SITE ACCEPTABILITY REPORT

HUFFAKER ROAD LANDFILL

PLANT HAMMOND
FLOYD COUNTY, GEORGIA

FOR

Georgia Power

NOVEMBER 2018

Stantec

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PLANT HAMMOND
PROPOSED HUFFAKER ROAD
COAL COMBUSTION BY-PRODUCTS

STORAGE FACILITY
SITE ACCEPTABILITY REPORT

DECEMBER 2002

GEORGIA POWER

A SOUTHERN COMPANY

GEORGIA POWER COMPANY
PLANT HAMMOND
PROPOSED HUFFAKER ROAD COAL COMBUSTION BY-PRODUCTS STORAGE FACILITY
SITE ACCEPTABILITY REPORT

Prepared For

Georgia Power Company

By

Southern Company Services, Inc.
Earth Science and Environmental Engineering

December 2002

GEORGIA POWER

A SOUTHERN COMPANY

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PROPOSED HUFFAKER ROAD COAL COMBUSTION BY-PRODUCTS
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EXECUTIVE SUMMARY

Plant Hammond is located in central Floyd County approximately 10 miles west of Rome, Georgia. Georgia Power Company proposes to use a 200 acre previously mined site located on Huffaker Road, approximately one mile west of the Rome city limits to store coal combustion by-products produced at Plant Hammond.

Per Circular 14, site investigations have been performed to determine if the site is acceptable for ash and gypsum storage. This Site Acceptability Report presents the results of the site investigations. The following key points are discussed in the report:

- The site is zoned H-I, Heavy Industrial, and a special use permit has been obtained from the Floyd County Board of Commissioners for the site.
- The site is not located within
  - 0.5 mile of a county boundary,
  - 5,708 yards of a National Historic Site,
  - 100-year or 500-year floodplain.
- The site contains several man-made detention ponds associated with previous mining of the site. Several small wetland areas were delineated that are associated with these man-made structures. Inspection by the U. S. Army Corps of Engineers determined that these small areas were not jurisdictional wetlands. Larger wetlands associated with the old course of Smith Creek north of the railroad track were the only jurisdictional wetlands delineated by the Corps of Engineers.
- At least a 200-foot buffer will be maintained between the limits of the facility and property boundaries except for the right of way with Norfolk Southern Railroad. A 50-foot buffer will be maintained with the railroad that passes through the facility.
- No threatened or endangered animal or plant species were observed at the site.
- No portion of the site is located within a significant groundwater recharge area.
- No public water supply wells were identified within 2 miles of the site. The site is not within the water management area of a public water supply well. Six domestic wells are located within ½ mile of the site. Five of these wells are unused and one is an irrigation well. All six of the wells are located up-gradient of the site.
- Based on laboratory testing, permeability of the compacted material proposed for use as a soil liner averages 3.12×10^{-6} cm/sec.
- Fate and transport modeling indicated that arsenic would travel only 1.9 feet into a compacted clay liner after 1000 years under a realistic scenario without a synthetic liner.
- Based on the fate and transport modeling, the facility will not contaminate groundwater since the leachate will not travel through a compacted clay liner and 5-foot soil barrier between the ash and groundwater.

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- Groundwater pollution potential was also determined using the LeGrand Method as described in Circular 14, using measured site input parameters. The LeGrand analysis produced a score of 12.4, which means groundwater pollution potential is possible, but not likely.
- A groundwater monitoring network will be designed to provide early detection in the unlikely event that regulated metals might reach groundwater and surface water.
- Based on site characteristics identified during this investigation, a compacted clayey soil liner will function as well as a composite liner at this site, but other controls can be added if necessary.
- A minimum 2-foot compacted clayey soil liner will satisfy design requirements at this site.

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1.0 GENERAL SITE AREA

1.1 Background

Georgia Power Company's Plant Hammond is located in central Floyd County approximately 10 miles west of downtown Rome, Georgia. Plant Hammond consists of three, 100-megawatt coal-fired units (Units 1 through 3) and one, 500-megawatt coal fired unit (Unit 4). The plant currently produces approximately 200,000 tons of coal combustion by-products per year in the form of top and bottom ash. Based upon present annual projections of future ash production, an alternative means of ash storage will be required by approximately 2006.

Additionally, proposed air quality regulations could trigger the installation of flue gas desulfurization (FGD) equipment (scrubbers) at one or more units at Plant Hammond. FGD technologies use limestone slurry to absorb SO_2 in the flue gas, producing calcium-sulfur compounds. The slurry is dewatered, resulting in gypsum as a by-product of the process. This technology is currently used at Georgia Power Company's Plant Yates where gypsum is produced and stored on-site. For Plant Hammond, approximately 127,000 tons per year of gypsum storage will be required under present projections. Useable areas are not available on current plant property for ash and gypsum storage. An off-site ash storage area is, therefore, necessary for future storage of coal combustion by-products.

Georgia Power Company recently purchased approximately 419 acres of property along both the north and south sides of Smith Creek, on the south side of Huffaker Road, a county maintained road (Drawing No. H-628-10). The Huffaker Road property was previously owned by Boral Bricks, Inc. The approximately 205 acre site north of Smith Creek was formerly operated as a surface clay mine. Mining of this portion of the site has been completed and is currently in the reclamation phase by Georgia Power Company under Surface Mining Permit #192-02. The purchased property south of Smith Creek is comprised of approximately 214 acres of woodland.

It is proposed to develop the approximately 205 acres of the previously mined property located on the north side of the creek as a private industry coal combustion by-products storage area. The storage area will receive by-products (coal ash and gypsum) from both the coal burning process and the flue gas desulfurization. These wastes are classified in Circular 14, Appendix A, as industrial wastes with a moderate potential for groundwater pollution. These by-products will be managed separately, that is, not co-mingled. It is proposed to use the 214 acres located south of the creek as a potential borrow area for the storage area and site development needs.

This report presents the results of a site acceptability study performed for the purpose of obtaining the necessary EPD approval to develop the approximate 205 acre mined portion of the property as a private industry coal combustion by-product storage area for co-

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storage of ash and gypsum. The subsurface investigation covered the 205 acres north of Smith Creek and south of Huffaker Road that was previously mined. A borrow investigation will be performed in the near future to determine the engineering characteristics of the materials in the proposed borrow area.

1.2 Site Description

1.2.1 Location

The 205 acre Huffaker Road site is located approximately five miles northeast of Plant Hammond and one mile west of the Rome, Georgia city limits in rural Floyd County (Figure 1-1). It is approximately five miles north of the intersection of Huffaker Road and Georgia Highway 20. The center of the site is at approximately N 34° 17' 45" latitude and W 85° 18' 00" longitude. Two residences are located on the northern side of Huffaker Road approximately 400 feet from the eastern boundary. A church is located on the southern side of Huffaker Road approximately 0.5 miles east of the site. Two other residences are located approximately 0.75 miles from the eastern boundary of the site. The area to the north of the site is owned by Boral Bricks, Inc. and is currently being mined. To the west, residences are located 0.4 mile and 1.1 mile from the site. Traffic conditions are currently light, local traffic.

1.2.2 General Site Topography

The 205 acres north of Smith Creek at the Huffaker Road site were excavated and disturbed by the mining operation and the construction of several sedimentation/detention ponds. Due to these activities, areas of exposed weathered shale are also present. In general, the site varies from an elevation of 695 in the northwestern corner of the property and an elevation of 655 in the northeastern corner to an elevation ranging from 630 to 620 going southwesterly along Smith Creek. The southern 214 acres is wooded with an established stand of pines and hardwoods. This area is on the northern slope of Judy Mountain with characteristic dendritic drainage to Smith Creek. The site topography is shown on Drawing No. H-628-11.

1.2.3 General Site Geology

Geographically, the proposed storage facility is located in the Great Valley District of the Southern Valley and Ridge Physiographic Province of Georgia. The District is typically broad and open with scattered ridges. The floor of the valley is underlain by shales, dolomites, and limestones of Cambrian and Ordovician age (Clark and Zisa, 1976). The geologic structure of the formations in Floyd County is typical of the Valley and Ridge Province of northwest Georgia. The rocks are folded in a series of sub-parallel anticlines

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and synclines of interbedded shale, limestone, sandstone, and chert. These folds are locally cut by faults. Most of the major topographic features in Floyd County, notably Lavender (immediately north of the site), Simms, Turkey, and Horseleg Mountains, are anticlinal. On the other hand, Rocky Mountain and Judy Mountain (immediately south of the site) are synclinal (Cressler, 1970). The site is located in the Floyd Shale member of the Judy Mountain syncline.

1.3 Population Trends

The population of Floyd County, Georgia for the year 2001 was estimated to be 90,565. From 1980 to 1996, the 15 counties comprising northwest Georgia grew in population an estimated 16.5%. Floyd County currently has a population growth rate of 11.5% annually. Eighty-nine percent of the population increase that has occurred since 1970 is from people moving into the area. Employment in the region is projected to increase by 52% over the next 20 years (Georgia Department of Community Affairs, 2002).

1.4 Other Permitted State/Federal Facilities

The Rome-Walker Mountain Road Site 2 Municipal Solid Waste Landfill is located approximately 1.25 miles northeast of the site. No other State or Federal permitted facility is present near the site.

1.5 Threatened and Endangered Species/Wildlife Habitat Survey

The proposed storage area site (northern 205 acres of property) was surveyed by representatives of Georgia Power Company's Environmental Affairs for threatened and endangered species. No threatened and endangered species or their habitats were identified during these surveys. Some hydrophytic vegetation is present around the constructed detention ponds present at the site. The remaining vegetation was planted for erosion control and consists of planted pines, lespedeza, and broomsedge. Species of animals common to the area include white-tailed deer, wild turkey, gray squirrels, beavers, raccoons, bob-white quail, blue jays, crows, and other common species of birds (Georgia Natural Heritage Program and Marion Dobbs). A copy of the letter addressing endangered species, a list from the Georgia Natural Heritage Program regarding amphibians, mammals, and reptiles common to Floyd County, and a list of birds common to Floyd County are located in Appendix A.

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1.6 Proximity to Roads, Airports, and Railroads

The site is adjacent to Huffaker Road, with road frontage of approximately 3600 feet. The Norfolk Southern Railroad crosses the site in a general east-west direction. This railroad divides the proposed storage area site into two parcels; a northern parcel and a southern parcel (Drawing No. H-628-10).

The nearest airport is Russell Airport, located approximately 8 miles from the site, north of Rome, Georgia on U.S. Hwy. 27. This is greater than the most stringent requirements specified by Circular 14, requiring a minimum separation distance of 10,000 feet from the end of runways servicing turbojet aircraft. Additionally, the proposed facility will not receive wastes that will attract birds. The facility will consist of coal combustion by-product, i.e., ash and gypsum.

1.7 Proximity to County Boundaries and Historical Sites

The nearest county boundary is the boundary between Floyd and Chatooga County, approximately 4 miles northwest of the site. Circular 14 states that no permit shall be issued to an applicant if any part of the site is within ½ mile of an adjoining county without the approval of the government of the adjoining county. No portion of the proposed facility is within ½ mile of an adjoining county.

The National Parks Service's National Register of Historic Places was searched for a listing of historical places in Floyd County. The search indicated several historical places located in Rome and Cave Springs, Georgia, but none within 3¼ miles (5,708 yards) of the site. According to Circular 14, no industrial landfill shall be located within 5,708 yards of a National Historic Site.

1.8 Proximity to Floodplains

Based on the Flood Insurance Rate Maps, Floyd County, Georgia, Panel 175 of 410, Map Number 12115C0175 D, dated August 9, 2000 and Panel 140 of 385, Community-Panel Number 130079 0140 A, dated May 19, 1987, the site is not located in the 100-year or 500-year flood plain. The nearest base elevation line is elevation 586 located about 2.5 miles south of the site on Cabin Smith Creek (Figure 1-2).

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1.9 Proximity to Streams and Wetlands

A wetland delineation survey was performed by Georgia Power Environmental Affairs personnel in conjunction with personnel from the North Area Section, Savannah District, Corps of Engineers. Several small detention ponds were constructed by Boral Bricks, Inc. during the mining operations and were part of their site reclamation. These detention ponds control surface runoff from the site. Several small wetland areas were delineated that are associated with these man-made structures (Figure 1-3). Inspection by the Corps of Engineers determined that these small areas were not jurisdictional wetlands. Three of the ponds are associated with the original course of Smith Creek which extended northward across the site from its intersection with the railroad to Huffaker Road. This course of Smith Creek was impacted by the previous mining operations and two jurisdictional wetlands have been delineated along its course. These larger wetlands associated with the old course of Smith Creek were the only jurisdictional wetlands delineated by the Corps of Engineers. A total of 12.97 acres of wetlands are present at the site, of which 5.59 acres are delineated as jurisdictional. These are also shown on Figure 1- 3. Correspondence from the Corps of Engineers is included in Appendix B.

Smith Creek forms the southern boundary of the proposed by-products storage site. This creek is a tributary of the Coosa River, which is located approximately 3 miles downstream of the site. Circular 14 specifies a minimum protection for water supply watersheds. In particular, if a disposal area is to be located within 7 miles upstream of a public or government drinking water supply intake, there shall be a minimum setback from a stream bank of any perennial stream. There are no public or government drinking water supply intakes downstream within 7 miles. The City of Rome is located upstream of the site and obtains its water from surface water intakes located on the Etowah and Oostanaula Rivers, therefore, a setback is not required. The remaining public water supplies in the vicinity are discussed in Section 1.11.

1.10 Proximity to Nearest Significant Groundwater Recharge Area

According to Hydrologic Atlas 18, Most Significant Groundwater Recharge Areas, the site is not located in or adjacent to an area of significant groundwater recharge. The nearest significant unconfined aquifer recharge areas are located approximately 6 miles to the southeast and to the northwest of the site. Figure 1-4 indicates the nearest significant recharge areas.

1.11 Proximity to Public and Domestic Water Wells

In October 2001, a survey was performed to identify water supply wells and surface water intakes near the site. This survey was performed by Kemron Environmental

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Services in accordance with the specifications for a Private Industry Disposal Facility as outlined in Chapter 391-3-4-.05 (k) of the Rules for Solid Waste Management, and Appendix A, Circular 14, Criteria for Performing Site Acceptability Studies for Solid Waste Landfills. An inventory of all privately owned (domestic) water supply wells within ½ mile radius and all public water supply wells and surface water intakes within a 2 mile radius was completed. The survey included the following:

- Visiting the site
- Obtaining tax maps of the adjacent properties from the Floyd County Tax Assessors Office to identify property owners
- Contacting local residences
- Contacting city and county agencies
- Searching the Water Resources Division of the United States Geologic Survey (USGS) and State of Georgia Environmental Protection Division (EPD) databases
- Contacting the Floyd County Health Department
- Contacting the City of Rome and the Floyd County Water Departments.

The search produced the following information:

- The USGS database listed 15 water supply wells within the 2 mile radius. Field reconnaissance found that these are private wells located outside the ½ mile radius.

- The State of Georgia Environmental Protection Division database listed 12 water supply sources, but none of these are located within the 2 mile radius.

- The Floyd County Health Department did not have any information regarding water supply wells.

- The Rome and Floyd County Water Departments were contacted for information on the availability of public water supplies in the vicinity of the site. Public water mains service Avery Road, Woods Road, and portions of Huffaker Road. A gap exists in the mains along Huffaker Road directly in front of the site. Public water is provided to Boral Bricks, immediately adjacent to the east site boundary. The water main to the west stops about ½ mile west of the site boundary.

- Field reconnaissance within the 2 mile radius of the site boundaries and interviews with several property owners in the vicinity of the site identified 6 private wells within the ½ mile radius that were not listed on the USGS database. These are listed on Table 1-1 and shown on Figure 1-5. As shown, these wells are located northeast of the site boundaries. Based upon the groundwater potentiometric maps, discussed in Section 3.5, these wells are up-gradient wells.

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- The nearest surface water intakes were also identified and were noted to be outside the 2 mile radius. The City of Rome Water Department obtains water from surface water intakes along the Etowah and Oostanaula Rivers. The Floyd County Water Department purchases water from Cave Springs and the City of Rome. The County also maintains 2 water supply wells, located on Kingston Road and Fulton Road. Both of these roads are located east of the City of Rome and are located outside the 2 mile radius.

- Based on the investigations noted above, there are six private wells located within a ½ mile radius of the site. Five of these are unused, one is an irrigation well, and all the wells are up-gradient of the site. No public drinking water wells were identified within 2 miles of the site.

Circular 14 specifies a wellhead protection area around wells and springs used as sources of water supply for public water systems serving municipalities, counties, and authorities. The site is not within the water management area of a public water supply well.

Table 1-1 is a summary of the inventory of the domestic wells identified during the survey to be within ½ miles of the site. The locations of the wells are shown on Figure 1-5. The complete Kemron report, including correspondence with the adjacent property owners and city agencies, the revision letter, and field notes, is included in Appendix C.

Table 1-1
Water Supply Well Inventory

ID	Well Owner	Location	Well Use	2 Mile Radius	½ Mile Radius
Wells 1&2	Boral Bricks, Inc.	2131 Huffaker Rd.	Private - Unused	Yes	Yes
Well 3	John W. Hardin	2114 Huffaker Rd.	Private - Unused	Yes	Yes
Well 4	Selena Hammond	2114 Huffaker Rd.	Private - Unused	Yes	Yes
Well 5	H. A. & Nora Holbrook	1881 Huffaker Rd.	Private - Unused	Yes	Yes
Well 6	Buddy & Wydean Smith	1872 Huffaker Rd.	Private Supply Irrigation	Yes	Yes

1.12 Character of the Smith Creek Watershed and Watershed Protection Criteria

Smith Creek is a tributary of the Coosa River. Neither water body is classified as a trout stream. Under the Specific Use Classification, the Coosa River has the classification "Fishing". Smith Creek is not specifically listed in the classification; however, according to Chapter 391-3-6, Rules and Regulations for Water Quality Control (Georgia DNR, 2002) any stream not specifically listed is classified as "Fishing".

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1.13 Zoning and Notification

The property is currently zoned H-I, Heavy Industrial. According to the Unified Land Development Code for Rome – Floyd County, a private industry, solid waste landfill for non-hazardous waste falls under the H-I zoning. The proposed use may be permitted with a Special Use Permit. A Special Use Permit for the site has been obtained from Floyd County. A letter addressed to Mr. Harold Gillespie, dated July 8, 2002 and signed by Garry Fricks, Chairman, Floyd County Board of Commissioners, states that "The Floyd County Board of Commissioners has granted Georgia Power Company a special use permit to operate a proposed industrial solid waste disposal facility off of Huffaker Road in Floyd County with the condition that Georgia Power Company obtain the proper operating permit from the Georgia Environmental Protection Division, and at all times stay in compliance with such permit." A copy of the above letter is included in Appendix D.

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2.0 CHARACTERIZATION OF WASTES

2.1 Coal Ash

Ash is the by-product produced from the combustion of coal at coal-fired electric generating plants and arises from the non-combustible mineral matter in coal such as clay, quartz, pyrite, and other materials. There are essentially two types of ash produced in a coal-burning furnace, bottom ash and fly ash. Bottom ash is a slag which builds up on the heat-absorbing surfaces of the furnace, superheater, and economizer. It eventually falls either by its own weight or as a result of load changes or soot blowing. Fly ash is small, fused particles of ash entrained with, and carried by, the flue gas stream to the stack where it is collected by electrostatic precipitators.

Fly ash exhibits the following characteristics:

- Generally gray in color
- Fine particle size, generally silt and clay size
- Predominately spheroidal particle shape
- Predominately glassy form due to rapid cooling
- Specific gravity from approximately 1.4 to 2.5
- Chemistry that reflects the coal impurities (for example quartz, clays, pyrites) from which it was derived.

Fly ash is comprised primarily of silica (SiO_2), alumina (Al_2O_3), and ferric oxide (Fe_2O_3), although the exact composition of the ash is dependent on the composition of the coal burned. Bottom ash tends to be larger in grain size, (for example sand and gravel size), and would have a slightly higher specific gravity than fly ash from the same plant. Because of the smaller surface area per unit volume, bottom ash tends to leach fewer constituents than fly ash.

According to the Environmental Protection Agency (EPA), large volumes of coal combustion by-products pose no threat to human health and the environment when managed appropriately. In 1980, Congress added the Bevill Amendment to the Resource Conservation and Recovery Act (RCRA) to ensure that unnecessary regulation of large volume utility combustion waste would be avoided since excessive regulation of combustion by-products could discourage utilities from using coal in generating electric power. Congress intended to promote the use of coal in energy production and the beneficial utilization of combustion by-products while managing the by-products in an appropriate manner. In 1988, the EPA reported to Congress that these combustion by-products can be safely managed as non-hazardous waste, and in 1993, the EPA issued a final ruling which permanently classified fly ash, bottom ash, boiler slag, and flue gas desulfurization (FGD) sludge as being non-hazardous when managed alone. Similarly,

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after studying ash co-managed with low-volume utility wastes, EPA reaffirmed in 2000 that fossil fuel combustion wastes could be managed as nonhazardous waste.

Ash samples collected from Plant Hammond were analyzed for metals. TCLP analyses and total metals were performed on the samples. The samples were analyzed according to method EPA 6010 (EPA 7471 and 7470 for mercury), the preferred method for analyzing samples. The results of the testing are included on Table 2-1. The TCLP results are all below the regulatory limits. Appendix E contains the laboratory reports.

Table 2-1
Plant Hammond Ash TCLP and Total Metals Laboratory Results

	TCLP			Total Metals	
Parameter	**Result, mg/L**	**Detection Limit, mg/L**	**Regulatory Limit, mg/L**	**Result, mg/kg**	**Detection Limit, mg/kg**
Antimony	ND	0.02		ND	5.0
Arsenic	0.10	0.03	5.0	68	3.0
Barium	1.1	0.1	100.0	160	1.0
Beryllium	ND	0.01		5.5	1.0
Cadmium	ND	0.01	1.0	ND	1.0
Chromium	ND	0.01	5.0	18	1.0
Cobalt	ND	0.04		91	4.0
Copper	ND	0.02		41	2.0
Iron	0.02	0.01		6500	4.0
Lead	ND	0.1	5.0	20	1.5
Manganese	ND	0.04		50	4.0
Mercury	ND	0.005	0.2	ND	0.25
Nickel	ND	0.1		15	2.0
Selenium	ND	0.5	1.0	4.4	4.0
Silver	ND	0.01	5.0	ND	1.0
Thallium	not analyzed			ND	20
Vanadium	0.06	0.02		55	2.0
Zinc	0.52	0.02		47	2.0

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2.2 Gypsum

Proposed air quality regulations could trigger the installation of flue gas desulfurization (FGD) equipment (scrubbers) at one or more units at Plant Hammond. FGD technologies use an alkaline slurry to absorb SO_2 in the flue gas, producing sodium or calcium-sulfur compounds. FGD technologies are categorized as dry or wet, depending on the state of the reagent as it leaves the absorber. Wet FGD systems are comprised of three main processing areas: sorbent handling, SO_2 scrubbing, and by-product handling. Wet FGD sorbents use either lime, limestone, sodium carbonate, or magnesium oxide. SO_2 absorber system design types come in many different configurations. FGD systems that use lime or limestone continually discharge scrubber slurry from the absorber that is generally more than 90% water. The used slurry can be dewatered by a number of processes, and depending on the slurry composition, it can be sold commercially as gypsum, mixed with fly ash to create a fairly impermeable fill, or handled and placed in storage.

The system under consideration for Plant Hammond is a wet system that will utilize the CT-121 design (Chiyoda Thoroughbred 121). This design is one of two advanced, or second-generation, wet FGD systems. This system was installed on Georgia Power Company's Plant Yates Units 1-5 in 1991. The CT-121 system, the only scrubber installed to date in the Southern Company system, utilizes a single vessel system known as a "jet bubbling reactor". The process works by combining three principal reactions in one vessel:

- A limestone flue gas desulfurization reaction
- Forced oxidation
- Gypsum crystallization.

Flue gas enters the reactor from underneath the scrubbing solution. The SO_2 in the flue gas is absorbed as it passes through the solution forming calcium sulfite. Simultaneously, air is forced (bubbled) through the bottom of the solution, oxidizing the calcium sulfite to form gypsum (hydrated calcium sulfate). The resulting gypsum slurry is then either dewatered mechanically at the equipment or sluiced to a facility and dewatered by gravity. Gypsum from Plant Hammond will be dewatered at the plant and stored dry at the Huffaker Road facility. The dry gypsum product is then marketed or stored in a facility. Gypsum from an SO_2 scrubber is the same chemically as naturally-occurring gypsum, which is mined for wallboard and agricultural use.

The only Georgia Power plant that currently generates gypsum is Plant Yates. If scrubbers are installed at Plant Hammond, the gypsum generated will be similar in physical and chemical properties to the gypsum that is currently generated at Plant Yates. Table 2-2 presents the range of results of total metals analyses based on 12 gypsum samples collected over a 12-day period. The 12 samples were composited, and the TCLP

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was run on the composite. A duplicate TCLP was also run. Table 2-3 presents a summary of Plant Yates gypsum leachate data, compared to the regulatory thresholds that the EPA has set for a hazardous waste. None of the elements in gypsum exceed the TCLP regulatory threshold. The laboratory reports and a figure showing the sampling location of the gypsum are in Appendix F.

Table 2-2
Plant Yates Gypsum Total Metals Data

Element	Range of Results mg/kg	Detection Limits mg/kg
Total Antimony	ND	7.4 – 8.1
Total Arsenic	ND	4.4 – 4.9
Total Barium	120 - 210	1.5 – 1.6
Total Beryllium	ND	1.5 – 1.6
Total Cadmium	ND	1.5 – 1.6
Total Chromium	ND – 1.6	1.5 – 1.6
Total Cobalt	ND	5.9 – 6.5
Total Copper	ND	1.5 – 3.3
Total Iron	260 - 560	5.9 – 6.5
Total Lead	ND	2.2 – 2.4
Total Manganese	ND	5.9 – 6.5
Total Mercury	ND – 0.77	0.37 – 0.8
Total Nickel	ND	2.9 – 3.3
Total Selenium	7.5 - 14	5.9 – 6.5
Total Silver	ND	1.5 – 1.6
Total Thallium	ND	29 – 33
Total Vanadium	ND	2.9 – 3.3
Total Zinc	10 - 29	2.9 – 3.3

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Table 2-3
Plant Yates Gypsum TCLP Data

Element	Sample #1 TCLP Concentration, mg/L	Duplicate TCLP Concentration, mg/L	TCLP Detection Limit, mg/L	TCLP Regulatory Limit, mg/L
Antimony	ND	ND	0.1	
Arsenic	ND	ND	0.03	5.0
Barium	0.2	0.2	0.1	100.0
Beryllium	ND	ND	0.01	
Cadmium	ND	ND	0.01	1.0
Chromium	0.02	0.02	0.01	5.0
Cobalt	ND	ND	0.04	
Copper	0.03	ND	0.02	
Iron	0.35	0.31	0.01	
Lead	ND	ND	0.1	5.0
Manganese	0.10	0.10	0.04	
Mercury	ND	ND	0.005	0.2
Nickel	ND	ND	0.02	
Selenium	ND	ND	0.5	1.0
Silver	ND	ND	0.01	5.0
Vanadium	ND	ND	0.02	
Zinc	0.51	0.45	0.03	

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3.0 SURFACE AND SUBSURFACE EXPLORATIONS

3.1 Topography

The 205 acres north of Smith Creek is the proposed site for the combustion by product storage facility. This area has been disturbed by Boral's mining operation. Excavated overburden material was used in the construction of several sedimentation/detention ponds on the site. Stockpiles of additional overburden are located elsewhere on the site. Areas of exposed weathered shale are also present in other areas (Figure 3-1). The ground surface elevations within the northern 205 acres vary due to the presence of these stockpiles and detention ponds. In general, the site varies from an elevation of 695 feet MSL in the northwestern corner of the property and an elevation of 655 feet MSL in the northeastern corner to an elevation ranging from 630 to 620 feet MSL going southwesterly along Smith Creek. The southern 214 acres are wooded with an established stand of pines and hardwoods. This area is on the northern slope of Judy Mountain with characteristic dendritic drainage to Smith Creek. The detailed site topography, wetlands, site hydrology, and other site specific information are shown on Drawing No. H-628-11 and Figure 1-3.

