/30/95
	Ethylbenzene	<.22	ug/g		10/11/95
	Fluoranthene	<1.65	ug/g		10/30/95
	Fluorene	<1.65	ug/g		10/30/95
	Fluorotrichloromethane	<.22	ug/g		10/11/95
	Hexachlorobutadiene	<1.65	ug/g		10/30/95
	Hexachlorobutadiene	<.22	ug/g		10/11/95
	Hexachlorobenzene	<1.65	ug/g		10/30/95
	Hexachlorocyclopentadie	<1.65	ug/g		10/30/95
	Hexachloroethane	<1.65	ug/g		10/30/95
	Isophorone	<1.65	ug/g		10/30/95
	Indeno(1,2,3-cd)pyrene	<1.65	ug/g		10/30/95
	Isopropylbenzene	<.22	ug/g		10/11/95
	m-Dichlorobenzene	<.22	ug/g		10/11/95
	m+p-Xylene	<.22	ug/g		10/11/95
	Naphthalene	<1.65	ug/g		10/30/95
	Naphthalene	<1.65	ug/g		10/30/95
	Nitrobenzene	<1.65	ug/g		10/30/95
	n-Butylbenzene	<.22	ug/g		10/11/95
	N-nitroso-di-n-propylam	<1.65	ug/g		10/30/95
	N-nitrosodimethylamine	<1.65	ug/g		10/30/95
	N-nitrosodiphenylamine	<1.65	ug/g		10/30/95
	n-Propylbenzene	<.22	ug/g		10/11/95
	o-Chlorotoluene	<.22	ug/g		10/11/95
	o-Dichlorobenzene	<.22	ug/g		10/11/95
	o-Xylene	<.22	ug/g		10/11/95
	Pyrene	<1.65	ug/g		10/30/95
	Phenanthrene	<1.65	ug/g		10/30/95
	Pentachlorophenol	<1.65	ug/g		10/30/95
	p-Chlorotoluene	<.22	ug/g		10/11/95
	p-Dichlorobenzene	<.22	ug/g		10/11/95
	Phenol	<1.65	ug/g		10/30/95
	p-Isopropyltoluene	<.22	ug/g		10/11/95
	Secbutylbenzene	<.22	ug/g		10/11/95
	Styrene	<.22	ug/g		10/11/95
	t-1,2-Dichloroethylene	<.22	ug/g		10/11/95
	Tertbutylbenzene	<.22	ug/g		10/11/95
	Trichloroethylene	<.22	ug/g		10/11/95
	Toluene	<.22	ug/g		10/11/95
	Vinyl Chloride	<.22	ug/g		10/11/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
10/31/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

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Attn:

Lab number : 5109209
Sample number : 521-6243
Sample matrix : SOIL

Report Date: 10/31/95

COLLECTION INFORMATION
Date/Time/By: 09/26/95 1:55 STAMPS
Location : LAG1-CRACKER ASPHALT LAGO

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 31, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109209	1,1,1,2-Tetrachloroetha	<.17	ug/g		10/11/95
	1,1,1-Trichloroethane	<.17	ug/g		10/11/95
	1,1,2,2-Tetrachloroetha	<.17	ug/g		10/11/95
	1,1,2Trichloroethane	<.17	ug/g		10/11/95
	1,1-Dichloroethane	<.17	ug/g		10/11/95
	1,1-Dichloroethylene	<.17	ug/g		10/11/95
	1,1-Dichloropropene	<.17	ug/g		10/11/95
	1,2,3-Trichlorobenzene	<.17	ug/g		10/11/95
	1,2,3-Trichloropropane	<.17	ug/g		10/11/95
	1,2,4-Trichlorobenzene	<33	ug/g		10/03/95
	1,2,4-Trichlorobenzene	<33	ug/g		10/03/95
	1,2,4-Trimethylbenzene	1.7000	ug/g		10/11/95
	1,2-Dichlorobenzene	<33	ug/g		10/03/95
	1,2-Dicholoethane	<.17	ug/g		10/11/95
	1,2-Dichloropropane	<.17	ug/g		10/11/95
	1,2-Diphenylhydrazine	<33	ug/g		10/03/95
	1,3,5-Trimethylbenzene	0.1800	ug/g		10/11/95
	1,3-Dichloropropane	<.17	ug/g		10/11/95
	1,3-Dichlorobenzene	<33	ug/g		10/03/95
	1,3-Dichloropropene	<.17	ug/g		10/11/95
	1,4-Dichlorobenzene	<33	ug/g		10/03/95

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* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 31, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109209	2,2-Dichloropropane	<.17	ug/g		10/11/95
	2,3,7,8-Tetrachlorodibe	<33	ug/g		10/03/95
	2,4,6-Trichlorophenol	<33	ug/g		10/03/95
	2,4-Dichlorophenol	<33	ug/g		10/03/95
	2,4-Dimethylphenol	<33	ug/g		10/03/95
	2,4-Dinitrophenol	<330	ug/g		10/03/95
	2,4-Dinitrotoluene	<33	ug/g		10/03/95
	2,6-Dinitrotoluene	<33	ug/g		10/03/95
	2-Chloronaphthalene	<33	ug/g		10/03/95
	2-Chlorophenol	<33	ug/g		10/03/95
	2-Methyl-4,6-dinitrophe	<165	ug/g		10/03/95
	2-Nitrophenol	<33	ug/g		10/03/95
	3,3'-Dichlorobenzidine	<33	ug/g		10/03/95
	4-Bromophenyl phenyl et	<33	ug/g		10/03/95
	4-Chloro-3-methylphenol	<33	ug/g		10/03/95
	Tetrachloroethylene	<.17	ug/g		10/11/95
	4-Chlorophenyl phenyl e	<33	ug/g		10/03/95
	4-Nitrophenol	<33	ug/g		10/03/95
	Acenaphthylene	<33	ug/g		10/03/95
	Acenaphthene	<33	ug/g		10/03/95
	Anthracene	<33	ug/g		10/03/95
	Benzo(a)anthracene	<33	ug/g		10/03/95
	Benzo(a)pyrene	<33	ug/g		10/03/95
	Bromobenzene	<.17	ug/g		10/11/95
	Benzo(b)fluoranthene	<33	ug/g		10/03/95
	Butyl benzyl phthalate	<33	ug/g		10/03/95
	Bis(2-chlorethyl)ether	<33	ug/g		10/03/95
	Bis(2-chloroethoxy)meth	<33	ug/g		10/03/95
	Bis(2-chloroisopropyl)e	<33	ug/g		10/03/95
	Bromochloromethane	<.17	ug/g		10/11/95
	Bromodichloromethane	<.17	ug/g		10/11/95
	Bis(2-ethylhexyl)phthal	<33	ug/g		10/03/95
	Benzene	<.17	ug/g		10/11/95
	Benzo(g,h,i)perylene	<33	ug/g		10/03/95
	Benzidine	<33	ug/g		10/03/95
	Benzo(k)fluoranthene	<33	ug/g		10/03/95
	Bromomethane	<.17	ug/g		10/11/95
	cis-1,2-Dichloroethylen	<.17	ug/g		10/11/95
	Chlorobenzene	<.17	ug/g		10/11/95
	Chlorodibromomethane	<.17	ug/g		10/11/95
	Chloroethane	<.17	ug/g		10/11/95
	Bromoform	<.17	ug/g		10/11/95
	Chloroform	<.17	ug/g		10/11/95
	Chloromethane	<.17	ug/g		10/11/95
	Chrysene	<33	ug/g		10/03/95
	Carbon Tetrachloride	<.17	ug/g		10/11/95
	Dibenzo(a,h)anthracene	<33	ug/g		10/03/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 31, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109209	Dibromomethane	<.17	ug/g		10/11/95
	Dibutyl phthalate	<33	ug/g		10/03/95
	Dichlorodifluoromethane	<.17	ug/g		10/11/95
	Dichloromethane	<.17	ug/g		10/11/95
	Diethyl phthalate	<33	ug/g		10/03/95
	Dimethylphthalate	<33	ug/g		10/03/95
	Di-n-octyl phthalate	<33	ug/g		10/03/95
	Ethylbenzene	0.2300	ug/g		10/11/95
	Fluoranthene	<33	ug/g		10/03/95
	Fluorene	<33	ug/g		10/03/95
	Fluorotrichloromethane	<.17	ug/g		10/11/95
	Hexachlorobutadiene	<33	ug/g		10/03/95
	Hexachlorobutadiene	<.17	ug/g		10/11/95
	Hexachlorobenzene	<33	ug/g		10/03/95
	Hexachlorocyclopentadie	<33	ug/g		10/03/95
	Hexachloroethane	<33	ug/g		10/03/95
	Isophorone	<33	ug/g		10/03/95
	Indeno(1,2,3-cd)pyrene	<33	ug/g		10/03/95
	Isopropylbenzene	0.1700	ug/g		10/11/95
	m-Dichlorobenzene	<.17	ug/g		10/11/95
	m+p-Xylene	<.17	ug/g		10/11/95
	Naphthalene	48.3000	ug/g		10/03/95
	Naphthalene	48.30	ug/g		10/03/95
	Nitrobenzene	<33	ug/g		10/03/95
	n-Butylbenzene	<.17	ug/g		10/11/95
	N-nitroso-di-n-propylam	<33	ug/g		10/03/95
	N-nitrosodimethylamine	<33	ug/g		10/03/95
	N-nitrosodiphenylamine	<33	ug/g		10/03/95
	n-Propylbenzene	0.8100	ug/g		10/11/95
	o-Chlorotoluene	<.17	ug/g		10/11/95
	o-Dichlorobenzene	<.17	ug/g		10/11/95
	o-Xylene	<.17	ug/g		10/11/95
	Pyrene	<33	ug/g		10/03/95
	Phenanthrene	<33	ug/g		10/03/95
	Pentachlorophenol	<33	ug/g		10/03/95
	p-Chlorotoluene	<.17	ug/g		10/11/95
	p-Dichlorobenzene	<.17	ug/g		10/11/95
	Phenol	<33	ug/g		10/03/95
	p-Isopropyltoluene	<.17	ug/g		10/11/95
	Secbutylbenzene	<.17	ug/g		10/11/95
	Styrene	<.17	ug/g		10/11/95
	t-1,2-Dichloroethylene	<.17	ug/g		10/11/95
	Tertbutylbenzene	<.17	ug/g		10/11/95
	Trichloroethylene	<.17	ug/g		10/11/95
	Toluene	<.17	ug/g		10/11/95
	Vinyl Chloride	<.17	ug/g		10/11/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
11/03/95

To: CERCLA Program
1751 Cong. W.L.Dickinson Drive
Montgomery AL 36109

123456
NOV 1995
RECEIVED
ADEM - FO
MONTGOMERY

Attn:

Lab number : 5109213
Sample number : 521-6243
Sample matrix : SOIL

Report Date: 11/03/95

COLLECTION INFORMATION
Date/Time/By: 09/27/95 2:10 STAMPS
Location : NB LEACHATE

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109213	1,1,1,2-Tetrachloroetha	<.22	ug/g		10/11/95
	1,1,1-Trichloroethane	<.22	ug/g		10/11/95
	1,1,2,2-Tetrachloroetha	<.22	ug/g		10/11/95
	1,1,2Trichloroethane	<.22	ug/g		10/11/95
	1,1-Dichloroethane	<.22	ug/g		10/11/95
	1,1-Dichloroethylene	<.22	ug/g		10/11/95
	1,1-Dichloropropene	<.22	ug/g		10/11/95
	1,2,3-Trichlorobenzene	<.22	ug/g		10/11/95
	1,2,3-Trichloropropane	<.22	ug/g		10/11/95
	1,2,4-Trichlorobenzene	<1.65	ug/g		10/03/95
	1,2,4-Trichlorobenzene	<1.65	ug/g		10/03/95
	1,2,4-Trimethylbenzene	<.22	ug/g		10/11/95
	1,2-Dichlorobenzene	<1.65	ug/g		10/03/95
	1,2-Dicholoethane	<.22	ug/g		10/11/95
	1,2-Dichloropropane	<.22	ug/g		10/11/95
	1,2-Diphenylhydrazine	<1.65	ug/g		10/03/95
	1,3,5-Trimethylbenzene	<.22	ug/g		10/11/95
	1,3-Dichloropropane	<.22	ug/g		10/11/95
	1,3-Dichlorobenzene	<1.65	ug/g		10/03/95
	1,3-Dichloropropene	<.22	ug/g		10/11/95
	1,4-Dichlorobenzene	<1.65	ug/g		10/03/95

NOV 1995
ADEM
SPECIAL PROJECTS

COPY

* U denotes results less than the instrument detection limit. < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109213	2,2-Dichloropropane	<.22	ug/g		10/11/95
	2,3,7,8-Tetrachlorodibe	<1.65	ug/g		10/03/95
	2,4,6-Trichlorophenol	<1.65	ug/g		10/03/95
	2,4-Dichlorophenol	<1.65	ug/g		10/03/95
	2,4-Dimethylphenol	<1.65	ug/g		10/03/95
	2,4-Dinitrophenol	<16.5	ug/g		10/03/95
	2,4-Dinitrotoluene	<1.65	ug/g		10/03/95
	2,6-Dinitrotoluene	<1.65	ug/g		10/03/95
	2-Chloronaphthalene	<1.65	ug/g		10/03/95
	2-Chlorophenol	<1.65	ug/g		10/03/95
	2-Methyl-4,6-dinitrophe	<8.25	ug/g		10/03/95
	2-Nitrophenol	<1.65	ug/g		10/03/95
	3,3'-Dichlorobenzidine	<1.65	ug/g		10/03/95
	4-Bromophenyl phenyl et	<1.65	ug/g		10/03/95
	4-Chloro-3-methylphenol	<1.65	ug/g		10/03/95
	Tetrachloroethylene	<.22	ug/g		10/11/95
	4-Chlorophenyl phenyl e	<1.65	ug/g		10/03/95
	4-Nitrophenol	<1.65	ug/g		10/03/95
	Acenaphthylene	<1.65	ug/g		10/03/95
	Acenaphthene	<1.65	ug/g		10/03/95
	Anthracene	<1.65	ug/g		10/03/95
	Benzo(a)anthracene	<1.65	ug/g		10/03/95
	Benzo(a)pyrene	<1.65	ug/g		10/03/95
	Bromobenzene	<.22	ug/g		10/11/95
	Benzo(b)fluoranthene	<1.65	ug/g		10/03/95
	Butyl benzyl phthalate	<1.65	ug/g		10/03/95
	Bis(2-chlorethyl)ether	<1.65	ug/g		10/03/95
	Bis(2-chloroethoxy)meth	<1.65	ug/g		10/03/95
	Bis(2-chloroisopropyl)e	<1.65	ug/g		10/03/95
	Bromochloromethane	<.22	ug/g		10/11/95
	Bromodichloromethane	<.22	ug/g		10/11/95
	Bis(2-ethylhexyl)phthal	<1.65	ug/g		10/03/95
	Benzene	<.22	ug/g		10/11/95
	Benzo(g,h,i)perylene	<1.65	ug/g		10/03/95
	Benzidine	<1.65	ug/g		10/03/95
	Benzo(k)fluoranthene	<1.65	ug/g		10/03/95
	Bromomethane	<.22	ug/g		10/11/95
	cis-1,2-Dichloroethylen	<.22	ug/g		10/11/95
	Chlorobenzene	<.22	ug/g		10/11/95
	Chlorodibromomethane	<.22	ug/g		10/11/95
	Chloroethane	<.22	ug/g		10/11/95
	Bromoform	<.22	ug/g		10/11/95
	Chloroform	<.22	ug/g		10/11/95
	Chloromethane	<.22	ug/g		10/11/95
	Chrysene	<1.65	ug/g		10/03/95
	Carbon Tetrachloride	<.22	ug/g		10/11/95
	Dibenzo(a,h)anthracene	<1.65	ug/g		10/03/95

* U denotes results less than the instrument detection limit, < less than sample detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - November 3, 1995

Lab#	Test	Result	Units	DL*	Analdate
5109213	Dibromomethane	<.22	ug/g		10/11/95
	Dibutyl phthalate	<1.65	ug/g		10/03/95
	Dichlorodifluoromethane	<.22	ug/g		10/11/95
	Dichloromethane	<.22	ug/g		10/11/95
	Diethyl phthalate	<1.65	ug/g		10/03/95
	Dimethylphthalate	<1.65	ug/g		10/03/95
	Di-n-octyl phthalate	<1.65	ug/g		10/03/95
	Ethylbenzene	<.22	ug/g		10/11/95
	Fluoranthene	<1.65	ug/g		10/03/95
	Fluorene	<1.65	ug/g		10/03/95
	Fluorotrichloromethane	<.22	ug/g		10/11/95
	Hexachlorobutadiene	<1.65	ug/g		10/03/95
	Hexachlorobutadiene	<.22	ug/g		10/11/95
	Hexachlorobenzene	<1.65	ug/g		10/03/95
	Hexachlorocyclopentadie	<1.65	ug/g		10/03/95
	Hexachloroethane	<1.65	ug/g		10/03/95
	Isophorone	<1.65	ug/g		10/03/95
	Indeno(1,2,3-cd)pyrene	<1.65	ug/g		10/03/95
	Isopropylbenzene	<.22	ug/g		10/11/95
	m-Dichlorobenzene	<.22	ug/g		10/11/95
	m+p-Xylene	<.22	ug/g		10/11/95
	Naphthalene	<1.65	ug/g		10/03/95
	Naphthalene	<1.65	ug/g		10/03/95
	Nitrobenzene	<1.65	ug/g		10/03/95
	n-Butylbenzene	<.22	ug/g		10/11/95
	N-nitroso-di-n-propylam	<1.65	ug/g		10/03/95
	N-nitrosodimethylamine	<1.65	ug/g		10/03/95
	N-nitrosodiphenylamine	<1.65	ug/g		10/03/95
	n-Propylbenzene	<.22	ug/g		10/11/95
	o-Chlorotoluene	<.22	ug/g		10/11/95
	o-Dichlorobenzene	<.22	ug/g		10/11/95
	o-Xylene	<.22	ug/g		10/11/95
	Pyrene	<1.65	ug/g		10/03/95
	Phenanthrene	<1.65	ug/g		10/03/95
	Pentachlorophenol	<1.65	ug/g		10/03/95
	p-Chlorotoluene	<.22	ug/g		10/11/95
	p-Dichlorobenzene	<.22	ug/g		10/11/95
	Phenol	<1.65	ug/g		10/03/95
	p-Isopropyltoluene	<.22	ug/g		10/11/95
	Secbutylbenzene	<.22	ug/g		10/11/95
	Styrene	<.22	ug/g		10/11/95
	t-1,2-Dichloroethylene	<.22	ug/g		10/11/95
	Tertbutylbenzene	<.22	ug/g		10/11/95
	Trichloroethylene	<.22	ug/g		10/11/95
	Toluene	<.22	ug/g		10/11/95
	Vinyl Chloride	<.22	ug/g		10/11/95

* U denotes results less than the instrument detection limit. < less than sample detection limit.

9-185
(October 1950)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

WELL SCHEDULE

Date 2-16, 1955 Field No. 750

Record by LVC Office No. ~~II-37~~

Source of data Mr. Tidmore [illegible] QQ-37

1. *Location:* State Ala. County Tuscaloosa
   Map Tuscaloosa Quad. (1½ mi N of M'ville)
   NW¼ NW¼ SW¼ sec. 32 T 24 N/S R 5 E/W
2. *Owner:* J. Lee Tidmore Sr. Address [illegible] Ala.
   Tenant Address
   Driller Causey Drlg Co. Address Northport Ala.
3. *Topography* Upland
4. *Elevation* 243 ft. above/below M.S.L.
5. *Type:* Dug, drilled, driven, bored, jetted JAN 11 1954
6. *Depth:* Rept. 160 ft. Meas. ft.
7. *Casing:* Diam. 4 in., to 4 in., Type Std.
   Depth 54 ft., Finish [illegible] - ?
8. *Chief Aquifer* Coker From ft. to ft.
   Others Sand just below Gray clay.
9. *Water level* 25 ft. rept. meas. JAN 11 1954 above/below L.S.
   which is ft. above/below surface
10. *Pump:* Type F & W JET Capacity G. M.
    Power: Kind Electric Horsepower 3/4
11. *Yield:* Flow G. M., Pump G. M., Meas., Rept. Est.
    Drawdown ft. after hours pumping G. M.
12. *Use:* Dom., Stock, PS., RR., Ind., Irr., Obs.
    Adequacy, permanence
13. *Quality* Temp °F.
    Taste, odor, color — None - Lt. Straw Sample Yes/No 2-16-55
    Unfit for Washing clothes — Heavy [illegible]
14. *Remarks:* (Log, Analyses, etc.) 47 barom traverse fr. TBM-16

U. S. GOVERNMENT PRINTING OFFICE 16-62891-1

G.W.
Ala-3

U. S. GEOLOGICAL SURVEY
P. O. Box 2033
University, Alabama

No. 750

CHEMICAL ANALYSIS REPORT

DATE MAR 20 1955

OWNER J. LEE Tidmore Sr. COUNTY Tuscaloosa

LOCATION (Well-~~Spring~~) ~~II-37~~

DEPTH FEET. ARTESIAN ( ) NON-ARTESIAN ( )

W. B. FORMATION COLLECTED BY LVC DATE 2-16-55

USE ANALYZED BY JN

SAMPLING CONDITIONS QQ-37

COMPLETE ( ) PARTIAL ( ) PRELIMINARY ( ) FIELD ( )

CONTENT	ppm
Total Hardness (~~Soap~~) 0.8	16.0
Fe (Total)	1.8
Cl 0.2	0.0
CO_3	
HCO_3	
SO_4	
NO_2	
NO_3	
Mn.	
F.	
SiO_2	
Color	
Total Dissolved Solids	

pH - - - - - - - - - - - - - 6.4

Temperature - - - - - - - - - - - °F.

Oil - - - - - - - - - - - - -

Appearance

Remarks Drilled

9-185
(October 1950)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

WELL SCHEDULE

Date August 3, 19 51 Field No. 383

Record by HDH Office No. ~~II 35~~ QQ 35

Source of data A. C. Nevin

1. *Location:* State Alabama County Tuscaloosa

Map Tuscaloosa Quad

NW ¼ SW ¼ sec. 30 T 24 N ~~S~~ R 5 E ~~W~~

2. *Owner:* A. C. Nevin Address Rt. 1, Moundville, Ala.

Tenant ..... Address .....

Driller ..... Address .....

3. *Topography* Floodplain

4. *Elevation* 120± ft. above ~~below~~ S. L.

5. *Type:* Dug, drilled, driven, bored, jetted ..... 19 ....

6. *Depth:* Rept. ..... ft. Meas. ..... ft.

7. *Casing:* Diam. 4 in., to ..... in., Type .....

Depth ..... ft., Finish .....

8. *Chief Aquifer* Co Ker From ..... ft. to ..... ft.

Others .....

9. *Water level* 12± ft. rept. meas. ..... 19 .... above ~~below~~ L. S.

..... which is ..... ft. above below surface

10. *Pump:* Type ..... Capacity ..... G. M. .....

Power: Kind ..... Horsepower .....

11. *Yield:* Flow ..... G. M., Pump ..... G. M., Meas., Rept. Est. .....

Drawdown ..... ft. after ..... hours pumping ..... G. M.

12. *Use:* Dom., Stock, PS., RR., Ind., Irr., Obs. Domestic and Stock

Adequacy, permanence .....

13. *Quality* ..... Temp 67 °F.

Taste, odor, color Fe Sample Yes No .....

Unfit for .....

14. *Remarks:* (Log, Analyses, etc.) .....

U. S. GOVERNMENT PRINTING OFFICE 16—62891-1

188

REPORT OF DRILLED WELL

DRILLING CONTRACTOR	License Number	Address	Zip Code	Date
Allen & Willis Dlg	#453	Rt1 Faunsdale	Al 36738	10/25/92

PROPERTY OWNER	Address (mailing)	Zip Code
Shelton State	Moundville	

WELL LOCATION	County	Section	¼ Section	Township	Range ---or:
Tuscaloosa ~~Hale~~ Co	Tuscaloosa	31		24N	5W

Well at Sale on Moundville Campus

Distance and direction from nearest town, community, road junction or other reference point

WELL WILL BE USED FOR: ☐ Private supply ☐ Public supply ☐ Industrial supply ☐ Test well ☒ Irrigation Other: _____

11/1/92 Estimated starting date

Drilling method: (check) Cable tool, Rotary, Jetted, Bored Other: _____

6" Diameter of well

400 Estimated depth

Thomas B. Willis
SIGNATURE of Drilling Contractor

Total Depth 446

Completion Date 12/1/93

Interval	Description of cuttings	Interval	Description of cuttings
-20	Sand & Clay		
-25	Sand & Gravel		
-46	Clay		
-106	Clay		
146	Fine Sand		
[illegible]	Coarse Sand		
186	Hard Purple Clay		
206	"		
-226	Clay & Sand		
-280	Gray Green Clay		
-286	Fine Sand		
-306	Fine White		
326	Clay		
344	Gray Clay (Hard)		
386	Fine White		
406	Sand, Mud/Fine		
426	Sand		
446	Coarse Sand		

*For deeper well please attach continuation sheet.

Completion date: report depths below ground level

Pump
Type: ☐ Turb. ☒ Subm. ☐ Jet ☐ Cyl.; Other: _____
Intake depth 120 H.P. 5 Yield 150 gpm

Capacity
Tested by: ☐ pumping ☐ air lift ☐ bailer ☐ none
Measured Static Water Level 70 ft.
Measured pumping level _____ ft. after _____ hrs. pumping _____ gpm
Development time prior to testing _____ hrs.

Finish
☐ Open hole ☒ Screened ☐ Slotted pipe ☒ Gravel pk.
Interval(s) screened: 366 to 446 ft; _____ to _____ ; _____ to _____ ft.
Packer(s) set at _____ and _____ ft.
Screen: diam. 4" ; Size openings .020

Casing

Interval cased	Diam. (Inches)	*Type pipe	*Type couplings	Interval grouted
0-168	6¼	PVC		
168-368	4"	PVC		

*Couplings: Threaded & Coupled (T&C) Welded (W) Threaded & coupled & welded (TC&W)
Other: _____
*Pipe: Black; PVC; Galv.; Other: _____

Quality
Water analysis obtained? (check) ☐ No ☐ Bacteriological ☐ Chemical
Analysis by: ☐ Ala Geol. Surv. ☐ U.S. Geol. Surv. ☐ Ala Health Dept. ☐ Private lab.
Signed:

ADEM Form 60 1/83

REPORT OF DRILLED WELL

Densmore Drilling Co 352 3029 Nixon Rd Bessemer, Al. 35020 2-2
DRILLING CONTRACTOR License Number Address Zip Code Date

Vernon Ryals 22909 Heritage Drive McCalla, Al. 35711
PROPERTY OWNER Address (mailing) Zip Code

McCalla, Al. Tuscaloosa 32 25 5 West
WELL LOCATION County Section ¼ Section Township Range ---or:

Distance and direction from nearest town, community, road junction or other reference point

WELL WILL BE USED FOR: ☑ Private supply ☐ Public supply ☐ Industrial supply ☐ Test well ☐ Irrigation Other: _____

2/24/92 Estimated starting date

Drilling method: (check) ~~Cable tool~~ Rotary Jetted Bored Other: _____

6" Diameter of well

100' Estimated depth

W.V. Densmore
SIGNATURE of Drilling Contractor

Total Depth 85'

Completion Date 2-26-92

Interval	Description of cuttings	Interval	Description of cuttings

Completion date: report depths below ground level

Pump
Type: ☐ Turb. ☐ Subm. ☐ Jet ☐ Cyl:; Other: _____
Intake depth _____ H.P. _____ Yield _____ gpm

Capacity
Tested by: ☐ pumping ☐ air lift ☐ bailer ☐ none
Measured Static Water Level _____ ft.
Measured pumping level _____ ft. after _____ hrs. pumping _____ gpm
Development time prior to testing _____ hrs.

Finish
☐ Open hole ☐ Screened ☐ Slotted pipe ☐ Gravel pk.
Interval(s) screened: _____ to _____ ft; _____ to _____; _____ to _____ ft.
Packer(s) set at _____ and _____ ft.
Screen: diam. _____; Size openings _____

Casing

Interval cased	Diam. (Inches)	*Type pipe	*Type couplings	Interval grouted
85	6"	Steel		

*Couplings: Threaded & Coupled (T&C) Welded (W) Threaded & coupled & welded (TC&W)

Other: _____

*Pipe: Black PVC; Galv.; Other: _____

Quality
Water analysis obtained? (check) ☐ No ☐ Bacteriological ☐ Chemical

Analysis by: ☐ Ala Geol. Surv. ☐ U.S. Geol. Surv. ☐ Ala Health Dept. ☐ Private lab.

Signed: W.V. Densmore

*For deeper well please attach continuation sheet.

ADEM Form 60 1/83

REPORT OF DRILLED WELL

QQ

DRILLING CONTRACTOR	License Number	Address	Zip Code	Date
Mid South Drilling COmpany	355	Rt. 1 Bx 36F Carrollton, AL	35447	5-16-89

PROPERTY OWNER	Address (mailing)	Zip Code
Doug Redemberry	Rt. 1 Box 255 Moundville, AL	35474

WELL LOCATION	County	Section	¼ Section	Township	Range	—or:
Moundville	Tuscaloosa	30		24N	5E	

2 1/2 miles North of Moundville on county road 72

Distance and direction from nearest town, community, road junction or other reference point

WELL WILL BE USED FOR: [XXX] Private supply [ ] Public supply [ ] Industrial supply [ ] Test well [ ] Irrigation Other: _____

5-1-89 Estimated starting date

Drilling method: (check) [XX] Cable tool [ ] Rotary [ ] Jetted [ ] Bored Other: _____

4" Diameter of well

210 Estimated depth

Lewis Price
SIGNATURE of Drilling Contractor

Total Depth 210'

Completion Date 5-1-89

Interval	Description of cuttings	Interval	Description of cuttings
0-7	clay		
7-45	sand		
45-65	shale		
65-75	blue clay		
75-203	clay		
203-210	sand		
	rock at 30,35		

Completion date: report depths below ground level

Pump
Type: [ ] Turb. [ ] Subm. [ ] Jet [ ] Cyl.; Other: _____
Intake depth _____ H.P. _____ Yield _____ gpm

Capacity
Tested by: [ ] pumping [ ] air lift [ ] bailer [XX] none
Measured Static Water Level flowing 15gpm
Measured pumping level _____ ft. after _____ hrs. pumping _____ gpm
Development time prior to testing _____ hrs.

Finish
[ ] Open hole [XX] Screened [ ] Slotted pipe [X] Gravel pk.
Interval(s) screened: 195 to 210 ft; _____ to _____ ; _____ to _____ ft.
Packer(s) set at _____ and _____ ft.
Screen: diam. 4" ; Size openings .032

Casing

Interval cased	Diam. (Inches)	*Type pipe	*Type couplings	Interval grouted
0-195	4	PVC	glue	

*Couplings: Threaded & Coupled (T&C) Welded (W) Threaded & coupled & welded (TC&W)
Other: _____
*Pipe: Black; PVC; Galv.; Other: _____

Quality
Water analysis obtained? (check) [XX] No [ ] Bacteriological [ ] Chemical
Analysis by: [ ] Ala Geol. Surv. [ ] U.S. Geol. Surv. [ ] Ala Health Dept. [ ] Private lab.
Signed:

*For deeper well please attach continuation sheet.

ADEM Form 60 1/83

ATTACHMENT 3

Att 3

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

John M. Smith, Director

Fob James, Jr.
Governor

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Mobile, AL
36615-1131
(334) 450-3400
FAX 479-2593

August 18, 1995

Celeste South
U. S. Fish & Wildlife
P. O. Box 1190
Daphne, Alabama 36526

Dear Ms. South:

I would like to request any information you may have available concerning fish and wildlife living on or near the Cracker Asphalt site located in Moundville, Hale County Alabama. The Cracker site is located adjacent to Moundville State Park and is currently in the Site Investigation stage of the EPA Superfund Process. During this stage of getting a site listed as a possible candidate for clean-up by EPA, it is necessary to determine what if any endangered and/or threatened species and sensitive environments are within each of the target radii listed on the attached map and also if any targets are present within 15 down stream miles of the site.