3.2 Regional Geology

The geologic structure of the formations in Floyd County is typical of the Valley and Ridge Province of northwest Georgia. The rocks are folded in a series of sub-parallel anticlines and synclines locally cut by faults. The proposed storage area lies between Lavender Mountain, immediately north of the site and Judy Mountain, immediately south of the site (Figure 3-2). The Rome Fault, one of two major faults which cross Floyd County, trends generally east-west approximately three miles south of the site. Approximately three miles east of the site, another irregular section of the Rome Fault has placed older Conasauga Shale over the younger Floyd Shale. It is a very low-angled thrust fault, which occurred some time after the deposition of the Floyd Shale (Cressler, 1970).

The Huffaker Road site geology consists entirely of the Floyd Shale. In Floyd County, the Floyd Shale is generally a highly carbonaceous, silty, micaceous shale that has a dull, rather rough bedding surface. The total thickness of the Floyd Shale has not been determined; however, measurements indicate that it ranges between 200 and 1,200 feet. The shale is interlayered with thin (less than 2-inch) layers of siltstone and fine-grained sandstone. It tends to be less fissile than the shale of other formations with which it comes in contact. The Floyd Shale includes a limestone unit at its base and the Hartselle Sandstone Member at or near the top. The Hartselle makes up Judy Mountain, south of the site, where it is about 300 feet thick (Cressler, 1970). Except for material seen in the

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overburden soils which appears to be transported from Lavender Mountain, neither the limestone unit of the Floyd Shale nor the Hartselle Sandstone were observed at the site.

The site was previously a surface clay mine where most of the residual soil (clayey silt and silty clay) was removed for use in making bricks. Portions of the site now expose the shale. Strike and dip readings on bedding and joint surfaces were taken from these exposures. The exposed rock is a soft, medium dark gray to dark gray, moderately weathered (at the surface) to unweathered (at depth), thin bedded, very fine-grained shale or siltstone. Generally parallel with and on most bedding surfaces are slickensides. Occasionally, some thin, calcite lenses were noted along bedding/slickensided surfaces. Pyrite was noted along some bedding/slickensided surfaces. No geologic faults or shear zones were identified on the site.

3.3 Boring and Sampling Program

3.3.1 Basis

Preliminary boring depths were expected to be on the order of 20 feet to 30 feet. This was based on the characteristics of the site noted during the site reconnaissance. Specifically, several stockpiles of overburden material stripped during the mining operation were present over the site. In several areas, the weathered shale was exposed due to the removal of material during mining. It was anticipated that groundwater flow was generally controlled by the presence of this weathered shale.

3.3.2 Depth Criteria

The drilling and sampling program consisted of borings drilled at 19 locations dispersed over the approximately 205 acres north of Smith Creek that is proposed for the storage area. Reconnaissance of the site indicated exposed weathered shale existed over portions of the site. Per Circular 14, the criteria were established to extend the borings to a depth of 20 feet below the groundwater table, and, since rock was expected to be encountered within this 20 feet, a minimum of 10 feet of rock core was required or until recovery exceeded 95% within the last 5 feet. Boring locations are shown on Figure 3-3.

3.3.3 Drilling Methods

Drilling was performed using 4.875-inch diameter hollow stem augers to auger refusal. Rock coring was performed utilizing a NQ triple barrel coring system. The triple tube coring system was utilized to improve the recovery of the cored rock. The borings were advanced with SIMCO 2800 and CME55 drill rigs. The drilling was performed by Project Services, Geological Services, Engineering and Construction Services, Southern

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Company, a bonded service group under the Georgia Water Well Standards Act. A copy of the bond is located in Appendix G. All sampling and coring were observed and logged by Mr. Ronald D. Wood, P. G. #602.

3.3.4 Sampling Methods

Split-spoon samples were taken of the overburden/stockpile material at a 5-foot center-to-center spacing, beginning at a depth of 5 feet, to auger refusal. An additional sample was taken at the surface to a depth of 1.5 feet. The soil samples were collected from each split-spoon sample, placed in glass jars and labeled with boring number, depth, blow counts, sample number, job name, and date. NW size surface casing was set into the top of rock as determined by the auger refusal depths. Rock coring was performed with 5-foot core runs with a NQ triple barrel system. The recovered rock core was placed in wooden boxes, labeled with respect to boring number, date, depth of run, and core recovery.

Undisturbed sampling of the overburden material was not performed at this site. The stockpiled overburden material consisted of numerous gravel/weathered shale fragments that would make obtaining a relatively undisturbed sample extremely difficult. More importantly, portions of the site will require grading to achieve final grade elevation of the proposed cells and to maintain the required buffer between the bottom of liner and the seasonal high groundwater table. Information regarding permeability, from Shelby tube samples of this material would not be useable under these circumstances. Rather, samples remolded from bag samples of the overburden were used to determine a permeability value that would be representative of compacted material. Table 3-1 presents a summary of the boring data. A copy of the boring logs is included in Appendix H.

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Table 3-1
Summary Bore Data

Boring	Date Drilled	Ground Elev.	Auger Refusal		Boring Term.		GWT			Remarks
			Depth	Elev.	Depth	Elev.	T.O.B. Depth	24 Hr. Depth	24 Hr. Elev..	
HUF-1	8/29/01	654.2	15.6	638.6	25.6	628.6	4.6	5.7	648.5	2" PVC
HUF-2	8/30/01	652.7	28.6	624.1	44.5	608.2	25.0	3.9	648.8	2" PVC
HUF-3	9/12/01	654.0	14.9	639.1	25.0	629.0	14.2	9.4	644.6	2" PVC
HUF-4	9/11/01	677.4	16.8	660.6	25.2	652.2	--	4.3	673.1	2" PVC
HUF-5	9/11/01	698.2	26.5	671.7	35.9	662.3	14.2	13.2	658.0	2" PVC
HUF-6	9/19/01	663.6	21.5	642.1	34.0	629.6	17.0	14.4	649.2	2" PVC
HUF-7	8/28/01	652.0	29.6	622.4	49.8	602.2	7.2	12.0	640.0	1.5" PVC
HUF-8	8/29/01	614.8	5.1	609.7	20.2	594.6	1.8	2.6	612.2	1.5" PVC
HUF-9	8/22/01	639.8	29.4	610.4	49.7	590.1	23.9	16.5	623.3	1.5" PVC
HUF-10	8/29/01	639.6	17.8	621.8	34.8	604.8	6.5	4.2	635.4	1.5" PVC
HUF-11	9/11/01	645.2	18.8	626.4	34.0	611.2	3.5	2.8	642.4	1.5" PVC
HUF-12	9/17/01	647.9	23.3	624.6	41.5	606.4	3.4	4.7	643.2	1.5" PVC
HUF-12P	9/27/01	647.9	--	--	23.0	624.9	--	5.2	642.7	4" PVC Casing to Weathered Shale
HUF-12PS	9/27/01	647.9	--	--	10.0	637.9	--	--	DRY	Open Hole
HUF-13	9/12/01	641.8	14.1	627.7	99.7	542.1	5.4	2.7	639.1	1.5" PVC
HUF-14	8/30/01	646.3	24.2	622.1	50.4	595.9	5.2	3.8	642.5	1.5" PVC
HUF-14P	9/26/01	646.3	--	--	24.0	622.3	--	2.7	643.6	4" PVC Casing to Weathered Shale
HUF-14PS	9/26/01	646.3	--	--	10.0	636.3	--	--	DRY	Open Hole
HUF-15	8/16/01	651.5	18.6	632.9	46.0	605.5	8.0	6.5	645.0	1.5" PVC
HUF-15P	9/26/01	651.5	--	--	18.0	633.5	--	6.3	645.2	4" PVC Casing to Weathered Shale
HUF-15PS	9/26/01	651.5	--	--	5.0	646.5	--	--	DRY	Open Hole
HUF-16	8/23/01	651.0	20.8	630.2	30.3	620.7	2.5	7.0	644.0	1.5" PVC
HUF-16P	9/27/01	651.0	--	--	20.0	631.0	--	2.5	648.5	4" PVC Casing to Weathered Shale
HUF-16PS	9/27/01	651.0	--	--	5.0	646.0	--	--	DRY	Open Hole
HUF-17	8/22/01	626.9	27.1	599.8	45.2	581.7	8.3	5.6	621.3	1.5" PVC
HUF-17P	9/27/01	626.9	--	--	27.0	599.9	--	1.4	625.5	4" PVC Casing to Weathered Shale
HUF-17PS	9/27/01	626.9	--	--	10.0	616.9	--	--	DRY	Open Hole
HUF-18	9/18/01	655.0	4.5	650.5	19.5	635.5	--	0.5	654.5	Caved - In
HUF-19	8/21/01	638.5	37.2	601.3	56.0	582.5	8.4	4.6	633.9	1.5" PVC

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3.3.5 Field and Laboratory Testing

Split-spoon and bulk samples were collected for laboratory soils testing. The laboratory testing was performed by GeoHydro, Kennesaw, Georgia. Table 3-2 indicates the scope of the laboratory testing. The following tests were performed on the soil samples using the standard noted:

- Standard Test Method for Particle-Size Analysis of Soils R (1998) - ASTM D-422
- Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits Tests) - ASTM D-4318
- Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) - ASTM D-2487
- Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer E(2002) - ASTM D-854
- Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass - ASTM D-2216
- Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)) - ASTM D-698
- Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter E(2002) - ASTM D-5084
- Cation Exchange Capacity – EPA method 9081

As noted in Section 3.3.4, remolded samples were used to test for porosity, void ratio, and hydraulic conductivity of the overburden soil (void ratio and porosity are obtained during the test for hydraulic conductivity). Samples were remolded to 95% maximum dry density and optimum moisture content using the results of the compaction testing (ASTM D-698). Slug testing was performed in the field to determine the permeability of the rock. This testing is discussed in Section 3.5.4.

The cation exchange capacity was also determined for four samples. A composite sample was prepared for BS-1 from the bag samples taken at depths of 1-foot and 4-foot. The same was done for sample BS-2. Samples BS-3 and BS-4 were tested separately on the 2-foot samples. The laboratory tests reports are included in Appendix I.

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Table 3-2
Summary of Soil Laboratory Test Results

Sample	Type	Depth, ft.	% Fines	LL	PI	USCS	M.D.D PCF	Opt. W %	Gs	Ɒ %	CEC meq/100g	k cm/s
HUF4, S1	SS	1.5	61.5			CL-ML						
HUF5, S1	SS	1.5	40.1			SM						
HUF5, S2	SS	5.0	62.3			CL-ML						
HUF6, S1	SS	1.5	56.9			ML						
HUF7, S1	SS	1.5	57.2			CL-ML						
HUF7, S2	SS	5.0	73.4			CL-ML						
HUF8, S1	SS	1.5	78.0			CL-ML						
HUF8, S2	SS	5.0	49.5			SM						
HUF10, S1	SS	1.5	73.7			CL-ML						
HUF10, S2	SS	5.0	89.8			CL-ML						
HUF13, S1	SS	1.5	54.0			ML						
HUF15, S1	SS	1.5	62.7			CL-ML						
HUF15, S2	SS	5.0	54.4			CL-ML						
HUF17, S1	SS	1.5	57.5			CL-ML						
BS-1	BAG	1.0	47.6	23	6	SC-SM	117.4	14.1	2.69	33.6	12.4 (C)	3.2E-06
BS-1	BAG	4.0	44.3	23	5	SC-SM	119.0	13.2	2.67	32.0		1.6E-06
BS-2	BAG	1.0	42.6	28	8	SC	119.6	13.0	2.72	33.0	12.6 (C)	9.7E-06
BS-2	BAG	4.0	29.9	26	9	SM	118.8	14.1	2.72	33.5		1.5E-06
BS-3	BAG	2.0	66.0	25	7	CL-ML	107.8	16.2	2.53	35.1	15.4	1.6E-06
BS-4	BAG	2.0	56.3	23	6	CL-ML	118.4	13.2	2.58	26.2	14.2	1.1E-06

LL - Liquid Limit (ASTM D-4318)
PI - Plasticity Index (ASTM D-4318)
Gs - Specific Gravity (ASTM D-894)
k - Hydraulic Conductivity (ASTM D-5084)
M.D.D. - Maximum Dry Density (ASTM D-698 (Standard))
OPT. W - Optimum Moisture Content (ASTM D-698 (Standard))
Ɒ - Porosity
CEC - Cation Exchange Capacity (CEC9081)
USCS - Unified Soil Classification System Designation (SS samples visually/manually classified)
% Fines - ASTM D-422
C - Composite from Bag Sample
SS - Split Spoon

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3.4 Soil and Rock Description

3.4.1 Soil Description

The soils over the site consist, predominantly, of overburden material excavated during the mining operations and stockpiled over areas of the site. This material, extending to depths varying from 0 feet to about 22 feet, consists of dry to moist, medium gray to dark yellowish-orange to red-brown, sandy clayey silt to silty clay with occasional rock fragments, classified as CL-ML, SC-SM, and SM. Table 3-2 presents the results of the laboratory testing. Underlying this material is a medium gray to dark gray and dark olive gray, badly to moderately weathered shale. This material, generally logged as clayey silt, extends to auger refusal depths which vary from about 5 feet to about 37 feet. Blow counts (N values) of this weathered shale are generally from 60 to over 100 blows/foot. The weathered shale is exposed in a few areas of the site. HUF-8, located in the southeastern corner of the site, encountered alluvial material to the auger refusal depth of 5.1 feet. Subsurface profiles along strike and perpendicular to strike are indicated on Figures 3-4 and 3-5.

3.4.2 Rock Description

Rock coring began at auger refusal utilizing a NQ triple barrel coring system (NQ3B). NW casing was set through the overburden material prior to initiating coring. The rock consisted of medium gray to dark gray and grayish black, soft to moderately hard, predominately slightly weathered to unweathered, thinly bedded, fine grained to very fined grained shale (Figures 3-4 and 3-5). The bedding varied from near vertical in the northern two-thirds of the site to 40-45° in the southern portion of the site. Slickensides were also indicated generally parallel to bedding. The slickensides were predominately open, tight and unweathered with some calcite filling along slickensides. Jointing within the cores varied from 10° to near vertical. Joints were predominately intact with occasional calcite filling. Occasional slightly weathered, open joints were also logged.

The bedding/slickensides are the predominate geologic structure in the shale. The slickensides are the result of slippage along bedding surfaces during regional folding (Figure 3-1). Mapping of exposed rock surface indicted the strike along bedding varied from N35° to 55° E, with the dip varying from 80° SE or 80° NW to vertical. Based on these strike and dip measurements, the site is located on the steep portion of the northeast limb of the syncline centered on Judy Mountain. Some local, small scale folding was noted in the exposed outcrops. Most joints appeared to be planar with only a few being slightly wavy. Most joints appeared to be tight with very little weathering below the top of rock/auger refusal elevation. Some joints had thin coatings of calcite on their surfaces.

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Core recoveries ranged from 0% to 104%, averaging 67%. RQD's, measured for the NQ core, ranged from 0% to 94%, averaging 24%. The presence of the near vertical bedding and slickensides, as well as some jointing, adversely impacted the measured core recovery and RQD. Even with the use of the NQ3B system, the dip of the bedding, slickensides, and jointing caused block-outs in the core barrel, resulting in grinding of the soft to moderately hard shale and subsequent core loss. As described, the core is predominately unweathered.

3.5 Hydrogeologic Assessment

3.5.1 Description of Unconfined Aquifers

Temporary piezometers were installed in borings HUF-1 through HUF-17 and HUF-19 with the screened intervals in the moderately weathered to unweathered shale. The piezometers were developed after installation and prior to the first recorded groundwater depths. Depths to groundwater were measured at time of boring, at 24 hours after completion of drilling, and periodically since installation of the piezometers. The top of casing elevations, depths to groundwater, and groundwater elevations are indicated in Table 3-3. Figure 3-6 shows a graph of the groundwater elevations over time.

Groundwater potentiometric maps were prepared for the unconfined groundwater surface aquifer from groundwater readings taken on January 28, 2002 and September 11, 2002. The January readings represent the highest groundwater levels to date. Both maps indicate that the general groundwater flow is from north of Huffaker Road toward the south into Smith Creek and from northwest to southeast toward Smith Creek. This flow is generally through the moderately to badly weathered shale zone and is recharged by infiltration of storm water within the drainage areas to the north of the site as well as within the site itself. The groundwater potentiometric surfaces are represented on Figures 3-7 and 3-8.

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Table 3-3
Depth to Groundwater and Groundwater Elevations

Boring ID	Top of Casing	9/25/2001		11/16/2001		1/28/2002		3/18/2002		9/11/2002	
		Reading	GW Elev.	Reading	GW Elev.	Reading	GW Elev.	Reading	GW Elev.	Reading	GW Elev.
HUF-1	658.23	9.75	648.48	11.64	646.59	3.90	654.33	4.27	653.96	13.11	645.12
HUF-2	657.09	8.29	648.80	10.07	647.02	6.56	650.53	5.54	651.55	9.40	647.69
HUF-3	657.97	13.33	644.64	13.82	644.15	11.25	646.72	11.64	646.33	14.37	643.60
HUF-4	682.44	9.34	673.10	11.22	671.22	6.45	675.99	6.38	676.06	11.40	671.04
HUF-5	702.10	17.08	685.02	18.42	683.68	11.06	691.04	11.05	691.05	18.03	684.07
HUF-6	668.07	18.92	649.15	19.56	648.51	17.27	650.80	17.56	650.51	20.23	647.84
HUF-7	656.81	16.81	640.00	18.29	638.52	11.54	645.27	11.69	645.12	19.75	637.06
HUF-8	619.39	7.20	612.19	8.09	611.30	4.50	614.89	5.17	614.22	9.36	610.03
HUF-9	643.53	20.25	623.28	20.53	623.00	18.85	624.68	19.15	624.38	21.73	621.80
HUF-10	644.02	8.64	635.38	8.90	635.12	7.87	636.15	8.07	635.95	9.73	634.29
HUF-11	650.84	8.49	642.35	8.89	641.95	8.15	642.69	8.20	642.64	9.54	641.30
HUF-12	652.18	9.02	643.16	10.59	641.59	7.19	644.99	7.57	644.61	12.25	639.93
HUF-13	646.97	7.90	639.07	8.14	638.83	5.91	641.06	5.87	641.10	9.43	637.54
HUF-14	649.78	7.32	642.46	7.54	642.24	6.32	643.46	6.61	643.17	8.07	641.71
HUF-15	655.96	11.00	644.96	11.26	644.70	10.45	645.51	10.69	645.27	11.62	644.34
HUF-16	655.46	11.45	644.01	12.09	643.37	8.61	646.85	9.79	645.67	12.78	642.68
HUF-17	628.46	7.13	621.33	7.79	620.67	2.93	625.53	3.16	625.30	9.35	619.11
HUF-18*	655.02	0.50	654.52	0.90	654.12	0.35	654.67	0.28	654.74	2.00	653.02
HUF-19	641.54	7.63	633.91	7.93	633.61	7.26	634.28	7.37	634.17	8.53	633.01

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3.5.2 Description of Confined Aquifers

There are no confined aquifers on this site

3.5.3 Uppermost Aquifer Gradient

Using depth to groundwater data collected 1/28/02, which represent the highest groundwater levels to date, the hydraulic gradient of the unconfined groundwater aquifer was computed. Gradients were computed for several areas of the site using the following equation:

$$\text{hydraulic gradient} = i = \frac{(h_1 - h_2)}{L}$$

where:

h_1 = groundwater elevation at up gradient well

h_2 = groundwater elevation at down-gradient well

L = distance between h_1 and h_2

Table 3-4 shows the gradients calculated for the site. The highest gradient was 0.049 feet/feet or 4.9% from HUF-5 and HUF-18 in the northwest part of the site.

Table 3-4
Hydraulic Gradients

Wells	h_1	h_2	L	i
	ft. msl	ft. msl	ft.	ft./ft.
HUF-5 & HUF-18	691.04	654.67	741.79	0.049
HUF-5 & HUF-10	691.04	636.15	2534.3	0.022
HUF-2 & HUF 13	650.53	641.06	1131.62	0.008
HUF-7 & HUF-8	645.27	614.89	1467.17	0.021

3.5.4 Field Hydraulic Conductivity (Slug) Tests

Field hydraulic conductivity tests (slug tests) were conducted at boring locations HUF-12, HUF-14, HUF-15, HUF-16, and HUF-17. At each location, separate tests were drilled in 1) the unweathered shale, 2) the saturated, moderately to badly weathered shale (below the groundwater level), and 3) the unsaturated overburden/moderately to badly weathered shale (above the groundwater level). The hydraulic conductivity tests in the rock were performed in the existing temporary piezometers. For the saturated, moderately to badly weathered shale, 4-inch PVC grouted casing was set to isolate the overburden from a 10-foot test zone of weathered shale. An open hole was used to estimate the hydraulic conductivity of the overburden material.

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Table 3-5 presents the results of the hydraulic conductivity tests. A copy of the field data, data reduction and graphs, are included in Appendix J.

Table 3-5
Field Hydraulic Conductivity Tests

Location	Material	Interval, ft below ground surface	Hydraulic Conductivity	
			ft/sec	cm/sec
HUF-12	Shale	25.9 – 40.9	1.48×10^{-4}	4.51×10^{-3}
HUF-14	Shale	35 – 50	9.99×10^{-5}	3.04×10^{-3}
HUF-15	Shale	19.6 – 29.6	1.18×10^{-4}	3.60×10^{-3}
HUF-16	Shale	19.7 – 29.7	1.29×10^{-5}	3.93×10^{-4}
HUF-17	Shale	29.6 – 44.6	6.28×10^{-6}	1.91×10^{-4}
		AVERAGE	**7.70×10^{-5}**	**2.35×10^{-3}**
HUF-12P	Mod. to Badly Weathered Shale	13 - 23	1.05×10^{-5}	3.20×10^{-4}
HUF-14P	Mod. to Badly Weathered Shale	14 - 24	2.36×10^{-7}	7.19×10^{-6}
HUF-15P	Mod. to Badly Weathered Shale	8 - 18	3.11×10^{-6}	9.48×10^{-5}
HUF-16P	Mod. to Badly Weathered Shale	10 - 20	1.26×10^{-7}	3.84×10^{-6}
HUF-17P	Mod. to Badly Weathered Shale	17 - 27	3.63×10^{-7}	1.11×10^{-5}
		AVERAGE	**2.87×10^{-6}**	**8.74×10^{-5}**
HUF-12PS	Unsaturated Moderately to Badly Weathered Shale	0 - 10	7.54×10^{-5}	2.30×10^{-3}
HUF-14PS	Unsaturated Overburden & Moderately to Badly Weathered Shale	0 - 10	5.36×10^{-6}	1.63×10^{-4}
HUF-15PS	Overburden	0 - 5	1.51×10^{-6}	4.60×10^{-5}
HUF-16PS	Unsaturated Moderately to Badly Weathered Shale	0 - 5	7.43×10^{-6}	2.26×10^{-4}
HUF-17PS	Unsaturated Moderately to Badly Weathered Shale	0 - 10	1.85×10^{-5}	5.64×10^{-4}
		AVERAGE	**2.16×10^{-5}**	**6.60×10^{-4}**

3.5.5 Sorption and Attenuation Capacity

Sorption (Distribution) Coefficients

Environmental risk assessment of metals depends to a great extent on fate and transport modeling based on soil-liquid partitioning coefficients. The evaluation of the potential risks of metals in soils requires an assessment of the proportion of the total metal that is in a mobile and possibly bioavailable form. This can be done using a relatively simple partitioning of the total metal concentration between the fraction bound to the soil solids and the part that is dissolved in the soil solution (pore water). The dissolved metal concentration reflects the soil metal fraction that could potentially be leached from the soil and contaminate groundwater and surface waters. Conversely, the balance of the

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metal is assumed to be tightly retained by the soil solids and, hence, unavailable for biological uptake or movement into groundwater (Sauve and other, 2000).

Arsenic was chosen as the potential contaminant to model, based on the results of the ash total metals concentrations and leaching tests (Table 2-1), for fate and transport modeling. The partition or distribution coefficient K_d, is required for modeling. K_d is a measure of sorption of contaminants to soils and is defined as the ratio of the contaminant concentration adhered to the solid to the contaminant concentration in the surrounding aqueous solution when the system is at equilibrium. Once groundwater is contaminated, it is important to understand how the contaminant moves in the subsurface environment. K_d is one of the most important parameters used in determining the migration potential of contaminants present in aqueous solutions in contact with surface, subsurface and suspended solids. A contaminant with a K_d value around zero would travel at the rate of water, while ones that react more strongly with the soils would have higher K_d values (EPA, 1999). Arsenic K_d values, for example, range from 0 to 530,000 (Sauve and others, 2000). The K_d value is basically used to determine how well a soil will adsorb a contaminant and thus not allow the contaminant to migrate through the groundwater.

ASTM D 4646 is the Standard Test Method for 24-hour Batch-Type Measurement of Contaminant Sorption by Soils and Sediments. The distribution coefficient (K_d) is defined identically to the distribution ratio (R_d), except K_d is considered to be an equilibrium value and independent of the concentration of solute. The distribution ratio (R_d) is the ratio of the concentration of solute sorbed on the soil or other geomedia divided by its concentration in solution. The R_d value is calculated as follows:

$$K_d = R_{d(\text{at equilibrium})} = \frac{(\text{mass of solute sorbed per unit mass of geomedia})}{(\text{mass of solute in solution per unit volume of solution})}$$

$$= \frac{\mu g / g}{\mu g / mL} = mL / g$$

The test method can be summarized as mixing distilled water, natural water, waste leachate, or other aqueous solution containing a known concentration of a solute with a known amount of unconsolidated geologic material (e.g., soil) for 24 hours. Changes in solute concentrations are used to calculate a distribution ratio (R_d) (ASTM, 2001).

This test method is meant to allow for a rapid (24 hour) index of soil sorption affinity for given chemicals or leachate constituents. A large number of samples may be run using this test method to determine a comparative ranking of those samples, based upon the amount of solute sorbed by the soil, or by various soil or leachate constituents. The 24-hour time is used to make the test convenient and also to minimize microbial degradation

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which may be a problem for organic contaminants in long-timed procedures (ASTM, 2001).

After the samples have been weighed and air-dried, a moisture content has been measured, and the volume of solution has been determined, the sample can be placed in a rotary extractor to be agitated for 24 hours. The sample is then removed and the solution is removed from the solid phase by decantation and then filtered. After a clear solution is obtained, the K_d value can be calculated from the following equation:

$$K_d = \frac{(A - B)V}{(M_s)\,B}$$

where:
A = initial concentration of the solute defined as the mean concentration of the blanks, ug/mL,
B = final concentration of the solute after 24 hours in contact with the soil, ug/mL,
V = volume of solution used, ml,
Ms = mass of soil expressed on an oven-dried basis, grams, and
K_d = distribution ratio, ml/g (ASTM, 2001).

Site specific sorption coefficients (K_d) were measured for soil samples collected from the Huffaker Road site per ASTM D-4646. Three samples were collected from the site. The sample designated Huffaker 1 was collected from the proposed borrow area south of Smith Creek. Huffaker 2 consists of residual soils collected from the proposed by-products storage area. Huffaker 3 consists of mine spoils, also from the proposed by-products storage area, and colluvial material from the side of Lavender Mountain. All of these soils may be used for backfill at the site. Table 3-6 shows the results of the testing. The laboratory test results are located in Appendix K.

Table 3-6
Arsenic Adsorption Coefficients

Sample ID	Adsorption Coefficient, ml/g (K_d)	Soil Description
Huffaker 1	165	Tan to yellowish orange silty clay to clayey silt
Huffaker 2	289	Tan to yellowish orange silty clay with some weathered shale
Huffaker 3	349	Tan to yellowish orange silty fine sand with rock fragments

Cation Exchange Capacity **– EPA method 9081**

The cation exchange capacity was also determined for four samples. A composite sample was prepared for BS-1 from the bag samples taken at depths of 1-foot and 4-foot The

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same was done for sample BS-2. Samples BS-3 and BS-4 were tested separately. The results of this testing are shown on Table 3-2, Summary of Soil Laboratory Test Results. The laboratory tests reports are included in Appendix I.

3.6 Potential of Unconfined Aquifers as Sources of Drinking Water

Groundwater recharge is generally from infiltration of rainfall occurring in the drainage basins to the north of the site. The average annual rainfall is 54.27 inches per year. Determination of the seasonal fluctuation in the groundwater level is pending the collection of additional monitoring data.

There is a low potential for the unconfined aquifer in this area to be used as a source of drinking water. The exact thickness of the Floyd Shale is unknown, although it is estimated to range from about 200 to 1,200 feet thick. The USGS web site lists 36 wells completed in the Floyd Shale in Floyd County (USGS, 2002). Ten of these wells are greater than 100 feet deep. The remainder are between 50 and 96 feet deep (one is unknown). The area down-gradient of the site, along Smith Creek is sparsely populated with residences located west of the Norfolk Southern Railroad closer to Huffaker Road. The area to the east of the creek is the steep slope of Judy Mountain. Also, public water supply is provided along this portion of Huffaker Road.

3.7 Description of Geologic and/or Natural Hazards/Seismic Impact Zone

There were no faults or fault zones, unstable areas, or shear zones encountered during the site geological exploration. The bedding/slickensides are the predominate geologic structure in the shale. The slickensides are the result of regional folding.

The following recommended site parameters were obtained from ASCE 7-98, Minimum Design Loads for Buildings and Other Structures:

Site Class = B, Rock with shear wave velocity between 2500 fps and 5000 fps (assumed)
$S_s = 45\%$
$S_1 = 12\%$
$F_a = 1.0$
$F_v = 1.0$

Earthquake acceleration maps prepared for the continental United States (Algermissen and others, 1990) were reviewed to determine the seismic impact zone for the site. Map C of this series indicates the horizontal acceleration with a 90% probability of not being exceeded in 250 years. According to Map C, the horizontal acceleration for the site is 0.22g.

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4.0 GROUNDWATER POLLUTION POTENTIAL

4.1 Introduction

In order to determine groundwater pollution potential and rate of leachate migration from the proposed by-product storage area, three analyses were performed:

- Fate and transport modeling using the SESOIL model,
- LeGrand (1964) scoring method per Circular 14, and a
- Pathway analysis per Circular 14

The results of this work showed a very low potential for leachate to contaminate groundwater, and similarly, for leachate to leave the site. Fate and transport modeling showed that under a conservative scenario (K_d = 165 mg/l for the soil), contamination would take at least 1235 years to reach groundwater, and under a more realistic scenario (K_d = 289 mg/l), contamination would take about 3500 years to reach groundwater. A two-media LeGrand analysis produced a score of 12.4 indicating groundwater pollution is possible, but not likely.

The horizontal pathway analysis described in Circular 14 becomes relevant only after contamination has traveled vertically through at least a 2-foot compacted clayey soil liner and 5 feet of clayey, compacted fill material to the water table, that is, only after about 3500 years or more. The pathway analysis produced a 5.5 to 20.3 year horizontal travel time to the nearest receptor, which is more than enough time to detect any contamination with the required groundwater monitoring system and to mitigate it, if necessary.

4.2 Fate and Transport Modeling

4.2.1 Background

The fate and transport model selected for use in this study was RISKPRO's Seasonal Soil Compartment Model (SESOIL) for Windows, Version 3, May 1998, from General Science Corporation. The model was developed as a risk screening-level model. It is a one-dimensional vertical transport model for the unsaturated soil zone. The model can only consider one chemical (pollutant) compound at a time. The model is based on mass balance and equilibrium partitioning of a chemical between different phases (dissolved, sorbed, vapor, and pure).

SESOIL is used to estimate the rate of migration of chemicals through the soil and the concentration of chemicals in the soil layers after a chemical release to the environment. The model can accept time-varying pollutant loads and can simulate up to 9,999 years of chemical transport. Applications of the model include long term leaching studies from

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waste disposal sites, leaking underground storage tanks, agricultural applications, and pesticide and sediment transport on watersheds (SESOIL user's guide).

According to the SESOIL user's guide, the soil column is a user-defined compartment extending from the surface through the unsaturated zone to the water table. SESOIL requires several types of chemical- and site-specific data. The essential information needed to run the model includes the following:

- The behavior in the environment of the chemical to be modeled,
- The rate and frequency of the chemical's release into the environment,
- A description of the media in which the chemical is released, and
- Monthly estimates of climatic data. (Climate information is compiled in RISKPRO through on-line databases).

Output includes the following:

- Time-variant estimates of concentrations of pollutants in the soil column at various depths,
- Rate of leaching toward groundwater, including quantities of pollutants entering the groundwater (SESOIL does not model the saturated zone),
- Pollutant loss from the unsaturated zone in terms of surface runoff,
- Volatilization, and
- Degradation.

Pollutant transport and transformation in the unsaturated soil zone are complex processes affected by chemical, soil, and hydrogeologic properties. In SESOIL, these processes are included in one of three cycles or submodels. These submodels and their associated processes are shown below:

1. Hydrologic submodel (deals with moisture movement through the layers), including:
   - rainfall
   - surface runoff
   - capillary rise
   - groundwater runoff (recharge)
   - soil moisture (storage)
   - evapotranspiration
   - infiltration

2. Pollutant fate submodel, including:
   - advection
   - cation exchange
   - sorption

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- washload
- volatilization
- surface runoff
- groundwater runoff (recharge)
- metal complexation
- diffusion (air phase)
- hydrolysis

3. Sediment or washload submodel (deals with runoff from the soil surface). For this application, all precipitation is assumed to infiltrate into the subsurface (worst case) and zero runoff is assumed. Therefore, washload is not used in the Huffaker Road model.

Hydrologic Submodel

The hydrologic submodel is one-dimensional and considers vertical movement only. It focuses on the role of soil moisture (or interstitial pore water) in the soil layer. It is based on a statistical, dynamic formulation of a vertical water budget and has been adapted for either yearly or monthly simulations and for moisture variations in the soil. The submodel calculates results for the hydrology of the site and passes these results to both the pollutant fate and sediment washload cycles.

Pollutant Fate Submodel

The pollutant fate submodel breaks the soil column into several compartments, called layers. The soil column can be represented by up to 4 layers and the dimensions of these layers are defined by the user. Each layer in the pollutant cycle can be further broken up into 10 sublayers having the same soil properties as the layer of which they are a part. The total soil column is treated as a series of interconnected layers. Each layer or sublayer can receive and release pollutant to and from adjacent layers. Like the hydrologic submodel, pollutant fate is based on a mass balance equation that tracks the pollutant as it moves in the soil moisture between layers. When a pollutant enters a layer, the model assumes instantaneous and uniform distribution of the chemical throughout that layer. The model performs mass balance calculations over each entire soil layer or sublayer; there is no concentration gradient within a layer (SESOIL user's guide).

The pollutant cycle simulates transport and transformation processes in three phases present in the soil layers: soil-air or gaseous phase, soil-moisture phase, and adsorbed or soil-solids phase. The fate of the pollutant in the soil column includes both transport and transformation processes, which depend on the chemical's partitioning among these three phases. The three phases are assumed to be in equilibrium with each other at all times. The pollutant cycle in SESOIL is based on the chemical concentration in the soil water and all the mass balance equations are a function of this (SESOIL user's guide).

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Theoretically, a non-reactive dissolved pollutant will travel to another soil layer or to groundwater at the same speed as the movement of moisture through the soil layer. However, the movement of a reactive pollutant will be retarded due to adsorption of the pollutant on the soil particles. Movement of pollutant may also be retarded due to the movement of bulk moisture mass due to vapor phase partitioning. For ash, this is not applicable (SESOIL user's guide).

SESOIL includes two partitioning processes for movement of pollutant from soil moisture to soil solids, the sorption process and cation exchange. The sorption process may be defined as the adhesion of pollutant molecules or ions to the surface of soil solids. The process is generally reversible; adsorption being the movement of a pollutant onto soil solids and desorption being the movement of pollutant off of soil solids to the liquid or gas phase. The two processes are assumed to be in equilibrium and are modeled that way (SESOIL user's guide).

4.2.2 Huffaker Road SESOIL Model

Arsenic was chosen as the potential contaminant to model, based on the results of the ash total metals concentrations and leaching tests (Table 2-1). The general design of this model simulates 60 feet plus 2 cm of ash atop 5 feet of clayey soil representing the clay liner material that is to be placed at the site (Figure 4-1). The 2 cm of ash is used to directly introduce the pollutant (arsenic) to the clay.

Model Assumptions

- Ash will be stacked to a maximum height of 60 feet.
- The area of the storage is 30 acres.
- The storage area is not capped (worst case).
- Water moves vertically through the affected soils at a constant rate.
- Changes in soil components do not affect the overall infiltration rate or vertical movement.
- Dispersion in the vadose zone is negligible.
- The soil arsenic linear sorption coefficients are constant throughout the source area.
- The model is conservative and does not account for all the geochemical processes on site.
- The program models the unsaturated zone only (basically migration through the clay layer). The model assumes that the pollutant front begins at the middle of the lowest layer that has a concentration of the constituent of interest.

Input Parameters

Table 4-1 presents the input parameters for the model.

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Table 4-1
SESOIL Model Input Parameters – Basic Model

In put Parameter	Value	Source/Comments
General Model Properties		
Climate data from Rome, Georgia raingage station		National Climatic center at the National Oceanographic and Atmospheric Administration
Simulation length	100 years	Most runs used a 100-year run time. 1000 years was used as a worst case for the basic model.
Application length	50 years	Longest available application time.
Sediment washload cycle turned off		Assumes no surface runoff.
Number of layers	4	Model has 3 layers of ash totaling 60 feet plus 2 cm to directly introduce arsenic to the soil. A 5-foot layer of clay (conservative) underlies the ash.
Continuous loading of contaminant		Worst case.
Application area	30 acres = 1.21×10^9 cm^2	Assumed cell size.
Volatilization	0.0	Forces all contaminant transport downward through the soil.
Soil/Ash Input Parameters		
Ash density	1.45 g/cm^3 = 90 lb/ft^3	SCS Engineering and Construction Services
Ash effective porosity	0.1	RCRA Investigation Guidance, Table 10-4, Default Values for Effective Porosity; assumes ash behaves as a silt (0.1).
Freundlich equation exponent	1.0	Model recommended value in the absence of site-specific data; assumes linear sorption.
Disconnectedness index	12	Default value for silt and clay.
Organic carbon content	10%	SCS Engineering and Construction Services
Cation exchange capacity	NA	Since arsenic is an anion, K_d values were used. Both can not be used in the model.
Intrinsic permeability ash	1×10^{-9} cm^2	SCS Engineering – average value for ash. This is equivalent to a hydraulic conductivity of 1×10^{-4} cm/sec.
Intrinsic permeability soil	1×10^{-11} cm^2	Laboratory testing average value of remolded samples. This is equivalent to a hydraulic conductivity of 1×10^{-6} cm/sec.
K_d ash	22.5 mg/L	Average value for GPC ash (conservative)
K_d silt	289 mg/L	The average value of the residual soils from laboratory testing on Huffaker Rd. soils (Table 3-6).
Chemical Input Parameters - Arsenic		
Arsenic concentration in ash	68 mg/kg	By-product characterization of Hammond ash
Atomic weight of arsenic	74.9 g/mole	
Solubility of arsenic	37 g/L	Agency for Toxic Substances and Disease Registry/CDC website

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4.2.3 Sensitivity Analysis

A sensitivity analysis of the finalized model was conducted by varying the travel time, K_d values, intrinsic permeability, porosity, contaminant concentration, and a combination of these parameters. The sensitivity testing, as with the basic model, was performed using arsenic as the contaminant of interest. The following models were run for the sensitivity testing:

- The basic model travel time was extended to 1000 years.
- The adsorption coefficient was varied by an approximate order of magnitude higher and lower than that used for the basic model. In the lower sensitivity case, a value of 165 mg/L was used to simulate the lowest value of K_d measured for site soils.
- The intrinsic permeability of the ash was varied by an order of magnitude higher and lower.
- The intrinsic permeability of the soil was varied by an order of magnitude higher. Varying the intrinsic permeability of the soil by an order of magnitude lower produced a difference between the permeabilities of the ash and the soil such that the results became suspect. This would, however, be a more conservative case.
- The porosity was varied by an order of magnitude lower (0.01) and 0.9. These two values represent the extreme range that can be used in the model.
- Arsenic concentrations of the ash were varied by an order of magnitude higher and lower.

Table 4-2 contains the results of the sensitivity testing. Appendix L contains the model inputs and outputs from each of the runs.

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Table 4-2
Results of SESOIL Basic Model and Sensitivity Modeling

Case (modeled for 100 years except as noted)	Maximum Contaminant Depth Below Ash, inches (leading edge of contaminant)	Soil Moisture, ug/ml Lower Soil Layer	Adsorbed Arsenic, mg/kg, on Lower Soil Layer
Basic Model	2.44	0.1966	56.80
Basic Model at 1000 years	23.31	2.229	643.9
K_d = 165 mg/L	4.02	0.3448	56.86
K_d = 2,890 mg/L	0.08	0.0197	56.82
intrinsic permeability ash = $1X10^{-8}cm^2$	20.55	2.386	689.4
intrinsic permeability ash = $1X10^{-10}$ cm^2	0.08	0.0112	3.234
intrinsic permeability soil = $1X10^{-10}cm^2$	4.41	0.2789	80.53
porosity = 0.01	2.83	0.2168	62.64
porosity = 0.9	3.23	0.3769	108.9
As ash = 680 mg/kg	2.44	1.966	568.1
As ash = 6.8 mg/kg	2.44	0.0197	5.682

Summary of Results

- For a K_d of 289 (realistic case), arsenic traveled 2.44 inches into the compacted clayey soil liner after 100 years. No detectable arsenic was predicted to occur beneath the soil liner after 1000 years.

- After 1000 years, the predicted depth of arsenic migration into the compacted clayey soil liner is 1.9 feet. This indicates that arsenic would not break through the soil liner or reach the shallow rock aquifer.

- For a K_d of 165 (conservative case), the maximum arsenic depth into the compacted clayey soil liner is 4.0 inches after 100 years; this means that for a minimum water table depth of 7 feet (2 feet of compacted clayey soil liner and 5 feet of compacted soil), arsenic would take at least 2090 years to reach the water table, if then.

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4.3 LeGrand Analysis

A LeGrand Analysis was performed on the proposed by-product storage area site as described on pages 14 through 17 of Circular 14. Table 4-3 gives the measured input parameters and results of the analysis (LeGrand score). A two media analysis was used based upon the following site characteristics:

- Presence of unconsolidated materials consisting of clayey silt and weathered shale overburden.
- Overburden underlain at shallow depths by unweathered Floyd shale.

Table 4-3
LeGrand Analysis, Input Parameters and Results

Criteria	Measured Site-Specific Value	LeGrand Score Two Media
Distance between waste management boundary and closest receptors (Smith Creek)	200 feet	2.5
Minimum depth below clay liner to water table	5 feet	0.5
Water table gradient	2.2% toward receptor	2.5
Sorption	minimum of 2 feet of compacted clay liner	6
Permeability	fractured rock	0.9
	Total	**12.4**

- The maximum sorption rating of 6 (clay) was used in the analysis since the site will be lined with at a minimum 2 feet of compacted clayey soil.
- A minimum depth of 5 feet below the clayey soil liner to the seasonal high groundwater table will be established for this site.
- Gradients varied between 0.8% and 4.9% toward Smith Creek. A gradient of 2.2% was used. This value was an average across the site (Section 3.5.3).
- A 200-foot buffer was assumed along the potential receptor (Smith Creek).

The LeGrand analysis for a two media site produced a score of 12.4, which means groundwater pollution potential is "possible, but not likely" (Table 4-4).

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Table 4-4
LeGrand Score Interpretation
(from Circular 14, p. 14)

Total Points	Pollution Potential of a Site
0 – 4	Imminent
4 – 8	Probably
8 – 12	Possible
12 – 25	Possible, but not likely
25+	Approaching impossible

4.4 Pathway Analysis (Horizontal Travel Time)

4.4.1 Calculated Groundwater Velocities

Horizontal flow velocity calculations were performed using the Darcy equation on page 14 of Circular 14. The linear flow velocity can be estimated using the following formula and permeabilities.

$$v = \frac{Ki}{\eta}$$

where:

v = linear velocity (ft/sec or m/sec)

i = hydraulic gradient = $\frac{(h_1 - h_2)}{l}$ (ft/ft)

η = estimated effective porosity

K = hydraulic conductivity (ft/sec or m/sec)

The average hydraulic conductivity of the moderately to badly weathered shale is 2.87 x 10^{-6} ft/sec as determined by field tests (Table 3-5). The gradient of 0.022 ft/ft is the average site gradient as determined from the groundwater potentiometric map (Table 3-4). A typical tabulated value for the effective porosity of gravelly clayey silts is 0.20 (Maidment, 1992). The resulting flow velocity is as follows:

$$v = \frac{(2.87 \times 10^{-6}\ \text{ft/sec})(0.022\ \text{ft/ft})}{(0.20)} = 3.2 \times 10^{-7}\ \text{ft/sec} = 0.027\ \text{ft/day}$$

The moderately to badly weathered shale unit comprises the approximate top 10 to 25 feet of the unconfined aquifer above the shale. If any contamination were to move

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through the badly weathered shale to the shale unit, the flow velocity could be higher due to the increased permeability and decreased porosity.

4.4.2 Description of the Relationship Between Groundwater Flow Directions and Potential Receptors

The groundwater flow directions indicated on the potentiometric map are towards Smith Creek. This surface water body would be the closest groundwater receptor. There were no private or public water sources down-gradient of the site within the ½ mile and 2 mile radii.

4.4.3 Estimated Travel Time for Leachate to Reach Potential Receptors

The estimated travel time for leachate to reach Smith Creek is determined from the groundwater flow velocities of Section 4.2. Berms were constructed along Smith Creek associated with detention ponds constructed during the previous mining operations. The existing buffer to the creek is associated with these berms. The following travel time is calculated assuming the by-product boundary unit will not extend beyond a 200-foot buffer to Smith Creek.

Using the average calculated flow velocity for the moderately to badly weathered shale resulted in a travel time of 20.3 years. This figures represents the travel time beyond that required for any contaminant to travel through the 2 feet of compacted clayey soil liner and the 5 feet of separation above the groundwater elevation.

4.5 Description of Relationship Between the Vadose Zone and Uppermost Aquifer

A minimum 5 feet of separation will be established between the bottom of the compacted clay liner and the seasonal high groundwater elevations. Continued monitoring of the temporary piezometers will establish these elevations. This separation will be established with existing stockpiled overburden material and compacted clayey soils from on site stockpiles and/or from the proposed borrow area. Anticipated flow paths for any leachate generated within the cells would be through the compacted clay liner system and the separation zone of compacted soil prior to reaching groundwater.

The hydraulic conductivities of existing overburden, remolded samples from these stockpiles, and of material below the groundwater surface has been determined. The following represents the variation in hydraulic conductivities with depth (by zone):

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Liner (compacted clayey soil)	3.12×10^{-6} ft/sec
Separation Zone (in place & compacted soil)	2.16×10^{-5} ft/sec 3.12×10^{-6} ft/sec
Permeable Zone (groundwater zone)	2.87×10^{-6} ft/sec 7.70×10^{-5} ft/sec

Currently, groundwater recharge is accomplished through infiltration of surface storm water within the drainage basin north of the site. The average annual rainfall is approximately 57 inches per year. The seasonal variation in the groundwater surface is currently being determined through periodic monitoring of the temporary piezometers on site.

4.6 Mitigation of Geologic and Natural Hazards

There were no geologic or other hazards detected for this site. The jurisdictional wetlands, if impacted, will be permitted as required by the Corps of Engineers 404 permitting process. Non-jurisdictional wetlands will be voluntarily mitigated on a 1:1 basis.

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5.0 RECOMMENDATIONS FOR DESIGN

5.1 Favorable and Unfavorable Areas

Figure 5-1 indicates the areas of the site that are considered favorable for development as a private industry, coal combustion by-products storage facility. The favorable areas consist of those areas outside the indicated buffer areas and the jurisdictional wetlands. Cell development will require grading of the site to meet current EPD criteria for industrial by-product storage facilities. Fill material from the existing overburden stockpiles and from an adjacent borrow area located south of Smith Creek will be placed and compacted to provide the minimum 5-foot separation between the seasonal high groundwater table and the bottom of the proposed compacted clayey soil liner. This will require draining and grading of the existing sedimentation/detention ponds located over the site.

The only jurisdictional wetlands on site are located along the original course of Smith Creek. Smith Creek flows beneath the Norfolk Southern Railroad discharging into its undisturbed, original course. A hydrologic study will be performed to determine: 1) the flow conditions of Smith Creek north of the railroad, 2) the adequacy of drainage beneath the railroad and impacts on storage area locations, and 3) the necessity of mitigating these jurisdictional wetlands and restoring the natural course of Smith Creek across the site to prevent flooding of potential cells and overtopping of the railroad. Any stream restoration will be in accordance with established U. S. Fish and Wildlife, Corps of Engineers and EPA guidelines. Minimum 25-foot buffers would be established and/or maintained along the restored course during any restoration.

Due to previous disturbance of the site by mining activities, shallow groundwater and shallow and exposed rock are present in various areas of the site. Engineered measures could include a drainage layer between exposed rock and groundwater and the required minimum of 5 feet of compacted fill below the compacted clayey soil liner. In all areas, the minimum 5 feet separation between the seasonal high groundwater level and the bottom of the compacted clayey soil liner will be maintained.

5.2 Liner/Leachate Collection Systems

Due to the current condition of the site and the proposed site development outlined in 5.1, a minimum 2-foot compacted clayey soil liner is recommended for the storage cells and necessary sedimentation/detention ponds. The liner will be constructed from fill material obtained on site or from the adjacent borrow area. Bulk samples were obtained from the on site materials. Hydraulic conductivity values for the samples, remolded to 95% maximum dry density at optimum moisture content, ranged from 1.1×10^{-6} cm/sec to 9.7×10^{-6} cm/sec, averaging 3.12×10^{-6} cm/sec.

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A detailed exploration will be conducted to further define the characteristics of the proposed borrow materials to ensure adequate placement, compaction, and hydraulic conductivity criteria for the compacted liner and the fill material used for the 5-foot zone of separation above the groundwater table.

5.3 Cell Depths

Excavation requirements for the storage cells will be determined during site design and development (design and operation plan). Excavation will not extend below the minimum 5-foot buffer required above the seasonal high groundwater table. Continued groundwater measurements will be made to determine this seasonal high level. Figure 5-2 indicates the typical relationship between the bottom of the storage cell, the 2-foot compacted clayey soil liner, the minimum 5-foot separation, and the seasonal high groundwater table.

5.4 Site Drainage and Erosion Control

The site should be designed and constructed to minimize soil erosion and sediment migration. Diversion ditches, berms, piping, and sedimentation ponds should be included as needed to accomplish this task as well as to prevent site storm water run-on from entering storage areas. Areas where excavation and earth fill operations occur should be vegetated immediately.

5.5 Buffer Zones

There will be a minimum 200 feet of buffer between the limits of the storage facility and adjacent property lines except the Norfolk Southern Railroad right of way crossing the site. A 50-foot buffer is recommended along both sides of this right of way. There will be a minimum 25-foot buffer between the limits of the storage facility and wetland areas. No land disturbing activities are to take place within these buffer zones except for construction of groundwater monitoring wells and site ingress and egress.

5.6 Monitoring

A groundwater and surface water monitoring network for the ash and gypsum storage facility will be designed to provide early detection in the unlikely event that any contaminates might reach groundwater and surface water. Proposed monitoring well locations will be submitted with the Groundwater Monitoring Plan when the limits of the storage area have been established. Monitoring locations will be located around the

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periphery of the site and will meet the EPD requirements. Figure 5-3 shows a diagram of a typical monitoring well design.

Sampling will commence once the Groundwater Monitoring Plan has been approved and will continue semiannually for the life of the storage area. Four initial sampling events will be performed at eight week intervals during the six month period following approval of the Plan to establish statistical base. Background data will be determined prior to site development for the up-gradient and down-gradient wells as well as any surface water monitoring points.

5.7 Disposition of Borings

Boreholes and piezometers located within the area proposed for by-product storage will be properly abandoned upon acceptance of this Report and establishment of the seasonal high groundwater levels. Abandonment procedures will be in accordance with the Water Well Standards Act.