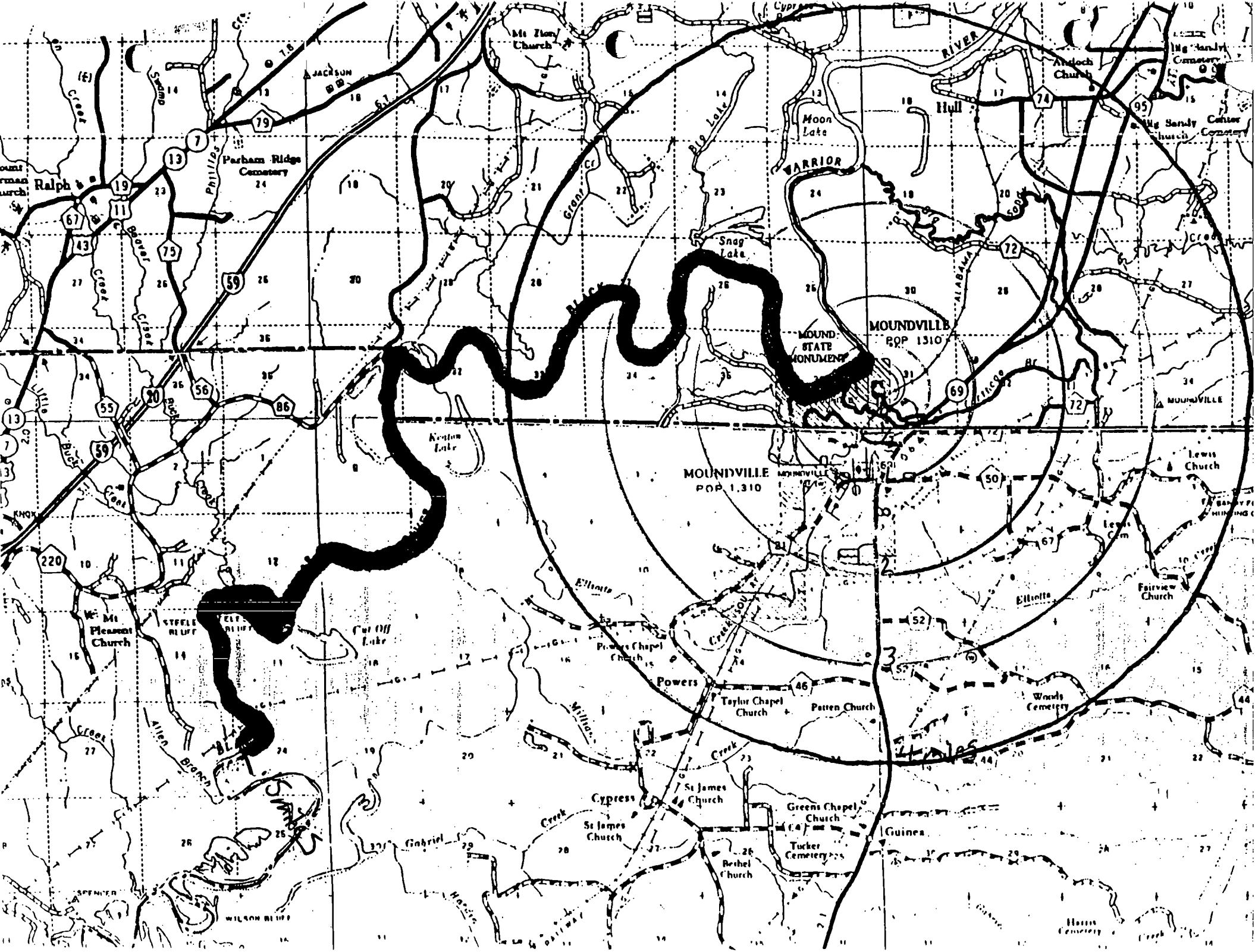
If you have any questions or need more information please do not hesitate to call me at (334) 2123-4320. Any help that you may be able to give will be greatly appreciated and may mean the difference between having the site cleaned up or it remaining a threat to human health and the environment.

Sincerely,

Jeremy Stamps

Jerremy H. Stamps
Site Assessment Unit
Special Projects

Printed on Recycled Paper


Ralph
Parham Ridge Cemetery
JACKSON
Mt Zion Church
Moon Lake
Hull
Antioch Church
Big Sandy Church
Big Sandy Center Cemetery
Snag Lake
MOUND STATE MONUMENT
MOUNDVILLE
POP 1310
MOUNDVILLE
POP 1,310
Kenton Lake
Lewis Church
Fairview Church
Mt Pleasant Church
STEELE BLUFF
Cut Off Lake
Powers Chapel Church
Powers
Taylor Chapel Church
Patten Church
Woods Cemetery
Cypress
St James Church
St James Church
Greens Chapel Church
Tucker Cemetery
Bethel Church
Guinea
WILSON BLUFF
Harris Cemetery
4 miles

PA TABLE 5: SURFACE WATER AND AIR PATHWAY SENSITIVE ENVIRONMENTS VALUES

Sensitive Environment	Assigned Value
Critical habitat for federally designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically important areas identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lake Program of the Clean Water Act (subareas in lakes or entire small lakes) National Monument (air pathway only) National Seashore Recreational Area National Lakeshore Recreational Area	100
Habitat Know to be used by Federally designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Federal land designated to the protection of natural ecosystems Administratively proposed Federal Wilderness Area Spawning area critical for the maintenance of fish/shellfish species within a river system, bay, or estuary Migration pathways and feeding areas critical for the maintenance of anadromous fish species in a river system Terrestrial areas utilized for breeding by large or dense aggregation of vertebrate animals (air pathway) or semi-aquatic foragers (surface water pathway) National river reach designated as Recreational	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for protection/maintenance of aquatic life under the Clean Water Act	5
Wetlands	See PA Table 6 (Surface Water Pathway) or PA Table 9 (Air Pathway)

PA TABLE 6: SURFACE WATER PATHWAY WETLANDS FRONTAGE VALUES

Total length of Wetlands	Assigned Value
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

United States Department of the Interior

FISH AND WILDLIFE SERVICE
2001-A Highway 98
P. O. Drawer 1190
Daphne, Alabama 36526

IN REPLY REFER TO:

September 5, 1995

SEP 1995
ADEM SPECIAL PROJECTS

Mr. Jeremy Stamps
Site Assessment Unit
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463

Dear Mr. Stamps:

We received your letter dated August 18, 1995 requesting information for federally listed species located within 15 miles of the Cracker Asphalt site in Moundville, Hale County, Alabama currently in the Site Investigation stage of the EPA Superfund Process. We have reviewed your request and offer the following comments in accordance with the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et. seq.).

Our records indicate that the following freshwater mussel species have historically occurred and may be present in that portion of the Black Warrior River adjacent to and 15 miles downstream of the facility:

SPECIES	STATUS
ovate clubshell, Pleurobema perovatum	Endangered
southern clubshell, Pleurobema decisum	Endangered
inflated heelsplitter, Potamilus inflatus	Threatened

These mussel species are extremely sensitive to environmental pollutants and sedimentation, and, if present, may be adversely affected by contamination from this facility.

The endangered red-cockaded woodpecker, Picoides borealis, is located in the Talladega National Forest located just east of Moundville, and may be found foraging or nesting outside the confines of the National Forest.

Please note that the above list is subject to change if (1) new species are listed, (2) federally listed species migrate into the project area, (3) critical habitat is designated or (4) new information becomes on available on federally listed species.

The riparian zone of the Black Warrior River is considered sensitive wetland habitat which provides a stormwater storage basin as well as habitat for many fish and wildlife species.

Contaminants from this facility may harm important riparian vegetation and contaminate riverine and riparian sediment.

We hope this information is helpful. Should you have further questions, please contact Sharon Delchamps of this office at 334/441-5181 ext. 34.

Sincerely,

Larry Goldman
Field Supervisor

ATTACHMENT 4

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

John M. Smith, Director

Fob James, Jr.
Governor

Mailing Address:
PO BOX 301463
MONTGOMERY AL
36130-1463

Physical Address:
1751 Cong. W. L.
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Montgomery, AL
36109-2608

(334) 271-7700
FAX 270-5612

Field Offices:

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Birmingham, AL
35209-4702
(205) 942-6168
FAX [illegible]1-1603

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P.O. Box 953
Decatur, AL
35602-0953
(205) 353-1713
FAX 340-9359

2204 Perimeter Road
Mobile, AL
36615-1131
(334) 450-3400
FAX 479-2593

August 22, 1995

Davis Findley
USACOE Mobile District Regulatory Branch
P. O. Box 2288
Mobile, Alabama 36628-0001

Dear Mr. Findley:

I would like to request any information you may have available concerning wetlands located on or near the Cracker Asphalt site located in Moundville, Hale County Alabama. The Cracker site is located adjacent to Moundville State Park and is currently in the Site Investigation stage of the EPA Superfund Process. During this stage of getting a site listed as a possible candidate for clean-up by EPA, it is necessary to determine: 1) the location and acreage of each wetland located within the 0-1/4, 1/4-1/2, 1/2-1, 1-2, 2-3, and 3-4 mile distance radii from the site; and 2) the location and acreage of each wetland along the banks of the 15 mile down stream surface water pathway (see attached map).

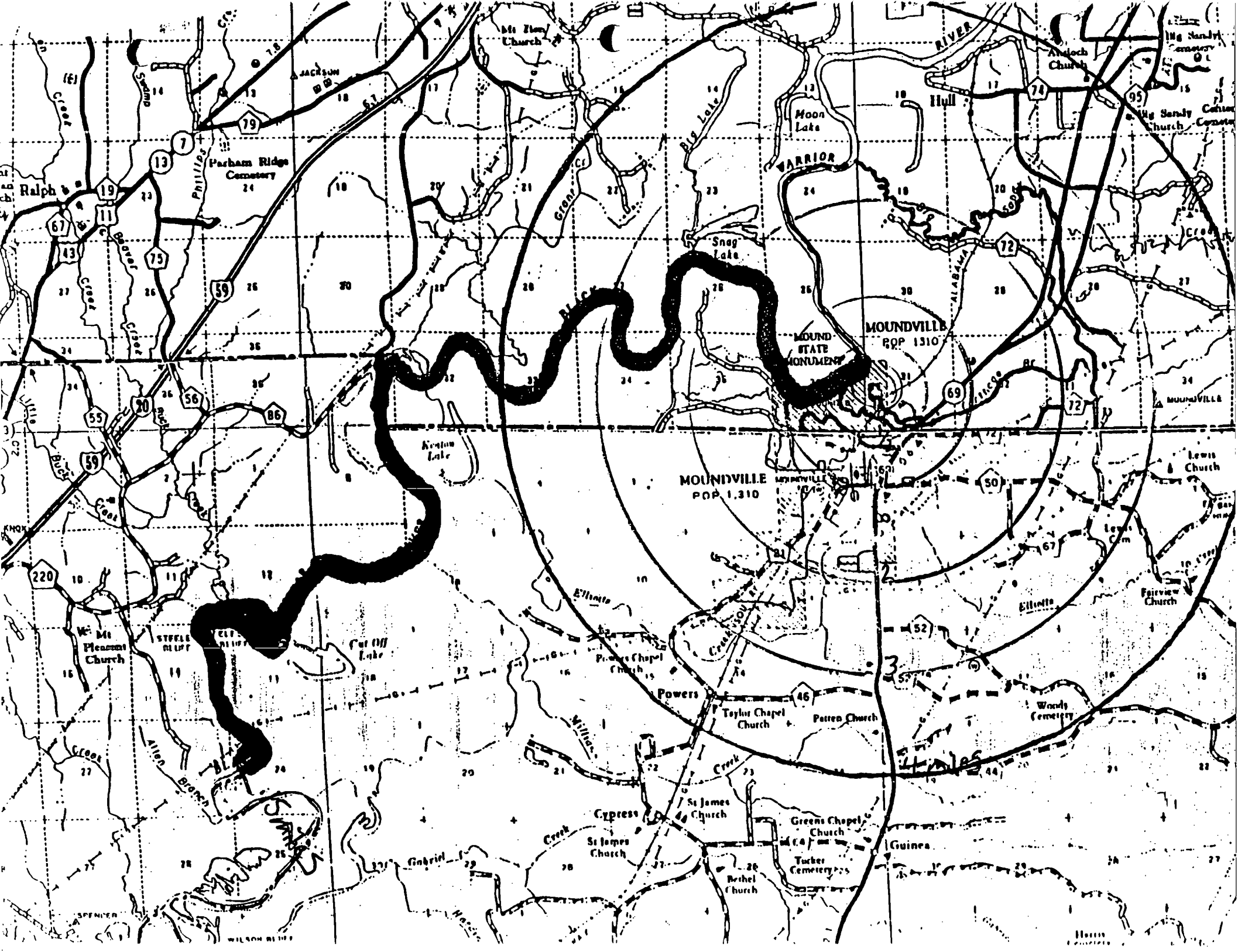
If you have any questions or need more information please do not hesitate to call me at (334) 213-4320. Any help that you may be able to give will be greatly appreciated and may mean the difference between having the site cleaned up or it remaining a threat to human health and the environment.

Sincerely,

Jeremy H. Stamps

Jeremy H. Stamps
Site Assessment Unit
Special Projects

Printed on Recycled Paper



Mt Zion Church
Ralph
Parham Ridge Cemetery
Phillips
Swamp
Beaver Creek
Big Lake
Moon Lake
Hull
Big Sandy Church
Snag Lake
MOUND STATE MONUMENT
MOUNDVILLE POP 1310
MOUNDVILLE
Keaton Lake
Lewis Church
Lewis Cem
Fairview Church
Mt Pleasant Church
STEELE BLUFF
Cut Off Lake
Powers Chapel Church
Powers
Taylor Chapel Church
Patten Church
Woods Cemetery
Cypress
St James Church
Greens Chapel Church
Guinea
Tucker Cemetery
Bethel Church
Allen Branch
Gabriel
Creek
Elliotts
Millsaw
WARRIOR
RIVER
ALABAMA
JACKSON
SPENCER
WILSON BLUFF

ATTACHMENT 5

LITERATURE CITATION

U.S. Fish and Wildlife Service. 1992. Endangered and Threatened Species of the Southeast United States (The Red Book). Prepared by Ecological Services, Division of Endangered Species, Southeast Region, Government Printing Office, Washington, D.C. 1,438 pp. (two volumes).

ENDANGERED AND THREATENED SPECIES

OF THE

SOUTHEASTERN UNITED STATES

(THE RED BOOK)

Introduction Section, Volume 1

Prepared by:

U.S. Fish and Wildlife Service
Southeast Region
Atlanta, Georgia

January 1992

Availability Unlimited
For Sale by Superintendent of Documents
Post Office Box 371954
Pittsburgh, PA 15250-7954

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2

SOUTHEAST REGION'S PROPOSED RULES

(E = Endangered; T = Threatened; CH = Critical Habitat; S/A = Classified under similarity of Appearance Provision

P = Plant, M = Mammal, I = Invertebrate, R = Reptile, F = Fish, MU = Mussel

SPECIES	LOCATION	PROPOSED STATUS	FEDERAL REGISTER
Bald eagle (Haliaeetus leucocephalus)	All U.S. States except WA,OR, MN,WI,MI,AK	Downlist to T	07/12/94
Bankclimber, purple (MU) (Elliptoideus sloatianus)	AL,FL,GA	T	08/03/94
Coccoloba rugosa (P) (no common name)	PR	T	09/24/93
Cumberlandian combshell (MU) (Epioblasma brevidens)	AL,KY,TN,VA	E	07/14/94
Cumberland elktoe (MU) (Alasmidonta atropurpurea)	KY,TN	E	07/14/94
Gesneria pauciflora (P) (no common name)	PR	T	02/18/94
Helianthus eggerti (P) (Eggert's sunflower)	AL,TN,KY	T	09/09/94
Lesquerella perforata (P) (Spring Creek bladderpod)	TN	E	08/23/94
Moccasinshell, gulf (MU) (Mediondus pencillatus)	AL,FL,GA	E	08/03/94
Moccasinshell, Ochlockonee (MU) (Medionidus simpsonianus)	FL,GA	E	08/03/94
Mussel, oyster (MU) (Epioblasma capsaeformis)	AL,KY,TN,VA	E	07/14/94
Pigtoe, oval (MU) (Pleurobema pyriforme)	AL,FL,GA	E	08/03/94

(E = Endangered; T = Threatened; CH = Critical Habitat; S/A = Classified under similarity of Appearance Provision

P = Plant, M = Mammal, I = Invertebrate, R = Reptile, F = Fish, MU = Mussel

SPECIES	LOCATION	PROPOSED STATUS	FEDERAL REGISTER
Pocketbook, shiny-rayed (MU) (Lampsilus subangulata)	AL,FL,GA	E	08/03/94
Purple bean (Villosa bean) (MU)	TN,VA	E	07/14/94
Rabbitsfoot, rough (MU) (Quadrula cylindrica strigillata)	TN,VA	E	07/14/94
Slabshell, chipola (MU) (Elliptio chipolaensis)	AL,FL	T	08/03/94
Spruce-fir moss spider (Microhexura montivaga)	NC,TN	E	01/27/94
Three-ridge, fat (MU) (Amblema neisleni)	FL,GA	E	08/03/94

CRITICAL HABITAT INDEX

Alabama:	Etheostoma boschungi (slackwater darter)
	Peromyscus polionotus ammobates (Alabama beach mouse)
	Peromyscus polionotus trissyllepsis (Perdido Key beach mouse)
	Speoplatyrhinus poulsoni (Alabama cavefish)
Arkansas:	Percina pantherina (leopard darter)
Florida:	Ammospiza maritima mirabilis (Cape Sable sparrow)
	Crocodylus acutus (American crocodile)
	Oryzomys palustris natator (silver rice rat) [= Oryzomys argentatus]
	Peromyscus polionotus allophrys (Choctawhatchee beach mouse)
	Peromyscus polionotus trissyllepsis (Perdido Key beach mouse)
	Rostrhamus sociabilis plumbeus (Everglade kite)
	Trichechus manatus (Florida manatee)
Georgia:	Percina antesella (amber darter)
	Percina jenkinsi (Conasauga logperch)
Kentucky:	Myotis sodalis (Indiana bat)
	Palaemonias ganteri (Kentucky cave shrimp)
Louisiana:	No designations
Mississippi:	Grus canadensis pulla (Mississippi sandhill crane)
North Carolina:	Hudsonia montana (mountain golden heather)
	Hybopsis monacha (spotfin chub)
	Menidia extensa (waccamaw silverside)
	Notropis mekistocholas (Cape Fear shiner)

10/05/94

Federally Listed Species By State

ALABAMA

(E=Endangered; T=Threatened; CH=Critical Habitat determined)

Mammals	General Distribution
Bat, gray (Myotis grisescens) - E	Extreme North, East
Bat, Indiana (Myotis sodalis) - E	Extreme North
Manatee, West Indian (Trichechus manatus) - E	Coastal waters
Mouse, Alabama beach (Peromyscus polionotus ammobates) - E,CH	Coastal; Baldwin
Mouse, Perdido Key beach (Peromyscus polionotus trissyllepsis) - E,CH	Perdido Key
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
Plover, piping (Charadrius melodus) - T	Coast
Warbler, Bachman's (Vermivora bachmanii) - E	Entire State
Wood, stork (Mycteria americana) - E	Entire State
Woodpecker, ivory-billed (Campephilus principalis) - E	South, West Central
Woodpecker, red-cockaded (Picoides [=Dendrocopos] borealis) - E	Entire State

Reptiles	
Alligator, American (Alligator mississippiensis) - T (S/A)*	Coastal plain

*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.

	General Distribution
Snake, eastern indigo (*Drymarchon corais couperi*) - T	South
Tortoise, gopher (*Gopherus polyphemus*) - T	Choctaw, Mobile, Washington Counties
Turtle, Alabama red-bellied (*Pseudemys alabamensis*) - E	Mobile River system; Baldwin and Mobile Counties
Turtle, flattened musk (*Sternotherus depressus*) - T	Upper Black Warrior River system
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
Amphibians	
Salamander, Red Hills (*Phaeognatus hubrichti*) - T	Covington, Conecuh, Butler, Crenshaw, Monroe Counties
Arthropods	
Shrimp, Alabama cave (*Palaemonias alabamae*) - E	Madison County
Fishes	
Cavefish, Alabama (*Speoplatyrhimus poulsoni*) - E, CH	Lauderdale County
Darter, boulder (*Etheostoma* [*Nothonotus*] sp) - E	Lower Elk River System, Limestone County
Darter, goldline (*Percina aurolineata*) - T	Cahaba River System

	General Distribution
Darter, palezone (Notropis sp., cf. procne) - E	Paint Rock River, Jackson County
Darter, slackwater (Etheostoma boschungi) - T, CH	Madison, Lauderdale, Limestone Counties
Darter, snail (Percina tanasi) - T	Madison and Jackson Counties (Paint Rock R.)
Darter, Watercress (Etheostoma nuchale) - E	Jefferson County
Shiner, blue (Cyprinella caerulea) -T	Upper Coosa River System: Weogufka and Choccolocco Creeks, lower reach of Little River
Shiner, cahaba (Notropis cahabae) - E	Cahaba River: Bibb, Shelby, Perry County
Sturgeon, Gulf (Acipenser axyrhynchus) - T	Alabama River System, Mobile River System
Mollusks	
Acornshell, southern (Epioblasma othcaloogensis) - E	Coosa River drainage
Clubshell, ovate (Pleurobema perovatum) - E	Sipsey River in the Tombigbee River drainage; Blackwater Creek and Locust Fork in the Black Warrior drainage; Chewacia Creek in the Tallapoosa drainage
Clubshell, southern (Pleurobema decisum) - E	Bogue Chitto Creek, Alabama River drainage; East Fork Tombigbee and Sipsey Rivers, Tombigbee River drainage; Chewacia Creek, Tallapoosa River drainage; Coosa River drainage, Conasauga River and Shoal and Kelly Creeks; Cahaba River
Combshell, southern or penitent mussel (Epioblasma penitent) - E	Cahaba, Coosa Rivers

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	General Distribution
Combshell, upland (Epioblasma metastriata) - E	Upper Black Warrior and Cahaba River drainages
Kidneyshell, triangular (Plychobranchus greeni) - E	Headwaters of the Sipsey Fork and Little Warrior River, Black Warrior River drainage; Cahaba River
Moccasinshell, Alabama (Medionidus acutissimus) - T	Sipsey Rivers in the Tombigbee River drainage; Brushy Creek and Rush Creek, Black Warrior River drainage
Moccasinshell, Coosa (Medionidus parvulus) - E	Coosa River and tributaries; Cahaba River; Sipsey Fork, Black Warrior River
Mucket, orange-nacre (Lampsilis perovalis) - T	Headwaters of the Sipsey Fork; Sipsey and Little Cahaba Rivers
Mussel, Alabama lamp pearly (Lampsilis virescens) - E	Paint Rock River, Estill Fork, Hurricane Creek, Larkin Fork
Moccasinshell, Coosa (Medionidus parvulus) - E	Cahaba River; Sipsey Fork of the Black Warrior River; Coosa River and tributaries; Little River
Mussel, fine-rayed pigtoe pearly (Fusconaia cuneolus) - E	Paint Rock River
Mussel, inflated heelsplitter (Potamilius inflatus) - T	Tombigbee and Black Warrior Rivers
Mussel, flat pigtoe (Pleurobema marshalli) - E	Tombigbee River (bendway in Sumter County)
Mussel, orange-footed pimpleback (Plethobasus cooperianus) - E	Tennessee River
Mussel, pale lilliput pearly (Toxolasma [Carunculina] cylindrella) - E	Paint Rock River, Estill Fork, Hurricane Creek

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	General Distribution
Mussel, pink mucket pearly (Lampsilis abrupta [= obiculata]) - E	Tennessee and Paint Rock Rivers
Mussel, rough pigtoe pearly (Pleurobema plenum) - E	Tennessee River
Mussel, shiny pigtoe pearly (Fusconaia edgariana) - E	Paint Rock River
Mussel, stirrup shell (Quadrula stapes) - E	Tombigbee River (bendway in Sumter County), and Sipsey River
Pigtoe, dark (Pleurobema furvum) - E	Black Warrior River, headwaters of the Sipsey Fork and Upper North River drainage
Pigtoe, heavy or Judge Tait's mussel (Pleurobema taitianum) - E	Tombigbee River (bendway in Sumter County), Sipsey River
Pigtoe, southern (Pleurobema georgiana) - E	Coosa River, Shoal Creek in the Choccolocco Creek drainage
Pocketbook, fine-lined (Lampsilis altilis) - T	Sipsey Fork headwaters, Black Warrior River drainage; Tatum Creek, Alabama River drainage; Little Cahaba, Cahaba River drainage; Kelly Creek and Shoal Creek in the Coosa River drainage and Main Channel; Chewacla and Opintlocco Creeks, Tallapoosa drainage
Riversnail, Anthony's (Atheamia anthonyi) - E	Limestone Creek in Limestone County
Snail, Tulotoma (Tulotoma magnifica) - E	Coosa River tributaries (Kelly Creek, St. Clair and Shelby Counties; Weogufka and Hatchet Creeks, Coosa County; Ohatchee Creek, Calhoun County; and between Jordan Dam and Wetumpka, Elmore County)

	General Distribution
Plants	
Amphianthus pusillus (little amphianthus) - T	Randolph, Chambers Counties
Apios priceana (Price's potato-bean) - T	Madison, Autauga, and Marshall Counties
Clematis morefieldii (Morefield's leather flower) - E	Madison County
Clematis socialis (Alabama leather flower) - E	St. Clair, Cherokee Counties
Dalea foliosa (= Petalostemum foliosum) (Leafy prairie-clover) - E	Franklin, Morgan, Lawrence, and Jefferson Counties
Marshallia mohrii (Mohr's Barbara's buttons) - T	Bibb, Cherokee, Etowah Counties
Phyllitis scolopendrium var. Americana (American hart's tongue fern) - T	Jackson, Morgan Counties
Ptilimnium nodosum (harperella) - E	Dekalb County
Sagittaria secundifolia (Kral's water plaintain) - T	Dekalb, Cherokee Counties
Sarracenia oreophila (green pitcher plant) - E	Cherokee, Dekalb, Jackson, Marshall, Etowah Counties
Sarracenia rubra ssp. alabamensis (Alabama canebrake pitcher-plant) - E	Autauga, Chilton, Elmore
Spigelia gentianoides (gentian pinkroot) - E	Montgomery County
Thelypteris pilosa var. alabamensis (Alabama streak-sorus fern) - T	Sipsey Fork tributary of Black Warrior River, Winston County
Trillium reliquum (relict trillium) - E	Henry, Lee Counties
Xyris tennesseensis (Tennessee yellow-eyed grass) - E	Franklin County

ENDANGERED SPECIES BY COUNTY LIST

STATE: ALABAMA

	CERTAINTY OF OCCURRENCE	GROUP	STATUS
BAT, INDIANA *(Myotis sodalis)*	POSSIBLE	MAMMAL	E
SNAKE, EASTERN INDIGO *(Drymarchon corais couperi)*	POSSIBLE	REPTILE	T
COUNTY: GREENE			
MUSSEL, FLAT PIGTOE *(Pleurobema marshalli)*	KNOWN	CLAM	E
MUSSEL, HEAVY PIGTOE *(Pleurobema taitianum)*	KNOWN	CLAM	E
MUSSEL, INFLATED HEELSPLITTER *(Potamilus inflatus)*	KNOWN	CLAM	T
MUSSEL, ORANGE-NACRE MUCKET *(Lampsilis perovalis)*	KNOWN	CLAM	T
MUSSEL, OVATE CLUBSHELL *(Pleurobema perovatum)*	KNOWN	CLAM	E
MUSSEL, SOUTHERN CLUBSHELL *(Pleurobema decisum)*	KNOWN	CLAM	E
MUSSEL, SOUTHERN COMBSHELL *(Epioblasma penita)*	KNOWN	CLAM	E
MUSSEL, STIRRUP SHELL *(Quadrula stapes)*	KNOWN	CLAM	E
STORK, WOOD *(Mycteria americana)*	POSSIBLE	BIRD	E
COUNTY: HALE			
MUSSEL, INFLATED HEELSPLITTER *(Potamilus inflatus)*	KNOWN	CLAM	T
STORK, WOOD *(Mycteria americana)*	POSSIBLE	BIRD	E
WOODPECKER, RED-COCKADED *(Picoides borealis)*	KNOWN	BIRD	E
COUNTY: HENRY			
BAT, INDIANA *(Myotis sodalis)*	POSSIBLE	MAMMAL	E
EAGLE, BALD *(Haliaeetus leucocephalus)*	KNOWN	BIRD	E
STORK, WOOD *(Mycteria americana)*	POSSIBLE	BIRD	E
TRILLIUM, RELICT *(Trillium reliquum)*	KNOWN	PLANT	E
COUNTY: HOUSTON			

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ENDANGERED SPECIES BY COUNTY LIST

STATE: ALABAMA

	CERTAINTY OF OCCURRENCE	GROUP	STATUS
(Cyprinella caerulea)			
WOODPECKER, RED-COCKADED *(Picoides borealis)*	KNOWN	BIRD	E
COUNTY: TALLAPOOSA			
BAT, INDIANA *(Myotis sodalis)*	POSSIBLE	MAMMAL	E
EAGLE, BALD *(Haliaeetus leucocephalus)*	KNOWN	BIRD	E
COUNTY: TUSCALOOSA			
BAT, INDIANA *(Myotis sodalis)*	POSSIBLE	MAMMAL	E
MUSSEL, DARK PIGTOE *(Pleurobema furvum)*	KNOWN	CLAM	E
MUSSEL, FINE-LINED POCKETBOOK *(Lampsilis altilis)*	KNOWN	CLAM	T
MUSSEL, ORANGE-NACRE MUCKET *(Lampsilis perovalis)*	KNOWN	CLAM	T
MUSSEL, OVATE CLUBSHELL *(Pleurobema perovatum)*	KNOWN	CLAM	E
MUSSEL, SOUTHERN CLUBSHELL *(Pleurobema decisum)*	KNOWN	CLAM	E
TURTLE, FLATTENED MUSK *(Sternotherus depressus)*	KNOWN	REPTILE	T
WOODPECKER, RED-COCKADED *(Picoides borealis)*	KNOWN	BIRD	E
COUNTY: WALKER			
BAT, INDIANA *(Myotis sodalis)*	POSSIBLE	MAMMAL	E
BUTTONS, MOHR'S BARBARA'S *(Marshallis mohrii)*	KNOWN	PLANT	T
MUSSEL, OVATE CLUBSHELL *(Pleurobema perovatum)*	KNOWN	CLAM	E
MUSSEL, TRIANGULAR KIDNEYSHELL *(Ptychobranchus greeni)*	KNOWN	CLAM	E
TURTLE, FLATTENED MUSK *(Sternotherus depressus)*	KNOWN	REPTILE	T
COUNTY: WASHINGTON			
MUSSEL, INFLATED HEELSPLITTER *(Potamilius inflatus)*	KNOWN	CLAM	T
SNAKE, EASTERN INDIGO	POSSIBLE	REPTILE	T

13

ATTACHMENT 6

MAR 1986
RECEIVED
ADEM
WATER DIVISION

HYDROGEOLOGIC STUDY AND SURFACE SOIL ASSESSMENT

Prepared for:
Lawter International, Inc.
Southern Resins Division
Moundville, Alabama

March, 1986

Prepared by:
CH2M HILL
2567 Fairlane Drive
Montgomery, Alabama

MGBG1/d.201

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INTRODUCTION

The Lawter International, Southern Resins Division facility in Moundville, Alabama, was required in early 1985 to address potential site contamination with hydrocarbon materials. This included both groundwater contamination and surficial soils contamination. The work plan to accomplish a Remedial Action Plan (RAP) which included the approved groundwater program and a surficial soils testing program was submitted to the Alabama Department of Environmental Management (ADEM) in August 1985. This was approved by ADEM, with one modification to include an additional surficial soil sampling site, on August 28, 1985.

Lawter described the groundwater assessment program in the RAP in a separate work plan, approved by ADEM on July 24, 1985. The purpose of the groundwater investigations was to characterize the hydrogeology of the Pleistocene terrace at the plant site, including an evaluation of the impact of plant operations on groundwater quality. The scope of this work for this investigation addressed the entire plant site but concentrated on the waste disposal area on the north bluff and the eastern property boundary, which is shared with a non-operative asphalt plant. The program included drilling several boreholes initially to identify the

subsurface profile, identify the water table, and establish the depth to the Gordo formation. Based on these results, monitoring well locations and depths were established and the wells installed. Finally, several groundwater sampling events were performed, including three sets of analyses for the monitoring wells and one set for seeps and springs at the property boundary adjacent to the gullies and river (north and west boundaries).

The RAP also included a program to establish levels of contamination in the site soils. This included the collection of soil samples from several profiles in the bore holes drilled as part of the groundwater assessment. It also included sampling the near-surface soils (top few feet) at several specified locations where contamination was suspected. These soil samples were analyzed using a technique that was described in a Technical Report submittal to ADEM for review and approved with the RAP. The method involved a special soil extraction for organics with a small volume of carbon disulfide, and analysis of the extract with a gas chromatograph with flame ionization detector (GC/FID). (The report is referenced as: CH2M HILL 1985. "Evaluation of GC/FID Protocol for Analysis of Site Hydrocarbon Contamination," prepared for Lawter International, by CH2M HILL, August 1985). The results from this procedure were interpreted in terms of several target materials found to be

characteristic of the organic contaminants at the facility. In addition, the chromatographs exhibit a large number of unidentified peaks that qualitatively indicate the presence of contamination and relative magnitude.

The objectives of the drilling, soil sampling and groundwater sampling plan included:

1. Identify the nature of saturated conditions at the plant site.

2. Determine the presence and extent of soil contamination with organic chemicals at each drilling site prior to well construction.

3. Map the piezometric surface (water table) within the terrace deposits.

4. Determine the direction of groundwater flow within the terrace deposits.

5. Sample and analyze groundwater within the terrace deposits for priority pollutant organic chemicals, primary drinking water metals and fluoride.

6. Estimate presence, extent, and level of organic contaminants, in the soil at selected areas of the plant site.

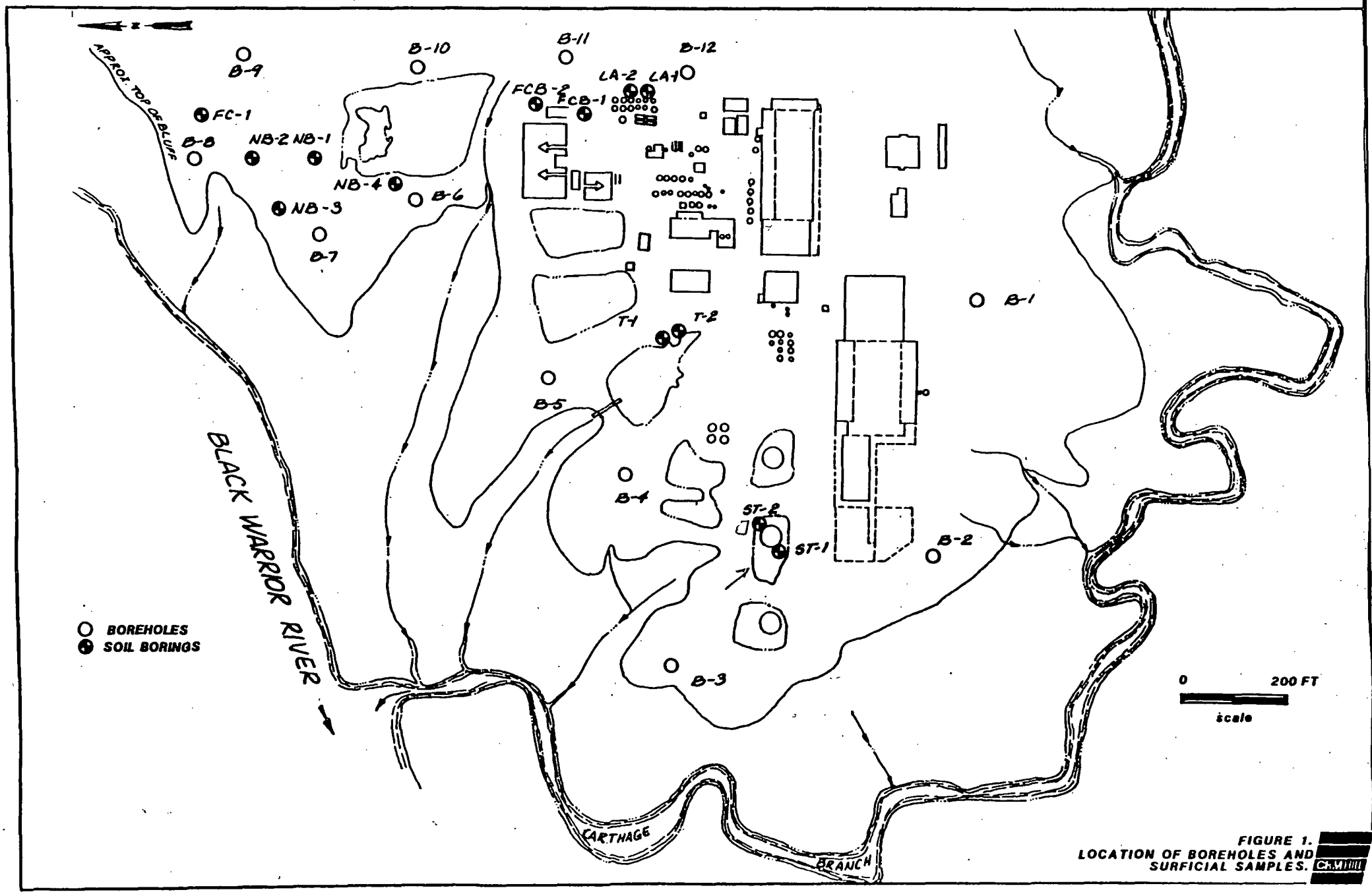


FIGURE 1.
LOCATION OF BOREHOLES AND SURFICIAL SAMPLES.

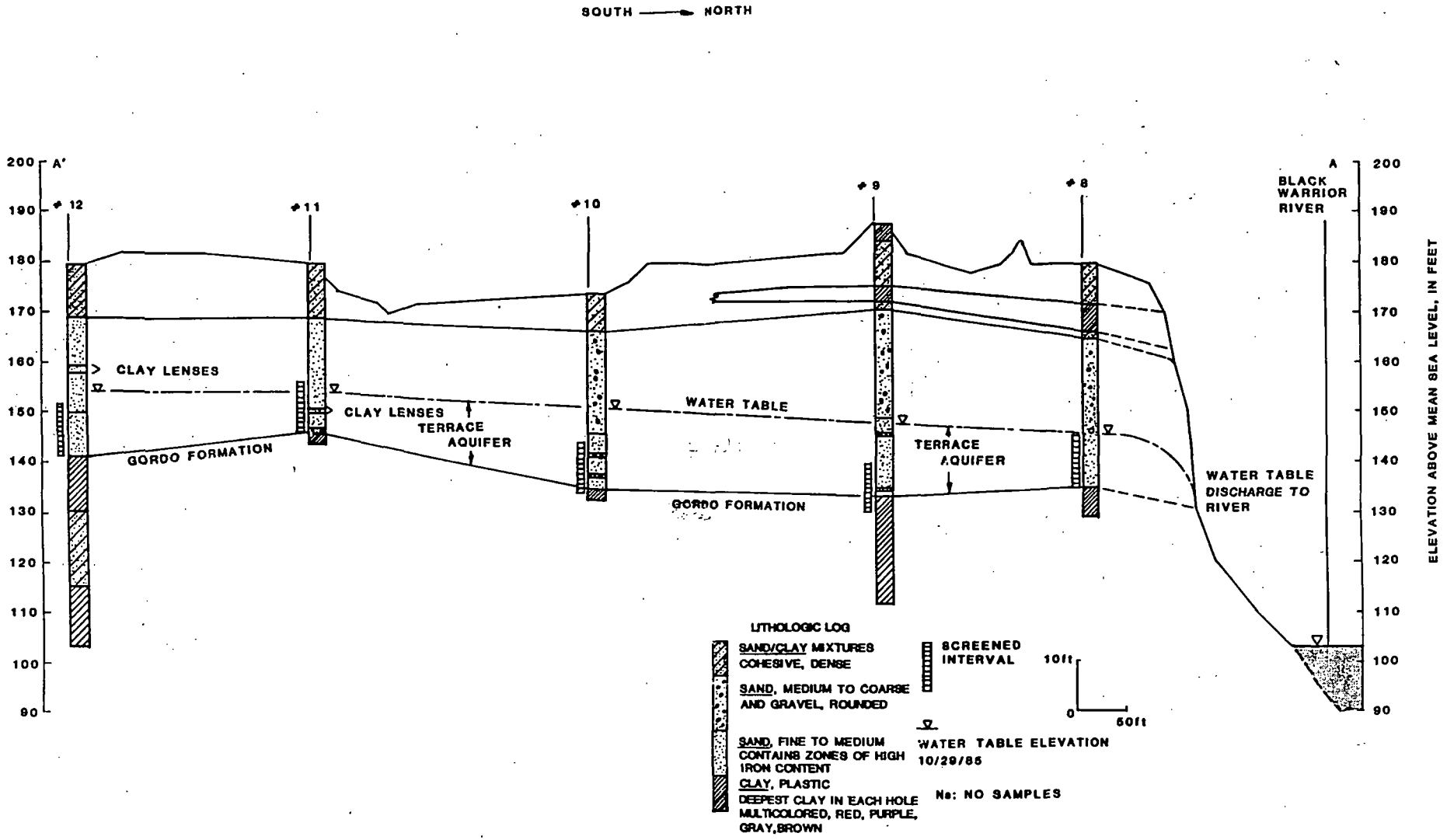


FIGURE 6
HYDROGEOLOGIC CROSS SECTION A-A'.

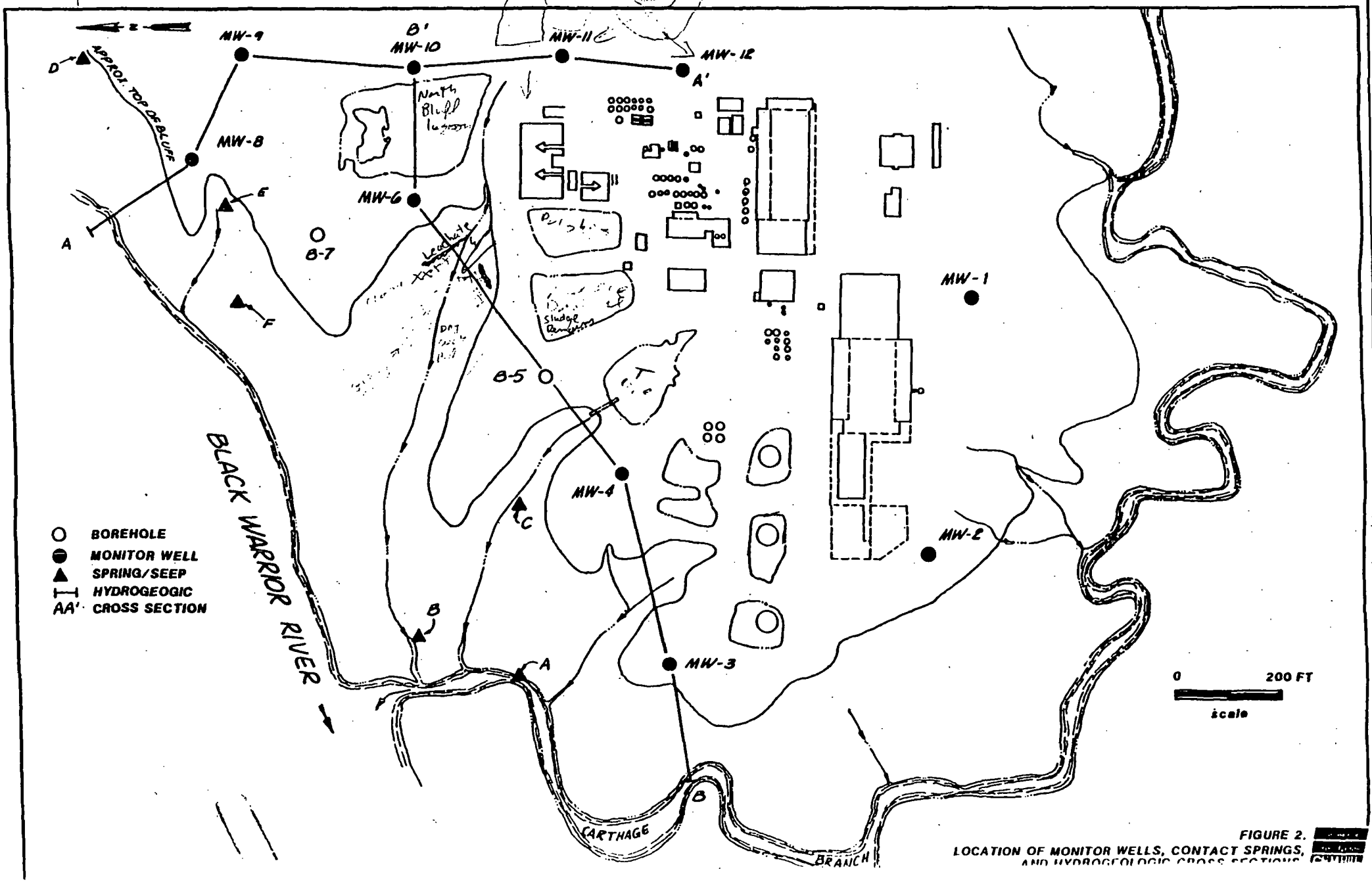


FIGURE 2.
LOCATION OF MONITOR WELLS, CONTACT SPRINGS, AND HYDROGEOLOGIC CROSS SECTIONS

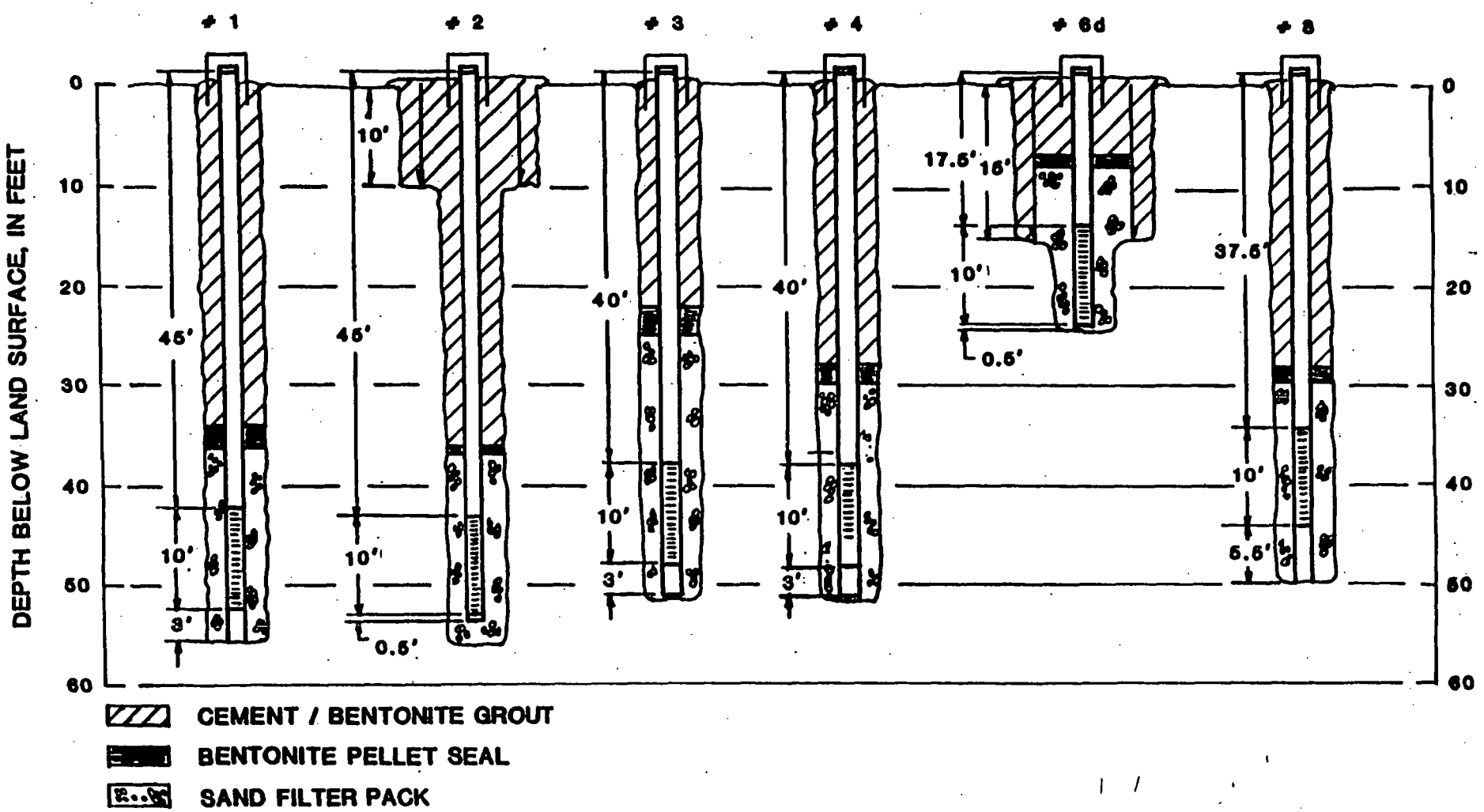


FIGURE 4

CONSTRUCTION DIAGRAM OF WELLS I THROUGH 8
AT LAWTER - SOUTHERN RESINS DIVISION, MOUNDVILLE, ALABAMA.

CH2M HILL

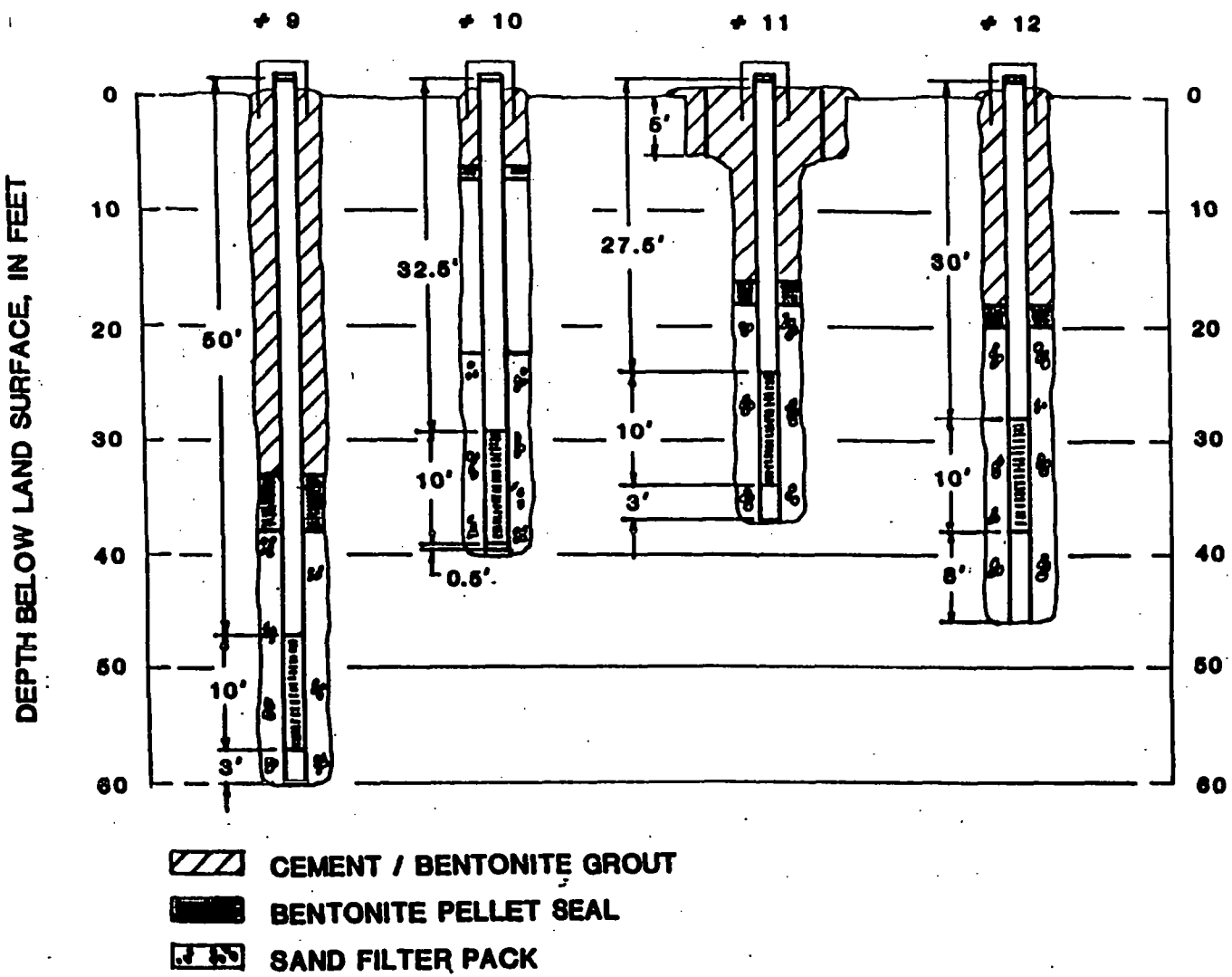


FIGURE 5

CONSTRUCTION DIAGRAM OF WELLS 9 THROUGH 12
AT LAWTER – SOUTHERN RESINS DIVISION, MOUNDVILLE, ALABAMA.

CH2M HILL

Table 1.- Summary of well construction data, Lawter International, Moundville, Alabama.

Well No (MW)	LSD [1]	Base of Aquifer (depth)	Base of Aquifer (elev)	Top of Casing (elev)	Casing Stickup (ft)	Bottom of Casing MP [3] (depth)	Bottom of Casing MP [3] (elev)	Bottom of Screen MP (depth)	Bottom of Screen MP (elev)	Screen Length (ft)
1	157.8	>55.5	<102.3	159.94	2.1	58.0	101.9	55.0	104.9	10.0
2	156.0	>56.0	<100.0	157.42	1.4	55.5	101.9	55.0	102.4	10.0
3	148.4	85.0	63.4	150.06	1.7	53.0	97.1	50.0	100.1	10.0
4	154.3	46.5	107.8	156.57	2.3	53.0	103.6	50.0	106.6	10.0
5 [4]	152.7	24.5	128.2	--	--	--	--	--	--	--
P-6a	167.2	--	--	169.79	2.6	12.5	157.3	12.5	157.3	2.5
6	167.9	24.5	143.4	171.26	3.4	28.0	143.3	27.5	143.8	10.0
7 [4]	173.4	35.5	137.9	--	--	--	--	--	--	--
8	179.9	45.0	134.9	182.51	2.6	53.0	129.5	47.5	135.0	10.0
9	187.7	54.5	133.2	190.19	2.5	63.0	127.2	60.0	130.2	10.0
10	174.1	39.0	135.1	176.14	2.0	43.0	133.1	42.5	133.6	10.0
11	180.1	34.0	146.1	183.17	3.1	40.5	142.7	37.5	145.7	10.0
12	179.5	38.0	141.5	181.30	1.8	48.0	133.3	40.0	141.3	10.0

NOTES:
[1] "LSD" = land surface datum
[2] elev = elevation above mean sea level
[3] MP = measuring point which refers to the top of the PVC well casing
[4] No well constructed

Table 2.- Groundwater field sampling data.

Well No (MW)	Date	Water Level (elev) [1]	pH	Cond. (umhos/cm)	Purge Volume (gal)
1	10/29/85	119.31	4.20	40	30
	11/06/85	119.14	5.01	50	30
	12/11/85	119.11	4.40	40	30
2	10/29/85	115.04	4.20	60	42
	11/06/85	115.00	4.86	60	30
	12/11/85	114.98	4.30	60	30
3	10/29/85	113.18	4.70	70	28
	11/06/85	113.13	5.50	80	30
	12/11/85	113.02	6.00	90	27
4	10/29/85	113.65	4.95	95	20
	11/06/85	113.57	5.80	100	30
	12/11/85	113.53	5.70	88	30
6	10/29/85	151.26	11.55	2200	21
	11/06/85	151.08	12.22	3100	27
	12/11/85	150.74	11.60	4700	47
8	10/29/85	145.47	6.00	265	20
	11/06/85	145.29	5.62	210	30
	12/11/85	145.13	5.30	170	24
9	10/29/85	148.31	4.70	65	40
	11/06/85	148.29	4.68	60	30
	12/11/85	148.02	4.20	60	36
10	10/29/85	150.81	5.30	190	40
	11/06/85	150.87	5.63	170	42
	12/11/85	150.60	5.20	180	40
11	10/29/85	154.00	5.10	600	12
	11/06/85	154.02	5.25	420	24
	12/11/85	153.94	4.90	420	21
12	10/29/85	154.01	4.60	290	30
	11/06/85	153.87	4.41	250	30
	12/11/85	153.76	4.30	225	40

NOTES:

[1] water levels measured from top of PVC well casing and presented as elevations above mean sea level

Contact Spring and Seep Sampling

Field reconnaissance prior to this program had identified groundwater discharging at the contact of the terrace deposits and the underlying Gordo Formation. These contact springs and seeps were observed along the erosional scarp adjacent to the Black Warrior River and in several locations in the banks of the tributary creeks. The spring and seep analyses were included in this program to evaluate the quality of groundwater discharge to surface water bodies and to determine if organic contaminants are reaching the receiving waters. The data also approximate groundwater quality in the vicinity of the point of discharge.

A total of six springs that exhibited sufficient flow for sample collection were mapped for sampling and analysis. Their locations are shown in Figure 2. Springs labelled D, E, and F on Figure 2 were sampled on October 29, 1985, prior to the initial round of groundwater samples and were analyzed

for the priority pollutant list of volatile organic compounds (VOC's) and the inorganic list of primary drinking water metals and fluoride. The decision was then made to expand the area of interest for this study. Therefore, springs labelled A, B, and C were sampled on November 6, 1985, prior to the second round of groundwater samples. Because of their lower flow, springs A, B, and C were only sampled and analyzed for VOC's only.

PLANT SITE GEOLOGY AND HYDROGEOLOGY

Geology

The geology and hydrogeology of the Moundville area is described in a Geological Survey of Alabama report (SM-136) on the water resources of Hale County. The plant site is located on a remnant of a river terrace along the Black Warrior River. The terrace elevation varies from 50 to 70 ft above the present level of the river. The north edge of the terrace is located on a horseshoe bend in the Black Warrior River and the riverbank is actively eroding. As a result of this erosion, about 50 ft of the terrace deposits and underlying formation are exposed in the riverbank.

The deposits consist of beds of yellow-brown sandy gravel, yellow or white fine to coarse sand, and an upper layer about five feet thick of light gray or yellow-brown sandy and silty clay. These deposits were laid down in an alluvial environment and the sands and gravel consist of very well-rounded quartz.

The terrace deposits lie unconformably on the Gordo Formation of the Tuscaloosa Group. The contact between the terrace deposits and the Gordo Formation is marked in the

outcrop by a thin layer of iron-cemented sandstone. This layer has a thickness of about 1/2 inch.

The uppermost bed of the Gordo Formation, as exposed in the riverbank, is a massive light gray and mottled gray and red clay. East and north of the plant site, the Gordo Formation crops out and has a reported thickness of over 300 ft. The formation consists of light gray clay or mottled red and gray clay layers and light tan to red-brown sand and gravel layers. The lower part of the Gordo Formation is reported to be more coarse-grained than the upper section.

Two cross sections have been prepared to illustrate site-specific stratigraphy of the terrace deposits. The locations of the cross sections are shown on Figure 2 and the sections are shown in Figures 6 and 7. The terrace deposits at the plant site are characterized by an upper fine-grained unit and a coarse-grained basal unit. The upper fine-grained unit consists of dense mixtures of clay and sand dominated by the clay fraction and also contains layers of plastic clay. The upper unit ranges in thickness from 3.5 ft at B-6 to 22 ft at B-3. The basal unit consists of fine to coarse sand and sandy gravel and ranges in thickness from 10 ft at B-5 to 63 ft at B-3. The steep local dip on the top of the Gordo Formation results in a westward thickening of the terrace deposits.

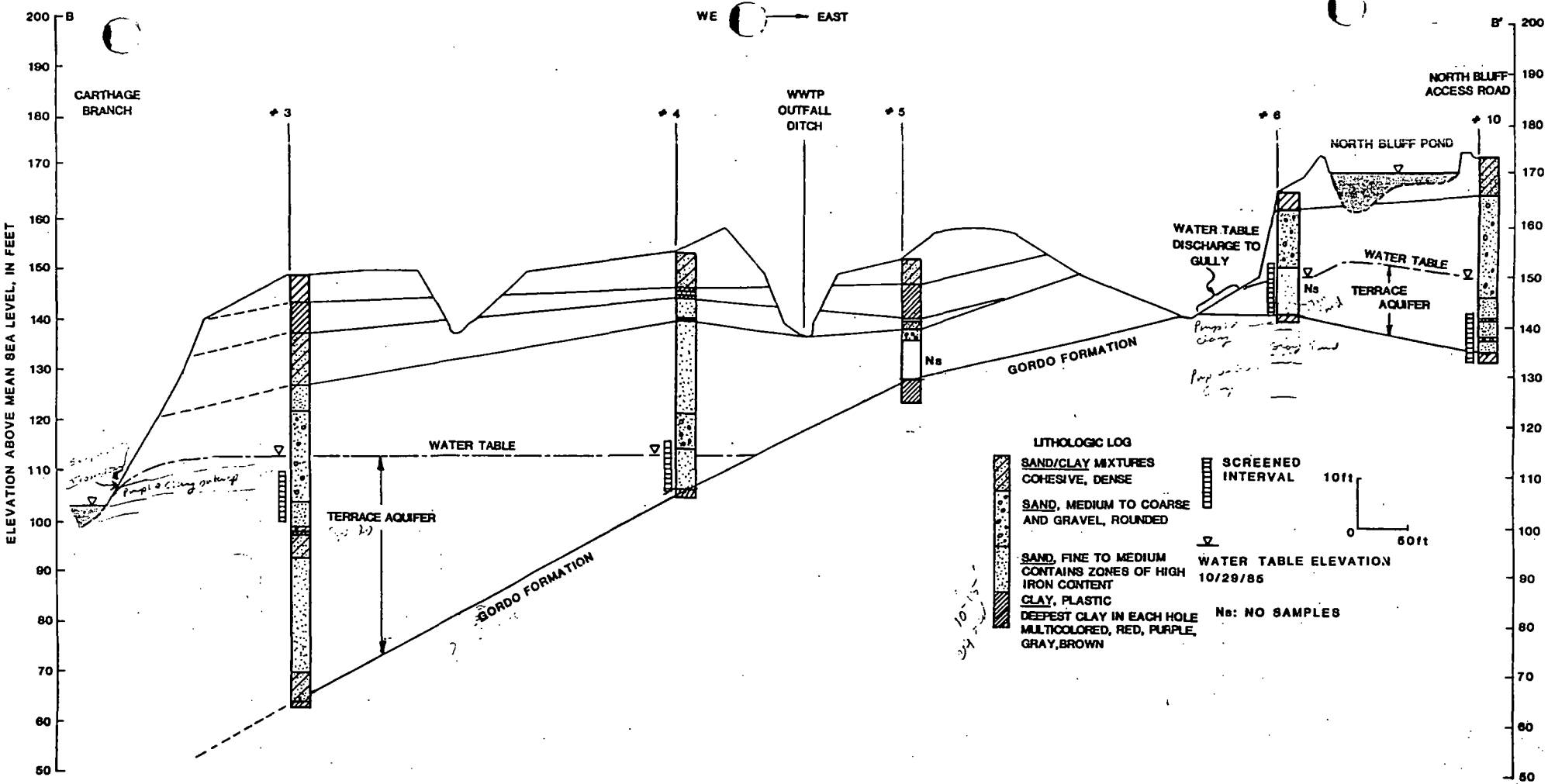


FIGURE 7
HYDROGEOLOGIC CROSS SECTION B-B'.

CH2M HILL

Hydrogeology

The first aquifer beneath the site is a water table aquifer located within the coarse basal unit of the terrace deposits. Water level measurements taken on October 29, 1985, are shown on the hydrogeologic cross sections, Figures 6 and 7. These cross sections indicate the aquifer is absent at boring B-5, due to an elevated clay surface (top of Gordo Formation) and discharge to the erosional gullies. The aquifer is also absent at boring B-7. The aquifer ranges in thickness from 8 ft at wells MW-6 and MW-11 to 48 ft at well MW-3.

A contour map of the water levels as measured on October 29, 1985, is presented in Figure 8. This figure shows that the piezometric surface is highest along the eastern property boundary and slopes towards the Black Warrior River and Carthage Branch. The shape of the contours infers that recharge to the aquifer occurs east of the plant facilities. Recharge on the plant site is probably limited by the upper fine-grained unit of the terrace deposits. The piezometric surface is consistent with the aquifer discharge to the surface water bodies via contact springs and seeps in the river bluff and erosional gullies. However, discharge to Carthage Branch appears to occur primarily by direct groundwater flow.