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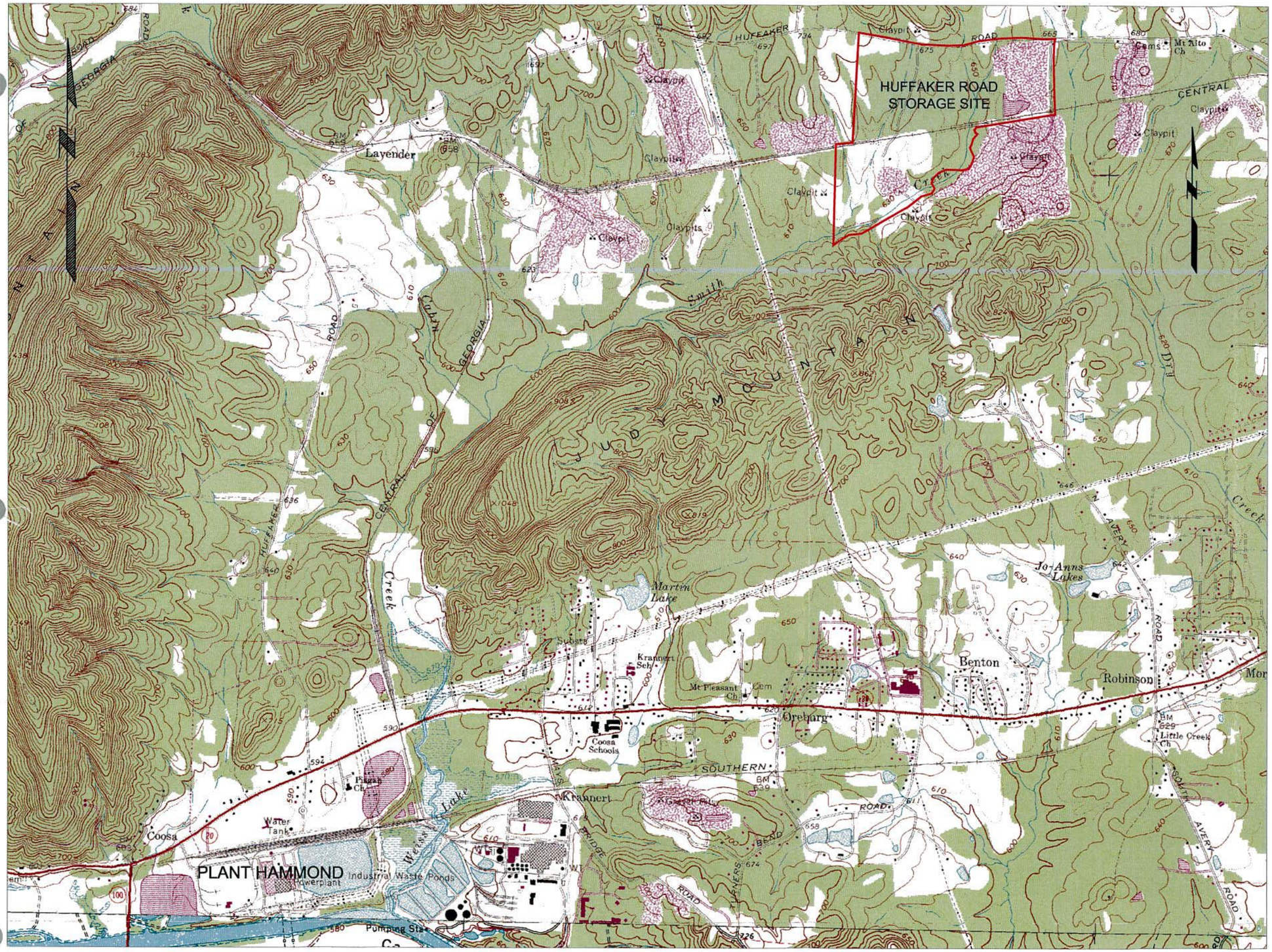
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Reference Drawings

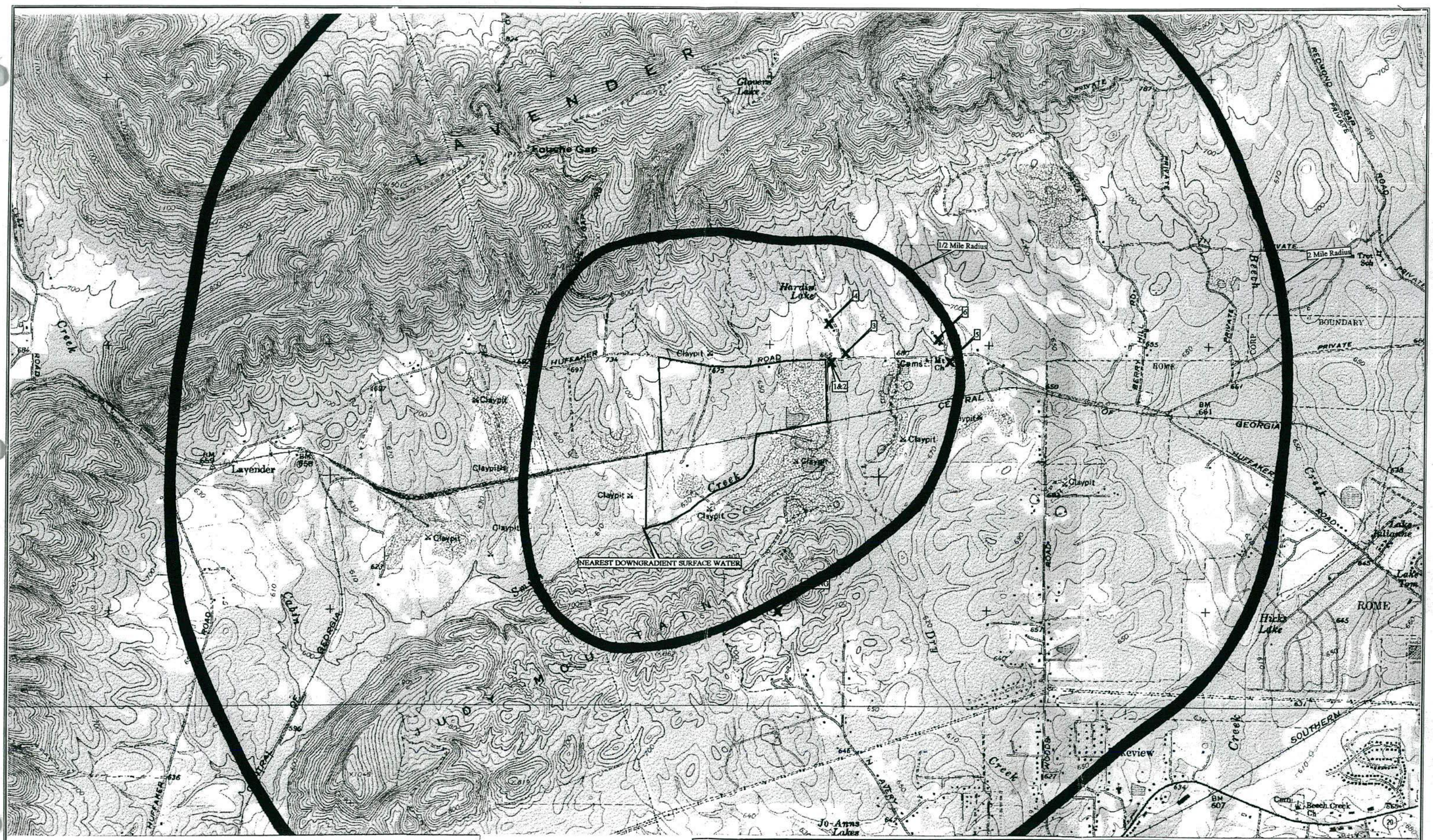
GPC Land Department Map File No. H-628-10 Ash Monofill Site
GPC Land Department Map File No. H-628-11 Site Topographic Map
ES1164S1-2 Figure 1-2 Flood Zone Map
ES1164S1-3 Figure 1-3 Wetland Boundaries
ES1164S1-4 Figure 1-4 Proximity of Site to Significant Groundwater Recharge Areas
ES1164S1-5 Figure 1-5 Location of Public and Domestic Water Supply Sources
ES1164S3-1 Figure 3-1 Shale Outcrops
ES1164S3-2 Figure 3-2 Regional Geology
ES1164S3-3 Figure 3-3 Bore Hole Locations and Sections
ES1164S3-4 Figure 3-4 Geologic Cross-Section A-A Along Strike
ES1164S3-5 Figure 3-5 Geologic Cross-Section B-B Perpindicular to Strike
ES1164S3-6 Figure 3-6 Groundwater Elevations Over Time
ES1164S3-7 Figure 3-7 Potentiometric Surface Map Readings Taken January 28, 2002
ES1164S3-8 Figure 3-8 Potentiometric Surface Map Readings Taken September 11, 2002
ES1164S4-1 Figure 4-1 SESOIL Model Simulation
ES1164S5-1 Figure 5-1 Areas Favorable and Unfavorable for Private By-Products Facility
ES1164S5-2 Figure 5-2 Cell Depth and Relationship to Groundwater
ES1164S5-3 Figure 5-3 Typical Monitoring Well Design

Southern Company Services, Inc.

Figure 1-1
Plant Hammond - Huffaker Road
Coal Combustion By-Products
Storage Site
Topographic Map of General Site Area
(1:24,000)

ES1164s1-1

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KEMRON ENVIRONMENTAL SERVICES

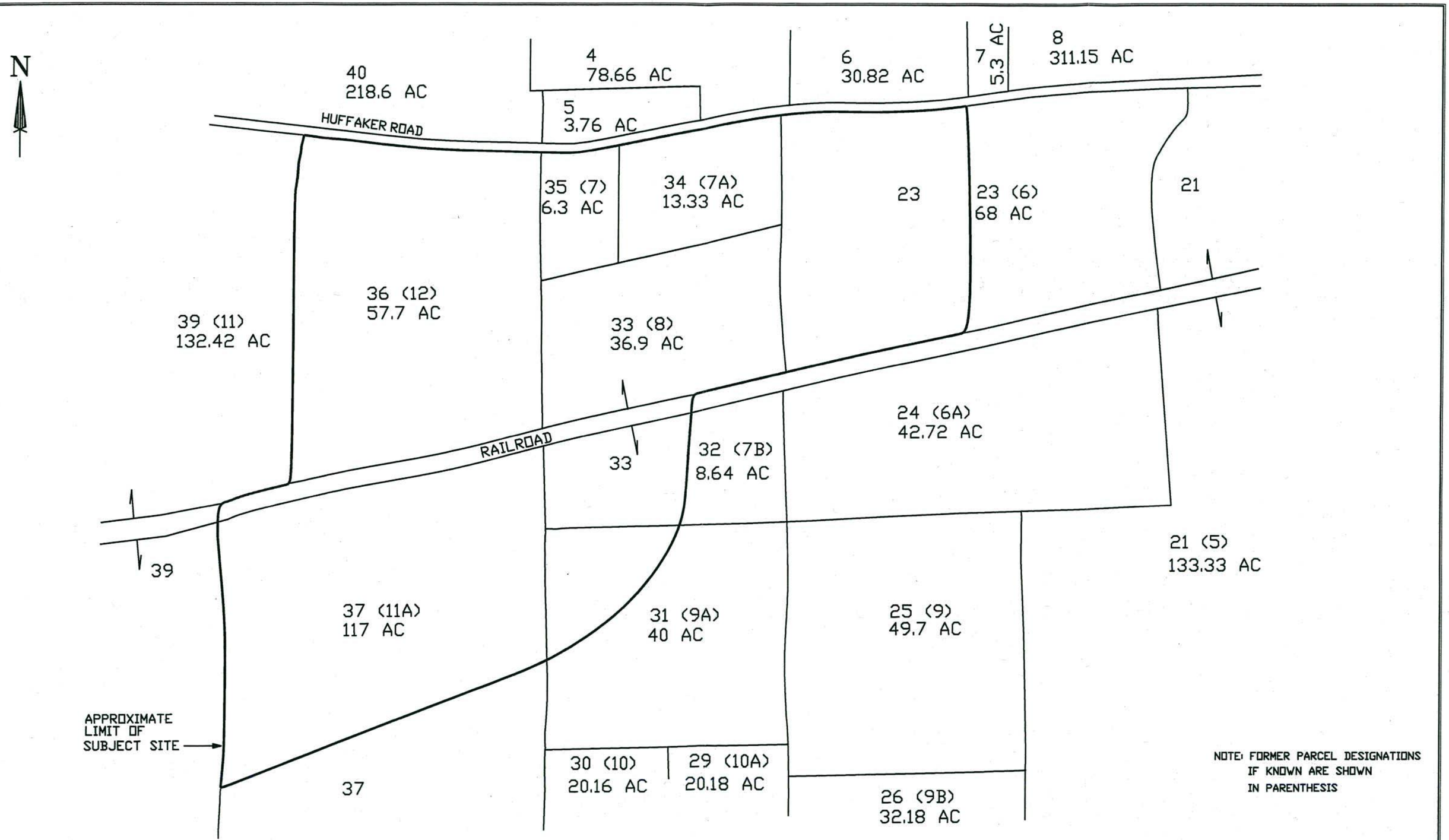
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ITED BY:	
DRAWN BY: KG	
REVIEWED:	
APPROVED:	
DATE: 05 OCTOBER 2001	
PROJECT NO. 6950/017	
DWG. NO. WT RS FG 3	

FIGURE 3

WATER RESOURCES
HUFFAKER ROAD MONOFILL SITE
ROME, FLOYD COUNTY, GEORGIA



NOTE: FORMER PARCEL DESIGNATIONS IF KNOWN ARE SHOWN IN PARENTHESIS

KEMRON ENVIRONMENTAL SERVICES

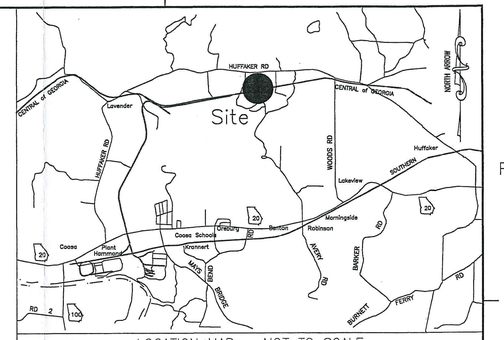
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REVIEWED:	DATE: 05 OCTOBER 2001
DRAWN BY: KG	PROJECT NO. 6950/017
APPROVED:	DWG. NO. TAX MAP FG 2

FIGURE 2

TAX MAP
HUFFAKER ROAD MONOFILL SITE
ROME, FLOYD COUNTY, GEORGIA





LOCATION MAP – NOT TO SCALE

LEGEND

JURISDICTIONAL WETLAND BOUNDARY

THE JURISDICTIONAL WETLANDS SHOWN ON THIS PLAN ARE UNDER THE JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS. LOT OWNERS MAY BE SUBJECT TO PENALTY BY LAW FOR DISTURBANCE TO THESE WETLAND AREAS WITHOUT PROPER AUTHORIZATION.

NON-JURISDICTIONAL WETLAND BOUNDARY

NOTES:
1) FOR PROPERTY INFORMATION, SEE GPC LAND DEPT. MAP FILE NO. H-628-10.
2) ALL HORIZONTAL CONTROL SHOWN IS GEORGIA STATE PLANE - WEST ZONE NAD83/94.
3) ALL VERTICAL CONTROL SHOWN IS NAVD88.

PRELIMINARY

200 0 400 600
(In Feet)
1 inch = 200 feet

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Southern Company Services, Inc.
FOR
GEORGIA POWER COMPANY

REVISION	DATE

REVISION	A	DATE	04/03/02
ISSUED FOR REVIEW			

BY	CHK'D	CIVL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR

BY	CHK'D	CIVL APPR	ELECT APPR	I/C APPR	MECH APPR	MGR APPR
GLS	RDW	XXX				

PLANT HAMMOND
HUFFAKER ROAD ASH MONOFILL SITE
TOPOGRAPHIC MAP
(WETLANDS & FLOOD PLAIN)

SCALE	PROJ I.D.	DRAWING NUMBER	SH	CONT'D	REV
1" = 200'	10201	H8884	1	FINAL	A

ANSI F: 28x40 Acad2000

Note: Wetlands shown on this plan are under the jurisdiction of the US Army Corps of Engineers. Lot owners may be subject to penalty by law for disturbance to these wetland areas without proper authorization.

Approx. Land Lot Line

Approx. Land Lot Line

Iron Pin Set
1/2" Rebar
w/ Yellow GPC Cap

L4 L5

Iron Pin Found
5/8" Rebar

Huffaker Road (40' R/W)

L1 C1 L2 C2 L3 C3 C4

Permanant Eastern
Easement for Ingress/Egress

Temporary Stockpile Easement
Approx. 4.8 Acres

Haul Road

S00°34'12"W
407.66'

S03°07'10"E 918.35'

Geodetic Marker
Nail & Cap – Spurl
State Plane Coords.
N 1565605.71
E 1952986.07
Elev. 679.02

Wetlands

Wetlands

Dirt Road

c/L Haul Road

Boral
Bricks,
Inc.

N/F
Sikes Corp.

NORTH ARROW

Georgia State Plane – West Zone

N03°11'43"E

2045.22'

Permanant Western
Easement for Ingress/Egress

Temporary Easement
for Ingress/Egress

LL 79

Geodetic Marker
1/2" Rebar w/ Cap
Huffaker
State Plane Coords.
N 1564873.76
E 1953128.38
Elev. 670.40

Approx. Land Lot Line

Boral Bricks, Inc.
Tract 1
134.45 Acres

LL 80

Haul Road

Wetlands

MP 380

(100' R/W) S79°53'25"W

C/L Railroad

Central of Georgia Railroad

Geodetic Marker
Nail & Cap – NC14
State Plane Coords.
N 1564363.05
E 1955692.91
Elev. 660.37

Iron Pin Set
1/2" Rebar
w/ Yellow GPC Cap

Approx. Land Lot Line

Iron Pin Found
5/8" Rebar

3795.82' N79°53'25"E

C/L Railroad 2633.18'

Permanant Western
Easement for Ingress/Egress

S 01°59'34" W
590.47'

Georgia Power Company
Easement for Ingress/Egress

Haul Road

Approx. Land Lot Line

Iron Pin Found
5/8" Rebar w/ Blue Cap

867.29' Along C/L Creek

2003.96'

S89°51'30"E

1803.96' Land Lot Line

200.00'

Iron Pin Found
1/2" OTP

Iron Pin Set
1/2" Rebar
w/ Yellow GPC Cap

Iron Pin Found
1 1/2" Rod
1.73' East P/L

Iron Pin Found
5/8" Rebar

226.10'

108.65'

Iron Pin Found
Axle
0.6' East P/L

199.32'

S01°25'02"W

Iron Pin Found
2 1/2" OTP
0.4' East P/L

398.76'

Iron Pin Found
1" OTP
0.2' East P/L

1536.37'

598.03'

Haul Road

N/F
Inland Container Corp.

N01°50'01"E

2580.23'

c/L Creek

Boral Bricks, Inc.
Tract 2
283.97 Acres

Land Lot Line

LL 102

LL 101

Iron Pin Found
1" OTP
RR Iron Witness Post
1.4' East

Iron Pin Found
1 1/4" OTP
RR Iron Witness Post
0.7' Northeast

Iron Pin Found
2 1/2" OTP
5.01'

Iron Pin Found
1" OTP
RR Iron Witness Post
0.7' Northeast

Boral
Bricks,
Inc.

Iron Pin Found
Spindel Gear
1.2" West P/L

320.04'

72.99'

S01°25'40"W

Iron Pin Found
2 1/2" OTP
0.1 East P/L

196.13'

Iron Pin Found
2 1/2" OTP
0.2' East P/L

400.13'

989.29'

Iron Pin Found
1 1/4" OTP
RR Iron Witness Post
0.6' Southwest

Iron Pin Found
1" OTP 0.8' South P/L
3" Angle Iron Witness Post
0.3' Southwest

133.71'

705.00'

570.88'

Land Lot Line

Iron Pin Found
Railroad Track

1777.77'

N88°25'03"W

1409.59'

N89°22'56"W

1409.10'

N89°24'32"W

Iron Pin Found
1" Axle
RR Iron Witness Post
0.2' Southeast

Iron Pin Found
1" Flat Iron
RR Iron Witness Post
0.7' Southwest

Iron Pin Found
1" Axle
RR Iron Witness Post
0.5' Southwest

Iron Pin Found
RR Iron
26.56' South P/L

N/F
Vance G. Payne

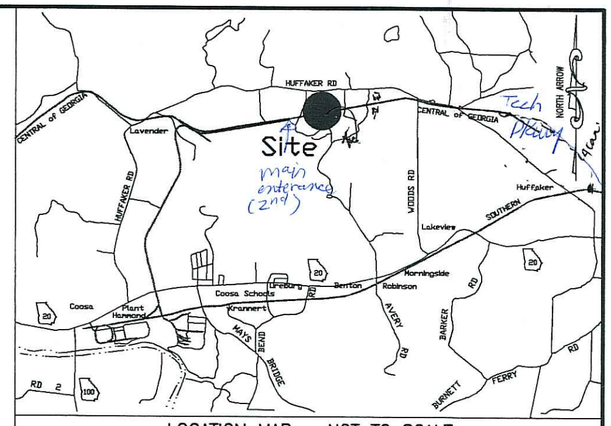
N/F
John M. Gilreath

N/F
James E.
Heard

GRAPHIC SCALE

400 0 200 400 800 1200

(In Feet)
1 inch = 400 feet



LOCATION MAP – NOT TO SCALE

PLAT ABBREVIATIONS

IPF – Iron Pin Found
IPS – Iron Pin Set
FPS – Fence Post Set
OTP – Open Top Pipe
CTP – Crimp Top Pipe
Conc. – Concrete
Alumn. – Aluminum
P/L – Property Line
R/W – Right of Way
C/L – Centerline
F/L – Fence line
T/L – Transmission Line
N/F – Now or Formerly
DB – Deed Book
PB – Plat Book
MF – Map File No.

MONUMENTATION LEGEND

Depicts Iron Pin Set
Depicts Iron Pin Found
Depicts Monument Set
Depicts Monument Found

UTILITY LEGEND

Electric Manhole
Electric Meter
Gas Manhole
Gas Valve
Gas Meter
Sanitary Sewer Manhole
Sanitary Sewer Cleanout
Storm Sewer Manhole
Telephone Manhole
Water Manhole
Water Valve
Water Meter
Fire Hydrant
Well
Power Pole
Transmission Tower
Guy Wire

Filed and Recorded in Plat Book , Page ,
This Day of , 19 , at M.

, Clerk

Surveyor: Donald L. Dryden
R.L.S. #2800
241 Ralph McGill Blvd., N.E.
BIN – 10151
Atlanta, Ga. 30308–3374
Phone (404) 506–2839

NOTE: THIS PLAT IS NOT VALID FOR RECORDING PURPOSES UNLESS SURVEYOR'S SIGNATURE APPEARS IN ORIGINAL BLACK INK OVER THE STAMP.

GEORGIA REGISTERED No. 2800 PROFESSIONAL 11-11-2002 LAND SURVEYOR DONALD L. DRYDEN

In my opinion this plat is a correct representation of the land platted and has been prepared in conformity with minimum standards and requirements of law.

Signed Donald L. Dryden

GPS Control Statement

I, Donald Dryden, declare that this map or report was prepared under my supervision on 10–10–2001 from an actual GPS survey made under my supervision; that this GPS survey was performed to category B specifications; that I used kinematic GPS field procedures. That this survey was performed using Trimble 4700 duel frequency receivers and all coordinates are based on Georgia State Plane – West Zone NAD83/94 and vertical datum of NAVD88.

All stations were double occupied and from this:
The minimum horizontal error is 0.01 feet.
The maximum horizontal error is 0.06 feet.
The average horizontal error is 0.03 feet.
All vertical control is less than 0.12 feet of error.

LINE TABLE		
LINE	BEARING	LENGTH
L1	S80°41'37"E	969.07'
L2	S87°41'59"E	377.98'
L3	N79°10'28"E	363.51'
L4	S89°44'27"E	235.27'
L5	S87°13'01"E	138.72'

CURVE TABLE				
CURVE	RADIUS	LENGTH	CHORD DIRECTION	CHORD
C1	2000.00'	244.56'	S84°11'48"E	244.41'
C2	1500.00'	343.63'	N85°44'14"E	342.88'
C3	3675.00'	710.98'	N84°43'00"E	709.87'
C4	5000.00'	220.25'	S88°28'44"E	220.24'

PLAT CLOSURE STATEMENT

This plat has been calculated for closure and is found to be accurate within one foot in 722305 feet.

\shared data\working\specproj\huffaker_preliminary.dwg
SERVER – \\gaxgpprc01\shared data\workgroups\gpc land\engineering\

REVISION BLOCK
No. 1 – Added Wetlands – JFW – 4/4/02

APPROVALS

GEORGIA POWER CO., ATLANTA, GA.
Land Department
Plant Hammond
Ash Monofill Site

Land lots 79, 80, 101 and 102 – 4th District – 4th Section
Floyd County, Georgia

DR.	TR.	Checked
JFW		
SCALE		DATE
1" = 400'		Dec. 13, 2001

DRAWING NUMBER

H–628–10

Note: Wetlands shown on this plan are under the jurisdiction of the US Army Corps of Engineers. Lot owners may be subject to penalty by law for disturbance to these wetland areas without proper authorization.

Approx. Land Lot Line

Huffaker Road (40' R/W)

Iron Pin Found 5/8" Rebar

Iron Pin Set 1/2" Rebar w/ Yellow GPC Cap

L1 L2 L3 L4 L5

C1 C2 C3 C4

200' Environmental Buffer

Geodetic Marker
Nail & Cap – Spurl
State Plane Coords.
N 1565605.71
E 1952986.07
Elev. 679.02

Permanant Eastern Easement for Ingress/Egress

Temporary Stockpile Easement
Approx. 4.8 Acres

Haul Road

S00°34'12"W
407.66'

S03°07'10"E
918.35'

Boral Bricks, Inc.

N/E Sikes Corp.

NORTH ARROW

Georgia State Plane – West Zone

N03°11'43"E
2045.22'

Permanant Western Easement for Ingress/Egress

Temporary Easement for Ingress/Egress

Wetlands

Dirt Road

c/L Haul Road

Geodetic Marker
1/2" Rebar w/ Cap
Huffaker
State Plane Coords.
N 1564873.76
E 1953128.38
Elev. 670.40

LL 79

LL 80

Boral Bricks, Inc.
Tract 1
134.45 Acres

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(100' R/W) S79°53'25"W

C/L Railroad

Central of Georgia Railroad

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N79°53'25"E

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867.29' Along C/L Creek

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E 1955692.91
Elev. 660.37

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S89°51'30"E

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1.73' East P/L

108.65'

Iron Pin Found Axle
0.6' East P/L

Iron Pin Found 2 1/2" OTP
0.4' East P/L

Iron Pin Found 1" OTP
0.2' East P/L

226.10'

191.82'

398.76'

S01°25'02"W
1536.37'

598.03'

Iron Pin Found 5/8" Rebar

N/F Inland Container Corp.

N01°50'01"E
2580.23'

Haul Road

c/L Creek

Land Lot Line

Boral Bricks, Inc.
Tract 2
283.97 Acres

LL 102

LL 101

Iron Pin Found 1" OTP
RR Iron Witness Post
1.4' East

Iron Pin Found 1 1/4" OTP
RR Iron Witness Post
0.7' Northeast

Iron Pin Found 2 1/2" OTP
5.01'

Iron Pin Found 1" OTP
RR Iron Witness Post
0.7' Northeast

Boral Bricks, Inc.

Iron Pin Found Spindel Gear
1.2" West P/L

72.99'

320.04'

S01°25'40"W

Iron Pin Found 2 1/2" OTP
0.1 East P/L

196.13'

Iron Pin Found 2 1/2" OTP
0.2' East P/L

400.13'

989.29'

Iron Pin Found 1" OTP 0.8' South P/L
3" Angle Iron Witness Post
0.3' Southwest

Iron Pin Found 1 1/4" OTP
RR Iron Witness Post
0.6' Southwest

133.71'

705.00'

570.88'

Land Lot Line

Land Lot Line

Iron Pin Found Railroad Track

1777.77'

N88°25'03"W

1409.59'

N89°22'56"W

1409.10'

N89°24'32"W

Iron Pin Found 1" Flat Iron
RR Iron Witness Post
0.7' Southwest

Iron Pin Found 1" Axle
RR Iron Witness Post
0.5' Southwest

Iron Pin Found RR Iron
26.56' South P/L

Iron Pin Found 1" Axle
RR Iron Witness Post
0.2' Southeast

N/F Vance G. Payne

N/F John M. Gilreath

N/F James E. Heard

LINE TABLE		
LINE	BEARING	LENGTH
L1	S80°41'37"E	969.07'
L2	S87°41'59"E	377.98'
L3	N79°10'28"E	363.51'
L4	S89°44'27"E	235.27'
L5	S87°13'01"E	138.72'

CURVE TABLE				
CURVE	RADIUS	LENGTH	CHORD DIRECTION	CHORD
C1	2000.00'	244.56'	S84°11'48"E	244.41'
C2	1500.00'	343.63'	N85°44'14"E	342.88'
C3	3675.00'	710.98'	N84°43'00"E	709.87'
C4	5000.00'	220.25'	S88°28'44"E	220.24'

PLAT CLOSURE STATEMENT

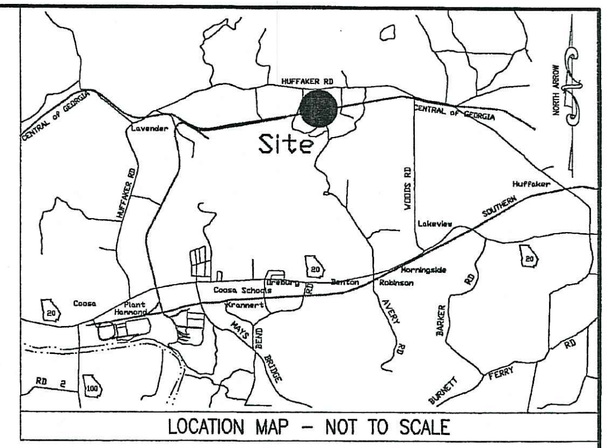
This plat has been calculated for closure and is found to be accurate within one foot in 722305 feet.

GRAPHIC SCALE

400 0 200 400 800 1200

(In Feet)

1 inch = 400 feet



LOCATION MAP – NOT TO SCALE

PLAT ABBREVIATIONS

IPF – Iron Pin Found
IPS – Iron Pin Set
FPS – Fence Post Set
OTP – Open Top Pipe
CTP – Crimp Top Pipe
Conc. – Concrete
Alumn. – Aluminum
P/L – Property Line
R/W – Right of Way
C/L – Centerline
F/L – Fence line
T/L – Transmission Line
N/F – Now or Formerly
DB – Deed Book
PB – Plat Book
MF – Map File No.

MONUMENTATION LEGEND

- Depicts Iron Pin Set
- Depicts Iron Pin Found
- Depicts Monument Set
- Depicts Monument Found

UTILITY LEGEND

- E – Electric Manhole
- E – Electric Meter
- G – Gas Manhole
- Gas Valve – Gas Valve
- G – Gas Meter
- SS – Sanitary Sewer Manhole
- Sanitary Sewer Clean Out – Sanitary Sewer Cleanout
- ST – Storm Sewer Manhole
- T – Telephone Manhole
- W – Water Manhole
- Water Valve – Water Valve
- W – Water Meter
- Fire Hydrant
- W – Well
- Power Pole
- Transmission Tower
- Guy Wire

Filed and Recorded in Plat Book , Page ,
This Day of , 19 , at M.

, Clerk

Surveyor: Donald L. Dryden
R.L.S. #2800
241 Ralph McGill Blvd., N.E.
BIN – 10151
Atlanta, Ga. 30308–3374
Phone (404) 506–2839

GEORGIA REGISTERED No. 2800 PROFESSIONAL LAND SURVEYOR DONALD L. DRYDEN

NOTE: THIS PLAT IS NOT VALID FOR RECORDING PURPOSES UNLESS SURVEYOR'S SIGNATURE APPEARS IN ORIGINAL BLACK INK OVER THE STAMP.

In my opinion this plat is a correct representation of the land platted and has been prepared in conformity with minimum standards and requirements of law.

Signed _____

GPS Control Statement

I, Donald Dryden, declare that this map or report was prepared under my supervision on 10–10–2001 from an actual GPS survey made under my supervision; that this GPS survey was performed to category B specifications; that I used kinematic GPS field procedures. That this survey was performed using Trimble 4700 duel frequency receivers and all coordinates are based on Georgia State Plane – West Zone NAD83/94 and vertical datum of NAVD88.

All stations were double occupied and from this:
The minimum horizontal error is 0.01 feet.
The maximum horizontal error is 0.06 feet.
The average horizontal error is 0.03 feet.
All vertical control is less than 0.12 feet of error.

\shared data\working\specproj\huffaker_preliminary.dwg
SERVER – \\gaxgprc01\shared data\workgroups\gpc land\engineering\

REVISION BLOCK
No. 1 – Added Wetlands – JFW – 4/4/02

APPROVALS

GEORGIA POWER CO., ATLANTA, GA.
Land Department

Plant Hammond
Ash Monofill Site

Land lots 79, 80, 101 and 102 – 4th District – 4th Section
Floyd County, Georgia

DR.	TR.	Checked
JFW		

SCALE	DATE
1" = 400'	Dec. 13, 2001

DRAWING NUMBER

H–628–10

B

SEE MAP F11

SEE MAP E12

SEE MAP G12X

SEE MAP G12Y

SEE MAP F13X

SEE MAP F13W

4TH DIST / 4TH SECT

THIS PROPERTY OWNERSHIP MAP IS FOR TAX PURPOSES ONLY. IT IS NOT INTENDED FOR CONVEYANCES, NOR IS IT A LEGAL SURVEY. THIS MAP WAS COMPILED BY:

TRI-STATE MAPPING & APPRAISAL SERVICE, INC.

P.O. BOX 380 GULFPORT, MS 39204 | 207 COGSWELL AVENUE PELL CITY, AL 35125 | P.O. BOX 828 ROME, GEORGIA 30162

SUBD NO	SUBDIVISION NAME	PLAT BOOK	PLAT PAGE
01	C. A. WALKERSON	2	168

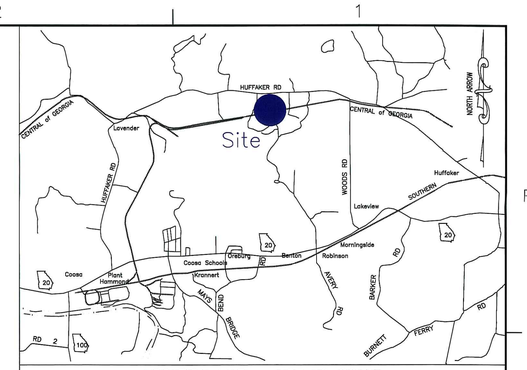
FLOYD COUNTY GEORGIA

MAP F12

SCALE: 1"=400' DATE OF PHOTOGRAPHY: JANUARY, 1999

©





LOCATION MAP – NOT TO SCALE

NORTH ARROW
Georgia State Plane – West Zone

LEGEND

- JURISDICTIONAL WETLAND BOUNDARY
- NON–JURISDICTIONAL WETLAND BOUNDARY WILL BE VOLUNTARILY MITIGATED ON A 1:1 BASIS
- BUFFER ZONE

REFERENCE DRAWINGS

GPC LAND DEPARTMENT MAP FILE NO. H–628–10 ASH MONOFILL SITE
GPC LAND DEPARTMENT MAP FILE NO. H–628–11 SITE TOPOGRAPHIC MAP
ES1164S1–1 FIGURE 1–1 TOPOGRAPHIC MAP OF GENERAL SITE AREA (1:24,000)
ES1164S1–2 FIGURE 1–2 FLOOD ZONE MAP
ES1164S1–3 FIGURE 1–3 WETLAND BOUNDARIES
ES1164S1–4 FIGURE 1–4 PROXIMITY OF SITE TO SIGNIFICANT GROUNDWATER RECHARGE AREAS
ES1164S1–5 FIGURE 1–5 LOCATION OF PUBLIC AND DOMESTIC WATER SUPPLY WELLS
ES1164S3–1 FIGURE 3–1 SHALE OUTCROPS
ES1164S3–2 FIGURE 3–2 REGIONAL GEOLOGY
ES1164S3–3 FIGURE 3–3 BORE HOLE LOCATIONS AND SECTIONS
ES1164S3–4 FIGURE 3–4 GEOLOGIC CROSS SECTION A–A ALONG STRIKE
ES1164S3–5 FIGURE 3–5 GEOLOGIC CROSS SECTION B–B PERPINDICULAR TO STRIKE
ES1164S3–6 FIGURE 3–6 GROUNDWATER LEVELS OVER TIME
ES1164S3–7 FIGURE 3–7 POTENTIOMETRIC SURFACE MAP READINGS TAKEN JANUARY 28, 2002
ES1164S3–8 FIGURE 3–8 POTENTIOMETRIC SURFACE MAP READINGS TAKEN SEPTEMBER 11, 2002
ES1164S4–1 FIGURE 4–1 SESOIL MODEL SIMULATION
ES1164S5–2 FIGURE 5–2 CELL DEPTH AND RELATIONSHIP TO GROUNDWATER
ES1164S5–3 FIGURE 5–3 TYPICAL MONITORING WELL DESIGN

NOTES:

1) FOR PROPERTY INFORMATION, SEE GPC LAND DEPT. MAP FILE NO. H–628–10.
2) ALL HORIZONTAL CONTROL SHOWN IS GEORGIA STATE PLANE – WEST ZONE NAD83/94.
3) ALL VERTICAL CONTROL SHOWN IS NAVD88.
4) THE SITE IS NOT LOCATED WITHIN 100 YEAR FLOOD PLAIN.
5) WETLAND DELINEATION PERFORMED BY GEORGIA POWER ENVIRONMENTAL AFFAIRS DEPARTMENT USING GPS SURVEY TECHNIQUES.
6) DELINEATION OF JURISDICTIONAL WETLANDS PERFORMED BY GEORGIA POWER COMPANY AND CORPS OF ENGINEERS, NORTH AREA SECTION, SAVANNAH DISTRICT.

GRAPHIC SCALE

200 0 100 200 400 600
(In Feet)
1 Inch = 200 feet

Southern Company Services, Inc.

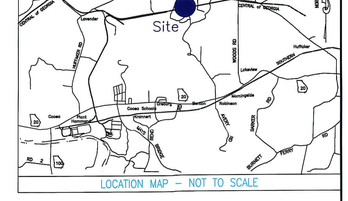
FIGURE 5–1
PLANT HAMMOND HUFFAKER ROAD
COAL COMBUSTION BY–PRODUCTS STORAGE SITE
AREAS FAVORABLE AND UNFAVORABLE FOR
PRIVATE COMBUSTION BY–PRODUCTS FACILITY

SCALE	DRAWING NUMBER
1"= 200'	**ES1164S5-1**

ANSI F: 28x40 Acad2000

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NORTH ARROW
Georgia State Plane – West Zone

LEGEND

640 GROUNDWATER POTENTIOMETRIC SURFACE

TP PIEZOMETER/BORING LOCATIONS

634.28 GROUNDWATER ELEVATION. FEET MSL

GROUNDWATER FLOW DIRECTION

REFERENCE DRAWINGS

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GPC LAND DEPARTMENT MAP FILE NO. H-628-11 SITE TOPOGRAPHIC MAP
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ES1164S1-5 FIGURE 1-5 LOCATION OF PUBLIC AND DOMESTIC WATER SUPPLY WELLS
ES1164S3-1 FIGURE 3-1 SHALE OUTCROPS
ES1164S3-2 FIGURE 3-2 REGIONAL GEOLOGY
ES1164S3-3 FIGURE 3-3 BORE HOLE LOCATIONS AND SECTIONS
ES1164S3-4 FIGURE 3-4 GEOLOGIC CROSS SECTION A-A ALONG STRIKE
ES1164S3-5 FIGURE 3-5 GEOLOGIC CROSS SECTION B-B PERPINDICULAR TO STRIKE
ES1164S3-6 FIGURE 3-6 GROUNDWATER LEVELS OVER TIME
ES1164S3-7 FIGURE 3-7 POTENTIOMETRIC SURFACE MAP READINGS TAKEN JANUARY 28, 2002
ES1164S4-1 FIGURE 4-1 SESOIL MODEL SIMULATION
ES1164S5-1 FIGURE 5-1 AREAS FAVORABLE AND UNFAVORABLE FOR PRIVATE BY-PRODUCTS FACILITY
ES1164S5-2 FIGURE 5-2 CELL DEPTH AND RELATIONSHIP TO GROUNDWATER
ES1164S5-3 FIGURE 5-3 TYPICAL MONITORING WELL DESIGN

NOTES:

1) FOR PROPERTY INFORMATION, SEE GPC LAND DEPT. MAP FILE NO. H-628-10.
2) ALL HORIZONTAL CONTROL SHOWN IS GEORGIA STATE PLANE – WEST ZONE NAD83/94.
3) ALL VERTICAL CONTROL SHOWN IS NAVD88.
4) THE POTENTIOMETRIC SURFACE IS BASED ON GROUNDWATER READINGS TAKEN ON SEPTEMBER 11, 2002, MANIPULATED TO REFLECT THE PRESENCE OF THE EXISTING MAN-MADE PONDS. AS THESE PONDS ARE DRAINED PRIOR TO SITE DEVELOPMENT, THE GROUNDWATER POTENTIOMETRIC SURFACE MAP WELL BE REVISED AS NECESSARY.

GRAPHIC SCALE

200 0 100 200 400 600
(In Feet)
1 inch = 200 feet

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 12987 JOHN H. McMINDER

Southern Company Services, Inc.

FIGURE 3-8
PLANT HAMMOND HUFFAKER ROAD
COAL COMBUSTION BY-PRODUCTS STORAGE SITE
POTENTIOMETRIC SURFACE
MAP READINGS TAKEN SEPTEMBER 11, 2002

SCALE	DRAWING NUMBER
1"= 200'	**ES1164S3-8**

ANSI F: 28x40 Acad2000

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LEGEND

640 GROUNDWATER POTENTIOMETRIC SURFACE

TP PIEZOMETER/BORING LOCATIONS

630 GROUNDWATER ELEVATION. FEET MSL

GROUNDWATER FLOW DIRECTION

REFERENCE DRAWINGS

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GPC LAND DEPARTMENT MAP FILE NO. H-628-11 SITE TOPOGRAPHIC MAP
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ES1164S3-6 FIGURE 3-6 GROUNDWATER LEVELS OVER TIME
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ES1164S5-2 FIGURE 5-2 CELL DEPTH AND RELATIONSHIP TO GROUNDWATER
ES1164S5-3 FIGURE 5-3 TYPICAL MONITORING WELL DESIGN

NOTES:

1) FOR PROPERTY INFORMATION, SEE GPC LAND DEPT. MAP FILE NO. H-628-10.
2) ALL HORIZONTAL CONTROL SHOWN IS GEORGIA STATE PLANE - WEST ZONE NAD83/94.
3) ALL VERTICAL CONTROL SHOWN IS NAVD88.
4) THE POTENTIOMETRIC SURFACE IS BASED ON GROUNDWATER READINGS TAKEN ON JANUARY 28, 2002, MANIPULATED TO REFLECT THE PRESENCE OF THE EXISTING MAN-MADE PONDS. AS THESE PONDS ARE DRAINED PRIOR TO SITE DEVELOPMENT, THE GROUNDWATER POTENTIOMETRIC SURFACE MAP WELL BE REVISED AS NECESSARY.

GRAPHIC SCALE

200 0 100 200 400 600

(In Feet)
1 Inch = 200 feet

REGISTERED GEORGIA No. 13587 PROFESSIONAL ENGINEER GARY W. McMANNEN

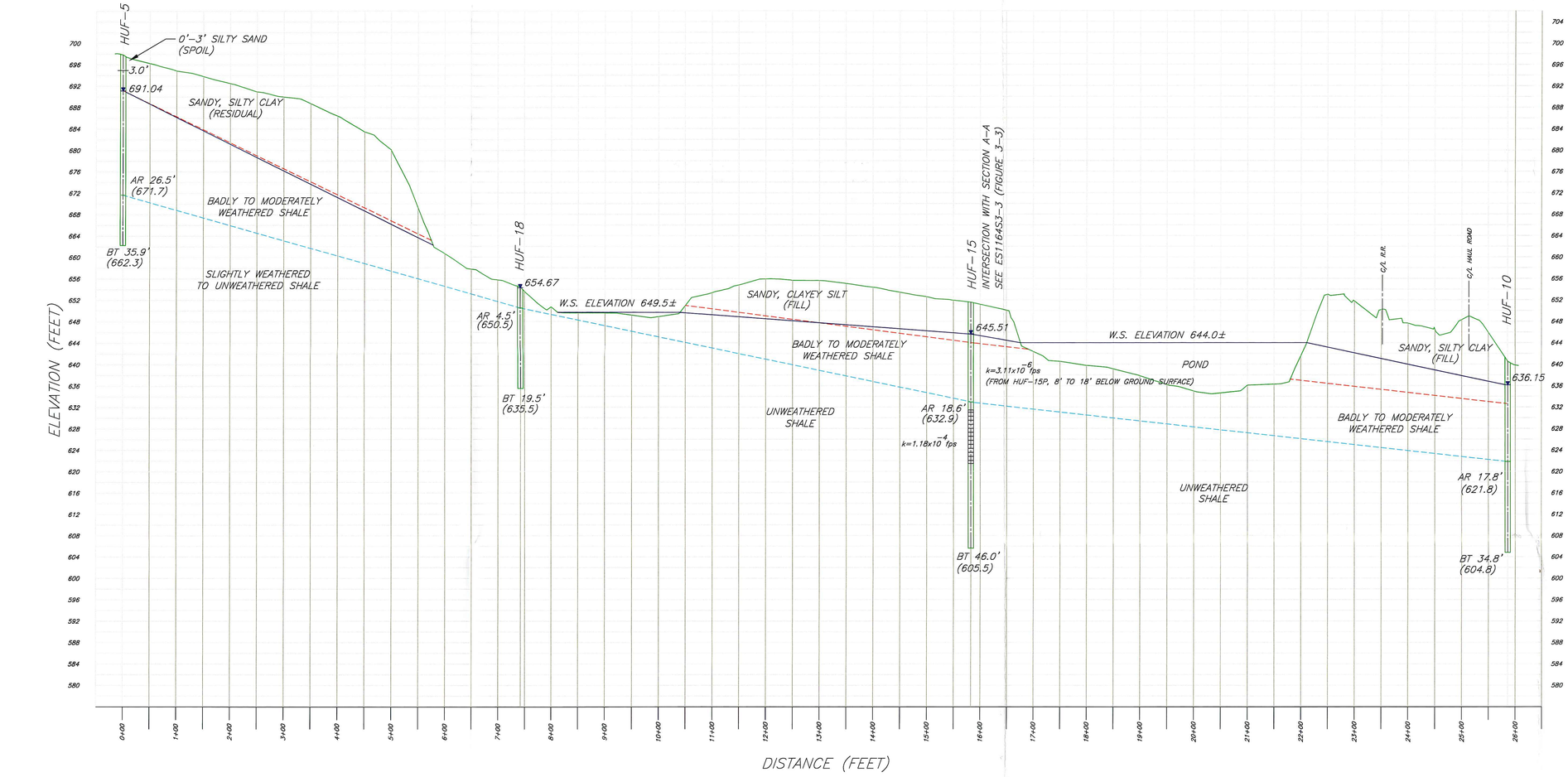
Southern Company Services, Inc.

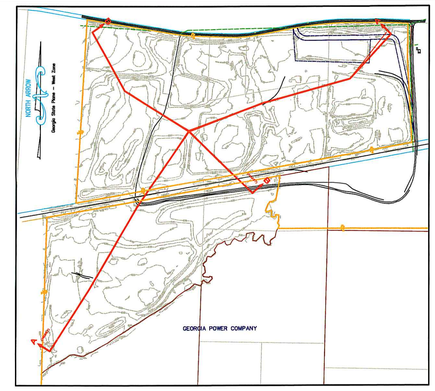
FIGURE 3-7
PLANT HAMMOND HUFFAKER ROAD
COAL COMBUSTION BY-PRODUCTS STORAGE SITE
GROUNDWATER POTENTIOMETRIC SURFACE
MAP READINGS TAKEN JANUARY 28, 2002

SCALE	DRAWING NUMBER
1"= 200'	ES1164S3-7

ANSI F: 28x40 Acad2000

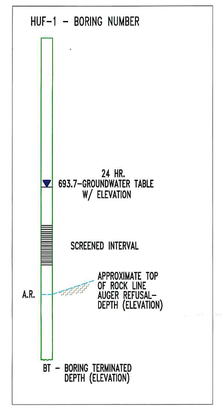
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KEY PLAN – SECTIONS
N.T.S.

LEGEND



SECTION B-B

1"=100' (HORIZONTAL)
1"=10' (VERICAL)

NOTES:

1. THIS DRAWING WAS PREPARED FOR THE "HUFFAKER ROAD SITE ACCEPTABILITY REPORT, COAL COMBUSTION BY-PRODUCTS STORAGE SITE, PLANT HAMMOND UNITS 1-4."
2. INTERPRETATIONS OF OVERBURDEN, RESIDUAL SOILS, ROCK TYPES, ROCK CHARACTERISTICS AND DEGREE OF WEATHERING ARE TRUE ONLY AT THE BORING LOCATION. PROFESSIONAL JUDGEMENT HAS BEEN USED TO EVALUATE THE DATA COLLECTED. ANY INTERPOLATION OF CONDITIONS BETWEEN BORINGS IS CONJECTURE AND THE ACCURACY OF SUCH INTERPOLATION IS NOT GUARANTEED. THE LINES DESIGNATING THE INTERFACES BETWEEN VARIOUS STRATA ARE APPROXIMATE ONLY, AS TRANSITIONS BETWEEN MATERIALS MAY BE GRADUAL. GROUND WATER LEVELS FLUCTUATE SEASONALLY AND WITH CLIMATIC CONDITIONS, THEREFORE, GROUND WATER CONDITIONS ENCOUNTERED AT OTHER TIMES MAY VARY FROM THOSE SHOWN.
3. GROUNDWATER ELEVATIONS MEASURED JAN. 28, 2002.
4. PERMEABILITY VALUES (k) WERE OBTAINED FROM SLUG TESTING.

REFERENCE DRAWINGS

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GPC LAND DEPARTMENT MAP FILE NO. H-628-11 SITE TOPOGRAPHIC MAP
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ES1164S3-8 FIGURE 3-8 POTENTIOMETRIC SURFACE MAP READINGS TAKEN SEPTEMBER 11, 2002
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ES1164S5-2 FIGURE 5-2 CELL DEPTH AND RELATIONSHIP TO GROUNDWATER
ES1164S5-3 FIGURE 5-3 TYPICAL MONITORING WELL DESIGN



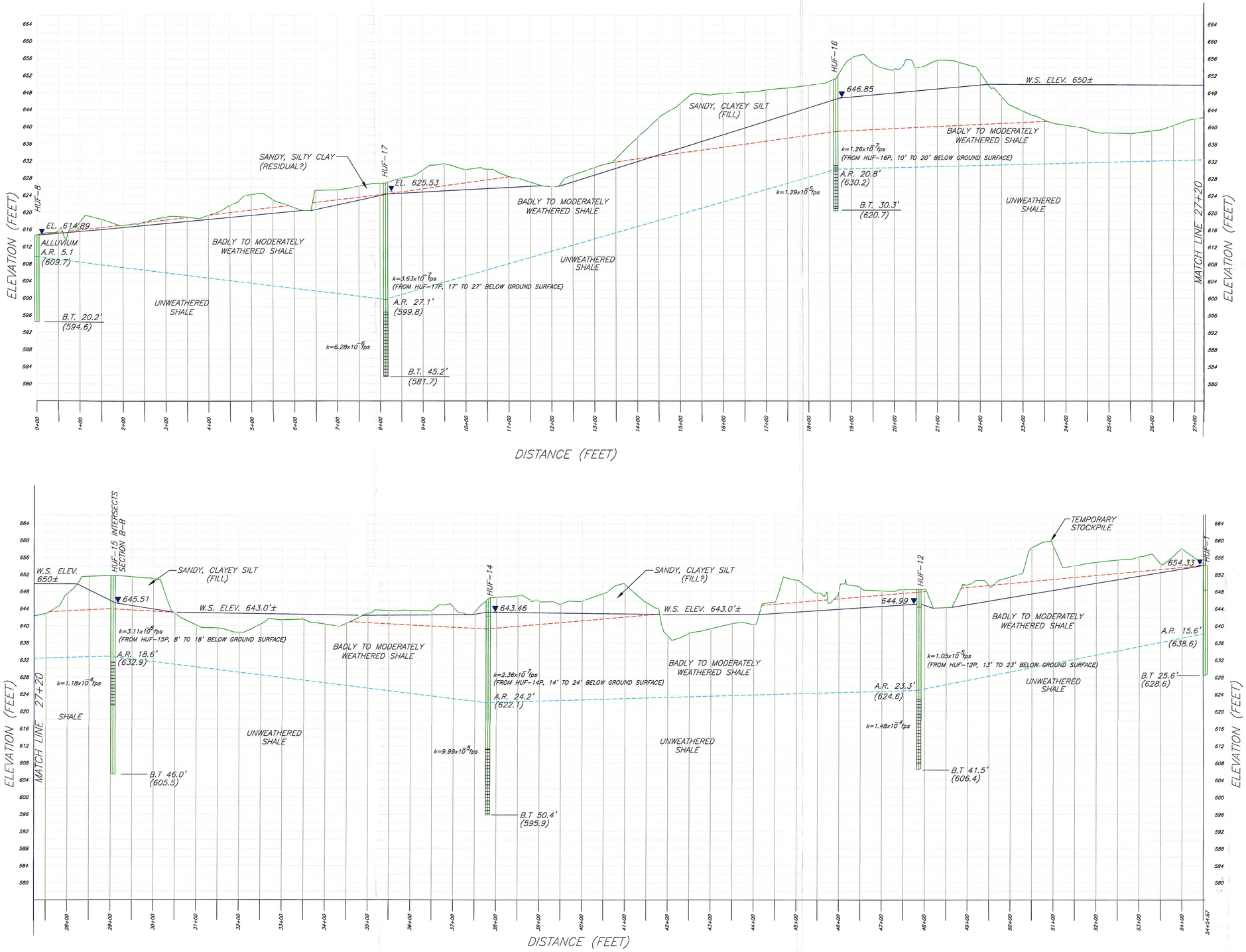
Southern Company Services, Inc.

FIGURE 3-5
PLANT HAMMOND HUFFAKER ROAD
COAL COMBUSTION BY-PRODUCTS STORAGE SITE
GEOLOGIC CROSS SECTION B-B
PERPENDICULAR TO STRIKE

SCALE	DRAWING NUMBER
AS NOTED	ES1164S3-5

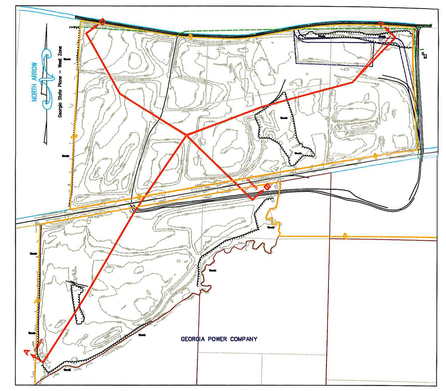
ANSI F: 28x40 Acad2000

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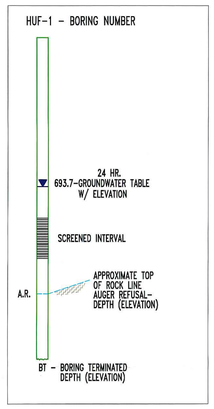
SECTION A-A

1"=100' (HORIZONTAL)
1"=10' (VERICAL)



KEY PLAN – SECTIONS
N.T.S.