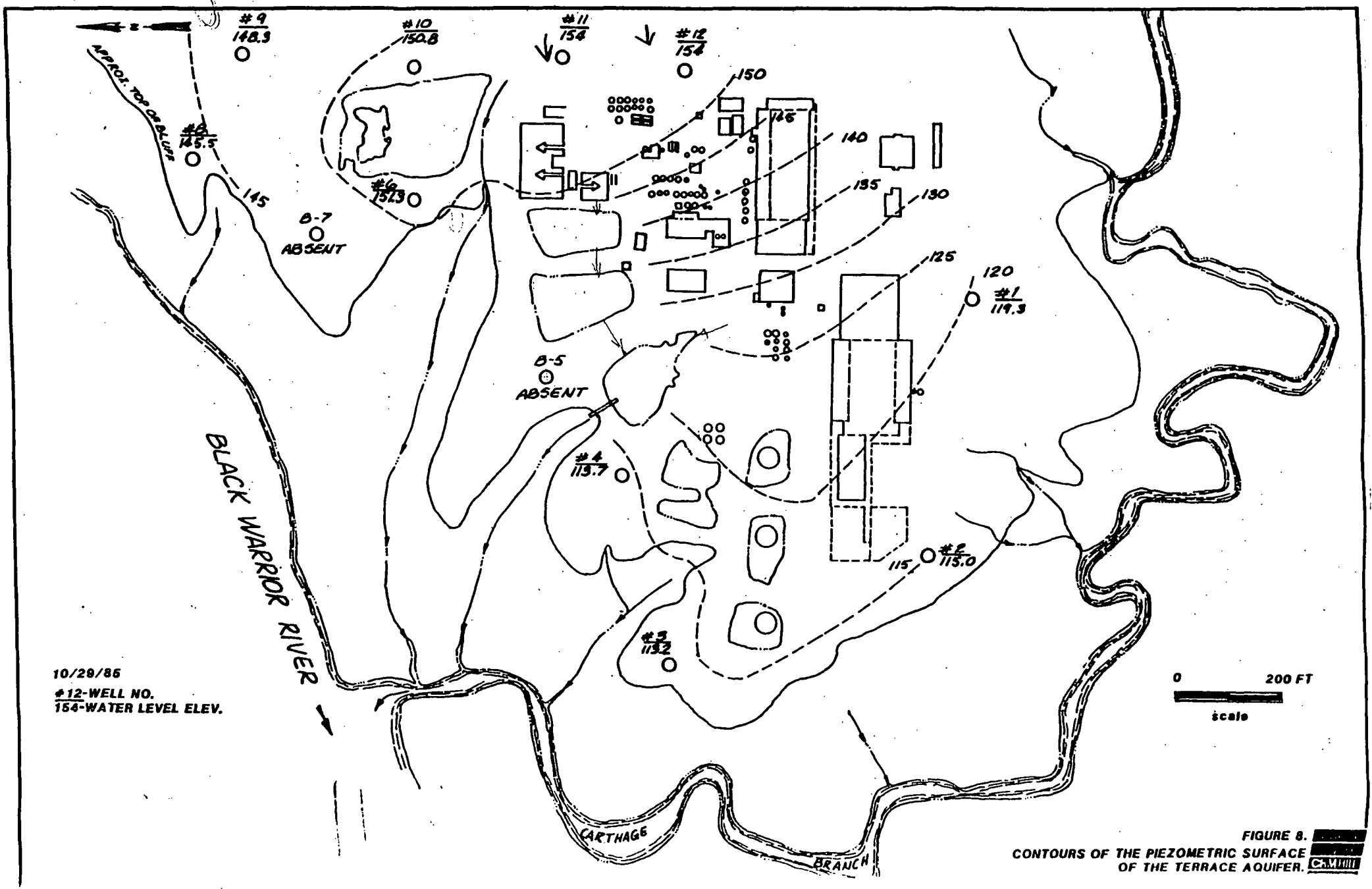


FIGURE 8.
CONTOURS OF THE PIEZOMETRIC SURFACE OF THE TERRACE AQUIFER.

The measured water levels indicate there may have been a hydraulic connection between the water table aquifer and the North Bluff storage pond. (This pond was drained at the end of November, 1985.) Prior to draining the pond, plant personnel had measured a maximum water depth of 8 ft on the western side of the pond. This depth would indicate that the upper fine grained unit was breached during construction of the pond, which could result in a hydraulic connection to the terrace aquifer. The water level in well MW-6 measured October 29, 1985 is slightly higher than would be expected without such a connection. As shown in Figure 7, it is speculated that a slight mounding in the terrace aquifer exists (or existed) just below the North Bluff pond.

Groundwater flow and velocity can be estimated from the piezometric gradient and additional data. Groundwater flow occurs perpendicular to the equipotential lines shown on Figure 8. Flow beneath most of the plant site is generally westerly, but has a radial nature near the bluffs due to discharge around the perimeter of the site.

Average linear flow velocities can be estimated by a form of Darcy's equation written as follows:

$$v(avg) = KI/p$$

Where: v(avg) = average linear velocity

K = hydraulic conductivity, estimated from literature (Groundwater, by Freeze and Cherry, 1979) as 5×10^{-3} cm/sec for clean sands (14 ft/day)

I = hydraulic gradient, head difference divided by distance

p = porosity, estimated from literature (Groundwater, by Freeze and Cherry, 1979) as 0.30

The steepest hydraulic gradient occurs between wells MW-1 and MW-12 and is about 5 percent. This results in an average linear velocity of about 2.3 ft per day or 850 ft per year. Groundwater flow beneath the North Bluff is slower due to a lesser gradient of about 1 percent which results in a velocity of about 0.41 ft per day or 150 ft per year.

Water supply wells in the Moundville area are usually completed in the Gordo aquifer at a depth of 150 to 180 ft or in the Coker aquifer at a depth of over 400 ft. In the lower terrain along the river and west of Highway 69, the potentiometric surface in the Coker aquifer is above land surface and the wells flow naturally.

There is a standby well at the plant site with a reported depth of 400 ft, which would be completed in the Coker

aquifer. There are several other wells in Moundville which produce from the Coker Aquifer. The Moundville water supply is from wells in both the Coker and Gordo aquifers. The standby well at the Lawter site was sampled on February 21, 1985, with analyses for organic priority pollutants (volatile organic compounds, base-neutral extractables, and acid extractables) and for inorganic drinking water compounds. The analytic results are included in Appendix B. The analyses indicate the absence of organic priority pollutants in this well. The results for the drinking water parameters show levels consistent with background levels.

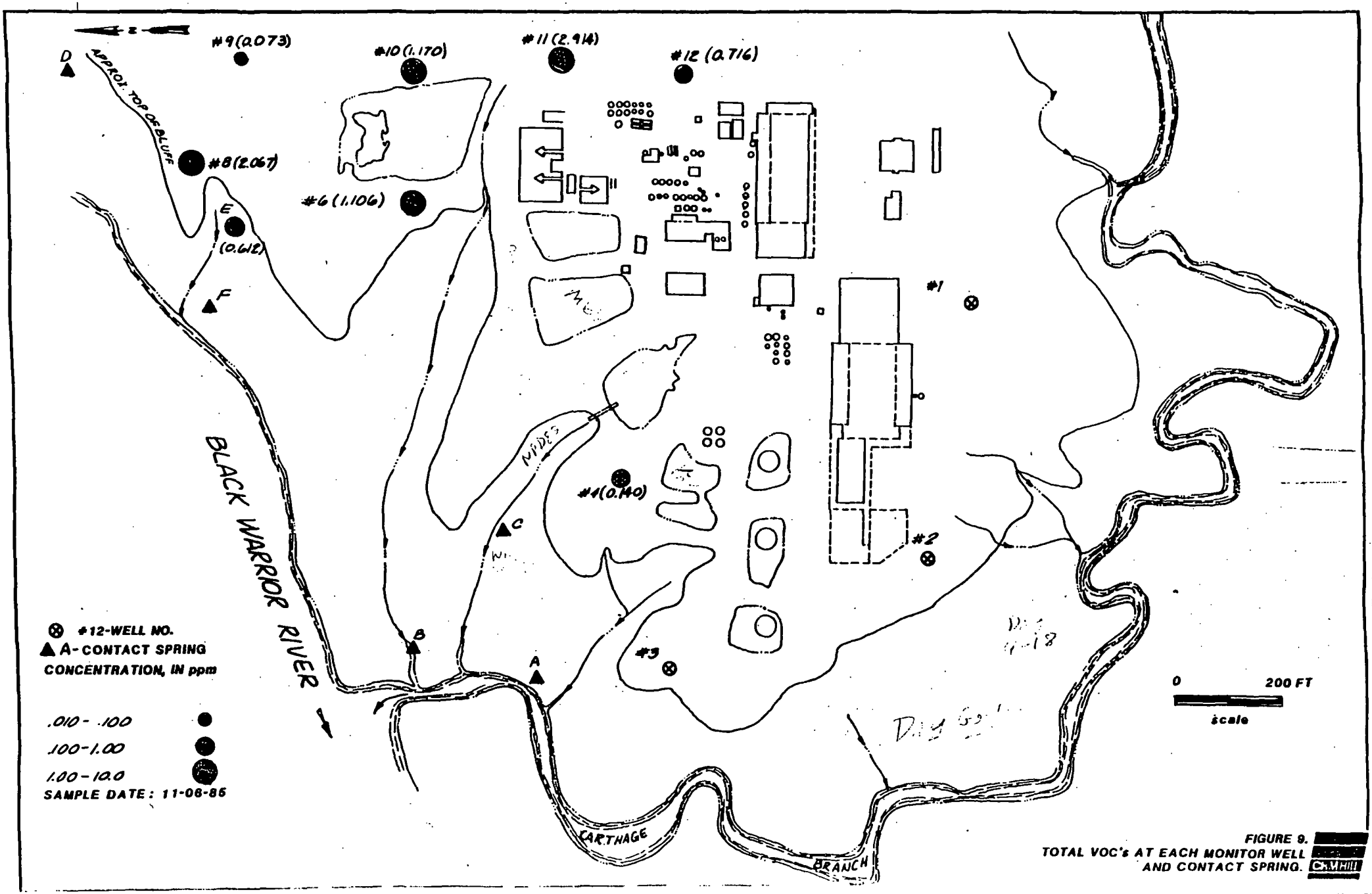


FIGURE 9.
TOTAL VOC's AT EACH MONITOR WELL AND CONTACT SPRING.
CH2M HILL

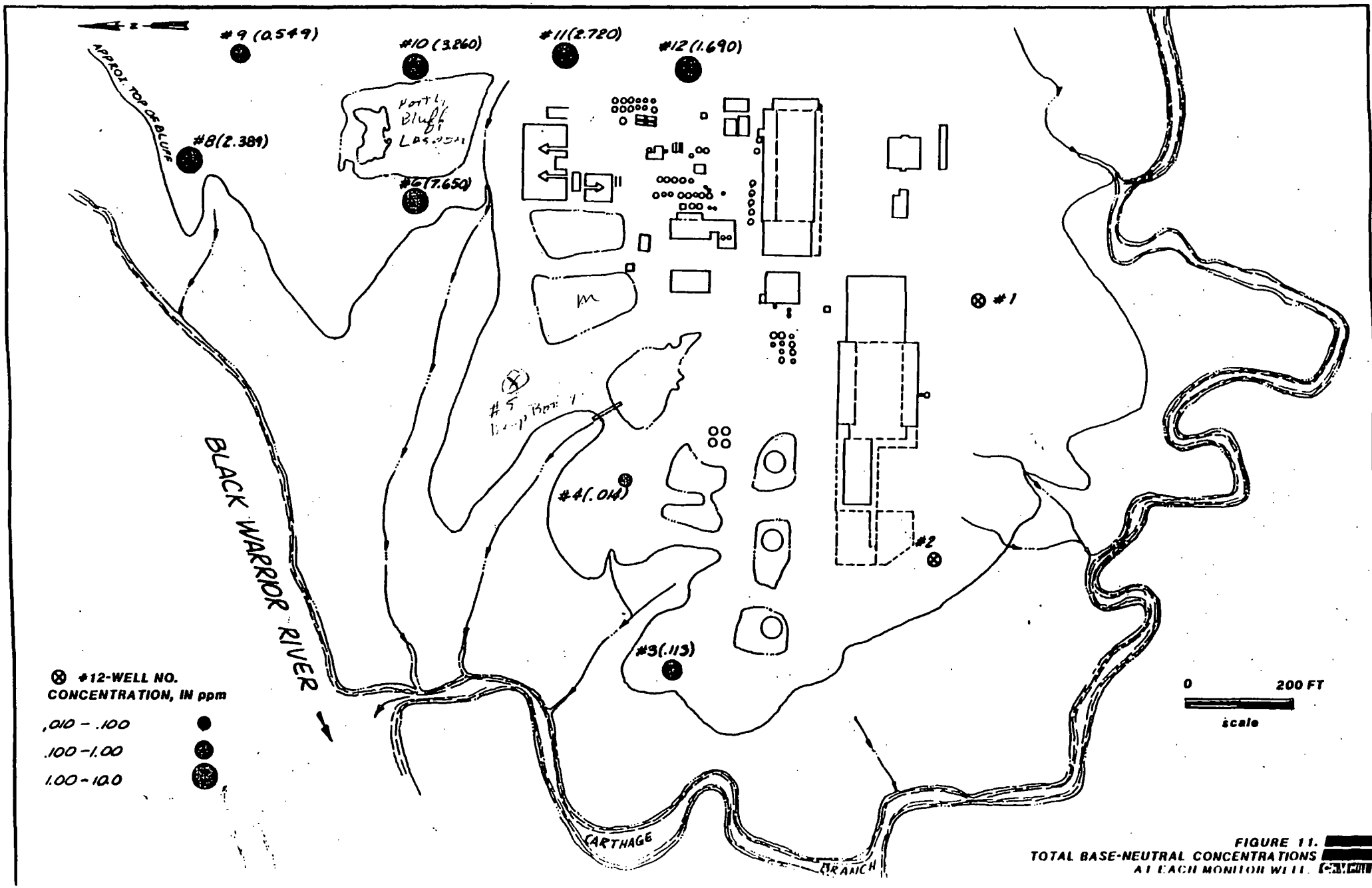


FIGURE 11.
TOTAL BASE-NEUTRAL CONCENTRATIONS
AT EACH MONITOR WELL

Table 8
SUMMARY OF RESULTS FOR NORTH BLUFF SAMPLES
AND FOR PLANT MATERIAL SAMPLES

Sample	Target Material Levels, ppm					Estimated Total Organic ppm[b]
	Total	D,M-Xylene	O-Xylene	DCP	Napthalene	
Results for North Bluff Samples (9/85)						
NB-1, 6-10"	227	6	11	130	130	770
NB-1, 22-26"	2,660	200	260	1,110	1,110	7,100
NB-2, 10-12"	865	12	23	260	570	2,300
NB-3, 10-14"	1,198	14	24	380	780	3,200
NB-3, 34-38"	332	4	8	140	180	870
NB-4, 10-14"	3,760	330	430	1,700	1,300	9,900
Results for plant materials (4/85)						
FC Bin[a]	30,700	3,300	5,200	11,200	11,000	
FC Pile[a]	11,650	840	810	4,900	5,100	
FC Debris[a]	15,300	900	1,400	8,100	5,300	
Resin[a]	234	6	10	18	200	

[a]Results are an average value for data reported in: "Evaluation of GC/FID Protocol for Analysis of Site Hydrocarbon Contamination," August 1985, prepared by CH2M HILL, Table 3, p. 10.

[b]Estimate is based on target materials representing 38 percent of Total Quantified Organics as developed in CH2M HILL, 1985.

SUMMARY

An assessment of potential groundwater and soils contamination was undertaken at the Lawter International Southern Resins Plant in Moundville, Alabama. Another purpose of the investigation was to characterize the hydrogeology of the terrace deposits beneath the plant site and evaluate the impact of plant operations on groundwater quality.

The work included drilling 12 soil borings, construction of 10 monitor wells and 1 piezometer, and sampling and analysis of borehole soils, surficial soils, groundwater, and site boundary seeps and springs. Water samples were collected from the monitor wells and were analyzed for inorganic primary drinking water standards and organic priority pollutants. Contact springs and seeps at six locations around the site were sampled and analyzed for organic and inorganic parameters. The borehole and surficial soils were analyzed for indicators of organic contamination and organic target compounds.

The geologic framework beneath the site consists of terrace deposits overlying the Gordo Formation of the Tuscaloosa Group. The terrace deposits consist of an upper fine-grained unit and a basal coarse-grained unit. The uppermost

bed of the Gordo Formation is a massive light gray and mottled gray and red clay.

Groundwater occurs within the coarse-grained basal unit of the terrace deposits. Saturated conditions were not found at 2 borings; however, the aquifer ranged in thickness from 8 to 48 ft in the 10 monitor wells. Groundwater flow is generally westerly with deviations occurring near the bluffs. The terrace aquifer discharges to the river and tributary creeks via contact springs, seeps, and direct groundwater flow.

Analyses of groundwater from the terrace aquifer showed the presence of organic chemicals. Volatile organic compounds such as benzene, toluene, ethyl benzene, styrene, xylenes, and propyl benzene were reported in samples from 9 wells and 3 seeps, in concentrations as high as 2.4 mg/l. Base-neutral extractable compounds were detected in samples from 8 of the monitor wells. The base-neutral compounds were characterized by the occurrence of naphthalene, dicyclopentadiene, and C3-substituted benzenes in concentrations as high as 2.7 mg/l. Acid extractable compounds were detected in samples from 7 of the monitor wells. Concentrations were much less than the other groups of compounds and the compound with the largest concentration was 3-(1,1-dimethyl) phenol at 0.98 mg/l. Figure 14 summarizes the distribution by well of the three groups of

CONCLUSIONS

The results of the hydrogeologic study and contamination assessment indicate that organic chemicals are present in the soil and groundwater at the Lawter plant site. The highest concentrations of organic compounds were detected in the north bluff area and along the eastern property boundary. Sources of the organic compounds probably occur both onsite and upgradient from the site.

Only low level concentrations of organic compounds were found downgradient of the majority of the plant facilities in Wells MW-1 through MW-4. These low levels indicate that any surface contamination is effectively retarded from reaching the aquifer by the upper fine-grained unit of the terrace deposits.

The old storage pond that existed on the north bluff apparently acted as a source of organic and inorganic contaminants to the terrace aquifer. Groundwater in the vicinity of the drained pond does not flow westerly beneath the remainder of the plant facilities, but instead discharges to the drainage gully on the west and to the Black Warrior River to the north.

It is apparent from the magnitude and number of compounds detected in the upgradient wells, specifically MW-11 and MW-12 that organic compounds are the result of upgradient activities. The property to the east (upgradient) is occupied by a non-operative asphalt plant. The plant reportedly operated a petroleum cracking unit which could produce contaminants similar to those found on the Lawter property.

The terrace aquifer is bounded on the Lawter property by discharge boundaries formed by Carthage Branch and the bluffs along the Black Warrior River. There are no users of this groundwater on the plant site. Contaminants in the terrace aquifer are transported laterally and discharge at these boundaries. Concentrations decrease as transport occurs primarily by hydrodynamic dispersion, and possibly biodegradation. Attenuation by adsorption to the sediment matrix is generally very low in this type of siliceous sand and gravel aquifer.

The first aquifer beneath the site that is used for potable water supply is the Gordo aquifer. The Gordo aquifer is a confined aquifer occurring in the basal sand and gravel sequence of the Gordo aquifer. A maximum of 38 ft. of the Gordo Formation was penetrated during this investigation and did not encounter the Gordo Aquifer. Analysis of the degree of connection between the terrace aquifer and the

Gordo aquifer is beyond the scope of this investigation. However, observations can be stated regarding this relationship.

The upper beds of the Gordo Formation are characterized by massive low hydraulic conductivity clays. Based on experience and literature data the vertical hydraulic conductivity of the massive clays is estimated to be about 10^{-8} cm/sec. The hydraulic conductivity of the terrace aquifer is estimated at 10^{-3} cm/sec. Therefore, the ratio of horizontal to vertical conductivity is 100,000 to 1. Given this ratio and the short flow length to a point of discharge, the preferred flow path will be horizontal. Therefore, the possibility of contamination reaching the Gordo aquifer by advective transport (flowing groundwater) is very small.

It is possible for contaminants to move via a different mechanism than advective transport if source concentrations are sufficiently high. If a concentration gradient is imposed by a high source concentration, then solute transport can occur from high to low concentration, by molecular diffusion, even if this differs from the groundwater flow direction. It is doubtful that sufficient concentrations exist in the terrace aquifer to promote molecular diffusion beyond a few centimeters into the Gordo clays. The clay minerals that comprise the uppermost beds

APPENDIX A

BORING LOGS

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B-1	SHEET 1 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE START 9-10-85 FINISH 9-10-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
						Sand, very clayey, minor chert gravel, orange with gray mottling, dry		0730 - began continuous sampling using CME apparatus
	1.0		S-1					Sample - GC/FID
	2.0		S-2		Sample GC/FID			
	3.0							
	4.0		S-3					
	5.0					Moist 2-in perched layer		
						Sand, very clayey, brownish gray, dense, dry		
	6.0		S-4					
	7.0					Sand, silty to clayey, tan to brown, loose, dry		
	8.0		S-5					
	9.0							
	10.0		S-6			Clay, sandy, gray w/orange mottling, low plast.		
	11.0					Sand, very clayey, lt. gray w/ orange mottling, -ense, dry		
	12.0		S-7					
	13.0					Clay, sandy, mottled gray w/ orange mottling, low plast.		
						Sand, med-CSE, tan to brown loose, 2-in clay layer, sandy, gray and orange		
	14.0		S-8		Sample GC/FID			
						Clay, sandy, low to mod plast. (next sheet)		

REV

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B-1	SHEET 2 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE _____ START 9-10-85 FINISH 9-10-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
						Clay, sandy, low-mod plast. lt. gray w/orange mottling		
	16.0		S-9					
	17.0							
	18.0		S-10					
	19.0							0830 - Completed sampling - left hole open to check for fluids - dry - grouted at end of day

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B-2	SHEET 1 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE _____ START 9-10-85 FINISH 9-10-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
						Sand, FN, clayey, tan to brown, dry		0930-Began continuous sampling using lime apparatus
	1.0		S-1					
	2.0		S-2					Sample - GC/FID slight solvent odor - 160 ppm HNu headspace
	3.0							
			S-3			Sand, FN, very clayey lt. gray w/orange mottling dense, dry		Sample GC-FID
	4.0							
	5.0							
			S-4					
	6.0					Clay, sandy, low-mod plast, lt. gray w/orange mottling		
	7.0							
			S-5					
	8.0							
	9.0							
			S-6					
	10.0							
	11.0							
			S-7					
	12.0							
	13.0							
	14.0		S-8					
	15.0							

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.BO.03	B-2	SHEET 2 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE _____ START 9/10/85 FINISH 9/10/85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
						Clay - As above		
			S-9					
	16.0							
	17.0							
						Sand, FN, clayey, lt. gray w/ orange mottling, bottom 4-in sand, v. fn. well-sorted loose, micaceous, dry		
	18.0		S-10					Sample - GC/FID
	19.0							1017 - Completed sampling - left hole open to check for fluids - dry - grouted at end of day.

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B-3	SHEET 1 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc. Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE _____ START 9-11-85 FINISH 9-11-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
					Sample GC/FID	Sand, FN-Med, very clayey, lt gay w/orange, brown, red mottling, dense, dry		0755 began continuous sampling using CME apparatus
	1.0		S-1					
	2.0		S-2					
	3.0					Fines increasing with depth, dry, friable		
	4.0		S-3					
	5.0							
	6.0		S-4			Clay, slightly sandy, low-mod plast., lt. gray, orange, brown, red mottling, clay filled burrows		
	7.0							
	8.0		S-5					
	9.0					Clay - mod-high plast. stiff		
	10.0		S-6					
	11.0							
	12.0		S-7			Sand, FN, very clayey, lt. gray and red, becoming orange with depth, dense, dry, slightly micaceous		
	13.0							
	14.0		S-8					

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B-3	SHEET 2 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE _____ START 9-11-85 FINISH 9/11/85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
						Heavy Fe staining - laminated		
	16.0		S-9					
						Sand, FN and Clay, interlayered multicolored sequence, sand dominant, dry		
	17.0							
	18.0							
			S-10					
	19.0							0850 completed sampling - left hole open to check for fluids - dry - grouted at end of day

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B-3d	SHEET 1 OF 3

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE Approx. 33 ft. START 9-16-85 FINISH 9-16-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS (6"-6"-6" (N))	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
						0-19 ft see boring B-3		0740 began w/ standard split spoon sampling driving 12"
								Sample collection time
	20		S-1		8-6	Silt, slightly sandy, NP, lt. gray, orange-tan mottling		0810 hrs
			S-2		12-12	Sand, FN, slightly clayey, loose orange, dry, loose,		0817 hrs
	25		S-3		9-9	Same - w/2 1-inch clay stringers		
			S-4		10-11	Sand, med, lt gray and orange, gravelly - well rounded, loose, dry		0832 hrs
	30		S-5		9-11	Sand, med CSE, orange, orange loose, dry, 1-in stringer cemented sand, dry, friable, white, chalky		0839 hrs 0.8 ppm HNu headspace
			S-6		6-7	Clay, sandy, low plast, red-gray Sand, CSE, gravelly - well rounded, gray, orange, wet		0846 hrs
	35		S-7		4-8	Same		0854 hrs
			S-8		9-8	Same		0904 hrs
	40		S-9		18-18	Same		0915 hrs
			S-10		8-17	Same - Slightly micaceous		0929 hrs
	45		S-11		15-39	Sand, FN (Next Page)		0941 hrs

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.BO.03	B-3d	SHEET 2 OF 3

SOIL BORING LOG

JECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

VATION DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE Approx. 33 ft. START 9-16-85 FINISH 9-16-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION	
			S-11			Sand, FN, orange, loose, w/1-in clay stringer, high plast., tan		Sample Collection Time	HNu Head Space
			S-12		25-36	Same		0952 hr.	
	50		S-13		9-11	Sand, FN, clayey, dense, multi-colored clay, sandy, low plast. stiff multicolored		1004	0.8 ppm
			S-14		10-17	Sand, FN, clayey, micaceous lt. gray with layered Fe staining		1018	0.8 ppm
			S-15		9-15	Same		1031 Sample GC/FID	0.8 ppm
			S-16		22-34	Sand, FN, very slightly clayey lt. gray, tan, heavy Fe stain at bottom of sample		1046	
	60		S-17		44-54	Same (No Fe staining)		1102	
			S-18		33-50/3"	Same		1122	
	65		S-19		47-50/4"	Same		1230	
				NR	50/5"	No sample - probably sand as above fluid	NR	1249	
	70		S-20		48-40	Sand, FN, well sorted micaceous, tan		1308	
				NR	50/4½"	No sample - probably fluid sand ~~same~~ as above	NR	1326	
	75		S-21			Sand - as above		1346	

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B-3d	SHEET 3 OF 3

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE Approx. 33 ft. START 9-16-85 FINISH 9-16-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
			S-22			Sand, FN-med, clayey (stringers) dk orange (heavy Fe Conc) micaceous		
	80		S-22		38-50/4"	Same, clay stringers gray 2-3 mm thick high plast.		
	85			NR	5-50/5"	No sample - trace clay gray plastic in sampler, auger flight wrapped with clay, dk gray, silty, mod-high plast., micaceous, pyritic nodules Boring terminated - 86 ft		1446 Pulled and grouted through augers 4 bags net cement ½ bag bentonite
	90							1625 hrs Completed Grouting

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B4	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE Approx. 33 ft. START 9-11-85 FINISH 9-11-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	1.0		S-1		Sample GC/FID	Sand, FN, very clayey, dense, dry, lt gray with orange and brown mottling		Continuous sampling with CME apparatus 0930 began
	2.0		S-2					
	3.0							
	4.0		S-3					
	5.0							
	6.0		S-4					
	7.0					Sand, FN-med. clayey, dense, dry, dk brown		
	8.0		S-5		Sample GC/FID	Clay, slightly sandy, mod-high plast gray Sand, FN-med, slightly clayey dk brown		
	9.0					Clay - as above		
	10.0		S-6			Sand, med, well sorted loose, tan to brown, dry		
	11.0			50%				
	12.0		S-7					
	13.0					Clay - 2" layer, sandy mod plast, gray		1000 hrs completed sampling - left hole open to check for fluid - dry grouted at end of day
	14.0		S-8		Sample GC/FID	Boring terminated		
	15.0							

CH2M HILL

PROJECT NUMBER: MG19341.B0.03

BORING NUMBER: B-5

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE Approx. 33 ft. START 9-11-85 FINISH 9-11-85 LOGGER R. H. Goodsc-

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
					Sample GC/FID	Sand, med, clayey, dense, dry lt. gray with brown and orange mottling		Continuous sampling using CME apparatus 1015 hrs began
	1.0		S-1					
	2.0		S-2					
	3.0							
	4.0		S-3					
	5.0					Clay, slightly sandy, high plast lt gray with tan mottling		
	6.0		S-4			Clay, sandy, mod plasticity lt gray with red and brown mottling		
	7.0							
	8.0		S-5					
	9.0							
	10.0		S-6					
	11.0							
	12.0		S-7		Sample GC/FID	Sand, med, gravelly (approx. 4 inch)		
	13.0					Clay - as above		
	14.0		S-8					
	15.0					Sand, med, very clayey		

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0.03	B-5	SHEET 2 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, AL

DRILLING METHOD AND EQUIPMENT CME 55 w/Hollow Stem Auger

WATER LEVEL AND DATE Approx. 33 ft. START 9-11-85 FINISH 9-11-85 LOGGER R. H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
						Same		
			S-9					
	16.0					Sand, med-CSE, gravelly, Fe stained 16.0-16.5 ft dry, loose		
	17.0							
	18.0				Sample GC/FID			
			S-10					
	19.0					Boring terminated		1100 hrs completed sampling - left hole open to check for fluids - dry - grouted at end of day

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-6	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with Hollow-stem auger

WATER LEVEL AND DATE _____ START 9-10-85 FINISH 9-10-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	1.0		S-1	HNu Head Space 1.5	Sample GC/FID	Sand, FN-Med, very clayey tan to brown with orange mottling, moist from 1 to 3.5 ft.		1515 hrs. began sampling continuously with CME apparatus.
	2.0		S-2	1.2				Piezometer Installed; Neat cement/bentonite grout
	3.0							
	4.0		S-3	0.6	Sample GC/FID	Sand, Med. to coarse, gravelly, slightly clayey, orange, tan and brown, water saturated from 3.5-4.5 ft. Moist but not saturated below 4.5 ft.		Bentonite Pellets
	5.0							
	6.0		S-4		Sample GC/FID			Sand Pack
	7.0							
	8.0		S-5			Water saturated from 8.5-9.5 ft.		2" ID slotted screen
	9.0					Dry from 9.5 to 11.0 ft.		
	10.0		S-6					
	11.0					Boring terminated Installed: 10.0 ft. casing 2.5 ft. screen Stickup= 2.5 ft. Sand to 5 ft. below grade Benonite to 3.5 Added 5 Gal. Potable water Water to swell Pellets Installed steel protective cover and grouted in place.		HNu Breathing Zone monitoring prior to drilling=1-3ppm No change during drilling HNu on damp soil= 20-150ppm
	12.0							
	13.0							
	14.0							
	15.0							

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-7	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-11-85 FINISH 9-11-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
			S-1		Sample GC/FID	Sand, Med, very clayey to clay, very sandy, roots, tan to brown with orange mottling.		1410 began sampling continuously with CME apparatus
	1.0							
	2.0		S-2		Sample GC/FID			
	3.0							
						-------Gradational-------		
	4.0		S-3			Sand, clayey (less than above), dry dense, friable		
	5.0							
	6.0		S-4					
	7.0							Drilling very hard
	8.0		S-5					
	9.0							
	10.0		S-6					
				70%		Clay, High Plast, with gravel		
	11.0					Sand, medium to coarse, slightly clayey, gravelly, dry		
	12.0		S-7					
	13.0		S-8		Sample GC/FID			
	14.0					Boring terminated		1515 completed sampling, left hole open to check for Fluids-Dry-Grouted at end of day.
	15.0							

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-8	SHEET 1 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-11-85 FINISH 9-11-85 LOGGER R.H. Goodsc

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	1	S-1			Sample GC/FID	Sand, medium, very clayey dense, hard, brown with Fe staining.		1240 hrs.-began continuous sampling using CME apparatus
	2	S-2						HNu Background reading 0.2-0.4ppm
	3							No values above background during drilling.
	4	S-3				Iron cemented nodules at 4.5 and 6.25 ft.		
	5							
	6	S-4						
	7							
	8	S-5						
	9					Clay, sandy, low to mod. plasticity, lt.gray with orange and red mottling, stiff, dry.		
	10	S-6						
	11							
	12	S-7						
	13							
	14	S-8				Sand, medium, very clayey, lt gray with red mottling, dense, dry.		
	15							