LEGEND



NOTES:

1. THIS DRAWING WAS PREPARED FOR THE "HUFFAKER ROAD SITE ACCEPTABILITY REPORT, COAL COMBUSTION BY–PRODUCTS STORAGE SITE, PLANT HAMMOND UNITS 1–4."
2. INTERPRETATIONS OF OVERBURDEN, RESIDUAL SOILS, ROCK TYPES, ROCK CHARACTERISTICS AND DEGREE OF WEATHERING ARE TRUE ONLY AT THE BORING LOCATION. PROFESSIONAL JUDGEMENT HAS BEEN USED TO EVALUATE THE DATA COLLECTED. ANY INTERPOLATION OF CONDITIONS BETWEEN BORINGS IS CONJECTURE AND THE ACCURACY OF SUCH INTERPOLATION IS NOT GUARANTEED. THE LINES DESIGNATING THE INTERFACES BETWEEN VARIOUS STRATA ARE APPROXIMATE ONLY, AS TRANSITIONS BETWEEN MATERIALS MAY BE GRADUAL. GROUND WATER LEVELS FLUCTUATE SEASONALLY AND WITH CLIMATIC CONDITIONS, THEREFORE, GROUND WATER CONDITIONS ENCOUNTERED AT OTHER TIMES MAY VARY FROM THOSE SHOWN.
3. GROUNDWATER ELEVATIONS MEASURED JAN. 28, 2002.
4. PERMEABILITY VALUES (k) WERE OBTAINED FROM SLUG TESTING.

REFERENCE DRAWINGS

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ES1164S3–1 FIGURE 3–1 SHALE OUTCROPS
ES1164S3–2 FIGURE 3–2 REGIONAL GEOLOGY
ES1164S3–3 FIGURE 3–3 BORE HOLE LOCATIONS AND SECTIONS
ES1164S3–5 FIGURE 3–5 GEOLOGIC CROSS SECTION B–B PERPINDICULAR TO STRIKE
ES1164S3–6 FIGURE 3–6 GROUNDWATER LEVELS OVER TIME
ES1164S3–7 FIGURE 3–7 POTENTIOMETRIC SURFACE MAP READINGS TAKEN JANUARY 28, 2002
ES1164S3–8 FIGURE 3–8 POTENTIOMETRIC SURFACE MAP READINGS TAKEN SEPTEMBER 11, 2002
ES1164S4–1 FIGURE 4–1 SESOIL MODEL SIMULATION
ES1164S5–1 FIGURE 5–1 AREAS FAVORABLE AND UNFAVORABLE FOR PRIVATE BY–PRODUCTS FACILITY
ES1164S5–2 FIGURE 5–2 CELL DEPTH AND RELATIONSHIP TO GROUNDWATER
ES1164S5–3 FIGURE 5–3 TYPICAL MONITORING WELL DESIGN



Southern Company Services, Inc.

FIGURE 3–4
PLANT HAMMOND HUFFAKER ROAD
COAL COMBUSTION BY–PRODUCTS STORAGE SITE
GEOLOGIC CROSS SECTION A–A ALONG STRIKE

SCALE	DRAWING NUMBER
AS NOTED	ES1164S3-4

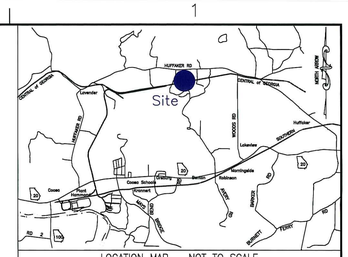
ANSI F: 28x40 Acad2000

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NORTH ARROW

Georgia State Plane - West Zone



LOCATION MAP - NOT TO SCALE

REFERENCE DRAWINGS

GPC LAND DEPARTMENT MAP FILE NO. H-628-10 ASH MONOFILL SITE
GPC LAND DEPARTMENT MAP FILE NO. H-628-11 SITE TOPOGRAPHIC MAP
ES1164S1-1 FIGURE 1-1 TOPOGRAPHIC MAP OF GENERAL SITE AREA (1:24,000)
ES1164S1-2 FIGURE 1-2 FLOOD ZONE MAP
ES1164S1-3 FIGURE 1-3 WETLAND BOUNDARIES
ES1164S1-4 FIGURE 1-4 PROXIMITY OF SITE TO SIGNIFICANT GROUNDWATER RECHARGE AREAS
ES1164S1-5 FIGURE 1-5 LOCATION OF PUBLIC AND DOMESTIC WATER SUPPLY WELLS
ES1164S3-1 FIGURE 3-1 SHALE OUTCROPS
ES1164S3-2 FIGURE 3-2 REGIONAL GEOLOGY
ES1164S3-4 FIGURE 3-4 GEOLOGIC CROSS SECTION A-A ALONG STRIKE
ES1164S3-5 FIGURE 3-5 GEOLOGIC CROSS SECTION B-B PERPINDICULAR TO STRIKE
ES1164S3-6 FIGURE 3-6 GROUNDWATER LEVELS OVER TIME
ES1164S3-7 FIGURE 3-7 POTENTIOMETRIC SURFACE MAP READINGS TAKEN JANUARY 28, 2002
ES1164S3-8 FIGURE 3-8 POTENTIOMETRIC SURFACE MAP READINGS TAKEN SEPTEMBER 11, 2002
ES1164S4-1 FIGURE 4-1 SESOIL MODEL SIMULATION
ES1164S5-1 FIGURE 5-1 AREAS FAVORABLE AND UNFAVORABLE FOR PRIVATE BY-PRODUCTS FACILITY
ES1164S5-2 FIGURE 5-2 CELL DEPTH AND RELATIONSHIP TO GROUNDWATER
ES1164S5-3 FIGURE 5-3 TYPICAL MONITORING WELL DESIGN

NOTES:

1) FOR PROPERTY INFORMATION, SEE GPC LAND DEPT. MAP FILE NO. H-628-10.
2) ALL HORIZONTAL CONTROL SHOWN IS GEORGIA STATE PLANE - WEST ZONE NAD83/94.
3) ALL VERTICAL CONTROL SHOWN IS NAVD88.

GRAPHIC SCALE

200 0 100 200 400 600
(In Feet)
1 inch = 200 feet

Southern Company Services, Inc.

FIGURE 3-3
PLANT HAMMOND HUFFAKER ROAD
COAL COMBUSTION BY-PRODUCTS STORAGE SITE
BORE HOLE AND SECTION LOCATIONS

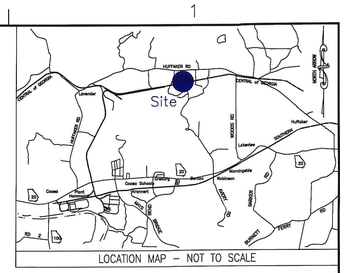
SCALE	DRAWING NUMBER
1"= 200'	ES1164S3-3

ANSI F: 28x40 Acad2000

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OUTCROP NUMBER	BEDDING STRIKE	BEDDING DIP	JOINTS STRIKE	JOINTS DIP
1	N42E	85SE		
	N42E	VERT.		
2	N51E	65SE		
3	N25E	85NW		
4	N31E	68SE		
5	N50E	VERT.	N86W	72SW
	N56E	80SE	N85E	50SE
			N85E	50SE
			N30E	70SE
			N20E	65NE
6	N60E	38SE		
7	N48E	75NW		
8	N66E	80SE	N38E	65NW
	N72E	85SE	N38E	65NW
9	N25E	70SE		
	N38E	80SE		
10			N45W	85SW
11	N62E	82NW	N68W	85SW
			N68W	VERT.
12	N23E	70SE		
	N18E	64SE		
13	N35E	62SE	N18E	84SE
	N38E	59SE		
14	N58E	62SE		
15	N75E	36SE	N04E	VERT.
16	N82W	75SW	N38E	80SE
17	N80E	82SE		
18	N82W	VERT.		
19	N80E	80SE	N20W	75NE
20	N55E	78SE		
21	N38E	85SE		
22	N56E	VERT.		
23	N50E	68SE	N70W	85NE
			N70W	85NE
24	N44E	65SE		
25	N65E	75SE		
26	N35E	34SE	N55W	VERT.
			N55W	VERT.
			N55W	VERT.
			N10E	VERT.
27	N38E	VERT.		
28	N15E	45SE		
	N15W	50SE		
29	N36E	60SE	N16E	55SE
			N16E	55SE
			N35W	65NE
			N83W	68SW
30	N48E	58SE	N75W	85SW
	N40E	85SW	N64E	40NW
31	N64E	VERT.		
	N64E	85SE		
32	N62E	80SE		
	N62E	VERT.		
33	N42E	85SE		
34	N70E	86SE		
35	N32E	VERT.		
36	N35E	70SE	N64E	70SE
	N35E	80SE	E-W	VERT.
	N35E	50SE	N65E	65SE
	N52E	VERT.	N75E	61NW
	N56E	85SE	N64W	VERT.
	N55E	VERT.	N88W	VERT.
	N65E	30SE	N82W	VERT.
	N75E	70NW	N80E	VERT.
	N55E	VERT.	N58W	70SW
	N55E	45SE	N58W	70SW
	N58E	75SE	N18E	35NW
	N56E	62SE	N18E	35NW
			N15E	40NW
			N20E	75SE
			N40W	VERT.
			N40W	VERT.
			N40W	VERT.
37	N65E	80SE	N80W	35SW
	N20E	29SE	N40W	60NE
	N30E	60SE	N38W	40NE
	N46E	50SE	N38W	40NE
	N40E	70SE	N20W	70SW
	N55E	VERT.	N20W	70SW
	N60E	65SE	N20W	70SW
	N65E	66SE	N55W	85NE
			N55W	85NE
			N55W	85NE





NOTES:

1) FOR PROPERTY INFORMATION, SEE GPC LAND DEPT. MAP FILE NO. H-628-10.
2) ALL HORIZONTAL CONTROL SHOWN IS GEORGIA STATE PLANE – WEST ZONE NAD83/94.
3) ALL VERTICAL CONTROL SHOWN IS NAVD88.
4) THE SITE IS NOT LOCATED WITHIN 100 YEAR FLOOD PLAIN.
5) WETLAND DELINEATION PERFORMED BY GEORGIA POWER ENVIRONMENTAL AFFAIRS DEPARTMENT USING GPS SURVEY TECHNIQUES.
6) DELINEATION OF JURISDICTIONAL WETLANDS PERFORMED BY GEORGIA POWER COMPANY AND CORPS OF ENGINEERS, NORTH AREA SECTION, SAVANNAH DISTRICT.

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ES1164S1-5 FIGURE 1-5 LOCATION OF PUBLIC AND DOMESTIC WATER SUPPLY WELLS
ES1164S3-2 FIGURE 3-2 REGIONAL GEOLOGY
ES1164S3-3 FIGURE 3-3 BORE HOLE LOCATIONS AND SECTIONS
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ES1164S3-7 FIGURE 3-7 POTENTIOMETRIC SURFACE MAP READINGS TAKEN JANUARY 28, 2002
ES1164S3-8 FIGURE 3-8 POTENTIOMETRIC SURFACE MAP READINGS TAKEN SEPTEMBER 11, 2002
ES1164S4-1 FIGURE 4-1 SESOIL MODEL SIMULATION
ES1164S5-1 FIGURE 5-1 AREAS FAVORABLE AND UNFAVORABLE FOR PRIVATE COMBUSTION BY-PRODUCTS FACILITY
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ES1164S5-3 FIGURE 5-3 TYPICAL MONITORING WELL DESIGN

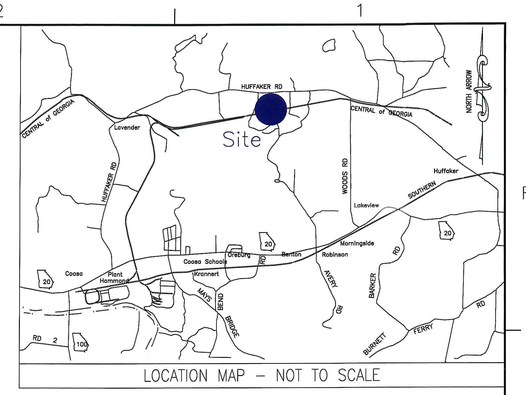
Southern Company Services, Inc.

FIGURE 3-1
PLANT HAMMOND HUFFAKER ROAD COAL COMBUSTION BY-PRODUCTS STORAGE SITE
SHALE OUTCROPS

SCALE	DRAWING NUMBER
1"= 200'	ES1164S3-1

ANSI F: 28x40 Acad2000





LOCATION MAP – NOT TO SCALE

NORTH ARROW
Georgia State Plane – West Zone

LEGEND

JURISDICTIONAL WETLAND BOUNDARY

NON–JURISDICTIONAL WETLAND BOUNDARY

REFERENCE DRAWINGS

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6) DELINEATION OF JURISDICTIONAL WETLANDS PERFORMED BY GEORGIA POWER COMPANY AND CORPS OF ENGINEERS, NORTH AREA SECTION, SAVANNAH DISTRICT.

GRAPHIC SCALE

200 0 100 200 400 600

(In Feet)
1 inch = 200 feet

Southern Company Services, Inc.

FIGURE 1–3
PLANT HAMMOND HUFFAKER ROAD
COAL COMBUSTION BY–PRODUCTS STORAGE SITE
WETLAND BOUNDARIES

SCALE	DRAWING NUMBER
1"= 200'	ES1164S1-3

ANSI F: 28x40 Acad2000

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HUFFAKER ROAD STORAGE SITE

Floyd County
Unincorporated Areas
130079

City of
Rome
130081

City o
130

JOINS PANEL 0975

JOINS PANEL 0255

JOINS PANEL 0260

34°15'00"
85°18'45"

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** *Areas of 500-year flood;* areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 or Later | Otherwise Protected Areas Identified 1991 or Later

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet**
- (A)—(A) Cross Section Line
- (23)—(23) Transect Line
- (EL 987) Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7 X Elevation Reference Mark
- M1.5 River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

AUGUST 9, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

Please refer to the Listing of Communities table on the FIRM Index for NFIP Initial Identification and Post-FIRM dates for all jurisdictions shown on this map.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

Southern Company Services, Inc.

FIGURE 1-2
PLANT HAMMOND HUFFAKER ROAD
COAL COMBUSTION BY-PRODUCTS STORAGE SITE
FLOOD ZONE MAP

SCALE	DRAWING NUMBER
1"= 200'	ES1164S1-2

ANSI F: 28x40 Acad2000

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THIS MAP HAS BEEN COMPILED FROM THE MOST AUTHENTIC INFORMATION AVAILABLE AND NEITHER FLOYD COUNTY NOR HUNNICUTT AND ASSOCIATES, INC. ASSUMES RESPONSIBILITY FOR ERRORS OR OMISSIONS CONTAINED HEREON

758

759

662

780

782

662

663

754

HUFFAKER ROAD

GEORGIA POWER

CENTRAL RAILROAD

R/W

49.2 Ac.± (13)

886.6'

268'

1384'

1915.93'

4903'

78

79

80

81

103

102

101

100

114

118
105.5 Ac.±

11
Sixes Corp.
132.42 Ac.±

12
57.7 Ac.±
P.B. 15-103

7
6.3 Ac.

7A
13.33 Ac.±

6
6.8 Ac.±

8
38.8 Ac.±
-1.9 Ac.± RR
36.9 Ac.±

P.B. 15-105

7B
8.64 Ac.±

6A
42.72 Ac.±

DEED LINE

320.5'

670'

825.4'

1123.9'

1290.6'

749.6'

823.5'

14
229.56 Ac.±

Inland Container Corp.

13C
(17 Ac.)
20.1 Ac.±
P.B. 17-252

1805'

643.61'

660'

1302'

11A
117 Ac.±

9A
40 Ac.±

9
49.7 Ac.±

10
20.16 Ac.

10
20.19 Ac.±

9B
32.18 Ac.±

ATLANTA BRICK & TILE CO.
(SEE SURVEY)

5
135.20 Ac.±
-1.87 R/W
133.33 Ac.±
P.B. 17-99

GMD 855
GMD 1120

1627.9'

KEY TO SYMBOLS

SOLID LINE DENOTES LIMIT OF OWNERSHIP
DASHED LINE DENOTES ORIGINAL PLATTED LINE
LAND LOT LINE
MILITIA LINE
RAILROAD RIGHT-OF-WAY
CITY LIMIT
EASEMENT
STREAM
CHURCH SCHOOL CEMETERY

SCALE 1" = 400'

ASSESSMENT MAP
FLOYD COUNTY, GEORGIA
COMPILED & DRAWN BY
HUNNICUTT & ASSOCIATES, INC.
ST. PETERSBURG, FLORIDA

LAND LOTS 81, 100, 101, 102, 103 Pt. OF 78, 79, 80, 114
LAND DISTRICT 4
SECTION 4
COMPILED & DRAWN, JANUARY, 1962
REVISION DATES
TRACING _____ PRINT _____

SHEET NUMBER 756

6-30-T C

FLOYD COUNTY, GEORGIA

BOARD OF COMMISSIONERS

BOARD OF COMMISSIONERS

GARRY FRICKS
CHAIRMAN

JERRY JENNINGS, Ph.D.
VICE-CHAIRMAN

CHUCK HUFSTETLER

TIM MAHANAY

JOHN MAYES

DEPARTMENTS

KEVIN POE
COUNTY MANAGER

SAMMY RICH
ASSISTANT COUNTY MANAGER

MICHELE FOUNTAIN
CLERK, BOARD OF COMMISSIONERS

WADE C. HOYT, III
COUNTY ATTORNEY

DR. MARC WALL
CLINIC PHYSICIAN

MIKE MATHEWS
MANAGER, AIRPORT

PHILIP MOORE
CHIEF, ANIMAL CONTROL

DARRELL WHEELER
DIRECTOR, COMMUNITY DEVELOPMENT

LADELL JACOBS
MANAGER, DATA PROCESSING

EVON BILLUPS
CHIEF CLERK, ELECTIONS & REGISTRATION

JOHN MAYS
MANAGER, FACILITIES MANAGEMENT

AL LEONARD
COMPTROLLER, FINANCE

LARRY JOHNSON
DIRECTOR, HUMAN RESOURCES

JIM FREE
CHIEF OF POLICE

ANNE BRINKLEY
WARDEN, COUNTY PRISON

RODGER SWAIM
DIRECTOR, PUBLIC WORKS

NANCY LAM
DIRECTOR, PURCHASING

BILL MCWHORTER
TAX ASSESSOR

STEVE HULSEY
UTILITIES ADMINISTRATOR, WATER

July 8, 2002

Mr. Harold Gillespie
Program Manager
Environmental Protection Division
4244 International Parkway, Suite 104
Atlanta, GA 30354

RE: Proposed Georgia Power Industrial Solid Waste Disposal Facility

Dear Mr. Gillespie:

The Floyd County Board of Commissioners has granted Georgia Power Company a special use permit to operate a proposed industrial solid waste disposal facility off of Huffaker Road in Floyd County with the condition that Georgia Power Company obtain the proper operating permit from the Georgia Environmental Protection Division, and at all times stay in compliance with such permit. Additionally, a plan for transporting the material to the disposal site must be submitted by Georgia Power and approved by the Floyd County Board of Commissioners.

Other than Georgia Power having to comply with these two conditions, the proposed industrial solid waste disposal facility complies with local zoning and land use ordinances.

Sincerely,

Garry Fricks, Chairman
Floyd County Board of Commissioners

kma

THREE GOVERNMENT PLAZA, SUITE 124 ♦ POST OFFICE BOX 946 ♦ ROME, GEORGIA 30162
PHONE (706) 291-5110 ♦ FAX (706) 291-5248 ♦ www.floydcountyga.org

Laboratory Results
Ash TCLP
And
Total Metals

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Dwight Davis
Report No. **151816-16**

March 7, 2002

Sample Description

Georgia Power
Solid, Ash\Soil\TCLP Southern Services, Project #4282, P, 428216, 02/11/2002, received 02/12/2002
Hammond Ash

Analytical Method	Analyte		Result	Detection Limit	Units	Regulatory Limit
		Toxicity Characteristic Leaching Procedure (EPA 1311) TCLP Non-volatile Extraction				
	Metals					
EPA 6010	D004	Arsenic (As)	0.10	0.03	mg/L	5.0
EPA 6010	D005	Barium (Ba)	1.1	0.1	mg/L	100.0
EPA 6010	D006	Cadmium (Cd)	BDL	0.01	mg/L	1.0
EPA 6010	D007	Chromium (Cr)	BDL	0.01	mg/L	5.0
EPA 6010	D008	Lead (Pb)	BDL	0.1	mg/L	5.0
EPA 7470	D009	Mercury (Hg)	BDL	0.005	mg/L	0.2
EPA 6010	D010	Selenium (Se)	BDL	0.5	mg/L	1.0
EPA 6010	D011	Silver (Ag)	BDL	0.01	mg/L	5.0
EPA 6010	---	Beryllium (Be)	BDL	0.01	mg/L	--
EPA 6010	---	Cobalt (Co)	BDL	0.04	mg/L	--
EPA 6010	---	Copper (Cu)	BDL	0.02	mg/L	--
EPA 6010	---	Manganese (Mn)	BDL	0.04	mg/L	--
EPA 6010	---	Nickel (Ni)	BDL	0.02	mg/L	--
EPA 6010	---	Antimony (Sb)	BDL	0.1	mg/L	--
EPA 6010	---	Vanadium (V)	0.06	0.02	mg/L	--
EPA 6010	---	Zinc (Zn)	0.52	0.02	mg/L	--
EPA 6010	---	Iron (Fe)	0.02	0.01	mg/L	--

BDL - Below Detection Limit

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **155039-2**

April 22, 2002

Sample Description

Georgia Power
Solid, Ash Utilization, Project#4683, Plant Hammond Ash #2, 468302, 04/11/2002, 12:00, received 04/12/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	5.0	mg/kg
EPA 6010	Total Arsenic (As)	68	3.0	mg/kg
EPA 6010	Total Barium (Ba)	160	1.0	mg/kg
EPA 6010	Total Beryllium (Be)	5.5	1.0	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.0	mg/kg
EPA 6010	Total Chromium (Cr)	18	1.0	mg/kg
EPA 6010	Total Cobalt (Co)	91	4.0	mg/kg
EPA 6010	Total Copper (Cu)	41	2.0	mg/kg
EPA 6010	Total Iron (Fe)	6500	4.0	mg/kg
EPA 6010	Total Lead (Pb)	20	1.5	mg/kg
EPA 6010	Total Manganese (Mn)	50	4.0	mg/kg
EPA 7471	Total Mercury (Hg)	BDL	0.25	mg/kg
EPA 6010	Total Nickel (Ni)	15	2.0	mg/kg
EPA 6010	Total Selenium (Se)	4.4	4.0	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.0	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	20	mg/kg
EPA 6010	Total Vanadium (V)	55	2.0	mg/kg
EPA 6010	Total Zinc (Zn)	47	2.0	mg/kg

BDL - Below Detection Limit

Environm. Laboratory
5131 Maner Road, Bin 39110
Smyrna, Georgia 30080

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

TRANSFER OF SAMPLES

10

1SS039

GPC POWER
A SOUTHERN COMPANY

Sample Delivery Group No. 4683

Lab Contact: CRAIG SCOTT

Project Name: ASH UTILIZATION

Vendor Laboratory Name and Address: ASI, 110 TECHNOLOGY PKWY NORCROSS, GA 30092

☒ Fax Results To: CRAIG SCOTT
☒ Mail Results To: ↓

Turnaround Time: (or expected date of results) 4/17/02
Rush Charges Authorized: ☑ Yes ☐ No Signature: ECS

Date of Sample Transfer: 4/12/02

Sample Date	Sample Time	No. of Containers	Project ID No.	Lab. ID No.	Analysis Requested	REMARKS SW846 = 3050B or 30
4/11/02	12:00	1	PLANT BOWEN ASH #1	468301	TOTAL ELEMENT CONCENTRATION:	EPA-3050B / EPA-6010B
4/11/02	↓	1	PLANT HAMMOND ASH #2	468302	Ag, As, Ba, Be, Cd, Co, Cu, Mn	EPA-7470
4/11/02		1	PLANT MCDONOUGH ASH #3	468303	Tl, Ni, Sb, V, Zn, Se, Fe, Cr, Hg, Pb	
4/11/02		1	PLANT YATES ASH #4	468304		
4/11/02		1	ASH COMPOSITE #5	468305	- PLEASE INCLUDE QC DATA	
4/11/02		1	SOIL COMPOSITE #6	468306		
					- HOMOGENIZE AND PULVERIZE TO 170 MESH SIZE.	

* Note: Attach copy of original Analysis Request

TRANSFERRED BY (Signature): [signature]
DATE: 04/12/2002 TIME: 0925

RECEIVED BY (Signature): Michael Citron TELEPHONE
TITLE DATE: 04/12/02 TIME: 0925

707454 MAC WHITE—Laboratory CANARY—Originator PINK—Laboratory

ASI ANALYTICAL SERVICES, INC.

Environmental Monitoring & Laboratory Services
110 Technology Parkway, Norcross, GA 30092
(770)734-4200 FAX (770)734-4201

LOG-IN CHECKLIST

Attn: Mr. Craig Scott

Client: GEORGIA POWER GA SMYRNA
Project: Ash Utilization, Project#4683
Recvd : 04/12/2002 **Logged By:** MWG **NPDES:**
Work Order: 155039

OBSERVATIONS

#Samples: 6 **#Containers:** 6
pH: n/a **Temp(C):** 6 **Ice:** Yes **Custody Seal(s):** Not Present

CHECKLIST ITEMS**

1. COC included with Samples	**Yes**
2. Chain of Custody Complete	**Yes**
3. Sample Container(s) Intact	**Yes**
4. Sample Container(s) Match COC	**Yes**
5. Methods Designated by Client on COC	**Yes**
6. Params Designated by Client on COC	**Yes**
7. Temperature in Compliance	**Yes**
8. Sufficient Sample Volume for Analysis	**Yes**
9. Zero HeadSpace Maintained for VOA Analyses	**N/A**
10. Samples properly preserved	**Yes**
11. Samples Received within Allowable Hold Times	**Yes**

Georgia P[illegible]er Environmental Laboratory
5131 Mane[illegible]oad, Bin 39110
Smyrna, GA 30080

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

ANALYSIS[illegible]EQUEST AND CHAIN OF CUSTODY RECORD

LAB USE ONLY

Control No. CC-[illegible]2103
Sample Delivery Group: 4683

11 Page 1 of 1

12 Standard Turnaround Time
Rush in _____ Business Days
(Must be cleared through Env. Lab. prior to shipment)

Company: 1 _____
Report To Address: 2 ROCHELLE ROUTMAN
Phone: 3 HO Fax _____
Contact: 4 CRAIG SCOTT
Project Location: 5 _____
Account Number: 6 _____
Special Instructions: 7 _____

Sample Shipment Date: 8 _____
Sample Received Date: 9 _____
Sampled By: 10 _____
Print Name
_____
Signature

Authorization to subcontract analysis will be assumed acceptable by customer unless stated otherwise.