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-8	SHEET 2 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-11-85 FINISH 9-11-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	16	S-9		50%	Sample GC/FID	Sand, medium, well sorted, lt. gray with heavy Fe staining from 17-19 ft.		
	17							
	18	S-10			Sample GC/FID			
	19					Boring Terminated		1345 Completed Sampling Left hole open to check for fluids-dry-grouted at end of day

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-9	SHEET 1 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-10-85 FINISH 9-10-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	1		S-1		Sample GC/FID	SILT/CLAY, dense, non-plastic, brown, dry		1210 hrs.-Began continuous sampling using CME apparatus.
	2		S-2					
	3							
	4		S-3			SAND, fine, very clayey, dense, gray with orange mottling, dry.		
	5							
	6		S-4					
	7							
	8		S-5					
	9							
	10		S-6					
	11							
	12		S-7					
						CLAY, sandy, low-mod. plasticity, light gray with orange mottling, dry.		
	14		S-8					

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-9	SHEET 2 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-10-85 FINISH 9-10-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	16		S-9			SAND, fine-medium, clayey, H. gray with tan and orange mottling, dry.		HNu arrived onsite Background=0.6ppm No values above background during drilling.
	17					SAND, fine-medium, orange to red becoming tan-brown with depth.		
	18		S-10					
	19							
	20		S-11			SAND, medium to coarse, gravel (up to 3/4 in.), gray, orange, tan, red.		
	21		S-12					
	22		S-13					
	23					Fe staining		
	24					Boring Terminated		1400 Completed Sampling Left hole open to check for fluids-dry-grouted at end of day

PROJECT NUMBER	BORING NUMBER	
MG 19341.B0	B-9d	SHEET 1 OF 2

CH2M HILL

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-17-85 FINISH 9-17-85 LOGGER R.H. Goodsc

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION	
						0-23.5 ft. See boring B-9		0745- Began sampling using standard split spoon sampler driving 12 inches.	
	25		S-1		15-31	SAND, medium-coarse, gravel, rounded, loose, dry, light gray orange mottling.		Sample collection time 0801 hrs. HNu 0.-	
			S-2		7-11	Same		0807	
	30		S-3		15-20	Same		0812	
			S-4		10-19	Same		0818	0.1
	35		S-5		15-18	Same		0826	0.1
			S-6		12-10	Same		0832	0.1
	40		S-7		13-20	SAND, medium to coarse, white to gray, moist, loose, micaceous		0838	Sample GC/FID 0.3
			S-8		8-35	CLAY, sandy, lt gray, orange, lam. SAND, fine to medium, saturated loose, tan to brown, micaceous		0847	0.2
	45		S-9		19-19	Same		0856	0.2
			S-10		10-41	Same		0907	
	50		S-11		42-50/5"	Same			

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG 19341.B0	B-9d	SHEET 2 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Tuscaloosa

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-17-85 FINISH 9-17-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
			S-11					
			S-12		25-19	Same, 2-in. clay bed, mod. plasticity, light gray		0937
	55		NR		21-50	No Sample- Clay smeared on sampler		0949 Crew changed out cathead rope
			S-13		13-29	CLAY, mod. plasticity, stiff, red, light gray, tan		1023
	60		S-14		20-36	Same		1038
			S-15		21-37	Same		1053
	65		S-16		17-31	Same		1111
			S-17		17-29	Same		1228
	70		S-18		23-40	Same CLAY, sandy, silty, low plasticity, dark gray, pyritic nodules		1242
			S-19		16-41	Same		1300
	75		S-20		23-50/5"	Same		1315 hrs.
						Boring Terminated		Grouted as augers withdrawn
	80							

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-10	SHEET 1 OF 1

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-12-85 FINISH 9-12-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
					Sample GC/FID	SAND, medium, very clayey, brown, orange with depth, dense, dry.		0745 Began sampling using CME continuous sampling apparatus.
	1		S-1					
	2		S-2					HNu Background 0.2-0.6ppm. No values above background.
	3							
	4		S-3					
	5							
	6		S-4					
	7							
	8		S-5		Sample GC/FID	SAND, medium, gravel, rounded, slightly clayey, orange to brown, dry, loose.		
	9							
	10		S-6					
	11			30%				
	12		S-7					
	13							
	14		S-8		Sample GC/FID			
						Boring Terminated		1650 -Competed Sampling Left hole open-dry grouted at end of day.
	15							

REV 11/82 FORM C1555

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-11	SHEET 1 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-12-85 FINISH 9-12-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	1		S-1		Sample GC/FID	SAND, medium, very clayey, light gray with orange mottling, dense, dry, friable		0925-Began sampling using CME continuous sampling apparatus
	2		S-2					
	3							
	4		S-3					
	5							
	6		S-4			SAND, fine to medium, slightly clayey, dry, friable, H. gray with orange and red mottling		
	7							
	8		S-5					
	9							
	10		S-6					
	11			50%				
	12		S-7			SAND, fine to medium, slightly clayey, dry, loose, tan and lt gray, micaceous		
	13							
	14		S-8		Sample GC/FID	SAND, fine to medium, clayey lt gray with red mottling		HNu headspace= 3.5ppm
	15							

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-11	SHEET 2 OF 2

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-12-85 FINISH 9-12-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
			S-9			SAND, fine to medium, slightly clayey, loose, dry, orange, gray, red.		HNu Headspace 1.0 ppm.
	16							
	17			50%				
	18		S-10		Sample GC/FID			3.0 ppm
	19					Boring Terminated		1010 Completed Sampling Left hole open to check for fluids-dry HNu in open borehole @1658 hrs.=60ppm Grouted at end of day.

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-12	SHEET 1 OF 4

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-12-85 FINISH 9-13-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	1		S-1			SAND, fine to medium, very clayey, dense, dry, lt gray, orange, tan, red mottling.		1300-Began sampling using CME continuous sampling apparatus
	2		S-2					
	3							
	4		S-3					
	5							
	6		S-4					
	7							
	8		S-5					
	9							
	10		S-6					
	11							
	12		S-7			SAND, fine, slightly clayey, lt brown, dry, loose.		
	13					SAND, fine, well sorted, tan, dry, loose.		
	14		S-8					
	15							

PROJECT NUMBER	BORING NUMBER	
MG19341B0	B-12	SHEET 2 OF 4

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-12-85 FINISH 9-13-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	16		S-9			SAND, fine, well sorted, light gray laminations of orange, tan, red, dry, loose. micaceous (trace)		
	17							
	18		S-10					
	19							
	20		S-11			Same, contains, several clay lenses 1-2 in. thick.		
	21			50%				
	22		S-12					
	23							
	24		S-13					Changed over to standard split spoon sampling.
	25				Sample GC/FID	Same, water saturated (25-26 ft.)		HNu headspace= 0.4ppm.
	26		S-14		6-7-8			
	27							
	28		S-15		1-2-3	Same		
	29							
	30		S-16		5-5-7	Same, gravelly, rounded		1545 hrs.

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-12	SHEET 3 OF 4

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moundville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-12-85 FINISH 9-12-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION	
			S-16			SAND, fine-medium, gravel rounded, light gray.		HNu Headspace	
			S-17		6-12-18	Same		1557 hrs.	0.4
	35		S-18		Sample GC/FID 15-24-22	Same			1.0
			S-19		7-9-16	Same CLAY, high plasticity, slightly sandy, purple, micaceous		1618	
	40		S-20		10-16-26	Same, becoming tan and gray		1633	
			S-21		17-29-38	Same CLAY, sandy, low-mod. plasticity gray and tan		0729	
	45		S-22		13-20-35	CLAY, mod-high plasticity, red-purple. SAND, fine, very clayey, tan and gray.		0741	0.2
			S-23		16-23-43	CLAY, mod-high plast., red, brown tan, gray, with sand stringers 1-2 mm.		0754	0.6
	50		S-24		12-25-35	SAND, fine, v. clayey, dense, micaceous, tan and gray, with clay bed (as above)		0812	
			S-25		17-35	SILT, clayey, slightly sandy, nonplastic, gray		Driving 12 in. 0827	
	55		S-26		25-40	SAND, fine, clayey, gray, micaceous. CLAY, sandy, mod-high plasticity, gray		0842	
			S-27		22-38	SILT, clayey, slightly sandy, gray, dense SAND, clayey, gray, wet, loose		0901	0.4
	60		S-28		26-25	SAND, loose, gray, wet			

PROJECT NUMBER	BORING NUMBER	
MG19341.B0	B-12	SHEET 4 OF 4

SOIL BORING LOG

PROJECT Lawter-Groundwater Assessment LOCATION Moudville, Alabama

ELEVATION _____ DRILLING CONTRACTOR TTL, Inc., Tuscaloosa, Alabama

DRILLING METHOD AND EQUIPMENT CME 55 with hollow-stem auger

WATER LEVEL AND DATE _____ START 9-12-85 FINISH 9-13-85 LOGGER R.H. Goodson

ELEVATION	DEPTH BELOW SURFACE	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
			S-28		26-25	SAND (above) CLAY, sandy, stiff, mod. plast. red-brown.		0914 hrs.
			S-29		24-33	SAND, v. clayey to CLAY, sandy, dense, multicolored.		
	65		S-30		24-31	CLAY, slightly sandy, stiff, mod-high plast., multicolored		1002
			S-31		25-36	Same		1025
	70		S-32		18-41	CLAY, sandy, low-mod. plasticity		1047 HNu headspace 0.4
			S-33		25-38	Same		
	75		S-34		25-45	Same		1133 Completed sampling
						Boring Terminated		
						Grouted through augers as augers withdrawn, 4 bags cement, ½ bag bentonite.		
	80							

APPENDIX B

ANALYTICAL RESULTS FOR THE STANDBY WELL AT THE LAWTER SITE (COKER AQUIFER)

Rocky Mountain Analytical Laboratory

Sampled 2/21/85

Purged 1 hr
H_2S odor

March 18, 1985

Mike Fessler
CH_2M Hill
807 South McDonough Street
Montgomery, Alabama 36104

Onsite potable supply well

Dear Mr. Fessler:

Enclosed are the analytical results from the analysis of your water sample. This sample was analyzed for the organic priority pollutants using EPA Methods 624 and 625. No priority pollutants were detected in the sample.

Please call if you have any questions.

Sincerely,

Jerry Parr

Jerry L. Parr
Director, Quality Assurance

JLP/kgc
Enclosures

RMAL #4731

ANALYTICAL RESULTS

for

CH$_2$M Hill

VOLATILE ORGANICS

Parameter		Units	Detection Limit	4731-01	4731-02
1V	Acrolein	ug/l	100	ND	ND
2V	Acrylonitrile	ug/l	100	ND	ND
3V	Benzene	ug/l	5	ND	ND
4V	Bis(chloromethyl)ether	ug/l	5	ND	ND
5V	Bromoform	ug/l	5	ND	ND
6V	Carbon tetrachloride	ug/l	5	ND	ND
7V	Chlorobenzene	ug/l	5	ND	ND
8V	Chlorodibromomethane	ug/l	5	ND	ND
9V	Chloroethane	ug/l	10	ND	ND
10V	2-Chloroethylvinyl ether	ug/l	5	ND	ND
11V	Chloroform	ug/l	5	ND	ND
12V	Dichlorobromomethane	ug/l	5	ND	ND
13V	Dichlorodifluoromethane	ug/l	10	ND	ND
14V	1,1-Dichloroethane	ug/l	5	ND	ND
15V	1,2-Dichloroethane	ug/l	5	ND	ND
16V	1,1-Dichloroethylene	ug/l	5	ND	ND
17V	1,2-Dichloropropane	ug/l	5	ND	ND
18V	1,3-Dichloropropylene	ug/l	5	ND	ND
19V	Ethylbenzene	ug/l	5	ND	ND
20V	Methylbromide	ug/l	10	ND	ND
21V	Methylchloride	ug/l	10	ND	ND
22V	Methylene chloride	ug/l	15	ND	ND
23V	1,1,2,2-Tetrachloroethane	ug/l	5	ND	ND
24V	Tetrachloroethylene	ug/l	5	ND	ND
25V	Toluene	ug/l	5	ND	ND
26V	1,2-trans-Dichloroethylene	ug/l	5	ND	ND
27V	1,1,1-Trichloroethane	ug/l	5	ND	ND
28V	1,1,2-Trichloroethane	ug/l	5	ND	ND
29V	Trichloroethylene	ug/l	5	ND	ND
30V	Trichlorofluoromethane	ug/l	10	ND	ND
31V	Vinyl chloride	ug/l	10	ND	ND

ND = Not detected.

ANALY... RESULTS

for

CH_2M Hill

...ASE/NEUTRAL COMPOUNDS

...arameter	Units	Detection Limit	4731-01
...B Acenaphthene	ug/l	5	ND
...B Acenaphthylene	ug/l	5	ND
...B Anthracene	ug/l	5	ND
...B Benzidine	ug/l	50	ND
...B Benzo(a)anthracene	ug/l	5	ND
...B Benzo(a)pyrene	ug/l	5	ND
...B Benzofluoranthene (b)	ug/l	5	ND
...B Benzo (ghi) perylene	ug/l	5	ND
...B Benzo (k) fluoranthene	ug/l	5	ND
10B Bis(2-chloroethoxy)methane	ug/l	5	ND
11B Bis (2-chloroethyl)ether	ug/l	5	ND
12B Bis (2-chloroiso-propyl)ether	ug/l	5	ND
13B Bis (2-ethylhexyl)phthalate	ug/l	5	ND
14B 4-Bromophenyl phenylether	ug/l	5	ND
15B Butyl benzyl phthalate	ug/l	5	ND
16B 2-Chloronaphthalene	ug/l	5	ND
17B 4-Chlorophenyl phenylether	ug/l	5	ND
18B Chrysene	ug/l	5	ND
19B Dibenzo(a,h) anthracene	ug/l	5	ND
20B 1,2-Dichlorobenzene	ug/l	5	ND
21B 1,3-Dichlorobenzene	ug/l	5	ND
22B 1,4-Dichlorobenzene	ug/l	5	ND
23B 3,3'-Dichlorobenzidine	ug/l	20	ND
24B Diethyl phthalate	ug/l	20	ND
25B Dimethyl phthalate	ug/l	5	ND
26B Di-n-butyl phthalate	ug/l	5	ND
27B 2,4-Dinitrotoluene	ug/l	5	ND
28B 2,6-Dinitrotoluene	ug/l	5	ND
29B Di-n-octyl phthalate	ug/l	5	ND
30B 1,2-Diphenylhydrazine*	ug/l	5	ND
31B Fluoranthene	ug/l	5	ND

ND = Not detected. *Measured as azobenzene.

ANALY[illegible] RESULTS

for

CH$_2$M Hill

ASE NEUTRAL COMPOUNDS (Cont'd.)

Parameter	Units	Detection Limit	4731-01
2B Fluorene	ug/l	5	ND
3B Hexachlorobenzene	ug/l	5	ND
4B Hexachlorobutadiene	ug/l	5	ND
5B Hexachlorocyclopentadiene	ug/l	5	ND
6B Hexachloroethane	ug/l	5	ND
7B Indeno(1,2,3-cd)pyrene	ug/l	5	ND
8B Isophorone	ug/l	5	ND
9B Naphthalene	ug/l	5	ND
0B Nitrobenzene	ug/l	5	ND
1B N-Nitrosodimethylamine	ug/l	5	ND
2B N-Nitrosodi-n-propylamine	ug/l	5	ND
3B N-Nitrosodiphenylamine	ug/l	5	ND
4B Phenanthrene	ug/l	5	ND
5B Pyrene	ug/l	5	ND
6B 1,2,4-Trichlorobenzene	ug/l	5	ND

ACID COMPOUNDS

Parameter	Units	Detection Limit	4731-01
A 2-Chlorophenol	ug/l	5	ND
A 2,4-Dichlorophenol	ug/l	5	ND
A 2,4-Dimethylphenol	ug/l	5	ND
A 4,6-Dinitro-o-cresol	ug/l	25	ND
A 2,4-Dinitrophenol	ug/l	50	ND
A 2-Nitrophenol	ug/l	5	ND
A 4-Nitrophenol	ug/l	10	ND
A p-Chloro-m-cresol	ug/l	5	ND
A Pentachlorophenol	ug/l	5	ND
0A Phenol	ug/l	10	ND
1A 2,4,6-Trichlorophenol	ug/l	5	ND

ND = Not detected. NR = Not requested.

Lawter

Project No. MG19341.AO
Laboratory No. #5810

Subject: Samples collected by CH2M HILL on February 21, 1985.

Description	Well Water Sample
Arsenic	<0.05
Barium	0.47
Cadmium	<0.01
Chromium	<0.05
Lead	<0.05
Mercury	<0.0002
Nitrate-N	0.9
Selenium	<0.01
Silver	<0.05
Fluoride	1.3
Calcium	23.7
Magnesium	5.6
Silicon	7.1
Chloride	11
Copper	<0.05
Iron	1.4
Manganese	0.10
Sulfate	<4
Zinc	<0.05
Total Dissolved Solids	125
pH (units)	7.3
Conductivity (umhos)	141
Alkalinity ($CaCO_3$)	87
Hardness ($CaCO_3$)	86
COD	--
COD (filtered)	--
Soluble Phosphate-N	--
Ammonia-N	--

All results expressed as mg/l unless otherwise noted.

jh/LAB1/028

ADDENDUM

HYDROGEOLOGIC STUDY AND SURFACE SOIL ASSESSMENT

Prepared for:
Lawter International, Inc.
Southern Resins Division
Moundville, Alabama

September, 1986

Prepared by:
CH2M HILL, Inc.
2567 Fairlane Drive
Montgomery, Alabama 36116

MG19341.BO

MGBG1/103

INTRODUCTION

In March 1986, Lawter International submitted a report entitled "Hydrogeologic Study and Surface Soil Assessment" to the Alabama Department of Environmental Management (ADEM). The report described the hydrogeology of the plant site and an assessment of the organic contents of the soil and groundwater. Subsequent to submittal of the report Lawter agreed to conduct further tests at the plant, primarily designed to provide data on strata below that which was drilled previously.

Geology and hydrogeology of the Moundville area are described in a Geological Survey of Alabama reports CR-6 and SM-136 on the water resources of Tuscaloosa and Hale Counties. The plant site is located on a remnant of a river terrace along the Black Warrior River. The terrace elevation varies from 50 to 70 ft. above the present level of the river. The north edge of the terrace is loacted on a horseshoe bend in the Black Warrior River and the riverbank is actively eroding. As a result of this erosion, about 50 ft. of the terrace deposits and underlying formation are exposed along the riverbank.

The purpose of this addendum is to submit the additional data and to revise the concept of the hydrogeologic regime to incorporate the new data. This report is intended only to supplement the March 1986 report and not to replace it. Only new or revised data tables and figures are presented.

ADDITIONAL DATA

Additional data collected included the following:

1. A rotary wash boring was drilled to a depth of 200 feet below land surface at the B-5 boring site. This boring

is designated as B-5d. Upon reaching 200 feet the boring was logged with natural gamma and resistivity borehole geophysical tools. Drill cuttings were generally insufficient to prepare a geologist log.

2. A 2-inch diameter well was installed in the borehole and screened from 70 to 85 feet below land surface. The screen interval was selected as the next aquifer below the basal terrace deposits based upon field examination of the borehole geophysics. The borehole below the screened interval was backfilled with sand and capped with a bentonite plug. The screen interval was sand-packed with a bentonite seal placed above the sand. The remaining annulus was grouted with a bentonite-cement grout. A steel protective casing with a locking cap was grouted in-place.

3. An undisturbed sediment sample was collected from the first clay bed below the basal terrace sand and gravel bed. This sample was collected with a thin-walled tube-type sampler and analyzed by a geotechnical lab for grain-size and lab permeability.

4. Water level elevations were measured in all wells.

5. Foundation boring logs were reviewed and lab test results (grain-size curves) included in Appendix A-1.

SITE GEOLOGY

The geologic description of the plant site is based upon exploratory borings at twelve locations as described in the March 1986 report and in this addendum. The depths of these borings range from 25 to 200 feet below land surface. Other data reviewed includes foundation borings drilled at various locations in the plant and field observations of the outcrop along the Black Warrior River.

The geology of the plant site is shown on three cross sections. The locations of the sections are shown on Figure 1. Section A-A' (Figure 2) is virtually unchanged from the March 1986 report. Section B-B' (Figure 3) is substantially revised with additional data collected from the 200-foot boring at B-5. Section B-A' (Figure 4) is a new cross section that correlates the data from B-5 to B-12.

These cross sections present a stratigraphic model of the plant site. Stratigraphic nomenclature is based upon regional reports by the Alabama Geological Survey. The sections are constructed from the geologic data collected at the site and interpolation between borings. The model presented is a fairly complex system of interbedded sand and clay strata some of which appear truncated by an erosional contact (unconformity). The basis for interpolation between borings is discussed below in the description of the geology.

The sediments penetrated by borings at the site include the Pleistocene series terrace deposits and upper beds of the Upper Cretaceous series (Tuscaloosa Group). The boundary between the terrace deposits and the Tuscaloosa Group is an erosional surface. The Tuscaloosa Group consists of the Gordo Formation and the Coker Formation. The plant site is located within the outcrop belt of the Gordo Formation,

however the regional reports are unclear if the Gordo is present or has been removed by erosion by the ancestral Black Warrior River followed by deposition of the terrace deposits.

The cross sections show that the terrace deposits exhibit a typical fining-upward sequence. This sequence can be subdivided into a upper fine-grained unit and a basal coarse-grained unit. The grain-size properties of these units have been documented by grain-size curves included in Appendix A-1. These data have been summarized in Table 1 by gravel, sand, silt, and clay fractions.

The upper fine-grained unit of the terrace consists of beds of clayey sand and sandy clay. These are poorly sorted sediments as indicated by the data in Table 1. The average silt and clay content of the sands is 43 percent which increases to 63 percent in the clay beds. This unit ranges in thickness from 3.5 to 22 feet.

The basal sand and gravel is 10 to 30 feet thick. These sediments show a higher degree of sorting and contain less than 10 percent silt and clay. The unconformity which marks the base of the terrace is considered to be the lowest occurrence of gravel. The outcrop along the Black Warrior River shows that the basal sand and gravel of the terrace overlies a multi-colored cross-bedded sand. In this report this sand is considered to be basal remnants of the Gordo Formation.

Sections B-B' and B-A' show that the thickness of the Gordo ranges from 40 to 65 feet. The Gordo consists of alternating beds of clayey sand and sandy clay with a basal sand. An undisturbed sediment sample was collected from boring B-5d from the uppermost sandy clay of the Gordo.

The sample was collected using a thin-walled tube-type sampler and taken to a geotechnical lab for grain-size and permeability tests. The lab data are attached in Appendix A-1. The permeability coefficient of the sample is reported to be 3×10^{-7} centimeters per second.

The resistivity borehole log of B-5d indicates that the basal sand is well-sorted and about 19 feet thick. The basal sand at B-5d correlates with the well-sorted sand sequence identified in boring B-3. Well #5d is screened in the basal sand of the Gordo Formation.

The Gordo/Coker contact is modelled as the contact between the well-sorted sand and the underlying stiff clay. The gamma and resistivity logs from boring B-5d indicate that this bed is very low in sand content, uniform in composition, and about 75 feet thick. The uppermost sand bed of the Coker formation occurs 165 feet below land surface (-10 feet msl) at B-5d. The natural gamma log response indicates that this sand probably contains moderate amounts of clay.

HYDROGEOLOGY

The first aquifer beneath the site is a water table aquifer located within the coarse basal unit of the terrace deposits and the sands of the Gordo Formation, where the two are in contact. Monitoring wells were installed above the uppermost clay of the Gordo at all boring locations except B-5 and B-7. At these locations saturated conditions did not exist above the Gordo clay. Well 5d was installed into the basal Gordo sand and is screened from 70 to 85 feet below land surface.

During the original well installation program, augers were advanced to 24.5 and 34.5 feet at B-5 and B-7 respectively. Clay was encountered at 24.5 feet (128.2 feet msl) in B-5 and at 35.5 feet (137.9 feet msl) in B-7. Augers were removed and boreholes left open for a minimum of 30 minutes after the augers were removed. No fluids were observed in either borehole and each borehole was grouted.

Water levels in the original monitoring wells have been measured six times since installation in October 1985 (Table 2 and Figures 5 and 6). These data show that water levels have remained fairly stable with the exception of well #6. Well #6 is located adjacent to the north bluff pond which was drained in November 1985. The water level declined about 2 feet between the November 1985 and April 1986 apparently as a result of the pond drainage. During this period water levels in all other wells remained constant or rose.

The stratigraphic model illustrated by the hydrogeologic cross sections (Figures 2 to 4) indicates that a clay bed separates the terrace/upper Gordo aquifer from the basal Gordo aquifer which is screened in well 5d. The water level in well 5d is about 5 feet higher than the nearest shallow well (#4). This head difference and the intervening clay may indicate hydraulic separation of the sand beds.

CONCLUSIONS

A deep boring at the site of the original B-5 was drilled to 200 feet below land surface and logged with borehole geophysics. These data revealed a complex system of interbedded sand and clay strata from 0 to 90 feet below land surface. A massive clay bed occurs from 90 to 165 feet below land surface. Below 165 feet is a clayey sand bed of undetermined thickness.

The alternating sand and clay beds of the upper 90 feet are believed to belong to the Pleistocene terrace deposits and the Upper Cretaceous Gordo Formation. The boundary between the stratigraphic units is modelled here as the lowest occurrence of the rounded channel gravels. The sand and clay beds of the Gordo appear to pinch out or are truncated by the erosional contact to the west of boring B-5d.

Groundwater occurs in the terrace gravels at all boring/well locations except B-5 and B-7. At these sites, the first groundwater occurs in deeper sand beds of the Gordo Formation. The low permeability (10^{-7} cm/sec) clay beds of the Gordo provide barriers to hydraulic interconnection of the sand beds. However at well #3, very little clay remains in the Gordo and probable interconnection exists at this location.

The massive clay from 90 to 165 feet below land surface is believed to be the uppermost bed of the Coker Formation. This clay bed is an effective barrier to vertical groundwater flow. Regional data indicate that the aquifer within the lower Coker is confined with pressure levels above land surface (artesian) in the vicinity of the site. This is supported by the observation of a naturally flowing well located at Mound State Park, adjacent to plant site. Artesian conditions in the deeper aquifer will prevent

advective transport of contaminants through the Coker Formation.

The ADEM specifically requested that the report addendum address the following items:

1. Explanation of the dry holes at B-5 and B-7.

2. Measurement of the permeability of the clay strata that act as barriers to vertical migration.

3. Description of the next underlying aquifer below the terrace aquifer.

The absence of groundwater in the terrace deposits at B-5 and B-7 is caused by lateral subsurface drainage. Groundwater is diverted from these locations and discharges to the surface or drains laterally down the sloping clay beds.

A permeability of $3x10^{-7}$ cm/sec was measured on a clay sample from the Gordo Formation. The material is a sandy clay, typical of the clay beds within the Gordo. The gamma and resistivity borehole logs from B-5d indicate that the uppermost bed of the Coker Formation is a clay bed with a higher clay content than the Gordo clays. Therefore, the Coker clay bed should have a permeability less than 10^{-7} cm/sec.

The next underlying aquifer at the site is considered to be the basal sand of the Gordo Formation. The base of this aquifer was penetrated at only two borings, B-3d and B-5d, at elevation 60 feet msl. This aquifer is screened in Well 5d and the water level, measured in August 1986, was 118.15 feel msl. This elevation is higher than the stage of both Carthage Branch and the Black Warrior River. The higher

groundwater head indicates that groundwater discharges to both of the surface water bodies. It is probable that the channel of the Black Warrior intersects the top of aquifer. Therefore, it is not likely that groundwater from the plant site could migrate beneath the river. It is also not likely that groundwater could flow beneath Carthage Branch because the creek acts as a pressure relief (line sink) mechanism to the aquifer. Groundwater flow vectors should be oriented upwards in the vicinity of the creek thereby not allowing lateral flow.

TABLE 1.
LAWTER INTERNATIONAL
SOIL CLASSIFICATION DATA SUMMARY

Formation	Sediment Type	Date	Boring No	Depth (ft)	Gravel %	Sand %	Silt %	Clay %
Upper terrace	Clayey Sand	Nov-77	T-1	6.0	0	55	17	28
		Nov-77	T-4	1.5	0	57	17	26
		Nov-77	T-8	3.0	0	52	10	38
		Nov-78	5	1.5	0	50	22	28
		Dec-78	SR-1	0.0	0	57	14	29
		May-79	28-1	10.5	0	70	8	22
			Minimum			50	8	22
			Maximum			70	22	38
			Average			57	15	29
			Std. Dev.			5.4	4.7	4.8
	Sandy Clay	Nov-77	T-6	3.5	0	45	20	35
		Nov-77	T-6	4.5	0	45	17	37
		Nov-77	T-5	4.5	0	36	22	42
		Nov-77	T-2	3.0	0	32	20	48
		Nov-77	T-1	1.5	0	43	17	40
		May-79	28-2	10.5	0	48	20	32
		May-79	28-1	4.5	0	45	13	42
		Aug-86	B-5d	5.5	0	14	48	38
		Aug-86	B-5d	9.5	0	25	45	30
			Minimum			14	13	30
			Maximum			48	48	48
			Average			37	25	38
			Std. Dev.			10.8	11.9	5.2
Basal terrace	Sand	May-79	28-1	18.0	0	92	2	6
	Gravelly Sand	May-79	28-2	18.0	25	67	5	3
Gordo	Sandy Clay	Aug-86	B-5d	26.0	0	25	43	32
	Sand	Nov-78	5	7.5	0	78	4	18
		Nov-78	5	10.5	0	86	2	12
			Average			82	3	15
	Clayey Sand	Nov-78	5	13.5	0	52	15	33

TABLE 2.
LAWTER INTERNATIONAL
GROUNDWATER MONITORING WELLS
WATER LEVEL ELEVATIONS

Date	1		2		3		4		5d	
	DTW	elev	DTW	elev	DTW	elev	DTW	elev	DTW	elev
29-Oct-85		119.31		115.04		113.18		113.65		
06-Nov-85		119.14		115.00		113.13		113.57		
11-Dec-85		119.11		114.98		113.02		113.53		
29-Apr-86		119.36		115.38		113.37		113.92		
25-Jul-86	41.20	118.74	42.70	114.72	37.20	112.86	43.50	113.07		
08-Aug-86	41.04	118.90	42.52	114.90	37.10	112.96	43.27	113.30	36.97	118.15

Date	6		8		9		10		11		12	
	DTW	elev	DTW	elev	DTW	elev	DTW	elev	DTW	elev	DTW	elev
29-Oct-85		151.26		145.47		148.31		150.81		154.00		154.01
06-Nov-85		151.08		145.29		148.29		150.87		154.02		153.87
11-Dec-85		150.74		145.13		148.02		150.60		153.94		153.76
29-Apr-86		149.05		145.23		148.19		150.60		153.86	*	
25-Jul-86	22.70	148.56	38.00	144.51	42.90	147.29	26.20	149.94	30.00	153.17	*	
08-Aug-86	22.67	148.59	37.79	144.72	42.69	147.50	26.08	150.06	29.85	153.32	28.38	153.35

Well No.	MP Elev.
1	159.94
2	157.42
3	150.06
4	156.57
5d	155.12
6	171.26
8	182.51
9	190.19
10	176.14
11	183.17
12	181.73

NOTES:
1. DTW = depth to water
2. MP = measuring point, top of 2-in PVC well casing
3. Well 12 was replaced in July 1986 due to damage by earth moving equipment. The replacement well was built to the same specifications as the original well.

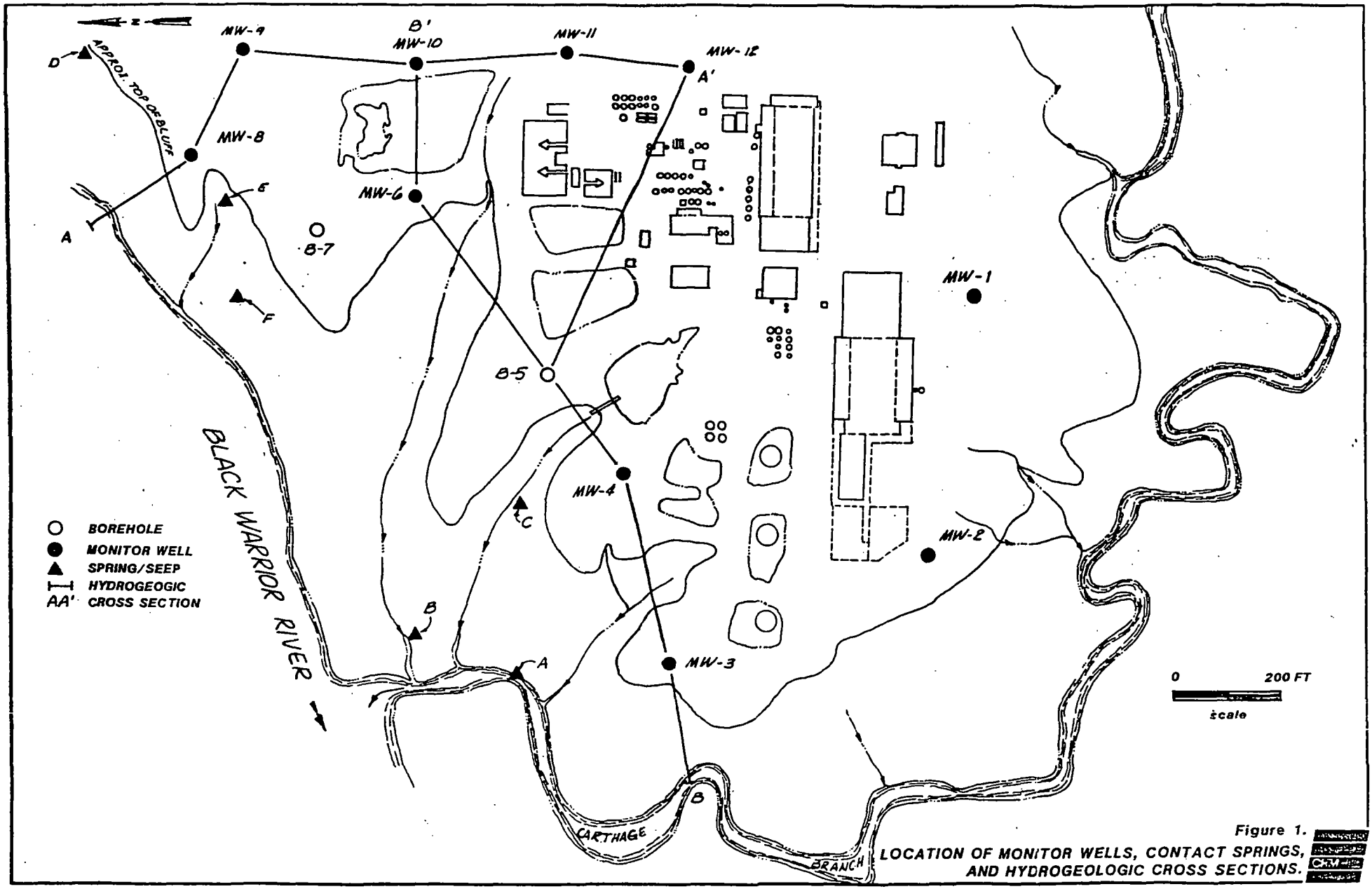


Figure 1. LOCATION OF MONITOR WELLS, CONTACT SPRINGS, AND HYDROGEOLOGIC CROSS SECTIONS.

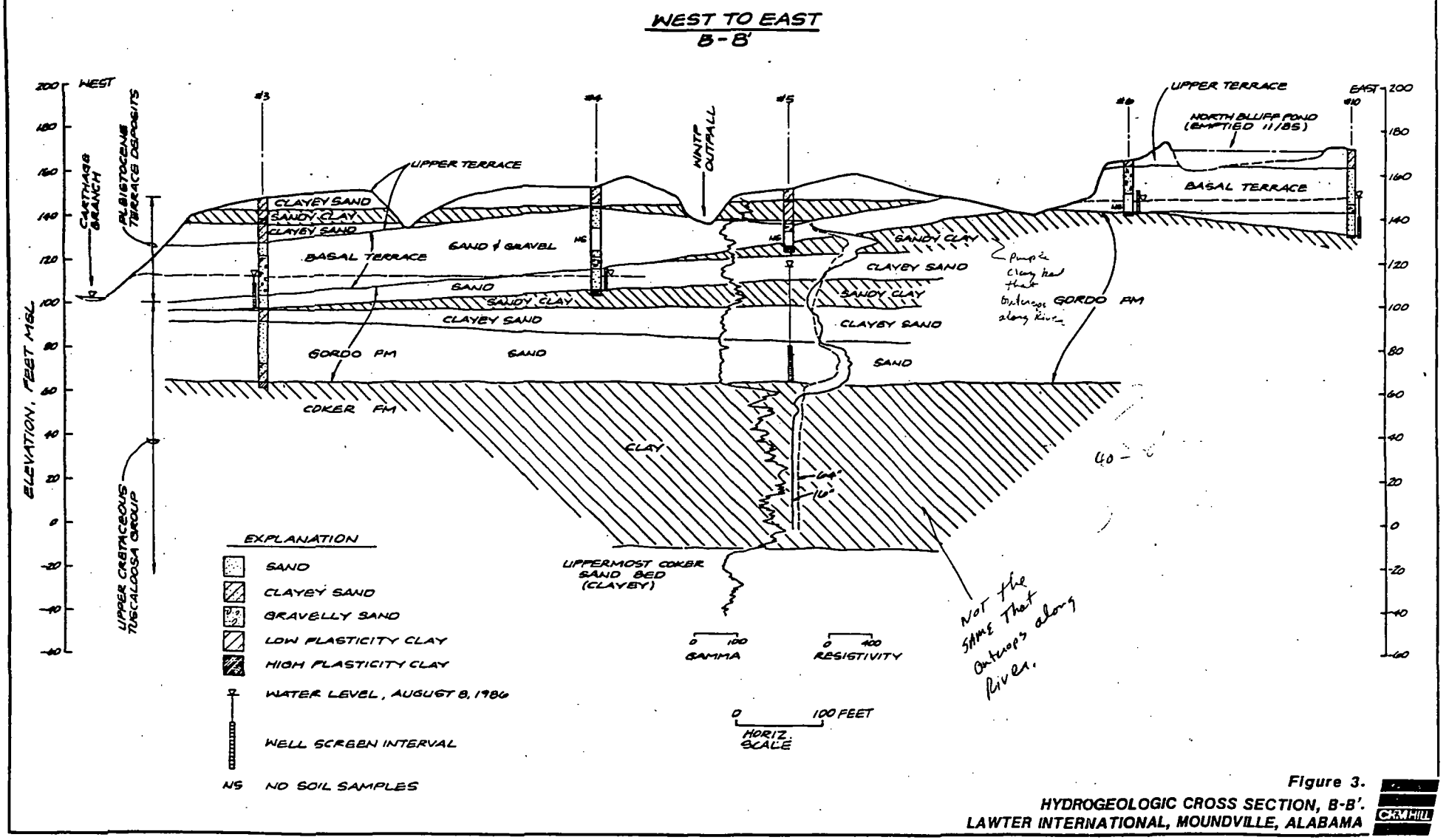


Figure 3.
HYDROGEOLOGIC CROSS SECTION, B-B'.
LAWTER INTERNATIONAL, MOUNDVILLE, ALABAMA

CH2M HILL

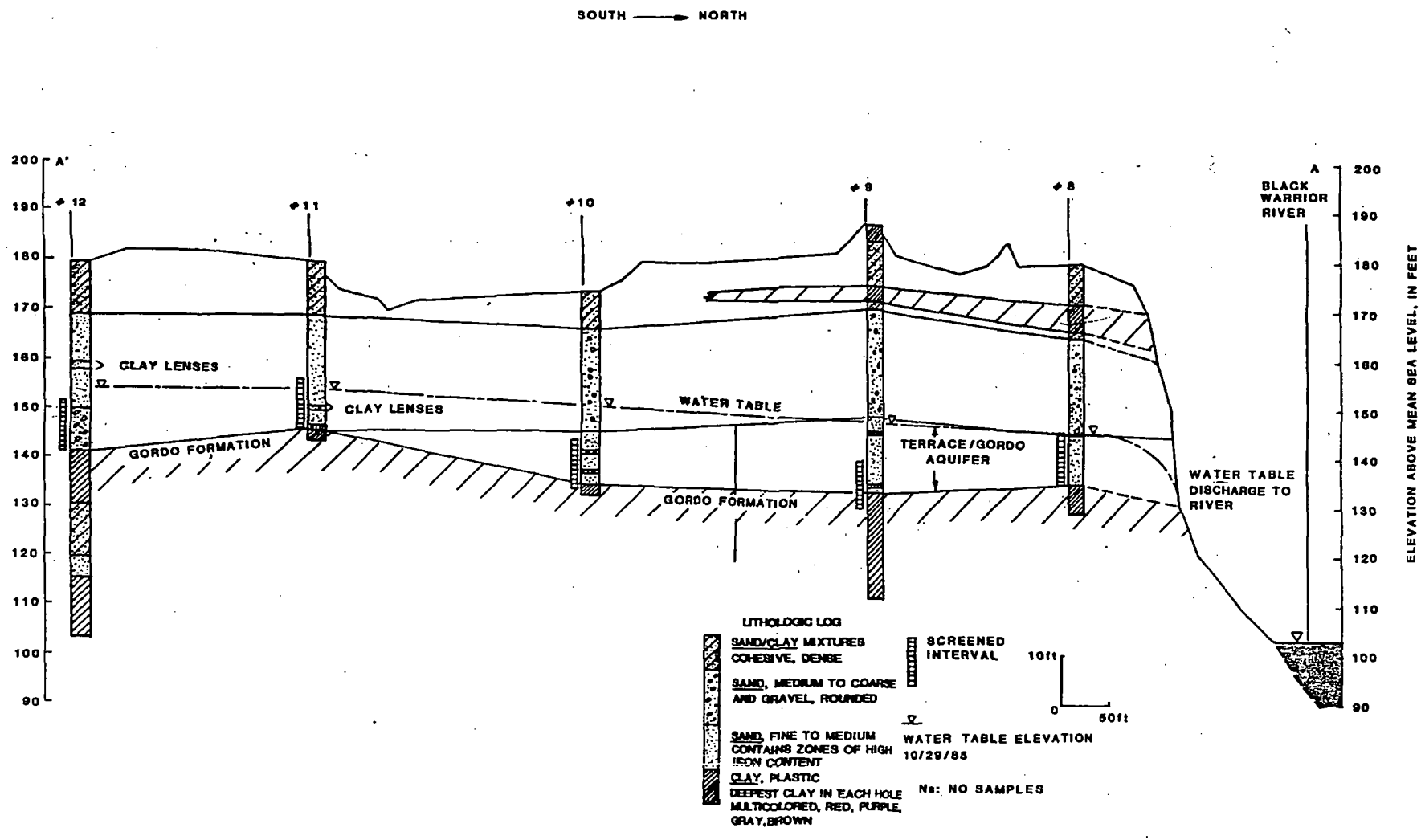


FIGURE 2.
HYDROGEOLOGIC CROSS SECTION A-A'.

CH2M HILL

ATTACHMENT 7

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

George C. Wallace
Governor

.eigh Pegues, Director

751 Federal Drive
Montgomery, AL
6130
05/271-7700

ield Offices:

nit 806, Building 8
25 Oxmoor Circle
irmingham, AL
5209
05/942-6168

.O. Box 953
ecatur, AL
3602
05/353-1713

204 Perimeter Road
obile, AL
3615
05/4[illegible]2336

May 6, 1986

M E M O R A N D U M

TO: J.P. Martin
Industrial Branch

FROM: Fred Mason
Groundwater Section

SUBJECT: Southern Resins/Lawter Chemicals/Cracker Asphalt Inspections
Tuscaloosa County

On Tuesday April 29, 1986, I conducted a follow-up evaluation of the Southern Resins plant near Moundville, Alabama. The following observations were made:

1. Red leachate with a hydrocarbon sheen appearance was discharging above a clay layer below the north bluff lagoon. This leachate disappears to the subsurface either to creek bed alluvium or to a gray sand below the clay layer.

2. Leachate was also observed in the drainage below the middle/polishing pond.

3. Sludge deposits were observed in the north bluff pond, the middle pond, and the "u" shaped pond.

4. Sludge spillage was observed in the containment area around the storage tank used by Southern Resins on the Cracker Asphalt plant site. This could affect the wells on the property line, i.e. wells 12, 11, 10, and 9. The Cracker Asphalt lagoon sludge level is low due to lack of rainfall.

5. Discharge from the T-pipe lagoon to Carthage Branch was excessively foamy. This foam discharge has been reported by the public in the past and by a worker at Mound State Park.

Southern Resins/Lawter Chemicals proposes to close the north bluff lagoon, and clean up and dispose of contaminated soils defined by the CH_2M Hill study. They propose, further, to continue monitoring the contaminated terrace and Gordo aquifers, assuming they will discharge contaminants naturally. This proposal should be considered since a massive clay confining unit outcrops along the Black Warrior River and leachate springs are discharging from above this clay layer.

Additional investigation and sampling by ADEM of wells abandoned at Mound State Park and in Moundville will be initiated.

Contact was also made with John Elliott, Superintendent for Cracker Asphalt. Elliott was observed building a bare steel storage tank. He was advised of the UST Program, and of the need to close or permit the asphalt lagoon. The owner of Cracker Asphalt, Conrad Wesselhoeft, 759-8142 beeper, 553-1079 home, 371-2263, 553-8129, Wesselhoeft Inc., P O Box 3323 ESS, Tuscaloosa, AL 35404 will be contacted about the lagoon violation.

/jd
cc: Treena Piznar, Industrial Branch
Cracker Asphalt File

ATTACHMENT 8

Southern Resins Div.
Lawter International, Inc.
P.O. Box 128
MOUNDVILLE, ALABAMA 35474
Phone 205-371-2235

December 22, 1986

Mr. Fred C. Mason
Alabama Department of
Environmental Management
1751 Federal Drive
Montogmery, AL 36130

RE: Lawter International, Inc.
Addendum to Groundwater Study

Dear Mr. Mason:

As I reported to you by phone, we measured the piezometric elevation in our standby well on 12/4/86. This well, which is completed in the Coker aquifer, had a water elevation 1.06' higher than the elevation in the nearby well no. 12 on that date. This data confirms the conclusion in the groundwater study that the higher water pressure in the Coker aquifer prevents downward migration from the terrace and Gordo aquifers lying above. The following table summarizes the measurements and elevations found on 12/4/86:

	Well No. 12	Stand-by well
Meas Pt, Elev	181.73'	174.50'
Depth to Water	28.583'	29.292'
Water Elev	153.15'	154.21'

All elevations are hgt above mean sea level

With regard to our plans for future monitoring of well #5 and the other wells on the property these will be presented with the plans for pond closure that are now being drafted.

Very truly yours,

F. Gordon Steward

F. Gordon Steward

FGS:cm

cc: Hermann Mueller
Richard D. Nordman
Robert H. Goodson - CH2M Hill
Treena G. Pizzar - ADEM

ATTACHMENT 9

LAWTER INTERNATIONAL, INC.

990 SKOKIE BLVD., NORTHBROOK, IL 60062 • 708 498-4700

February 17, 1992

MAR 1992
RECEIVED
ADEM
GROUNDWATER
SECTION

Mr. Fred C. Mason III
ADEM
1751 Cong, W.L.
Dickinson Drive
Montgomery, AL 36130

Re: Your letter November 19, 1991

Dear Mr. Mason:

This letter is submitted in response to your request for a report detailing "groundwater related corrective actions." I have attached summaries of the tests from the twelve groundwater sampling wells beginning with the original sampling in November of 1985. A summary of my conclusions from these groundwater samples prefaces the individual well results. These tests were conducted by the GCMS method.

In checking well numbers 10, 11 and 12, we see an increase in the level of napthalene. Hydrogeologic surveys of this area show the groundwater flow to be downgradient from our neighbor's property to ours. There is no reason that napthalene should be showing increasing levels on our property. There is no production or storage being done in these areas on our property. We cannot say what may be the case regarding our neighbor's property. We have no material stored there.

In addition, we are submitting TCLP results from the soil in the North Bluff pond.

In the last few years, a number of improvements have been made to the Lawter facility at Moundville.

1. The contaminated soil from the North Bluff pond has all been moved onto a concrete pad poured in the North Bluff pond. The soil has been surrounded by an erosion barrier to keep it in place.

2. All waste piles have been removed from the site.

3. Dikes around bulk storage areas are cleaned on a regular basis.

4. Management practices strictly enforce our SPCC plan.

5. Overall housekeeping has been greatly improved. We would welcome a visit from you to see the improvements that have been made to this facility.

The following actions are being taken:

1. CH2M Hill has been retained to prepare a pond closure plan. We expect to receive this in the very near future.

2. We are reviewing plans to clean and improve the operating processes for our aeration and polishing ponds.

3. We will take samples of groundwater discharging through the banks into the Warrior River. These will be submitted to you as soon as we have the results.

Since the levels in the monitoring wells have decreased or remained the same (with the exception of napthalene in wells 10, 11 and 12), I request that we begin taking samples on a yearly basis. Quarterly testing has shown no pattern or definitive results.

Please do not hesitate to contact me. I am available to meet you again at your convenience.

Sincerely yours,

LAWTER INTERNATIONAL, INC.

Terrence B. Sheehan
Director of Manufacturing

TBS/de

cc: R.D. Nordman
A. Kwiatkowski

APPENDICES

APPENDIX A

WELL # 1	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Ethylbenzene	700.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Napthalene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
N-Propylbenzene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Styrene	100.0	<5	<5	<5	<5	<12.5	<5	<5	10	<5	<5	10.00
Toluene	1000.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
1,2,4-Trimethylbenzene	70.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
1,3,5-Trimethylbenzene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Total Xylene	10000.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Dicyclopentadiene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA

WELL # 2	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Ethylbenzene	700.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Napthalene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
N-Propylbenzene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Styrene	100.0	<5	<5	<5	<5	<12.5	<5	<5	7	<5	<5	7.10
Toluene	1000.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
1,2,4-Trimethylbenzene	70.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
1,3,5-Trimethylbenzene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Total Xylene	10000.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Dicyclopentadiene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA

WELL # 3	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5.0	NA
Ethylbenzene	700.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5.0	NA
Napthalene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	23	22.60
N-Propylbenzene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5.0	NA
Styrene	100.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5.0	NA
Toluene	1000.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5.0	NA
1,2,4-Trimethylbenzene	70.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	6	6.20
1,3,5-Trimethylbenzene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5.0	NA
Total Xylene	10000.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	19	18.60
Dicyclopentadiene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	22	22.10

WELL # 4	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Ethylbenzene	700.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Napthalene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
N-Propylbenzene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Styrene	100.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Toluene	1000.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
1,2,4-Trimethylbenzene	70.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
1,3,5-Trimethylbenzene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Total Xylene	10000.0	<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA
Dicyclopentadiene		<5	<5	<5	<5	<12.5	<5	<5	<5	<5	<5	NA

WELL # 5	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	97	74	73	86	88	84	40	61	105	44	72.45
Ethylbenzene	700.0	35	6	30	<5	53	13	47	44	78	9	38.87
Napthalene		303	98	266	670	805	241	183	410	388	207	396.25
N-Propylbenzene		16	<5	11	<5	21	<5	<5	18	26	<5	18.95
Styrene	100.0	<5	<5	<5	9	16	10	6	8	10	<5	9.91
Toluene	1000.0	27	11	21	15	23	17	<5	20	28	13	19.69
1,2,4-Trimethylbenzene	70.0	98	86	109	134	124	97	68	70	92	59	94.10
1,3,5-Trimethylbenzene		27	35	43	46	31	38	27	25	26	18	31.69
Total Xylene	10000.0	200	211	220	287	324	264	186	173	361	145	245.00
Dicyclopentadiene		12	8	15	20	20	26	18	17	26	16	19.75

WELL # 6	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<500	<25	379	<25	<12.5	<12.5	<5	<5	10	<5	194.30
Ethylbenzene	700.0	<500	<25	186	23	<12.5	<12.5	<5	<5	<5	<5	104.45
Napthalene		10100	<25	<5	2180	2450	131	225	163	465	71	812.13
N-Propylbenzene		<500	<25	46	10	<12.5	<12.5	<5	<5	<5	<5	27.76
Styrene	100.0	<500	<25	328	56	<12.5	7	<5	<5	10	<5	100.26
Toluene	1000.0	<500	<25	41	<25	<12.5	<12.5	<5	<5	<5	<5	41.00
1,2,4-Trimethylbenzene	70.0	2700	188	373	219	148	19	31	<5	128	<5	153.12
1,3,5-Trimethylbenzene		<500	206	347	198	20	<12.5	<5	<5	18	<5	145.70
Total Xylene	10000.0	1900	418	669	314	213	44	40	<5	169	10	208.47
Dicyclopentadiene		1400	876	1004	1540	1420	433	247	502	1460	565	896.38

WELL # 8	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<5	<5	7	<5	<5	<5	<5	<5	7	<5	6.83
Ethylbenzene	700.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Napthalene		<5	<5	15	<5	12	<5	<5	<5	39	<5	22.03
N-Propylbenzene		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Styrene	100.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Toluene	1000.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
1,2,4-Trimethylbenzene	70.0	<5	<5	10	<5	5	<5	<5	<5	11	<5	8.87
1,3,5-Trimethylbenzene		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Total Xylene	10000.0	<5	<5	11	<5	6	<5	<5	<5	12	<5	9.50
Dicyclopentadiene		<5	<5	<5	<5	8	<5	<5	<5	<5	<5	7.95

WELL # 9	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Ethylbenzene	700.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Napthalene		<5	<5	<5	<5	<5	<5	<5	<5	17	<5	17.30
N-Propylbenzene		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Styrene	100.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Toluene	1000.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
1,2,4-Trimethylbenzene	70.0	<5	<5	<5	<5	<5	<5	<5	<5	9	<5	9.30
1,3,5-Trimethylbenzene		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA
Total Xylene	10000.0	<5	<5	<5	<5	<5	<5	<5	<5	7	<5	6.80
Dicyclopentadiene		<5	<5	<5	<5	<5	<5	<5	<5	5	<5	5.00

WELL # 11	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<250	<100	232	198	<250	<250	217	225	253	215	223.33
Ethylbenzene	700.0	402	669	860	817	443	739	629	702	649	571	676.25
Napthalene		2590	2060	2940	5590	2590	2390	2960	2590	2940	2480	3060.00
N-Propylbenzene		<250	211	439	430	<250	415	396	205	256	271	344.57
Styrene	100.0	514	815	714	614	337	500	392	366	330	276	441.13
Toluene	1000.0	<250	162	162	132	<250	<250	<125	147	112	103	131.20
1,2,4-Trimethylbenzene	70.0	3420	2240	4740	5240	3860	3860	3300	3190	4980	2700	3983.75
1,3,5-Trimethylbenzene		<250	946	1610	1400	746	1100	1050	1120	993	778	1099.63
Total Xylene	10000.0	4090	4760	4580	3830	2830	4130	3400	3540	3490	2700	3562.50
Dicyclopentadiene		390	391	596	485	436	542	485	656	600	534	541.75

WELL # 10	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<100	12	35	44	<25	40	<12.5	9	<8.5	<8.5	31.88
Ethylbenzene	700.0	<100	<10	86	120	<25	106	19	17	25	9	54.61
Napthalene		1080	53	818	943	1550	1080	633	2760	390	1500	1209.25
N-Propylbenzene		<100	<10	37	45	<25	40	<12.5	<8.5	16	<8.5	34.33
Styrene	100.0	<100	<10	106	152	<25	52	<12.5	<8.5	<8.5	<8.5	103.30
Toluene	1000.0	<100	<10	46	32	<25	35	<12.5	<8.5	<8.5	<8.5	37.77
1,2,4-Trimethylbenzene	70.0	121	112	150	715	31	289	49	82	<8.5	88	200.59
1,3,5-Trimethylbenzene		<100	39	67	199	<25	55	<12.5	15	<8.5	14	70.04
Total Xylene	10000.0	453	269	462	761	128	367	121	108	29	89	258.05
Dicyclopentadiene		266	211	302	943	343	468	321	380	178	415	418.75

WELL # 12	MCL (ppb)	6/90	9/90	12/90	6/91	12/91	3/92	9/92	9/93	12/93	6/94	Average
Benzene	5.0	<100	<25	56	44	97	91	133	105	116	93	91.83
Ethylbenzene	700.0	<100	101	191	164	194	238	272	163	395	190	225.88
Napthalene		460	461	774	1040	937	723	732	1360	1080	1200	980.75
N-Propylbenzene		<100	46	96	74	83	127	129	35	129	40	89.09
Styrene	100.0	<100	122	217	206	194	248	339	172	255	211	230.25
Toluene	1000.0	<100	36	78	69	78	100	127	104	111	97	95.61
1,2,4-Trimethylbenzene	70.0	339	348	607	567	482	650	614	610	1850	653	754.13
1,3,5-Trimethylbenzene		<100	135	250	236	208	237	290	238	275	188	240.25
Total Xylene	10000.0	710	737	1040	932	1110	1220	1310	1030	5230	1030	1612.75
Dicyclopentadiene		<100	27	72	75	113	115	186	132	181	147	127.65

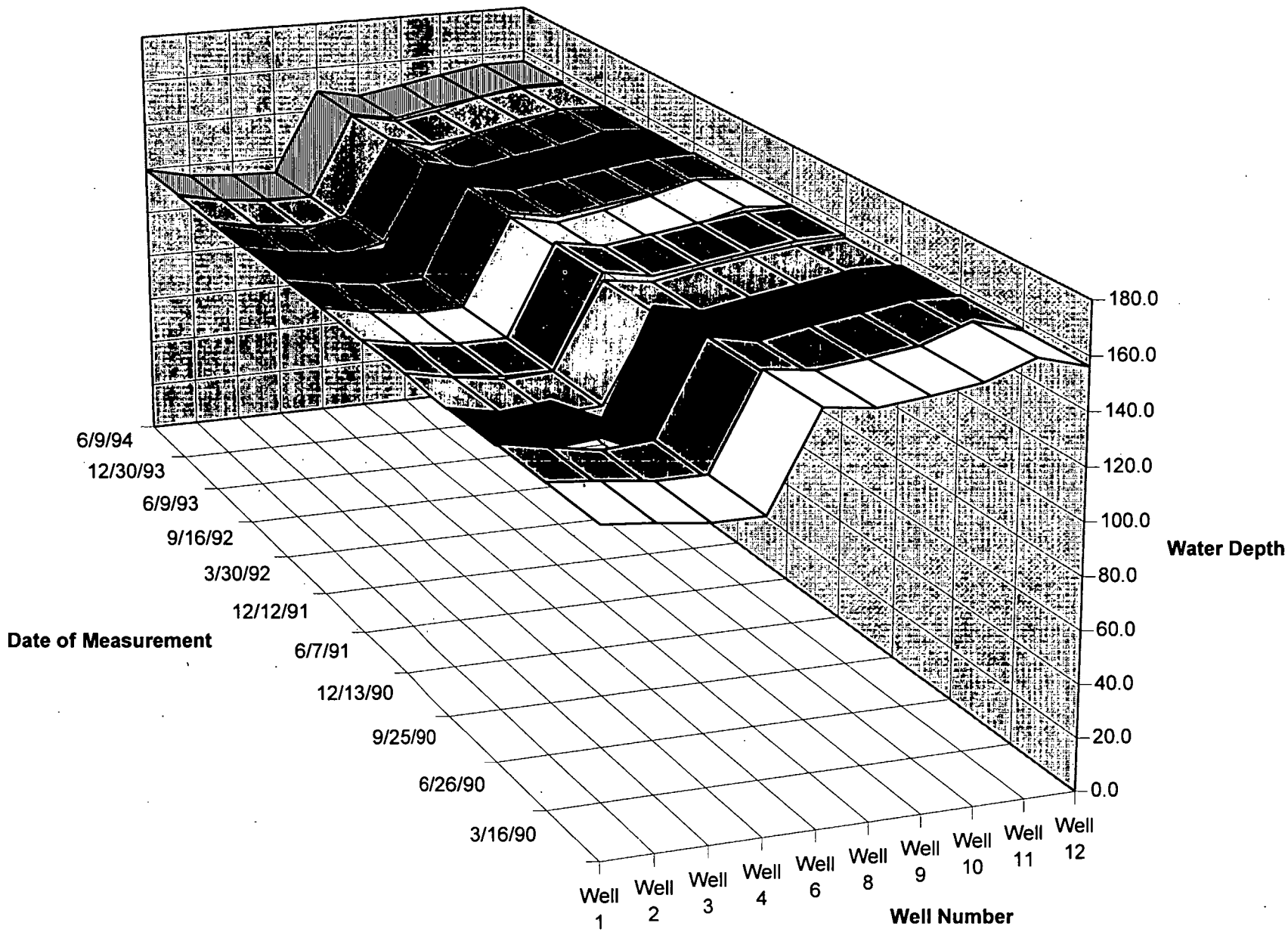
WATER LEVELS

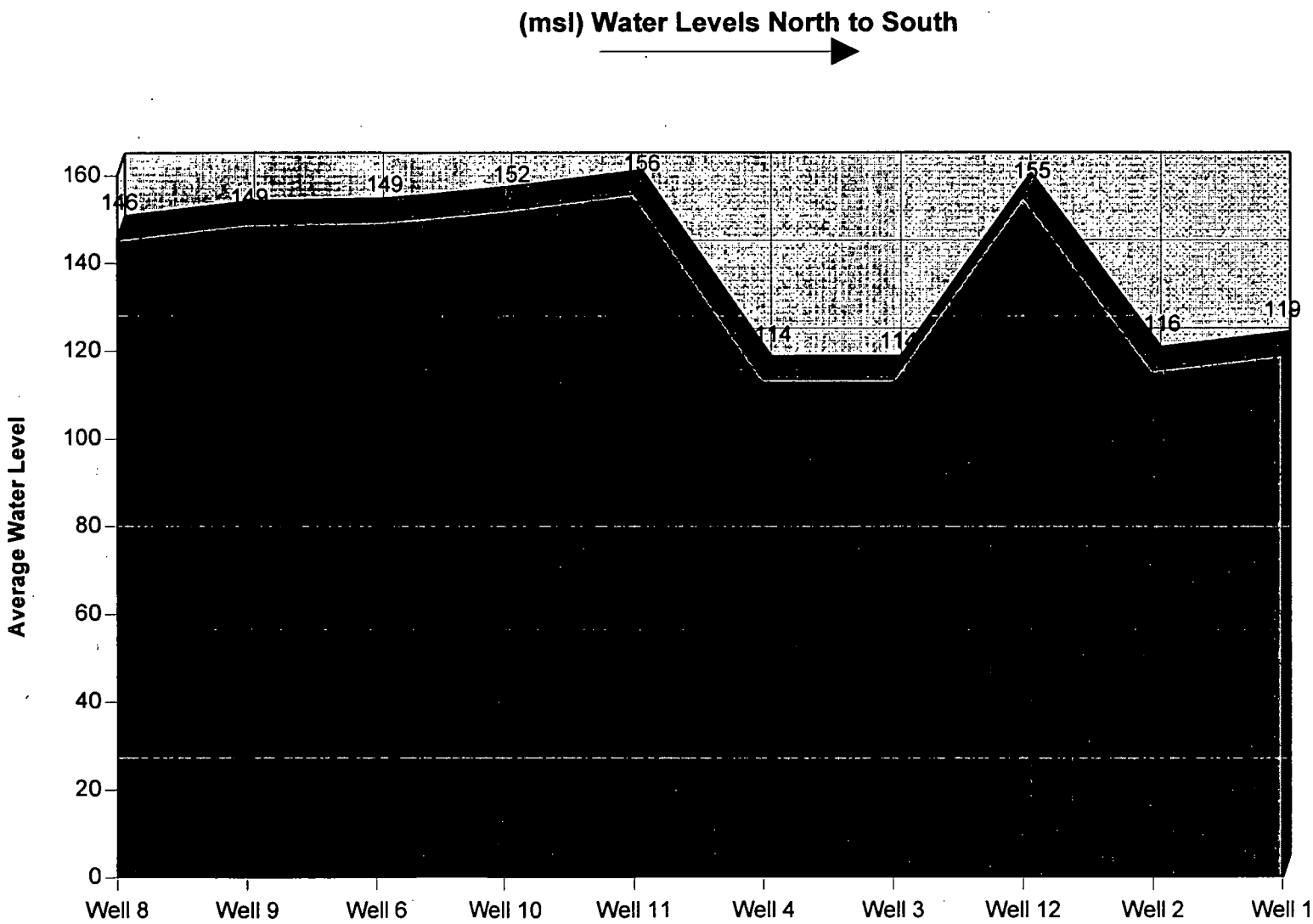
	WATER LEVELS												TOP OF
	3/16/90	6/26/90	9/25/90	12/13/90	6/7/91	12/12/91	3/30/92	9/16/92	6/9/93	12/30/93	6/9/94	Average	CASING (msl)
Well 1	120.1	119.9	119.2	118.9	118.9	118.9	118.9	119.1	118.7	119.0	119.5	119.2	159.94
Well 2	118.4	116.4	115.5	115.4	115.4	115.4	115.4	115.4	114.4	115.4	115.3	115.7	157.42
Well 3	116.1	113.1	117.6	112.4	113.5	113.0	113.0	113.3	111.7	113.1	113.8	113.7	150.06
Well 4	116.2	114.6	108.9	113.5	113.6	113.6	113.6	113.4	116.3	113.3	113.1	113.6	156.57
Well 6	152.3	151.3	149.9	147.3	150.3	148.6	150.3	148.9	148.2	148.3	149.0	149.5	171.26
Well 8	149.8	147.5	145.9	144.7	147.0	144.5	147.0	144.5	141.1	144.3	145.5	145.6	182.51
Well 9	152.0	151.2	149.4	148.2	149.7	147.9	149.7	147.9	147.5	147.0	148.7	149.0	190.19
Well 10	154.7	154.1	152.5	151.1	152.6	152.1	152.6	150.6	150.9	151.8	151.8	152.3	176.14
Well 11	161.5	157.2	155.9	153.4	155.2	157.2	155.2	155.6	155.0	154.2	155.1	156.0	183.17
Well 12	156.3	156.7	155.7	154.6	155.7	155.7	155.7	154.5	154.3	154.2	155.1	155.3	181.73
Well 5	116.6	104.1	103.7	103.7	105.1	104.6	105.1	103.5	102.5	104.4	103.8	105.2	155.12