PRESERVATIVE 20: U

ANALYSIS REQUESTED 21: METALS (TCLP LIST)

Sample Type Key: 22
G-Grab C-Composite
O-Other

Matrix Key: 23
O-Oil SW-Surface Water
S-Solid GW-Ground Water
SL-Sludge WW-Waste Water
W-Wipe DW-Drinking Water

Preservative Key: 24
H-Hydrochloric Acid
N-Nitric Acid
S-Sulfuric Acid
SH-Sodium Hydroxide
SB-Sodium Bisulfide
P-Phosphoric Acid
ST-Sodium Thiosulfate
I-Ice
U-Unpreserved

LAB USE ONLY 13 LAB ID	Sample 14 Number	Collection 15 Date	Collection 15 Time	Sample 16 Description	17 Sample Type	18 Matrix	19 No. of Containers	METALS (TCLP LIST)	LAB USE ONLY 25 Comments
468301	#1	4/11/02		PLANT BOWEN ASH	G	A	1	✓	
468302	#2	↓		PLANT HAMMOND ASH	G	A	1	✓	
468303	#3			PLANT MCDONOUGH ASH	G	A	1	✓	
468304	#4			PLANT YATES ASH	G	A	1	✓	
468305	#5			ASH COMPOSITE	C	A	1	✓	
468306	#6	↓		SOIL COMPOSITE	C	S	1	✓	

Relinquished by: 26 Date/Time
Received by: 27 Date/Time
Relinquished by: Date/Time
Received by Date/Time

LAB USE ONLY: Sample Disposition Information 28

Type: _____ Date: _____ Container: _____
Type: _____ Date: _____ Container: _____
Type: _____ Date: _____ Container: _____

707211B MAC

WHITE, CANARY & PINK—Laboratory GOLDENROD—Originator

(See Back For Instructions)

Environmental Laboratory
5131 Maner Road, Bin 39110
Smyrna, Georgia 30080

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

TRANSFER OF SAMPLES

GEORGIA POWER
A SOUTHERN COMPANY

Sample Delivery Group No. 4683

Lab Contact: CRAIG SCOTT

Project Name: ASH UTILIZATION

Vendor Laboratory Name and Address: ASI 110 TECHNOLOGY PKWY NORCROSS, GA 30092

☑ Fax Results To: CRAIG SCOTT
☑ Mail Results To: ↓

Turnaround Time: (or expected date of results) 4/17/02
Rush Charges Authorized: ☑ Yes ☐ No Signature: ECS

Date of Sample Transfer: 4/12/02

Sample Date	Sample Time	No. of Containers	Project ID No.	Lab. ID No.	Analysis Requested	REMARKS
4/11/02	12:00	1	PLANT BOWEN ASH #1	468301	TOTAL ELEMENT CONCENTRATION: Ag, As, Ba, Be, Cd, Co, Cu, Mn Tl, Ni, Sb, V, Zn, Se, Fe, Cr, Hg, Pb	EPA-3050B / EPA-6010B EPA-7470
4/11/02	↓	1	PLANT HAMMOND ASH #2	468302		
4/11/02		1	PLANT MCDONOUGH ASH #3	468303		
4/11/02		1	PLANT YATES ASH #4	468304		
4/11/02		1	ASH COMPOSITE #5	468305	- PLEASE INCLUDE QC DATA	
4/11/02		1	SOIL COMPOSITE #6	468306	- HOMOGENIZE AND PULVERIZE TO 170 MESH SIZE.	

Note: Attach copy of original Analysis Request

TRANSFERRED BY (Signature): [signature]
DATE: 4/11/2002 TIME: 0925

RECEIVED BY (Signature): Michael Citron
TITLE: DATE: 04/12/02 TIME: 0125
TELEPHONE:

707454 MAC

WHITE—Laboratory CANARY—Originator PINK—Laboratory

Sample Receipt and Non-Conformance

GEORGIA POWER
A SOUTHERN COMPANY

ample Delivery Group 4683 Location Ash Utilization

ontrol Numbers 468301 – 468306

A. Method of Shipment: ☒ Hand Delivered ☐ Courier ☐ UPS/Fedex ☐ Other _____

a. Did shipment come with a shipping air bill? ☐ Y ☐ N ☒ N/A

b. If "yes" document carrier and air bill #: _____

B. Preliminary Examination:

1. Was Chain of Custody initiated? If "no" proceed to number 2.	☐ Y	☒ N	
a. Were custody seals intact?	☐ Y	☐ N	☐ N/A
b. Were custody papers filled out properly?	☐ Y	☐ N	
c. Were custody papers signed?	☐ Y	☐ N	
2. Are sampling time(s) present?	☐ Y	☒ N	
3. Are sampling date(s) present?	☒ Y	☐ N	
4. Are samples received within the specified holding times?	☒ Y	☐ N	
5. Were samples packaged properly?	☒ Y	☐ N	

C. Sample Login:

1. Did all sample containers arrive intact?	☒ Y	☐ N	
2. Did all container labels agree with custody papers?	☒ Y	☐ N	
3. Were proper containers used for requested test(s)?	☒ Y	☐ N	☐ N/A
4. Were samples properly preserved for requested test(s)?	☐ Y	☐ N	☒ N/A
a. pH (acid)?	☐ < 2	☐ ≥ 2	☐ N/A
b. pH (base)?	☐ ≥ 12	☐ < 12	☐ N/A
c. temperature?	☐ < 4	☐ ≥ 4	☐ N/A
5. Was sufficient sample received for requested test(s)?	☒ Y	☐ N	
6. Were air bubbles present in VOA samples?	☐ Y	☐ N	☒ N/A

D. Corrective Action: (Complete this section only if needed)

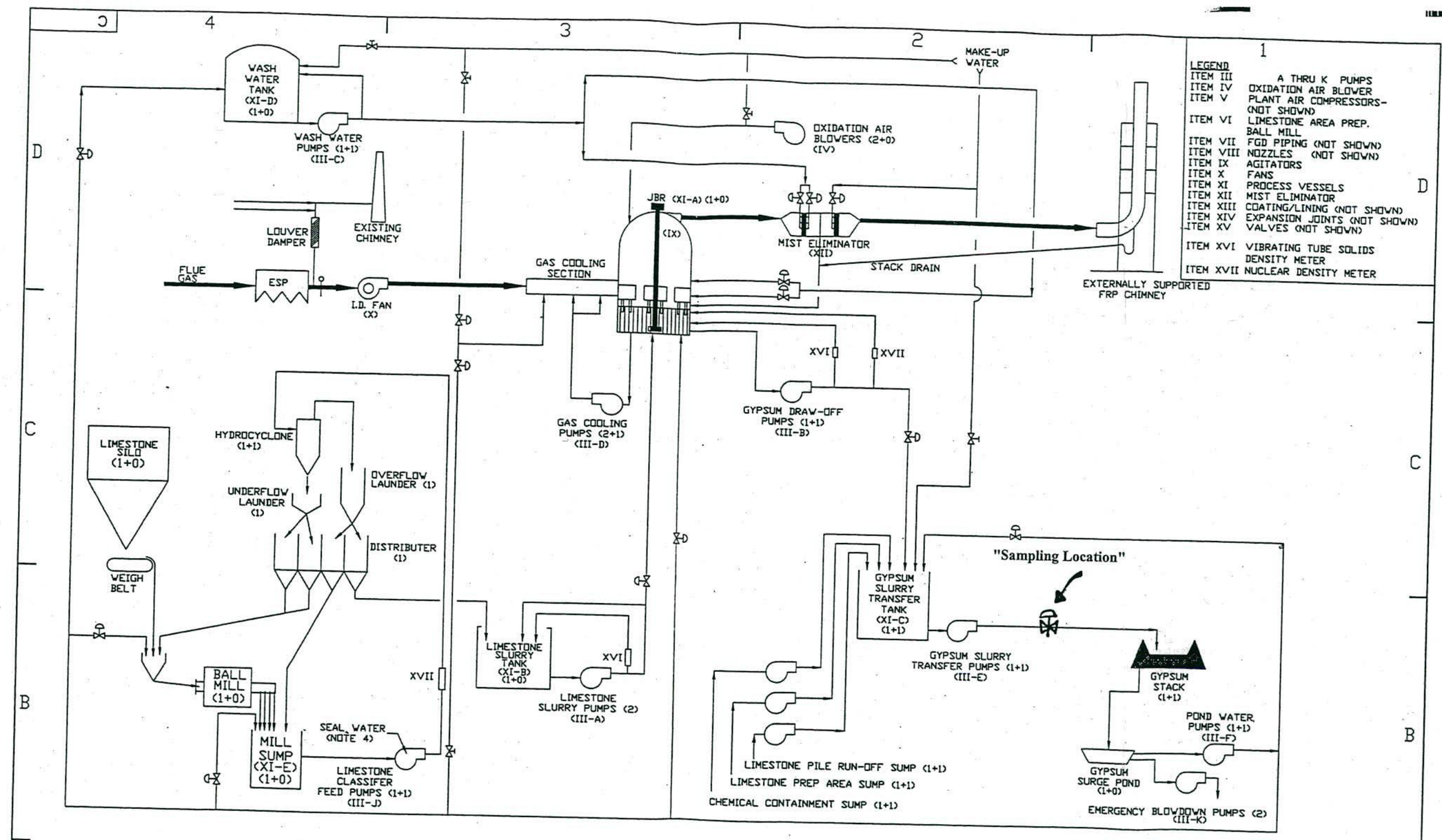
1. Client notified verbally - Date: _____ Time: _____
(attach written notification, e.g. e-mail, memo, etc.)

2. Samples processed as received ☐ Y ☐ N

E. Comments _____

Completed by: J Daniel Broadnax Date 4/12/02

Gypsum Sampling Location



NOTES:
1. PUMP ISOLATION VALVES REMOVED FOR CLARITY
2. NORMAL GAS COOLING WATER SUPPLIED FROM SURGE POND.
3. ALL TANKS HAVE MIXERS EXCEPT WASHING WATER TANK.
4. SEAL WATER PACKING REPLACED AFTER INITIAL OPERATION WITH MECHANICAL SEAL.

REVISION	DATE	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5

SOUTHERN COMPANY SERVICES, INC.
FOR

YATES
D.O.E. PROJECT
PROCESS FLOW DIAGRAM

DESIGNED PMH DRAWN JWB CHECKED FRR

SCALE		PROJECT I.D.	DRAWING NUMBER	REV.
	3-1		FIGURE 3-1	

Laboratory Results
Gypsum TCLP

Bin 39110
5131 Maner Road
Smyrna, Georgia 30080
Tel 404.799.2100

Composite from 10 consecutive days

GEORGIA POWER
A SOUTHERN COMPANY

April 15, 2002

Rochelle Routman
Georgia Power Company
Environmental Affairs
241 Ralph McGill Blvd.
Atlanta, GA 30308

RE: Plant Yates Gypsum Scrubber TCLP Metals Results

The Environmental Laboratory has completed the analysis of your samples and reports the results on the attached pages. All results relate only to the contents of the samples submitted. This report may not be reproduced except in full without the written consent of the Environmental Laboratory.

Please note the attached results analyzed by Analytical Services, Inc.

All samples will be disposed of after 30 days unless otherwise instructed.

If you have any questions, please advise.

Respectfully submitted,

D. A. Davis
Senior Environmental Specialist

Report Number: 041502-4638-1

JUL 22 '02 16:56 FR GEORGIA POWER 4045061499 TO 91249959249536 P.02/13

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Report Number **154732**

Project: Plant Yates Gypsum Scrubber, Project#4638

Prepared For:
Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott

April 17, 2002

We appreciate the opportunity to provide the analytical support for your project. The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Judy Wagner
Project Manager

Christy D. Hidden
Quality Assurance

lytical Services Inc., Norcross Laboratory maintains the following certifications, approvals, and accreditations:
orgia (812); NELAC (E87315) scope: CWA, SDWA, RCRA expires July 1, 2002; NSF International (04180) scope: SDWA expires August 17, 2002; Arkansas, California (01160CA); Connecticut (PH-0250); Florida (E87315); Kansas (E-10334); Kentucky (90126); Louisiana (02069); New Jersey (GA001); New York (11762); North Carolina (381); Oklahoma (9907), South Carolina (98011); Tennessee (02994); USDA Soil Import License (S-36027). For more information visit our web site at: asi-lab.com

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JUL 22 '02 16:56 FR GEORGIA POWER 4045061499 TO 91205552402536 P.03/13

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **154732-1**

April 17, 2002

Sample Description

Georgia Power
Solid, Plant Yates Gypsum Scrubber, Project#4638, PTY040422-1, 04/04/2002, 12:00, received 04/05/2002

Analytical Method	Analyte		Result	Detection Limit	Units	Regulatory Limit
		Toxicity Characteristic Leaching Procedure (EPA 1311) TCLP Non-volatile Extraction				
	Metals					
EPA 6010	D004	Arsenic (As)	BDL	0.03	mg/L	5.0
EPA 6010	D005	Barium (Ba)	0.2	0.1	mg/L	100.0
EPA 6010	D006	Cadmium (Cd)	BDL	0.01	mg/L	1.0
EPA 6010	D007	Chromium (Cr)	0.02	0.01	mg/L	5.0
EPA 6010	D008	Lead (Pb)	BDL	0.1	mg/L	5.0
EPA 7470	D009	Mercury (Hg)	BDL	0.005	mg/L	0.2
EPA 6010	D010	Selenium (Se)	BDL	0.5	mg/L	1.0
EPA 6010	D011	Silver (Ag)	BDL	0.01	mg/L	5.0
EPA 6010	---	Beryllium (Be)	BDL	0.01	mg/L	--
EPA 6010	---	Cobalt (Co)	BDL	0.04	mg/L	--
EPA 6010	---	Copper (Cu)	0.03	0.02	mg/L	--
EPA 6010	---	Manganese (Mn)	0.10	0.04	mg/L	--
EPA 6010	---	Nickel (Ni)	BDL	0.02	mg/L	--
EPA 6010	---	Antimony (Sb)	BDL	0.1	mg/L	--
EPA 6010	---	Vanadium (V)	BDL	0.02	mg/L	--
EPA 6010	---	Zinc (Zn)	0.51	0.03	mg/L	--
EPA 6010	---	Iron (Fe)	0.35	0.01	mg/L	--

BDL - Below Detection Limit

JUL 22 '02 16:56 FR GEORGIA POWER 4045061499 TO 91205992053S P.04/13

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **154732-2**

April 17, 2002

Sample Description
Georgia Power

Solid, Plant Yates Gypsum Scrubber, Project#4638, PTY040422-2, 463802, 04/04/2002, 12:00, received 04/05/2002

Analytical Method	Analyte		Result	Detection Limit	Units	Regulatory Limit
		Toxicity Characteristic Leaching Procedure (EPA 1311) TCLP Non-volatile Extraction				
	Metals					
EPA 6010	D004	Arsenic (As)	BDL	0.03	mg/L	5.0
EPA 6010	D005	Barium (Ba)	0.2	0.1	mg/L	100.0
EPA 6010	D006	Cadmium (Cd)	BDL	0.01	mg/L	1.0
EPA 6010	D007	Chromium (Cr)	0.02	0.01	mg/L	5.0
EPA 6010	D008	Lead (Pb)	BDL	0.1	mg/L	5.0
EPA 7470	D009	Mercury (Hg)	BDL	0.005	mg/L	0.2
EPA 6010	D010	Selenium (Se)	BDL	0.5	mg/L	1.0
EPA 6010	D011	Silver (Ag)	BDL	0.01	mg/L	5.0
EPA 6010	---	Beryllium (Be)	BDL	0.01	mg/L	--
EPA 6010	---	Cobalt (Co)	BDL	0.04	mg/L	--
EPA 6010	---	Copper (Cu)	BDL	0.02	mg/L	--
EPA 6010	---	Manganese (Mn)	0.10	0.04	mg/L	--
EPA 6010	---	Nickel (Ni)	BDL	0.02	mg/L	--
EPA 6010	---	Antimony (Sb)	BDL	0.1	mg/L	--
EPA 6010	---	Vanadium (V)	BDL	0.02	mg/L	--
EPA 6010	---	Zinc (Zn)	0.45	0.03	mg/L	--
EPA 6010	---	Iron (Fe)	0.31	0.01	mg/L	--

BDL - Below Detection Limit

JUL 22 '02 16:56 FR GEORGIA POWER 4045061499 TO 91205955205536 P.03/13

Single Analyte Data
Blank Results Information

Batch Number	Analyte	Analysis Method	Preparation Method	Units	Blank Result	Matrix
77080	Hg	EPA 7470	Hg-Aq	mg/L	< 0.0050	TCLP
77209	Se	EPA 6010	EPA 3010	mg/L	< 0.0400	TCLP
77209	Ag	EPA 6010	EPA 3010	mg/L	< 0.0100	TCLP
77209	As	EPA 6010	EPA 3010	mg/L	< 0.0300	TCLP
77209	Ba	EPA 6010	EPA 3010	mg/L	< 0.0100	TCLP
77209	Be	EPA 6010	EPA 3010	mg/L	< 0.0100	TCLP
77209	Cd	EPA 6010	EPA 3010	mg/L	< 0.0100	TCLP
77209	Cr	EPA 6010	EPA 3010	mg/L	< 0.0100	TCLP
77209	Pb	EPA 6010	EPA 3010	mg/L	< 0.0150	TCLP
77209	Sb	EPA 6010	EPA 3010	mg/L	< 0.0500	TCLP
77209	Ni	EPA 6010	EPA 3010	mg/L	< 0.0200	TCLP
77209	Fe	EPA 6010	EPA 3010	mg/L	< 0.0400	TCLP
77209	Cu	EPA 6010	EPA 3010	mg/L	< 0.0200	TCLP
77209	Zn	EPA 6010	EPA 3010	mg/L	< 0.0300	TCLP
77209	Co	EPA 6010	EPA 3010	mg/L	< 0.0400	TCLP
77209	V	EPA 6010	EPA 3010	mg/L	< 0.0200	TCLP
77209	Mn	EPA 6010	EPA 3010	mg/L	< 0.0400	TCLP
TCLP884	TCLP EXT	EPA 1311		mg/L	0.0000	TCLP

Lab Control Information

Batch Number	Analyte	Analysis Method	LC % Rec.	LCD % Rec.	LC/LCD RPD	%Recovery Range	RPD Range
77080	Hg	EPA 7470	105	105	0	86 - 114	0 - 12
77209	Se	EPA 6010	104	100	4	88 - 118	0 - 13
77209	Ag	EPA 6010	100	97	3	80 - 106	0 - 12
77209	As	EPA 6010	97	96	1	87 - 109	0 - 12
77209	Ba	EPA 6010	89	88	1	77 - 103	0 - 13
77209	Be	EPA 6010	82	81	1	83 - 104	0 - 14
77209	Cd	EPA 6010	90	87	3	83 - 106	0 - 13
77209	Cr	EPA 6010	82	79	4	81 - 105	0 - 14
77209	Pb	EPA 6010	86	85	1	80 - 105	0 - 12
77209	Sb	EPA 6010	101	100	1	83 - 109	0 - 13
77209	Ni	EPA 6010	90	89	1	82 - 103	0 - 13
77209	Fe	EPA 6010	87	84	4	71 - 105	0 - 14
77209	Cu	EPA 6010	98	93	5	78 - 110	0 - 16
77209	Zn	EPA 6010	97	94	3	78 - 124	0 - 11

JUL 22 '02 16:57 FR GEORGIA POWER 4045061499 TO 91205932053

Single Analyte Data
Lab Control Information

Batch Number	Analyte	Analysis Method	LC % Rec.	LCD % Rec.	LC/LCD RPD	%Recovery Range	RPD Range
77209	Co	EPA 6010	97	96	1	76 - 124	0 - 20
77209	V	EPA 6010	86	84	2	76 - 106	0 - 10
77209	Mn	EPA 6010	86	84	2	76 - 124	0 - 20

Matrix Spike Information

Batch Number	Analyte	Analysis Method	MS % Rec.	MSD % Rec.	MS/MSD RPD	%Recovery Range	RPD Range
77080	Hg	EPA 7470	109	76	36	81 - 116	0 - 15
77209	Se	EPA 6010	106	109	3	76 - 124	0 - 20
77209	Ag	EPA 6010	102	105	3	76 - 124	0 - 20
77209	As	EPA 6010	100	101	1	76 - 124	0 - 20
77209	Ba	EPA 6010	90	91	1	76 - 124	0 - 20
77209	Be	EPA 6010	83	84	1	76 - 124	0 - 20
77209	Cd	EPA 6010	88	89	1	76 - 124	0 - 20
77209	Cr	EPA 6010	80	81	1	76 - 124	0 - 20
77209	Pb	EPA 6010	87	88	1	76 - 124	0 - 20
77209	Sb	EPA 6010	101	103	2	76 - 124	0 - 20
77209	Ni	EPA 6010	89	90	1	76 - 124	0 - 20
209	Fe	EPA 6010	85	88	3	76 - 124	0 - 20
/209	Cu	EPA 6010	98	101	3	76 - 124	0 - 20
77209	Zn	EPA 6010	97	99	2	76 - 124	0 - 20
77209	Co	EPA 6010	98	98	0	76 - 124	0 - 20
77209	V	EPA 6010	87	87	0	76 - 124	0 - 20
77209	Mn	EPA 6010	85	87	2	76 - 124	0 - 20

Post Digestion Spike Information

Batch Number	Analyte	Analysis Method	PDS %Rec	%Recovery Range
77209	Se	EPA 6010	121	76 - 124
77209	Ag	EPA 6010	115	76 - 124
77209	As	EPA 6010	111	76 - 124
77209	Ba	EPA 6010	99	76 - 124
77209	Be	EPA 6010	93	76 - 124
77209	Cd	EPA 6010	99	76 - 124
77209	Cr	EPA 6010	90	76 - 124

JUL 22 '02 16:57 FR GEORGIA POWER

Single Analyte Data
Post Digestion Spike Information

Batch Number	Analyte	Analysis Method	PDS %Rec	%Recovery Range
77209	Pb	EPA 6010	97	76 - 124
77209	Sb	EPA 6010	113	76 - 124
77209	Ni	EPA 6010	99	76 - 124
77209	Fe	EPA 6010	98	76 - 124
77209	Cu	EPA 6010	113	76 - 124
77209	Zn	EPA 6010	109	76 - 124
77209	Co	EPA 6010	107	76 - 124
77209	V	EPA 6010	96	76 - 124
77209	Mn	EPA 6010	96	76 - 124

JUL 22 '02 16:57 FR GEORGIA POWER 4045061499 TO 912059920356 P.08/13

Single Analyte Data
Sample Batch Information
Analysis : Hg

Batch # 77080 ***Matrix : TCLP***

		Preparation				Analysis			
Sample ID	Tag	Date	Time	By	Notes	Date	Time	By	Inst
BLANK04-12		04/12/02	1015	EAH	TCLP	04/12/02	1648	EAH	HG1
154732-2		04/12/02	1015	EAH	TCLP	04/12/02	1700	EAH	HG1
154732-1		04/12/02	1015	EAH	TCLP	04/12/02	1658	EAH	HG1
154877-4		04/12/02	1015	EAH	TCLP	04/12/02	1656	EAH	HG1
154877-3		04/12/02	1015	EAH	TCLP	04/12/02	1654	EAH	HG1
154877-2		04/12/02	1015	EAH	TCLP	04/12/02	1652	EAH	HG1
154877-1		04/12/02	1015	EAH	TCLP	04/12/02	1650	EAH	HG1
77080BLK		04/08/02	1130	EAH	TCLP	04/08/02	1511	EAH	HG1
77080LCS		04/08/02	1130	EAH	TCLP	04/08/02	1513	EAH	HG1
77080LCSD		04/08/02	1130	EAH	TCLP	04/08/02	1515	EAH	HG1
154554-3MS		04/08/02	1130	EAH	TCLP	04/08/02	1517	EAH	HG1
154554-3MSD		04/08/02	1130	EAH	TCLP	04/08/02	1519	EAH	HG1
154554-3DUP		04/08/02	1130	EAH	TCLP	04/08/02	1521	EAH	HG1
154189-1		04/08/02	1130	EAH	TCLP	04/08/02	1531	EAH	HG1
154189-2		04/08/02	1130	EAH	TCLP	04/08/02	1533	EAH	HG1
154554-3		04/08/02	1130	EAH	TCLP	04/08/02	1535	EAH	HG1
154482-1		04/08/02	1130	EAH	TCLP	04/08/02	1537	EAH	HG1
154487-1		04/08/02	1130	EAH	TCLP	04/08/02	1539	EAH	HG1

JUL 22 '02 16:57 FR GEORGIA PUWER

Single Analyte Data

Sample Batch Information

Analysis : Se, Ag, As, Ba, Be, Cd, Cr, Pb, Sb, Ni, Fe, Cu, Zn, Co, V,

Batch # 77209 ***Matrix : TCLP***

		Preparation				Analysis			
Sample ID	Tag	Date	Time	By	Notes	Date	Time	By	Inst
154877-4		04/11/02	0920	MHU	TCLP	04/11/02	1402	MLR	ICP2
154877-3		04/11/02	0920	MHU	TCLP	04/11/02	1359	MLR	ICP2
154877-2		04/11/02	0920	MHU	TCLP	04/11/02	1355	MLR	ICP2
154877-1		04/11/02	0920	MHU	TCLP	04/11/02	1352	MLR	ICP2
BLANK04-11		04/11/02	0920	MHU	TCLP	04/11/02	1349	MLR	ICP2
77209BLK		04/10/02	0910	MHU	TCLP	04/10/02	1521	FBS	ICP3
77209LCS		04/10/02	0910	MHU	TCLP	04/10/02	1525	FBS	ICP3
77209LCSD		04/10/02	0910	MHU	TCLP	04/10/02	1528	FBS	ICP3
154732-1MS		04/10/02	0910	MHU	TCLP	04/10/02	1532	FBS	ICP3
154732-1MSD		04/10/02	0910	MHU	TCLP	04/10/02	1536	FBS	ICP3
154732-1PDS		04/10/02	0910	MHU	TCLP	04/10/02	1540	FBS	ICP3
154732-2DUP		04/10/02	0910	MHU	TCLP	04/10/02	1543	FBS	ICP3
154732-1		04/10/02	0910	MHU	TCLP	04/10/02	1602	FBS	ICP3
154732-2		04/10/02	0910	MHU	TCLP	04/10/02	1605	FBS	ICP3
154797-1		04/10/02	0910	MHU	TCLP	04/10/02	1554	FBS	ICP3
154797-2		04/10/02	0910	MHU	TCLP	04/10/02	1558	FBS	ICP3
LCDI		04/10/02	0910	MHU	TCLP	04/10/02	1609	FBS	ICP3
LCDI		04/10/02	0910	MHU	TCLP	04/10/02	1613	FBS	ICP3

JUL 22 '02 16:57 FR GEORGIA POWER 4045061499 TO 9125932

Single Analyte Data
Sample Batch Information
Analysis : TCLP EXT

Batch # TCLP884 ***Matrix : TCLP***

		Preparation				Analysis			
Sample ID	Tag	Date	Time	By	Notes	Date	Time	By	Inst
TCLPBLK		03/31/02	1700	RF		/ /			
154210-1		03/31/02	1700	RF		/ /			
154210-2		03/31/02	1700	RF		/ /			
154221-1		03/31/02	1700	RF		/ /			
TCLPBLK		04/02/02	1145	YC		/ /			
154382-3		04/02/02	1145	YC		/ /			
154382-4		04/02/02	1145	YC		/ /			
154382-5		04/02/02	1145	YC		/ /			
154391-1		04/02/02	1145	YC		/ /			
TCLPBLK		04/03/02	1400	MS		/ /			
154456-1		04/03/02	1400	MS		/ /			
154506-2		04/03/02	1400	MS		/ /			
154506-3		04/03/02	1400	MS		/ /			
154506-2DUP		04/03/02	1400	MS		/ /			
TCLPBLK		04/04/02	1400	MS		/ /			
154585-10		04/04/02	1400	MS		/ /			
154585-11		04/04/02	1400	MS		/ /			
154487-1		04/04/02	1400	MS		/ /			
4482-1		04/04/02	1400	MS		/ /			
154487-1		04/04/02	1400	MS		/ /			
154554-2		04/04/02	1400	MS		/ /			
154554-3		04/04/02	1400	MS		/ /			
154482-1DUP		04/04/02	1400	MS		/ /			
TCLPBLK		04/08/02	1100	RF		/ /			
154732-1		04/08/02	1100	RF		/ /			
154732-2		04/08/02	1100	RF		/ /			
TCLPBLK		04/09/02	1400	RF		/ /			
154542-3		04/09/02	1400	RF		/ /			

JUL 22 '02 16:57 FR GEORGIA POWER 4045061499 TO 9128035284554

Environme. , Laboratory
5131 Maner Road, Bin 39110
Smyrna, Georgia 30080

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

TRANSFER OF SAMPLES

US

GEORGIA POWER
A SOUTHERN COMPANY

Sample Delivery Group No. 4638

Lab Contact:	Project Name	Vendor Laboratory Name and Address
CRAIG SCOTT	PLANT YATES GYPSUM SCRUBBER	ASI 154732

☒ Fax Results To: CRAIG SCOTT
☒ Mail Results To: ↓

Turnaround Time: (or expected date of results) 4/12/02
Rush Charges Authorized: ☒ Yes ☐ No Signature: ECS

Date of Sample Transfer 4/5/02

Sample Date	Sample Time	No. of Containers	Project ID No.	Lab. ID No.	Analysis Requested	REMARKS
4/4/02	12:00	1	PLTY040402-1	463801	TCLP METALS (HSRA LIST) ↓	-1
4/4/02	12:00	1	PLTY040402-2	463802		-2
					HSRA LIST	BDAT -
					Ag, As, Ba, Be, Cd, Co, Cu, Mn, Tl	1311/6010B/7470
					Ni, Pb, Sb, V, Zn, Se, Fe, Hg	

* Note: Attach copy of original Analysis Request

TRANSFERRED BY (Signature) Samuel Broady
DATE 4/5/02 TIME

RECEIVED BY (Signature) Susan Dillard 4.5.02 1430
TITLE 13° @ 1430, No scarfica Lims: SD DATE TIME pH = N/A
TELEPHONE

WHITE—Laboratory CANARY—Originator PINK—Laboratory

JUL 22 '02 16:58 FR GEORGIA POWER 4043995492 TO 14155553555

ASI ANALYTICAL SERVICES, INC.