FIELD MONITORING DATA

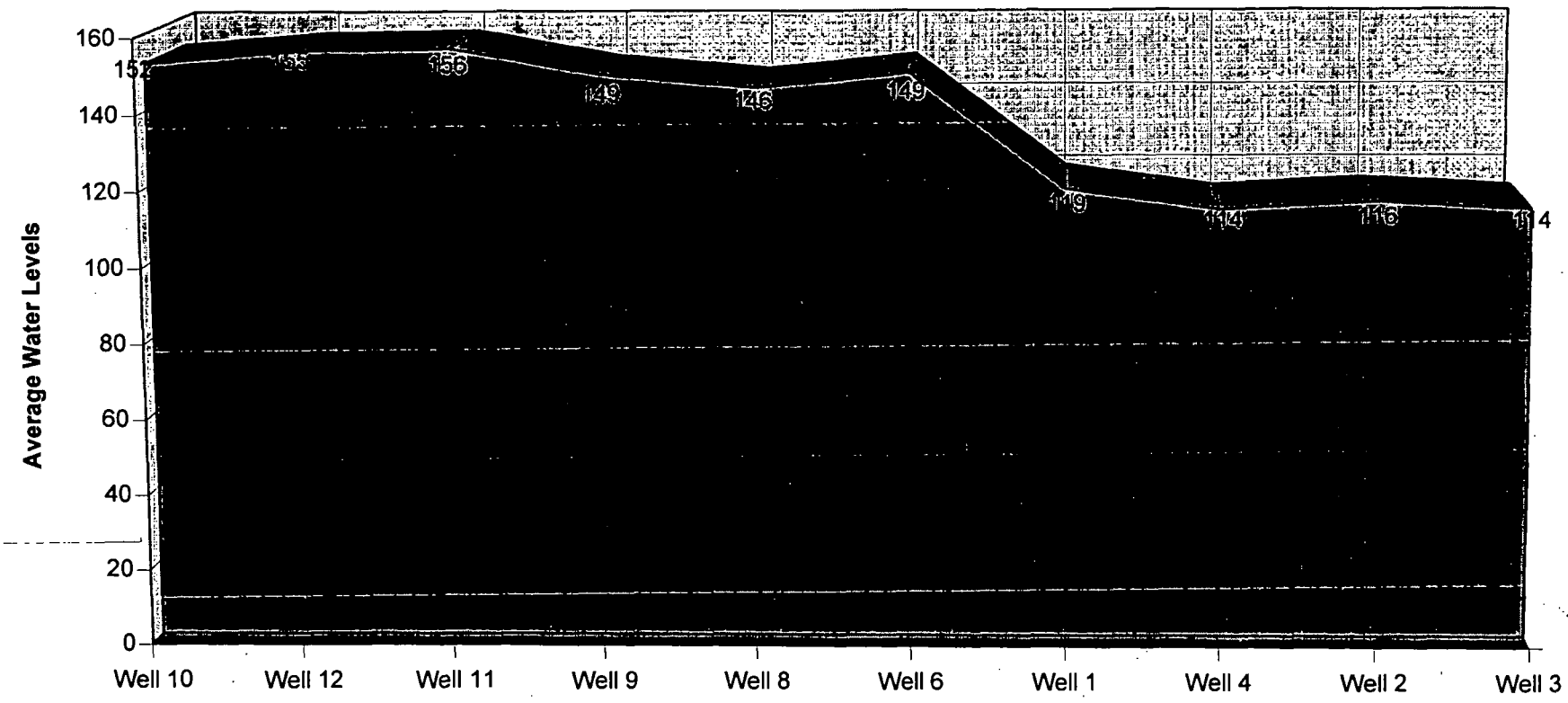
WELL #	CASING ELEVATION	WATER LEVEL	WATER DEPTH	TOTAL WELL DEPTH	SURFACE ELEVATION
1	159.94	120.11	39.83	56.50	157.80
2	157.42	118.42	39.00	55.10	156.00
3	150.06	116.06	34.00	54.00	148.40
4	156.57	116.15	40.42	54.00	154.30
5	155.12	116.62	38.50	86.00	
6	171.26	152.26	19.00	27.80	167.20
8	182.51	149.84	32.67	52.70	179.90
9	190.19	152.02	38.17	62.70	187.70
10	176.14	154.72	21.42	40.20	174.10
11	183.17	161.50	21.67	40.10	180.10
12	181.73	156.31	25.42	40.30	179.50

Water Levels




(msl) Water Levels North to South
Average Water Level
160
140
120
100
80
60
40
20
0
146
149
152
156
155
114
116
119
Well 8
Well 9
Well 6
Well 10
Well 11
Well 4
Well 3
Well 12
Well 2
Well 1

(msl) Water levels East to West



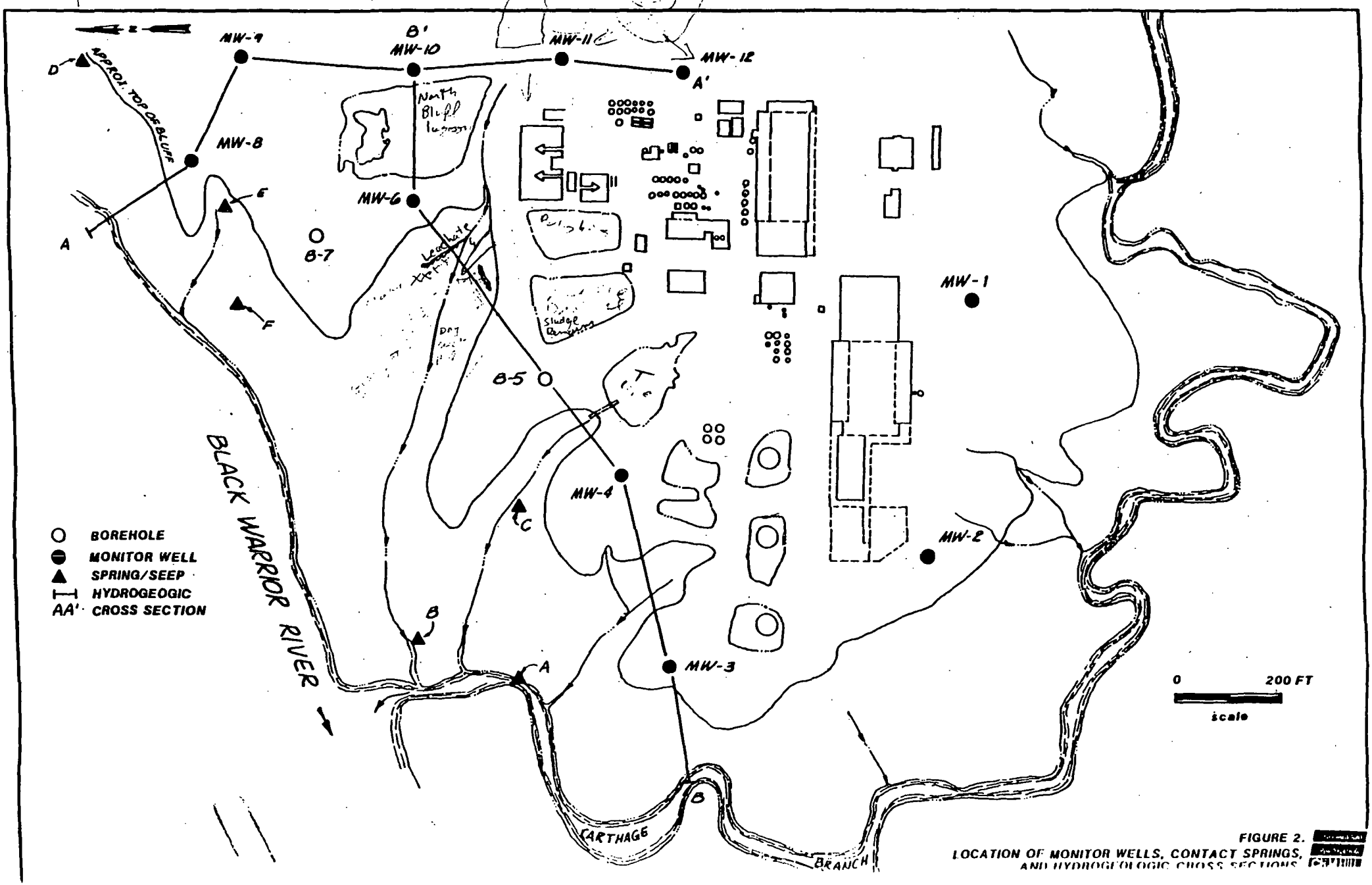


FIGURE 2.
LOCATION OF MONITOR WELLS, CONTACT SPRINGS, AND HYDROGEOLOGIC CROSS SECTIONS

APPENDIX B

THIS DATA IS CURRENTLY SCHEDULED FOR COLLECTION AND WILL BE ADDED TO THIS ASSESSMENT IN THE NEAR FUTURE

APPENDIX C

Contact Spring and Seep Sampling

Field reconnaissance prior to this program had identified groundwater discharging at the contact of the terrace deposits and the underlying Gordo Formation. These contact springs and seeps were observed along the erosional scarp adjacent to the Black Warrior River and in several locations in the banks of the tributary creeks. The spring and seep analyses were included in this program to evaluate the quality of groundwater discharge to surface water bodies and to determine if organic contaminants are reaching the receiving waters. The data also approximate groundwater quality in the vicinity of the point of discharge.

A total of six springs that exhibited sufficient flow for sample collection were mapped for sampling and analysis. Their locations are shown in Figure 2. Springs labelled D, E, and F on Figure 2 were sampled on October 29, 1985, prior to the initial round of groundwater samples and were analyzed

for the priority pollutant list of volatile organic compounds (VOC's) and the inorganic list of primary drinking water metals and fluoride. The decision was then made to expand the area of interest for this study. Therefore, springs labelled A, B, and C were sampled on November 6, 1985, prior to the second round of groundwater samples. Because of their lower flow, springs A, B, and C were only sampled and analyzed for VOC's only.

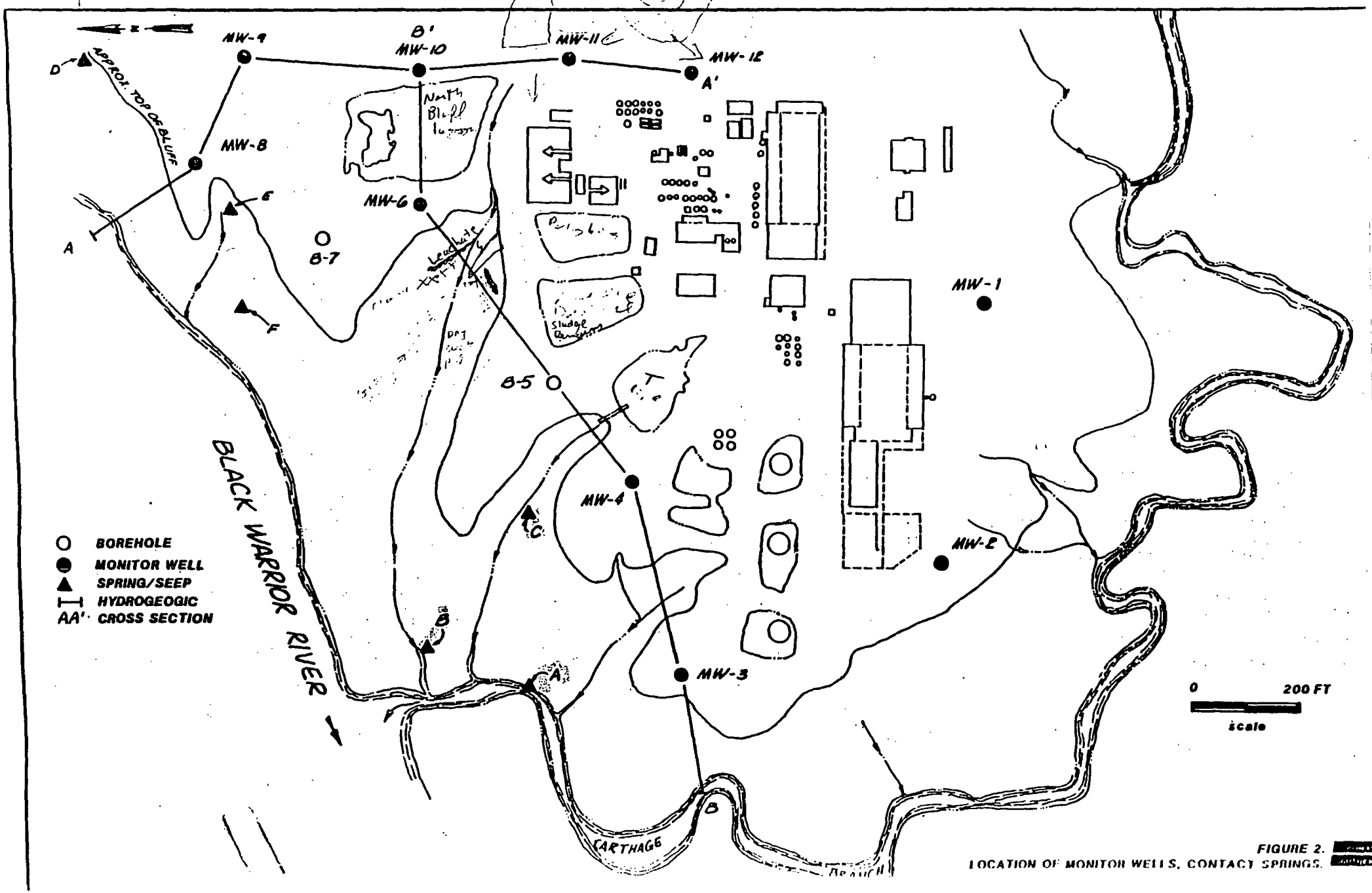


FIGURE 2.
LOCATION OF MONITOR WELLS, CONTACT SPRINGS.

CH2M HILL

VOLATILE COMPOUNDS
GC/MS REPORT

Laboratory No.: 6781-1
Date Received: 11/11/8
Date Analyzed: 11/21/8

Client: LAWTER INTERNATIONAL

Sample Description: WATER - GROUNDWATER SEEPS A

Compounds	MDL1 PPB	Conc.2 PPB	Compounds	MDL1 PPB	Conc. PPB
Chloromethane	5	BMDL	Acetone	10	BMDL
Bromomethane	5	BMDL	Carbon Disulfide	5	BMDL
Vinyl Chloride	5	BMDL	2-Butanone	10	BMDL
Chloroethane	5	BMDL	Vinyl Acetate	10	BMDL
Methylene Chloride	5	BMDL	4-Methyl-2-Pentanone	10	BMDL
Trichlorofluoromethane	5	BMDL	2-Hexanone	10	BMDL
1,1-Dichloroethene	5	BMDL	Styrene	5	BMDL
1,1-Dichloroethane	5	BMDL	Total Xylenes	5	1.1*
Trans-1,2-Dichloroethene	5	BMDL			
Chloroform	5	BMDL			
1,2-Dichloroethane	5	BMDL	OTHER COMPOUNDS:**		
1,1,1-Trichloroethane	5	BMDL			
Carbon Tetrachloride	5	BMDL			
Bromodichloromethane	5	BMDL			
1,2-Dichloropropane	5	BMDL			
Trans-1,3-Dichloropropene	5	BMDL			
Trichloroethylene	5	BMDL			
Benzene	5	BMDL			
Dibromochloromethane	5	BMDL			
1,1,2-Trichloroethane	5	BMDL			
Cis-1,3-Dichloropropene	5	BMDL			
2-Chloroethyl vinyl ether	10	BMDL			
Bromoform	5	BMDL			
1,1,2,2-Tetrachloroethane	5	BMDL			
Tetrachloroethene	5	BMDL			
Toluene	5	BMDL			
Chlorobenzene	5	BMDL			
Ethyl Benzene	5	BMDL			
Acrylonitrile	100	BMDL			
Acrolein	100	BMDL			
Dichlorodifluoromethane	ND 3				

SURROGATE RECOVERIES	% Rec.
D4-1,2-Dichloroethane	95
D8-Toluene	97
1,4-Bromofluorobenzene	101

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
3ND = Not Determined

REVIEW

Comments: * Presence indicated, but less than method detection limit.

** Tentatively identified and quantitatively estimated.

CH2M HILL

VOLATILE COMPOUNDS
GC/MS REPORT

Laboratory No.: 6781-1
Date Received: 11/11/9
Date Analyzed: 11/21/9

Client: LAWTER INTERNATIONAL

Sample Description: WATER - GROUNDWATER SEEPS B

Compounds	MDL1 PPB	Conc.2 PPB	Compounds	MDL1 PPB	Conc.2 PPB
Chloromethane	5	BMDL	Acetone	10	BMDL
Bromomethane	5	BMDL	Carbon Disulfide	5	BMDL
Vinyl Chloride	5	BMDL	2-Butanone	10	BMDL
Chloroethane	5	BMDL	Vinyl Acetate	10	BMDL
Methylene Chloride	5	7.5	4-Methyl-2-Pentanone	10	BMDL
Trichlorofluoromethane	5	BMDL	2-Hexanone	10	BMDL
1,1-Dichloroethene	5	BMDL	Styrene	5	BMDL
1,1-Dichloroethane	5	BMDL	Total Xylenes	5	BMDL
Trans-1,2-Dichloroethene	5	BMDL			
Chloroform	5	BMDL			
1,2-Dichloroethane	5	BMDL	OTHER COMPOUNDS:**		
1,1,1-Trichloroethane	5	BMDL			
Carbon Tetrachloride	5	BMDL			
Bromodichloromethane	5	BMDL			
1,2-Dichloropropane	5	BMDL			
Trans-1,3-Dichloropropene	5	BMDL			
Trichloroethylene	5	BMDL			
Benzene	5	BMDL			
Dibromochloromethane	5	BMDL			
1,1,2-Trichloroethane	5	BMDL			
Cis-1,3-Dichloropropene	5	BMDL			
2-Chloroethyl vinyl ether	10	BMDL			
Bromoform	5	BMDL			
1,1,2,2-Tetrachloroethane	5	BMDL			
Tetrachloroethene	5	BMDL			
Toluene	5	BMDL			
Chlorobenzene	5	BMDL			
Ethyl Benzene	5	BMDL			
Acrylonitrile	100	BMDL			
Acrolein	100	BMDL			
Dichlorodifluoromethane	ND 3				

SURROGATE RECOVERIES	% Rec.
D4-1,2-Dichloroethane	97
D8-Toluene	100
1,4-Bromofluorobenzene	97

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
3ND = Not Determined

H. Cole
REVIEW

Comments: * Presence indicated, but less than method detection limit.

** Tentatively identified and quantitatively estimated.

CH2M HILL

VOLATILE COMPOUNDS
GC/MS REPORT

Laboratory No.: 6781-1[illegible]
Date Received: 11/11/8[illegible]
Date Analyzed: 11/22/8[illegible]

Client: LAWTER INTERNATIONAL

Sample Description: WATER - GROUNDWATER SEEPS C

Compounds	MDL1 PPB	Conc.2 PPB	Compounds	MDL1 PPB	Conc.2 PPB
Chloromethane	5	BMDL	Acetone	10	BMDL
Bromomethane	5	BMDL	Carbon Disulfide	10	BMDL
Vinyl Chloride	5	BMDL	2-Butanone	10	BMDL
Chloroethane	5	BMDL	Vinyl Acetate	10	BMDL
Methylene Chloride	5	BMDL	4-Methyl-2-Pentanone	10	BMDL
Trichlorofluoromethane	5	BMDL	2-Hexanone	10	BMDL
1,1-Dichloroethene	5	BMDL	Styrene	5	BMDL
1,1-Dichloroethane	5	BMDL	Total Xylenes	5	BMDL
Trans-1,2-Dichloroethene	5	BMDL			
Chloroform	5	4.7*			
1,2-Dichloroethane	5	BMDL			
1,1,1-Trichloroethane	5	BMDL			
Carbon Tetrachloride	5	BMDL			
Bromodichloromethane	5	BMDL			
1,2-Dichloropropane	5	BMDL			
Trans-1,3-Dichloropropene	5	BMDL			
Trichloroethylene	5	BMDL			
Benzene	5	BMDL			
Dibromochloromethane	5	BMDL			
1,1,2-Trichloroethane	5	BMDL			
Cis-1,3-Dichloropropene	5	BMDL			
2-Chloroethyl vinyl ether	10	BMDL			
Bromoform	5	BMDL			
1,1,2,2-Tetrachloroethane	5	BMDL			
Tetrachloroethene	5	BMDL			
Toluene	5	BMDL			
Chlorobenzene	5	BMDL			
Ethyl Benzene	5	BMDL			
Acrylonitrile	100	BMDL			
Acrolein	100	BMDL			
Dichlorodifluoromethane	ND 3				

SURROGATE RECOVERIES	% Rec.
D4-1,2-Dichloroethane	93
D8-Toluene	99
1,4-Bromofluorobenzene	100

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
3ND = Not Determined

REVIEW

Comments: * Presence indicated, but less than method detection limit.

** Tentatively identified and quantitatively estimated.

CH2M HILL

VOLATILE COMPOUNDS
GC/MS REPORT

Laboratory No.: 6750-3
Date Received: 11/1/85
Date Analyzed: 11/4/85

Client: LAWTER INTERNATIONAL

Sample Description: WATER - NORTH BLUFF AREA GROUDWATER SEEPS - MIDDLE

Compounds	MDL1 PPB	Conc.2 PPB	Compounds	MDL1 PPB	Conc.2 PPB
Chloromethane	5	BMDL	Acetone	10	BMDL
Bromomethane	5	BMDL	Carbon Disulfide	10	BMDL
Vinyl Chloride	5	BMDL	2-Butanone	10	BMDL
Chloroethane	5	BMDL	Vinyl Acetate	10	BMDL
Methylene Chloride	5	BMDL	4-Methyl-2-Pentanone	10	BMDL
Trichlorofluoromethane	5	BMDL	2-Hexanone	10	BMDL
1,1-Dichloroethene	5	BMDL	Styrene	5	37
1,1-Dichloroethane	5	BMDL	Total Xylenes	5	320
Trans-1,2-Dichloroethene	5	BMDL			
Chloroform	5	BMDL			
1,2-Dichloroethane	5	BMDL	OTHER COMPOUNDS:**		
1,1,1-Trichloroethane	5	BMDL			
Carbon Tetrachloride	5	BMDL	1,3-Cyclopentadiene		3.5
Bromodichloromethane	5	BMDL	Propyl Benzene		19
1,2-Dichloropropane	5	BMDL			
Trans-1,3-Dichloropropene	5	BMDL			
Trichloroethylene	5	BMDL			
Benzene	5	150			
Dibromochloromethane	5	BMDL			
1,1,2-Trichloroethane	5	BMDL			
Cis-1,3-Dichloropropene	5	BMDL			
2-Chloroethyl vinyl ether	10	BMDL			
Bromoform	5	BMDL			
1,1,2,2-Tetrachloroethane	5	BMDL			
Tetrachloroethene	5	BMDL			
Toluene	5	28			
Chlorobenzene	5	BMDL			
Ethyl Benzene	5	54			
Acrylonitrile	100	BMDL			
Acrolein	100	BMDL			
Dichlorodifluoromethane	ND 3				

SURROGATE RECOVERIES	% Rec.
D4-1,2-Dichloroethane	100
D8-Toluene	112
1,4-Bromofluorobenzene	99

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
3ND = Not Determined

REVIEW

Comments: * Presence indicated, but less than method detection limit.

** Tentatively identified and quantitatively estimated.

CH2M HILL

VOLATILE COMPOUNDS
GC/MS REPORT

Laboratory No.: 6750-7
Date Received: 11/1/88
Date Analyzed: 11/4/88

Client: LAWTER INTERNATIONAL

Sample Description: WATER - NORTH BLUFF AREA GROUNDWATER SEEPS - WEST

Compounds	MDL1 PPB	Conc.2 PPB	Compounds	MDL1 PPB	Conc. PPB
Chloromethane	5	BMDL	Acetone	10	BMDL
Bromomethane	5	BMDL	Carbon Disulfide	10	BMDL
Vinyl Chloride	5	BMDL	2-Butanone	10	BMDL
Chloroethane	5	BMDL	Vinyl Acetate	10	BMDL
Methylene Chloride	5	BMDL	4-Methyl-2-Pentanone	10	BMDL
Trichlorofluoromethane	5	BMDL	2-Hexanone	10	BMDL
1,1-Dichloroethene	5	BMDL	Styrene	5	BMDL
1,1-Dichloroethane	5	BMDL	Total Xylenes	5	BMDL
Trans-1,2-Dichloroethene	5	BMDL			
Chloroform	5	BMDL			
1,2-Dichloroethane	5	BMDL	OTHER COMPOUNDS:**		
1,1,1-Trichloroethane	5	BMDL			
Carbon Tetrachloride	5	BMDL			
Bromodichloromethane	5	BMDL			
1,2-Dichloropropane	5	BMDL			
Trans-1,3-Dichloropropene	5	BMDL			
Trichloroethylene	5	BMDL			
Benzene	5	BMDL			
Dibromochloromethane	5	BMDL			
1,1,2-Trichloroethane	5	BMDL			
Cis-1,3-Dichloropropene	5	BMDL			
2-Chloroethyl vinyl ether	10	BMDL			
Bromoform	5	BMDL			
1,1,2,2-Tetrachloroethane	5	BMDL			
Tetrachloroethene	5	BMDL			
Toluene	5	BMDL			
Chlorobenzene	5	BMDL			
Ethyl Benzene	5	BMDL			
Acrylonitrile	100	BMDL			
Acrolein	100	BMDL			
Dichlorodifluoromethane	ND 3				

SURROGATE RECOVERIES	% Rec.
D4-1,2-Dichloroethane	102
D8-Toluene	109
1,4-Bromofluorobenzene	97

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
3ND = Not Determined

REVIEW

Comments: * Presence indicated, but less than method detection limit.

** Tentatively identified and quantitatively estimated.

CH2M HILL

VOLATILE COMPOUNDS
GC/MS REPORT

Laboratory No.: 6750BLK
Date Received: NA
Date Analyzed: 11/4/85

Client: LAWTER INTERNATIONAL

Sample Description: LABORATORY BLANK

Compounds	MDL1 PPB	Conc.2 PPB	Compounds	MDL1 PPB	Conc.2 PPB
Chloromethane	5	BMDL	Acetone	10	BMDL
Bromomethane	5	BMDL	Carbon Disulfide	10	BMDL
Vinyl Chloride	5	BMDL	2-Butanone	10	BMDL
Chloroethane	5	BMDL	Vinyl Acetate	10	BMDL
Methylene Chloride	5	BMDL	4-Methyl-2-Pentanone	10	BMDL
Trichlorofluoromethane	5	BMDL	2-Hexanone	10	BMDL
1,1-Dichloroethene	5	BMDL	Styrene	5	BMDL
1,1-Dichloroethane	5	BMDL	Total Xylenes	5	BMDL
Trans-1,2-Dichloroethene	5	BMDL			
Chloroform	5	BMDL			
1,2-Dichloroethane	5	BMDL	OTHER COMPOUNDS:**		
1,1,1-Trichloroethane	5	BMDL			
Carbon Tetrachloride	5	BMDL			
Bromodichloromethane	5	BMDL			
1,2-Dichloropropane	5	BMDL			
Trans-1,3-Dichloropropene	5	BMDL			
Trichloroethylene	5	BMDL			
Benzene	5	BMDL			
Dibromochloromethane	5	BMDL			
1,1,2-Trichloroethane	5	BMDL			
Cis-1,3-Dichloropropene	5	BMDL			
2-Chloroethyl vinyl ether	10	BMDL			
Bromoform	5	BMDL			
1,1,2,2-Tetrachloroethane	5	BMDL			
Tetrachloroethene	5	BMDL			
Toluene	5	BMDL			
Chlorobenzene	5	BMDL			
Ethyl Benzene	5	BMDL			
Acrylonitrile	100	BMDL			
Acrolein	100	BMDL			
Dichlorodifluoromethane	ND 3				

SURROGATE RECOVERIES	% Rec.
D4-1,2-Dichloroethane	94
D8-Toluene	108
1,4-Bromofluorobenzene	105

1MDL = Method Detection Limit
2BMDL = Below Method Detection Limit
3ND = Not Determined

W. Dickens
REVIEW

Comments: * Presence indicated, but less than method detection limit.

** Tentatively identified and quantitatively estimated.

Table 3(continued).- Summary of Water Quality Data — Volatile Organic Compounds, concentrations in ppm.

Compound	Well No.: 1	2	3	4	6 [1]	8 [1]	9	10 [2]	11 [1]	12 [1]	Contact Springs/Seep: A	B	C	D	E	F	Detection Limits
1,1,1-Trichloroethane				*													0.005
	*	*		*				*									
Methylethylketone (2-butanone)				*													0.010
Methylisobutylketone (4-methyl-2-pentanone)				*													0.010
1,3-Cyclopentadiene [8]															0.004		
					0.018	0.021		0.009									
Cyclohexane [8]							0.003										
Unidentified Compound [8]					1.300			0.380	0.290								
								0.260									
Totals [5]	0.000	0.013	0.000	0.023	2.710	1.469	0.061	1.953	3.809	0.859				0.000	0.612	0.000	
	0.000	0.000	0.000	0.140	1.106	2.067	0.073	1.170	2.914	0.716	0.000	0.000	0.000				

NOTES:

[1] Detection limits 5x indicated value
[2] First sample detection limit 5x indicated value
[3] blank represents compound not detected
[4] "ns" represents no sample collected
[5] "Totals" equals sum of concentrations of all VOC's
[6] Two values or symbols for each sample represent sample dates of 10-29-85 and 11-06-85
[7] Analytical accuracy is two significant figures for most samples and compounds
[8] Tentatively identified and quantitatively estimated
[9] "*" represents compounds detected at trace levels below method detection limit

Table 3.- Summary of Water Quality Data -- Volatile Organic Compounds, concentrations in ppm.

Compound	Well No.: 1	2	3	4	6 [1]	8 [1]	9	10 [2]	11 [1]	12 [1]	Contact Springs/Seep: A	B	C	D	E	F	Detection Limits
Chloroform				0.012							ns	ns	ns				0.005
				0.012					*				*	ns	ns	ns	
Benzene						0.430	0.016	0.049	0.200	*	ns	ns	ns		0.150		0.005
						0.600	0.018	0.037	0.160	*				ns	ns	ns	
1,1,2-Trichloroethane				0.011							ns	ns	ns				0.005
				0.066										ns	ns	ns	
Toluene						0.065		0.054	0.099	0.033	ns	ns	ns		0.028		0.005
						0.110	*	0.034	0.074	0.029				ns	ns	ns	
Ethyl Benzene					0.086	*	*	0.190	0.390	0.076	ns	ns	ns		0.054		0.005
					0.063	0.120	*	0.120	0.310	0.072			*	ns	ns	ns	
Acetone		0.013			0.130						ns	ns	ns				0.010
				0.047	0.160					0.074				ns	ns	ns	
Butylmethylketone (2-hexanone)											ns	ns	ns				0.010
				0.015										ns	ns	ns	
Styrene					0.150	0.064		0.160	0.250	0.100	ns	ns	ns		0.037		0.005
					0.110	0.170		0.080	0.210	0.082				ns	ns	ns	
Total Xylenes					0.950	0.910	0.045	1.000	2.400	0.650	ns	ns	ns		0.320		0.005
					0.660	1.000	0.048	0.520	1.900	0.410	*			ns	ns	ns	
Propyl Benzene [7]					0.094			0.120	0.180						0.019		
					0.095	0.046	0.005	0.110	0.260	0.049							

NOTES:

[1] Detection limits 5x indicated value

[2] First sample detection limit 5x indicated value

[3] blank represents compound not detected

[4] "ns" represents no sample collected

[5] Two values or symbols for each sample represent sample dates of 10-29-85 and 11-06-85

[6] Analytical accuracy is two significant figures for most samples and compounds

[7] Tentatively identified and quantitatively estimated

[8] "*" represents compounds detected at trace levels below method detection limit

APPENDIX D

THIS DATA IS CURRENTLY SCHEDULED FOR COLLECTION AND WILL BE ADDED TO THIS ASSESSMENT IN THE NEAR FUTURE

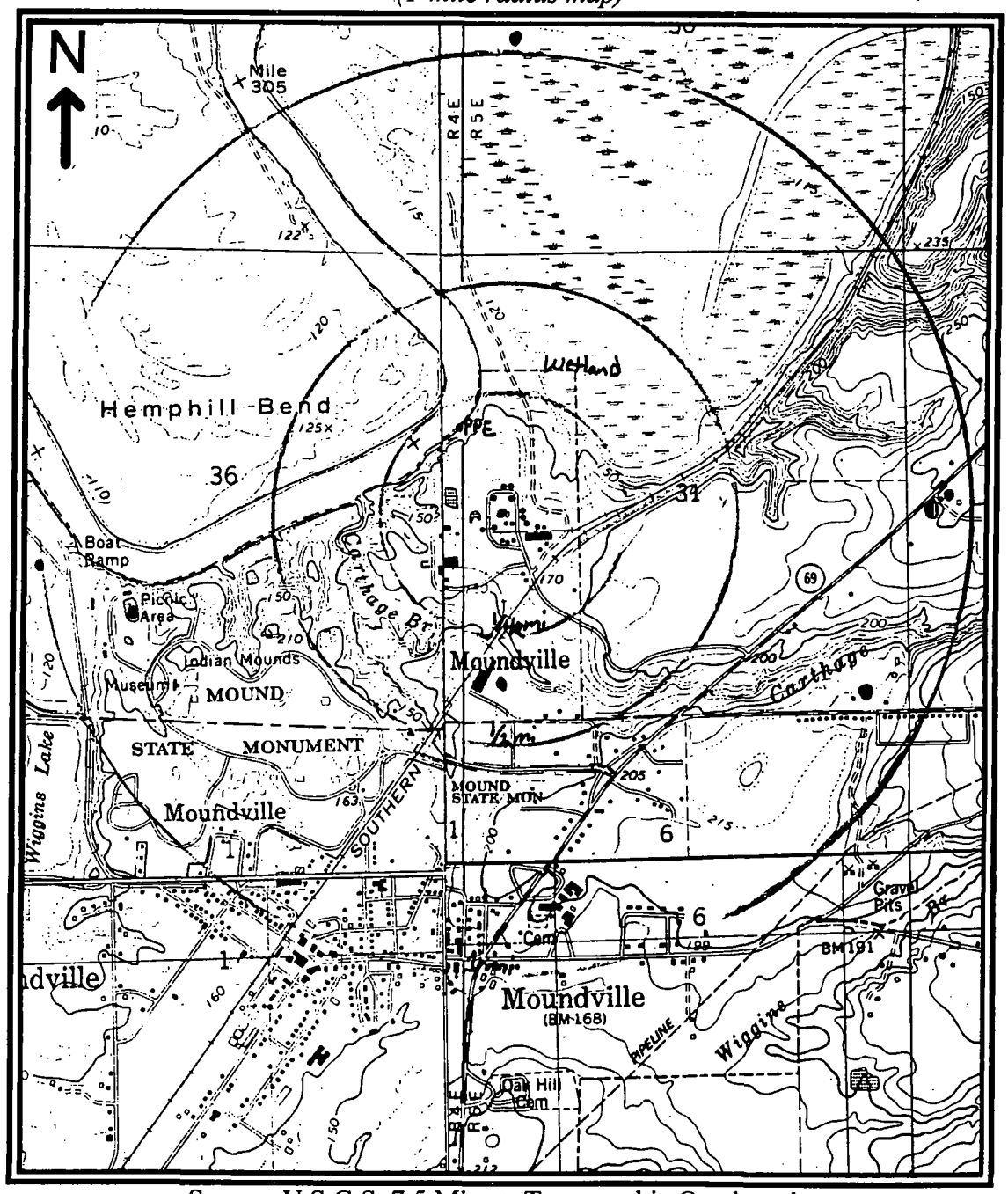
APPENDIX E

THIS DATA IS CURRENTLY SCHEDULED FOR COLLECTION AND WILL BE ADDED TO THIS ASSESSMENT IN THE NEAR FUTURE

FIGURES

FIGURE 1

FIGURE 1
Cracker Asphalt Facility Site
(1-mile radius map)



Source: U.S.G.S. 7.5 Minute Topographic Quadrangle

FIGURE 2

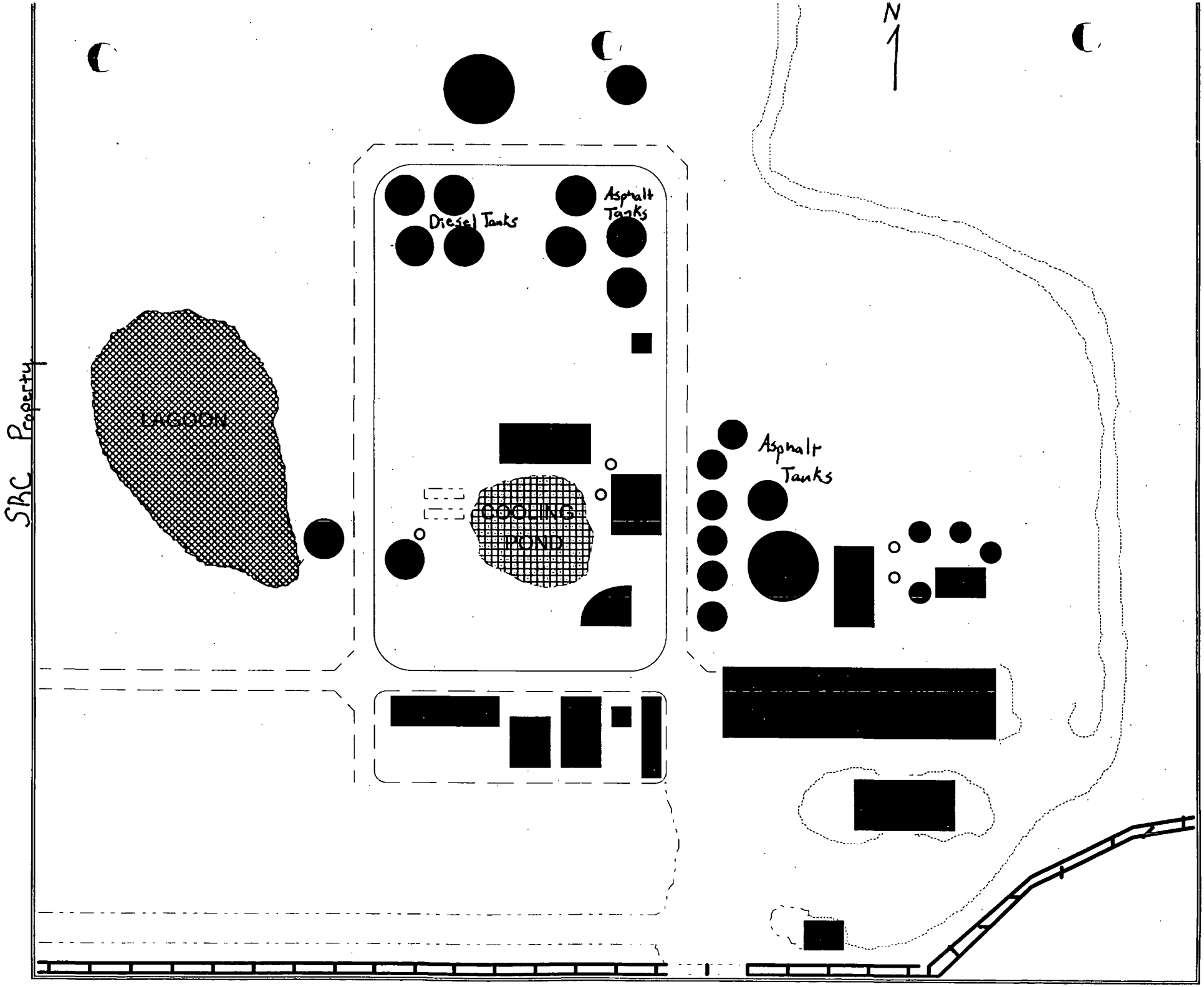
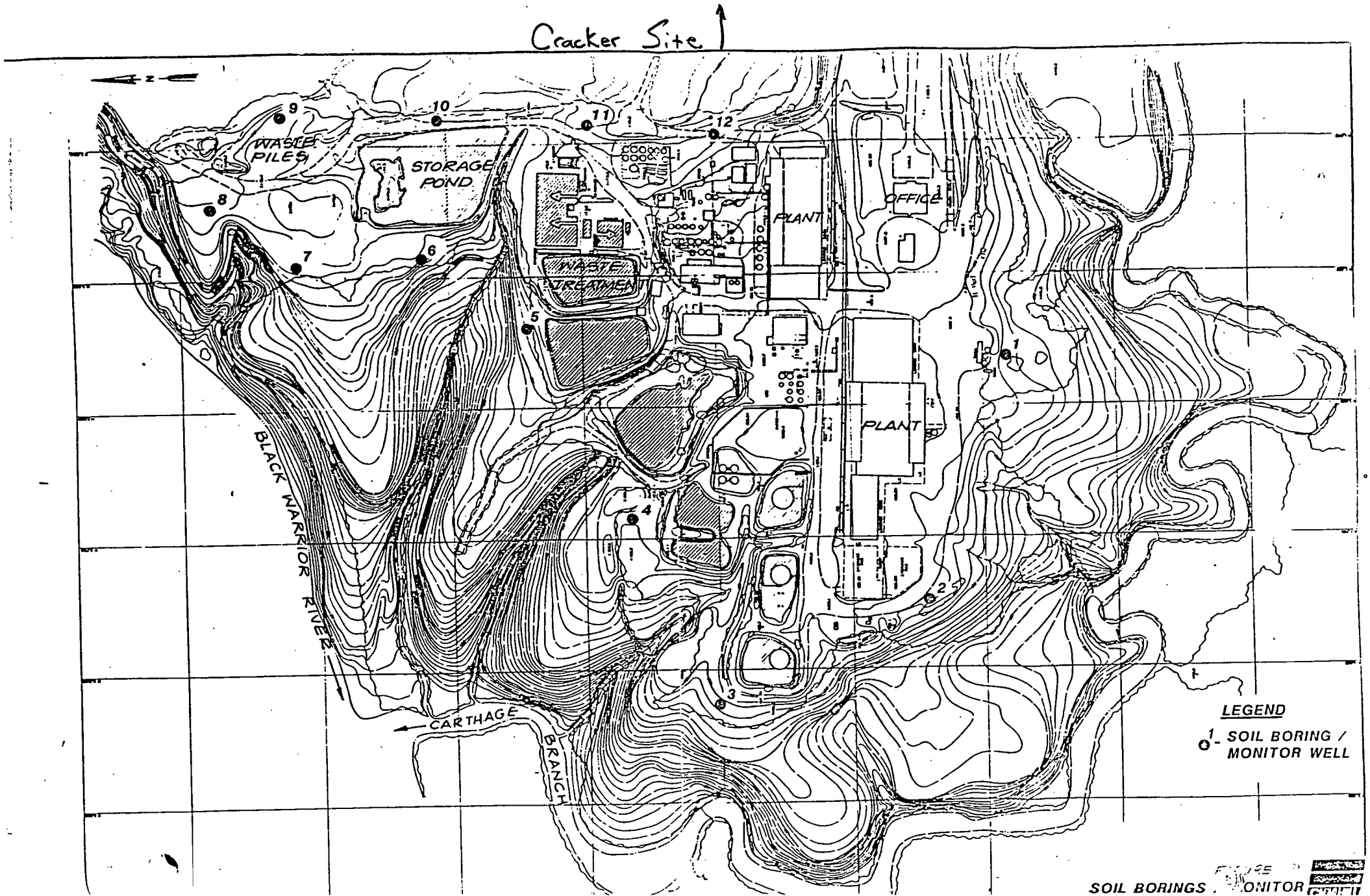

N
SBC Property
LAGOON
Diesel Tanks
Asphalt Tanks
COOLING POND
Asphalt Tanks

FIGURE 3



SOIL BORINGS / MONITOR

FIGURE 4

SUBJECT River Terrace North of Site

BY _____ DATE _____

SHEET NO. _____ OF _____

PROJECT NO. _____

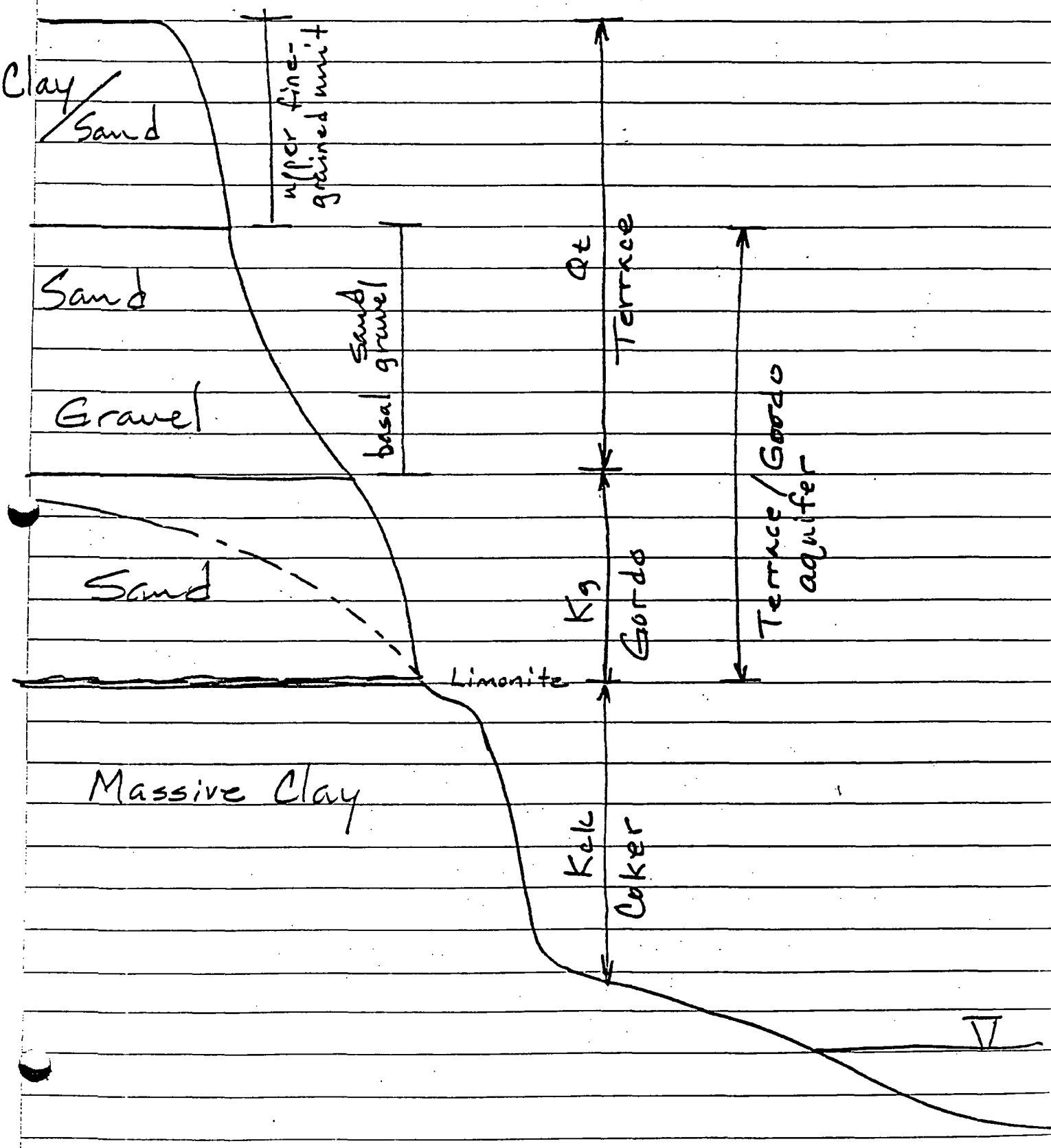
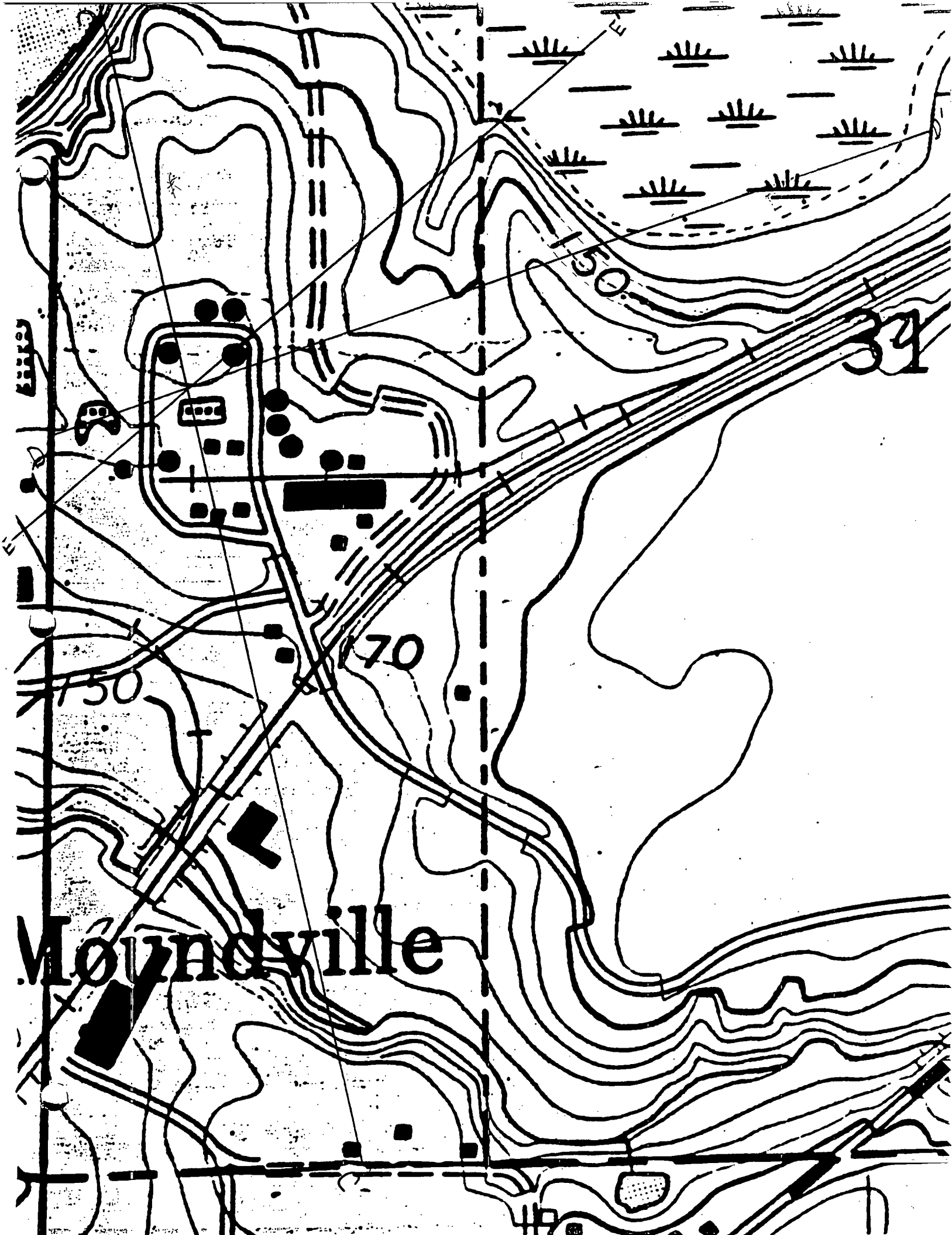
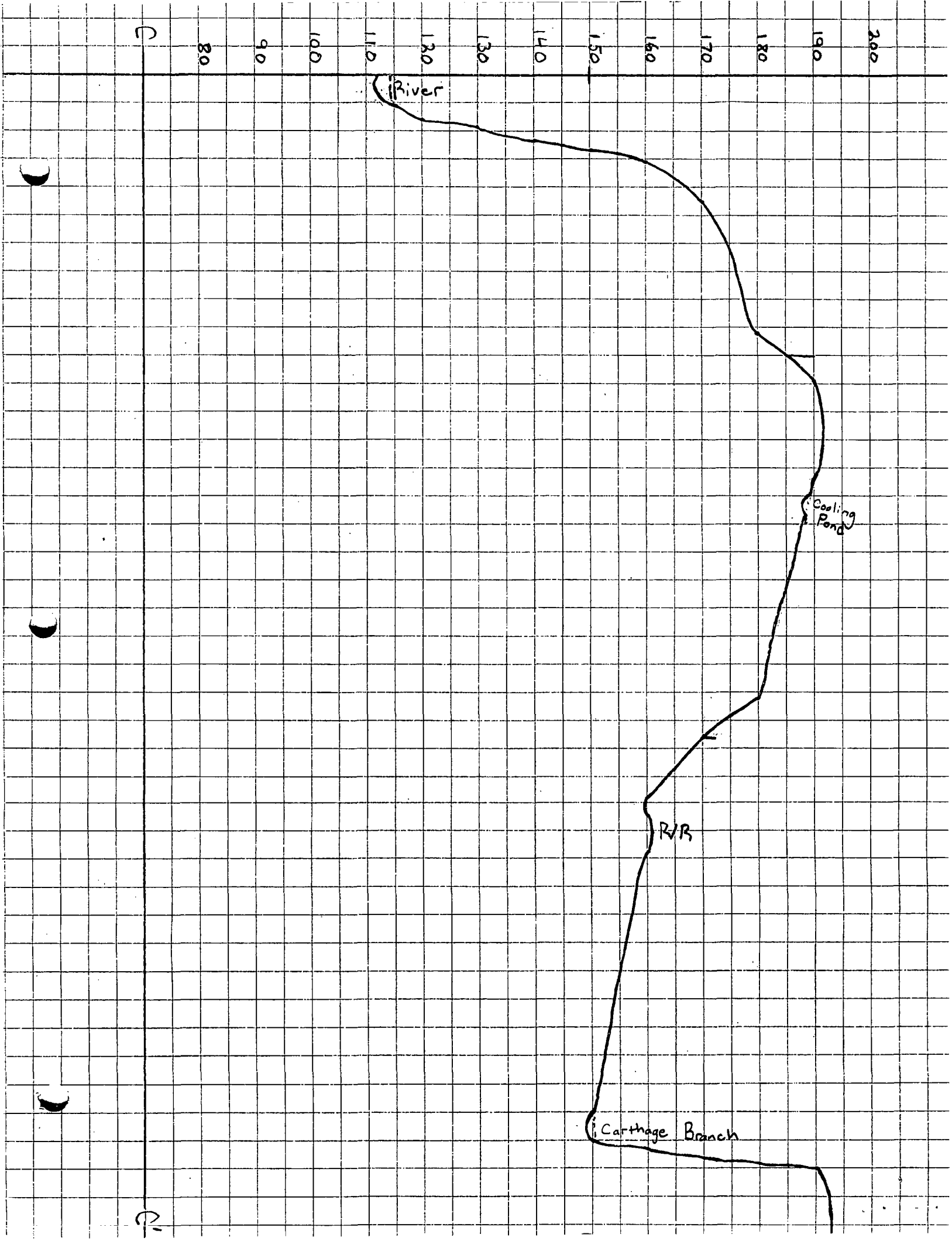
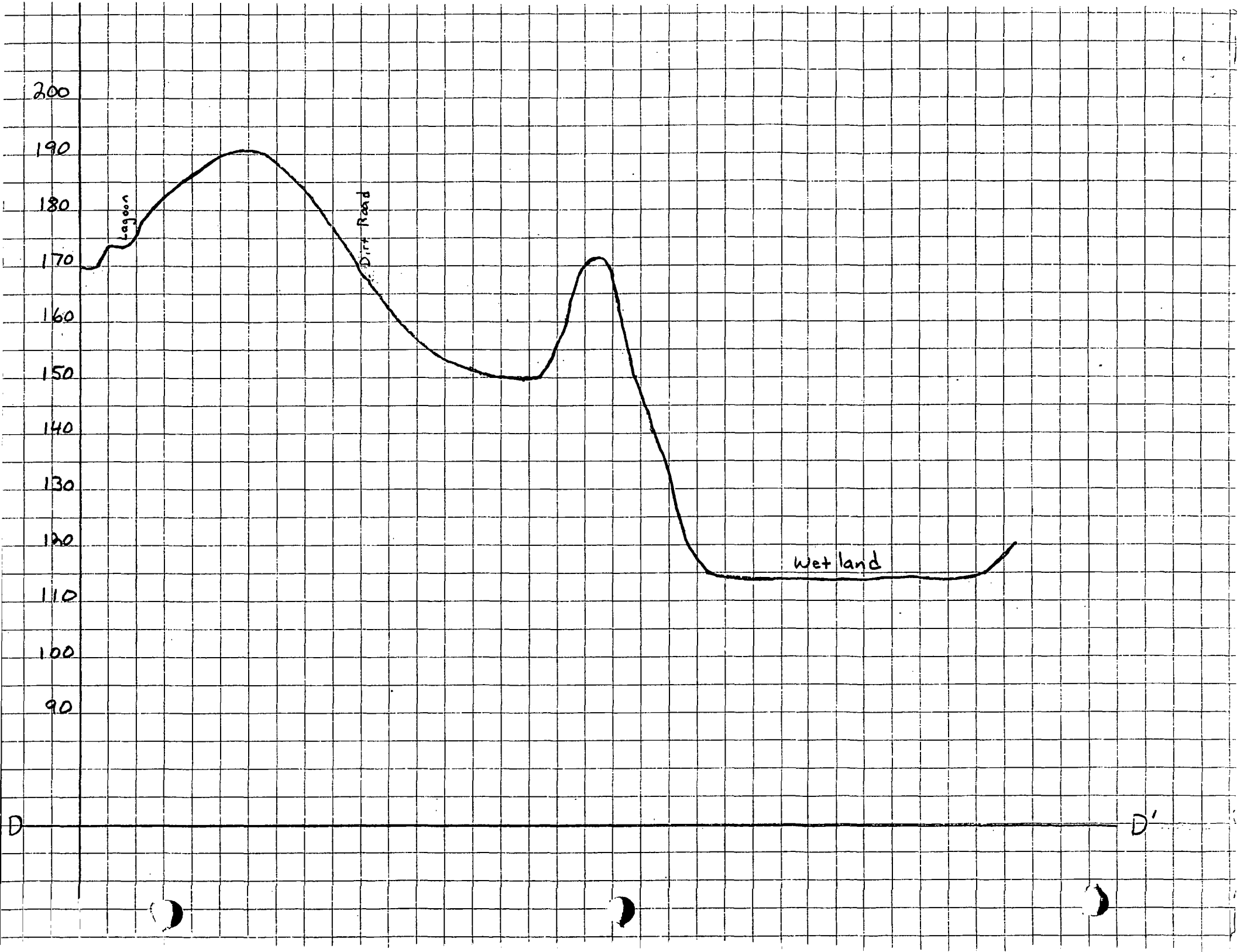
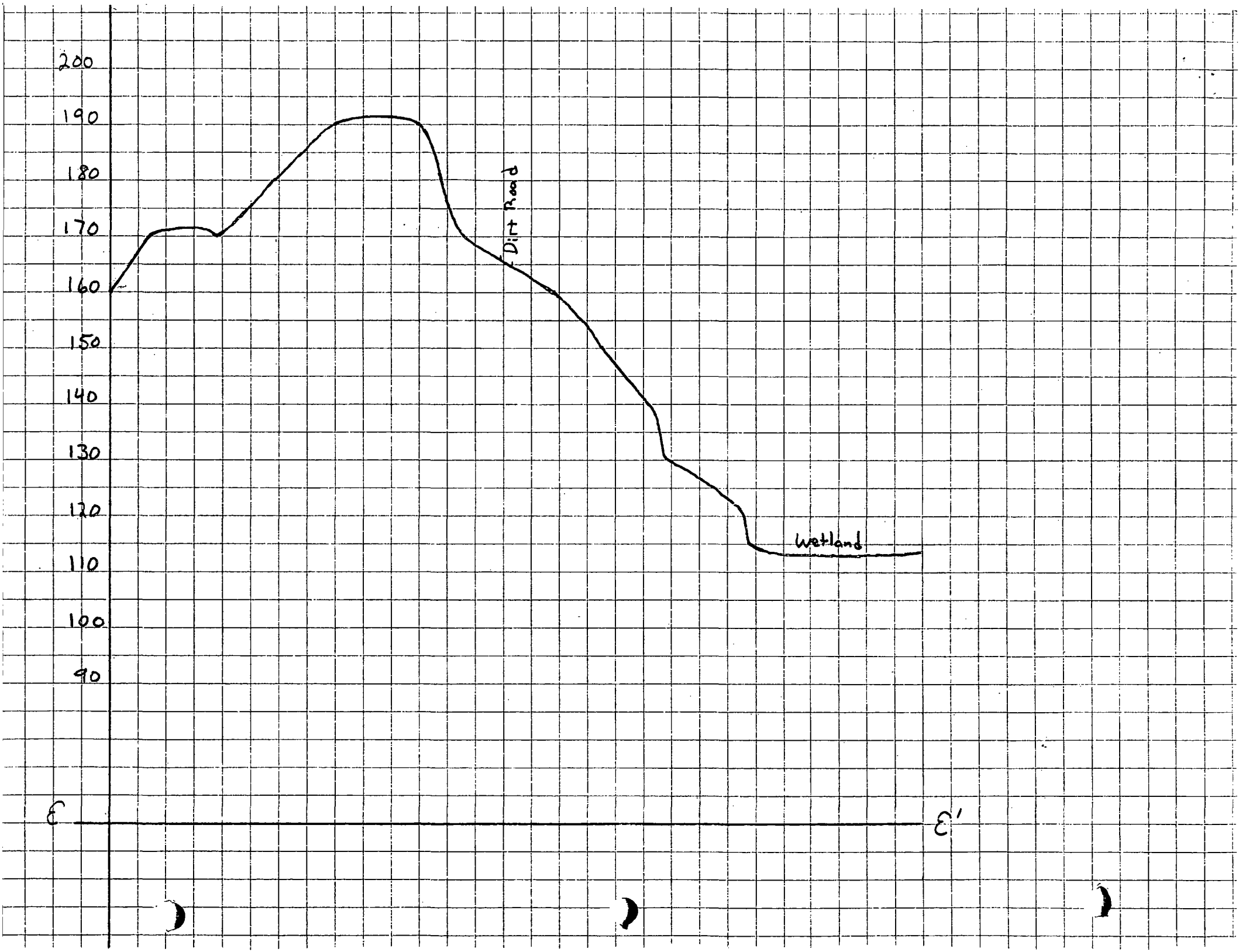


FIGURE 5


150
34
170
150
Moundville


80
90
100
110
120
130
140
150
160
170
180
190
200
River
Cooling Pond
R/R
Carthage Branch


200
190
180
170
160
150
140
130
120
110
100
90
Lagoon
Dirt Road
Wetland
D
D'


200
190
180
170
160
150
140
130
120
110
100
90
Dirt Road
Wetland
E
E'

PLATES

U.S. EPA REGION IV

SDMS

Unscannable Material Target Sheet

DocID: 10449698 Site ID: ALD000472712

Site Name: Cracker Asphalt

Nature of Material:

Map:	✓	Computer Disks:	
Photos:		CD-ROM:	
Blueprints:		Oversized Report:	
Slides:		Log Book:	

Other (describe): Plate 1-4

Amount of material:

* Please contact the appropriate Records Center to view the material *

PLATE 1

PLATE 2

PLATE 3

PLATE 4