Environmental Monitoring & Laboratory Services
110 Technology Parkway, Norcross, GA 30092
(770)734-4200 FAX (770)734-4201

SAMPLE RECEIPT VARIANCE FORM

Attn: Mr. Craig Scott

Client: GEORGIA POWER GA SMYRNA
Project: Plant Yates Gypsum Scrubber, Project#4638
Recvd : 04/05/2002 **Logged By:** SDD

NPDES:
Work Order: 154732

OBSERVATIONS

#Samples: 2 **#Containers:** 2
pH: n\a **Temp(C):** 13 **Ice:** Yes **Custody Seal(s):** Not Present

CHECKLIST ITEMS**

1. COC included with Samples	Yes
2. Chain of Custody Complete	Yes
3. Sample Container(s) Intact	Yes
4. Sample Container(s) Match COC	Yes
5. Methods Designated by Client on COC	Yes
6. Params Designated by Client on COC	Yes
7. Temperature in Compliance	No
8. Sufficient Sample Volume for Analysis	Yes
9. Zero HeadSpace Maintained for VOA Analyses	N/A
10. Samples properly preserved	Yes
11. Samples Received within Allowable Hold Times	Yes

Temperature above compliance level.

Status: Samples processed as received. **Arrive Via:** Client **Airbill:**

C acted: **Date:** **By:**

** **North Carolina Samples ONLY** - When a laboratory receives samples which do not meet sample collection, holding time, or preservative requirements, the laboratory must notify the sample collector or client and secure another sample. **If another sample cannot be secured, the original sample may be analyzed but the results reported must be qualified with the nature of the infraction(s) and the laboratory must notify the State Laboratory about the infraction(s).**
North Carolina Administrative Code, Reference 15A NCAC 2H.0805(a)(7)(N)

JUL 22 '02 16:58 FR GEORGIA POWER 4042061455 TO 31

Georgia [illegible] Environmental Laboratory
5131 Maner [illegible], Bin 39110
Smyrna, GA 30080

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

ANALYSIS [illegible] QUEST AND CHAIN OF CUSTODY RECORD

LAB USE ONLY — Control No. CC-[illegible] 00
Sample Delivery Group: 4638

[11] Page 1 of 1

[12] Standard Turnaround Time
Rush in _____ Business Days
(Must be cleared through Env. Lab. prior to shipment)

Company: [1] _____
Report To Address: [2] ROCHELLE ROUTMAN
Phone: [3] _____ Fax _____
Contact: [4] CRAIG SCOTT
Project Location: [5] PLANT YATES
Account Number: [6] _____
Special Instructions: [7] _____

Sample Shipment Date: [8] 4/4/02
Sample Received Date: [9] _____
Sampled By: [10] CRAIG SCOTT
Print Name
_____
Signature

Authorization to subcontract analysis will be assumed acceptable by customer unless stated otherwise.

PRESERVATIVE [20]: H

ANALYSIS REQUESTED [21]

Sample Type Key [22]: G-Grab, C-Composite, O-Other

Matrix Key [23]: D-Oil, S-Solid, SL-Sludge, W-Wipe, SW-Surface Water, GW-Ground Water, WW-Waste Water, DW-Drinking Water

Preservative Key [24]: H-Hydrochloric Acid, N-Nitric Acid, S-Sulfuric Acid, SH-Sodium Hydroxide, SB-Sodium Bisulfide, P-Phosphoric Acid, ST-Sodium Thiosulfate, I-Ice, U-Unpreserved

LAB USE ONLY [13] LAB ID	Sample [14] Number	Collection [15] Date	Collection [15] Time	Sample [16] Description	[17] Sample Type	[18] Matrix	[19] No. of Containers	TCLP METALS (HSDA LIST)	LAB USE ONLY [25] Comments
46380 1	PLTY040402-1	4/4/02	12:00	PLANT YATES GYPSUM SCRUBBER	C	S	1	✓	
46380 2	PLTY040402-2	4/4/02	12:00	PLANT YATES GYPSUM SCRUBBER	C	S	1	✓	

Relinquished by: [26] [signature] Date/Time 4/4/02 12:05
Received by: [27] [signature] Date/Time 4/4/02 1205
Relinquished by: Date/Time
Received by: Date/Time

LAB USE ONLY: Sample Disposition Information [28]
Type: Date: Container:
Type: Date: Container:
Type: Date: Container:

707211B MAC

WHITE, CANARY & PINK—Laboratory GOLDENROD—Originator

(See Back For Instructions)

JUL 22 '02 16:58 FR GEORGIA POWER 4043806422 TO 2135

Sample Receipt and Non-Conformance

GEORGIA POWER
A SOUTHERN COMPANY

Sample Delivery Group 4638 Location Yates

Control Numbers 463801 - 463802

A. Method of Shipment: ☒ Hand Delivered ☐ Courier ☐ UPS/Fedex ☐ Other _____

a. Did shipment come with a shipping air bill? ☐ Y ☐ N ☐ N/A

b. If "yes" document carrier and air bill #: _____

B. Preliminary Examination:

1. Was Chain of Custody initiated? If "no" proceed to number 2.	☒ Y	☐ N	
a. Were custody seals intact?	☐ Y	☐ N	☒ N/A
b. Were custody papers filled out properly?	☒ Y	☐ N	
c. Were custody papers signed?	☒ Y	☐ N	
2. Are sampling time(s) present?	☒ Y	☐ N	
3. Are sampling date(s) present?	☒ Y	☐ N	
4. Are samples received within the specified holding times?	☒ Y	☐ N	
5. Were samples packaged properly?	☒ Y	☐ N	

C. Sample Login:

1. Did all sample containers arrive intact?	☒ Y	☐ N	
2. Did all container labels agree with custody papers?	☒ Y	☐ N	
3. Were proper containers used for requested test(s)?	☒ Y	☐ N	☐ N/A
4. Were samples properly preserved for requested test(s)?	☐ Y	☐ N	☒ N/A
a. pH (acid)?	☐ < 2	☐ ≥ 2	☐ N/A
b. pH (base)?	☐ ≥ 12	☐ < 12	☐ N/A
c. temperature?	☐ < 4	☐ ≥ 4	☐ N/A
5. Was sufficient sample received for requested test(s)?	☒ Y	☐ N	
6. Were air bubbles present in VOA samples?	☐ Y	☐ N	☒ N/A

D. Corrective Action: (Complete this section only if needed)

1. Client notified verbally - Date: _____ Time: _____
   (attach written notification, e.g. e-mail, memo, etc.)
2. Samples processed as received ☐ Y ☐ N

E. Comments _____

Completed by: J. Daniel Broadnax Date 4/4/02

707446 MAC

JUL 22 '02 16:59 FR GEORGIA POWER

Laboratory Results
Gypsum Total Metals

Bin 39110
5131 Manor Road
Smyrna, Georgia 30080
Tel 404.799.2100

GEORGIA POWER
A SOUTHERN COMPANY

April 01, 2002

Rochelle Routman
Georgia Power Company
Environmental Affairs
241 Ralph McGill Blvd.
Atlanta, GA 30308

RE: Plant Yates Gypsum Ash Analytical Results

The Environmental Laboratory has completed the analysis of your sample and reports the results on the attached pages. All results relate only to the contents of the samples submitted. This report may not be reproduced except in full without the written consent of the Environmental Laboratory.

All samples will be disposed of after 30 days unless otherwise instructed.

If you have any questions, please advise.

Respectfully submitted,

D. A. Davis
Senior Environmental Specialist

CC: David Parks
Jim Redwine ✓

Report Number: 040102-4395-1

ASI

ANALYTICAL SERVICES, INC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Report Number **153897**

Project: Yates-Gypsum, Project#4395

Prepared For:
Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott

April 2, 2002

We appreciate the opportunity to provide the analytical support for your project. The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Judy Wagner
Project Manager

Quality Assurance

nalytical Services Inc., Norcross Laboratory maintains the following certifications, approvals, and accreditations:
eorgia (812); NELAC (E87315) scope: CWA, SDWA, RCRA expires July 1, 2002; NSF International (04180) scope: SDWA expires August 17, 2002; Arkansas; California (01160CA); Connecticut (PH-0250); Florida (E87315); Kansas (E-10334); Kentucky (90126); Louisiana (02069); Nebraska; New Jersey (GA001); New York (11762); North Carolina (381); North Dakota (R-116); Oklahoma (9907); South Carolina (98011); Tennessee (02994); USDA Soil Import License (S-36027); Virginia (00026). For more information visit our web site at: asi-lab.com

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ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-1**

April 2, 2002

Sample Description
Georgia Power
Soil, Yates-Gypsum, Project#4395, 01GYP020402, 439501, 02/04/2002, 14:00, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	34.1	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	7.6	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.6	mg/kg
EPA 6010	Total Barium (Ba)	150	1.5	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.5	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.5	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.5	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.1	mg/kg
EPA 6010	Total Copper (Cu)	BDL	1.5	mg/kg
EPA 6010	Total Iron (Fe)	360	6.1	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.3	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.1	mg/kg
EPA 7471	Total Mercury (Hg)	0.40	0.8	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.0	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.5	mg/kg
EPA 6010	Total Selenium (Se)	11	6.1	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	30	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.0	mg/kg
EPA 6010	Total Zinc (Zn)	26	3.0	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-2**

April 2, 2002

Sample Description

Georgia Power

Soil, Yates-Gypsum, Project#4395, 02GYP020502, 439502, 02/05/2002, 13:55, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	36.2	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	7.8	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.7	mg/kg
EPA 6010	Total Barium (Ba)	160	1.6	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.6	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.6	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.6	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.3	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.1	mg/kg
EPA 6010	Total Iron (Fe)	350	6.3	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.4	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.3	mg/kg
EPA 7471	Total Mercury (Hg)	BDL	0.39	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.1	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.6	mg/kg
EPA 6010	Total Selenium (Se)	9.4	6.3	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	31	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.1	mg/kg
EPA 6010	Total Zinc (Zn)	22	3.1	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-3**

April 2, 2002

Sample Description

Georgia Power
Soil, Yates-Gypsum, Project#4395, 03GYP020602, 439503, 02/06/2002, 14:00, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	38.6	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	8.1	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.9	mg/kg
EPA 6010	Total Barium (Ba)	180	1.6	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.6	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.6	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.6	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.5	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.3	mg/kg
EPA 6010	Total Iron (Fe)	380	6.5	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.4	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.5	mg/kg
EPA 7471	Total Mercury (Hg)	BDL	0.41	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.3	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.6	mg/kg
EPA 6010	Total Selenium (Se)	10	6.5	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	33	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.3	mg/kg
EPA 6010	Total Zinc (Zn)	23	3.3	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-4**

April 2, 2002

Sample Description

Georgia Power
Soil, Yates-Gypsum, Project#4395, 04GYP020702, 439504, 02/07/2002, 14:25, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	38.9	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	8.1	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.9	mg/kg
EPA 6010	Total Barium (Ba)	180	1.6	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.6	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.6	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.6	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.5	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.2	mg/kg
EPA 6010	Total Iron (Fe)	370	6.5	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.4	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.5	mg/kg
EPA 7471	Total Mercury (Hg)	BDL	0.41	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.2	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.6	mg/kg
EPA 6010	Total Selenium (Se)	10	6.5	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	32	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.2	mg/kg
EPA 6010	Total Zinc (Zn)	28	3.2	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-5**

April 2, 2002

Sample Description

Georgia Power
Soil, Yates-Gypsum, Project#4395, 05GYP020802, 439505, 02/08/2002, 13:00, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	35.1	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	7.7	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.6	mg/kg
EPA 6010	Total Barium (Ba)	210	1.5	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.5	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.5	mg/kg
EPA 6010	Total Chromium (Cr)	1.6	1.5	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.2	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.1	mg/kg
EPA 6010	Total Iron (Fe)	560	6.2	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.3	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.2	mg/kg
EPA 7471	Total Mercury (Hg)	0.65	0.39	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.1	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.5	mg/kg
EPA 6010	Total Selenium (Se)	14	6.2	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	31	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.1	mg/kg
EPA 6010	Total Zinc (Zn)	14	3.1	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-6**

April 2, 2002

Sample Description

Georgia Power
Soil, Yates-Gypsum, Project#4395, 06GYP020902, 439506, 02/09/2002, 14:00, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	34.3	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	7.6	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.6	mg/kg
EPA 6010	Total Barium (Ba)	190	1.5	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.5	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.5	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.5	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.1	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.0	mg/kg
EPA 6010	Total Iron (Fe)	480	6.1	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.3	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.1	mg/kg
EPA 7471	Total Mercury (Hg)	0.49	0.38	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.0	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.5	mg/kg
EPA 6010	Total Selenium (Se)	10	6.1	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	30	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.0	mg/kg
EPA 6010	Total Zinc (Zn)	24	3.0	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

ASI
ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
110 Technology Parkway Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-7**

April 2, 2002

Sample Description

Georgia Power

Soil, Yates-Gypsum, Project#4395, 07GYP021002, 439507, 02/10/2002, 14:00, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	37.4	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	8.0	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.8	mg/kg
EPA 6010	Total Barium (Ba)	170	1.6	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.6	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.6	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.6	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.4	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.2	mg/kg
EPA 6010	Total Iron (Fe)	400	6.4	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.4	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.4	mg/kg
EPA 7471	Total Mercury (Hg)	0.43	0.40	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.2	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.6	mg/kg
EPA 6010	Total Selenium (Se)	8.8	6.4	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	32	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.2	mg/kg
EPA 6010	Total Zinc (Zn)	16	3.2	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

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ANALYTICAL SERVICES, INC.
Environmental Monitoring & Laboratory Analysis
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Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-8**

April 2, 2002

Sample Description

Georgia Power
Soil, Yates-Gypsum, Project#4395, 08GYP021102, 439508, 02/11/2002, 13:30, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	34.1	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	7.6	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.6	mg/kg
EPA 6010	Total Barium (Ba)	170	1.5	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.5	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.5	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.5	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.1	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.0	mg/kg
EPA 6010	Total Iron (Fe)	340	6.1	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.3	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.1	mg/kg
EPA 7471	Total Mercury (Hg)	BDL	0.38	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.0	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.5	mg/kg
EPA 6010	Total Selenium (Se)	9.7	6.1	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	30	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.0	mg/kg
EPA 6010	Total Zinc (Zn)	17	3.0	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

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Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-9**

April 2, 2002

Sample Description
Georgia Power
Soil, Yates-Gypsum, Project#4395, 09GYP021202, 439509, 02/12/2002, 13:35, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	33.5	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	7.5	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.5	mg/kg
EPA 6010	Total Barium (Ba)	130	1.5	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.5	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.5	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.5	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.0	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.0	mg/kg
EPA 6010	Total Iron (Fe)	270	6.0	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.3	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.0	mg/kg
EPA 7471	Total Mercury (Hg)	BDL	0.38	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.0	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.5	mg/kg
EPA 6010	Total Selenium (Se)	7.9	6.0	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	30	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.0	mg/kg
EPA 6010	Total Zinc (Zn)	13	3.0	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

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Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-10**

April 2, 2002

Sample Description

Georgia Power

Soil, Yates-Gypsum, Project#4395, 10GYP021302, 439510, 02/13/2002, 13:00, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	37.2	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	8.0	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.8	mg/kg
EPA 6010	Total Barium (Ba)	200	1.6	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.6	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.6	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.6	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.4	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.2	mg/kg
EPA 6010	Total Iron (Fe)	430	6.4	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.4	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.4	mg/kg
EPA 7471	Total Mercury (Hg)	0.61	0.40	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.2	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.6	mg/kg
EPA 6010	Total Selenium (Se)	11	6.4	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	32	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.2	mg/kg
EPA 6010	Total Zinc (Zn)	29	3.2	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

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Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-11**

April 2, 2002

Sample Description
Georgia Power
Soil, Yates-Gypsum, Project#4395, 11GYP021402, 439511, 02/14/2002, 13:00, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	33.3	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	7.5	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.5	mg/kg
EPA 6010	Total Barium (Ba)	120	1.5	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.5	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.5	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.5	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	6.0	mg/kg
EPA 6010	Total Copper (Cu)	BDL	3.0	mg/kg
EPA 6010	Total Iron (Fe)	260	6.0	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.2	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	6.0	mg/kg
EPA 7471	Total Mercury (Hg)	0.46	0.37	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	3.0	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.5	mg/kg
EPA 6010	Total Selenium (Se)	7.5	6.0	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	30	mg/kg
EPA 6010	Total Vanadium (V)	BDL	3.0	mg/kg
EPA 6010	Total Zinc (Zn)	10	3.0	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

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(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Georgia Power
5131 Maner Road
Smyrna, GA 30080

Attention: Mr. Craig Scott
Report No. **153897-12**

April 2, 2002

Sample Description

Georgia Power
Soil, Yates-Gypsum, Project#4395, 12GYP021502, 439512, 02/15/2002, 13:00, received 03/22/2002

Analytical Method	Analyte	Result	Detection Limit	Units
	General Chemistry			
	Moisture	32.0	0.04	%
	Metals			
EPA 6010	Total Antimony (Sb)	BDL	7.4	mg/kg
EPA 6010	Total Arsenic (As)	BDL	4.4	mg/kg
EPA 6010	Total Barium (Ba)	160	1.5	mg/kg
EPA 6010	Total Beryllium (Be)	BDL	1.5	mg/kg
EPA 6010	Total Cadmium (Cd)	BDL	1.5	mg/kg
EPA 6010	Total Chromium (Cr)	BDL	1.5	mg/kg
EPA 6010	Total Cobalt (Co)	BDL	5.9	mg/kg
EPA 6010	Total Copper (Cu)	BDL	2.9	mg/kg
EPA 6010	Total Iron (Fe)	360	5.9	mg/kg
EPA 6010	Total Lead (Pb)	BDL	2.2	mg/kg
EPA 6010	Total Manganese (Mn)	BDL	5.9	mg/kg
EPA 7471	Total Mercury (Hg)	0.77	0.37	mg/kg
EPA 6010	Total Nickel (Ni)	BDL	2.9	mg/kg
EPA 6010	Total Silver (Ag)	BDL	1.5	mg/kg
EPA 6010	Total Selenium (Se)	11	5.9	mg/kg
EPA 6010	Total Thallium (Tl)	BDL	29	mg/kg
EPA 6010	Total Vanadium (V)	BDL	2.9	mg/kg
EPA 6010	Total Zinc (Zn)	18	2.9	mg/kg

BDL - Below Detection Limit
Note: Results reported on dry-weight basis

Single Analyte Data

Blank Results Information

Batch Number	Analyte	Analysis Method	Preparation Method	Units	Blank Result	Matrix
76819	Sb	EPA 6010	EPA 3050	mg/kg	< 0.0500	SOLID
76819	Ba	EPA 6010	EPA 3050	mg/kg	< 0.0100	SOLID
76819	Be	EPA 6010	EPA 3050	mg/kg	< 0.0100	SOLID
76819	Cd	EPA 6010	EPA 3050	mg/kg	< 0.0100	SOLID
76819	Cr	EPA 6010	EPA 3050	mg/kg	< 0.0100	SOLID
76819	Co	EPA 6010	EPA 3050	mg/kg	< 0.0400	SOLID
76819	Cu	EPA 6010	EPA 3050	mg/kg	< 0.0200	SOLID
76819	Fe	EPA 6010	EPA 3050	mg/kg	< 0.0400	SOLID
76819	Pb	EPA 6010	EPA 3050	mg/kg	< 0.0150	SOLID
76819	Ni	EPA 6010	EPA 3050	mg/kg	< 0.0200	SOLID
76819	Ag	EPA 6010	EPA 3050	mg/kg	< 0.0100	SOLID
76819	As	EPA 6010	EPA 3050	mg/kg	< 0.0300	SOLID
76819	Mn	EPA 6010	EPA 3050	mg/kg	< 0.0400	SOLID
76819	Se	EPA 6010	EPA 3050	mg/kg	< 0.0400	SOLID
76819	Tl	EPA 6010	EPA 3050	mg/kg	< 0.2000	SOLID
76819	V	EPA 6010	EPA 3050	mg/kg	< 0.0200	SOLID
76819	Zn	EPA 6010	EPA 3050	mg/kg	< 0.2000	SOLID
77070	Hg	EPA 7471	Hg-Solid	mg/kg	0.0000	SOLID

Lab Control Information

Batch Number	Analyte	Analysis Method	LC % Rec.	LCD % Rec.	LC/LCD RPD	%Recovery Range	RPD Range
76819	Sb	EPA 6010	94	91	3	76 - 124	0 - 20
76819	Ba	EPA 6010	86	86	0	81 - 92	0 - 8
76819	Be	EPA 6010	83	82	1	81 - 96	0 - 7
76819	Cd	EPA 6010	89	89	0	80 - 93	0 - 4
76819	Cr	EPA 6010	82	82	0	82 - 95	0 - 5
76819	Co	EPA 6010	94	95	1	82 - 95	0 - 7
76819	Cu	EPA 6010	90	89	1	84 - 97	0 - 5
76819	Fe	EPA 6010	88	88	0	86 - 118	0 - 12
76819	Pb	EPA 6010	88	88	0	78 - 95	0 - 5
76819	Ni	EPA 6010	88	89	1	82 - 93	0 - 5
76819	Ag	EPA 6010	78	78	0	75 - 88	0 - 5
76819	As	EPA 6010	85	85	0	77 - 90	0 - 6
76819	Mn	EPA 6010	86	86	0	79 - 100	0 - 11
76819	Se	EPA 6010	84	85	1	73 - 86	0 - 7

Single Analyte Data

Lab Control Information

Batch Number	Analyte	Analysis Method	LC % Rec.	LCD % Rec.	LC/LCD RPD	%Recovery Range	RPD Range
76819	Tl	EPA 6010	87	86	1	77 - 96	0 - 8
76819	V	EPA 6010	86	85	1	81 - 94	0 - 5
76819	Zn	EPA 6010	92	97	5	82 - 95	0 - 8
77070	Hg	EPA 7471	92	93	1	81 - 114	0 - 13

Matrix Spike Information

Batch Number	Analyte	Analysis Method	MS % Rec.	MSD % Rec.	MS/MSD RPD	%Recovery Range	RPD Range
76819	Sb	EPA 6010	22	29	28	76 - 124	0 - 20
76819	Ba	EPA 6010	98	90	5	76 - 124	0 - 20
76819	Be	EPA 6010	82	82	1	76 - 124	0 - 20
76819	Cd	EPA 6010	87	87	0	76 - 124	0 - 20
76819	Cr	EPA 6010	82	78	4	76 - 124	0 - 20
76819	Co	EPA 6010	90	90	0	76 - 124	0 - 20
76819	Cu	EPA 6010	92	87	5	76 - 124	0 - 20
76819	Fe	EPA 6010	0	102	200	76 - 124	0 - 20
76819	Pb	EPA 6010	84	82	2	76 - 124	0 - 20
76819	Ni	EPA 6010	86	79	5	76 - 124	0 - 20
76819	Ag	EPA 6010	80	80	0	76 - 124	0 - 20
76819	As	EPA 6010	83	81	2	76 - 124	0 - 20
76819	Mn	EPA 6010	101	119	4	76 - 124	0 - 20
76819	Se	EPA 6010	84	84	1	76 - 124	0 - 20
76819	Tl	EPA 6010	52	59	9	76 - 124	0 - 20
76819	V	EPA 6010	85	82	3	76 - 124	0 - 20
76819	Zn	EPA 6010	116	80	19	76 - 124	0 - 20
77070	Hg	EPA 7471	105	97	6	82 - 120	0 - 13

Post Digestion Spike Information

Batch Number	Analyte	Analysis Method	PDS %Rec	%Recovery Range
76819	Sb	EPA 6010	102	76 - 124
76819	Ba	EPA 6010	90	76 - 124
76819	Be	EPA 6010	101	76 - 124
76819	Cd	EPA 6010	108	76 - 124
76819	Cr	EPA 6010	95	76 - 124

Single Analyte Data
Post Digestion Spike Information

Batch Number	Analyte	Analysis Method	PDS %Rec	%Recovery Range
76819	Co	EPA 6010	109	76 - 124
76819	Cu	EPA 6010	109	76 - 124
76819	Fe	EPA 6010	196	76 - 124
76819	Pb	EPA 6010	103	76 - 124
76819	Ni	EPA 6010	96	76 - 124
76819	Ag	EPA 6010	103	76 - 124
76819	As	EPA 6010	103	76 - 124
76819	Mn	EPA 6010	0	76 - 124
76819	Se	EPA 6010	103	76 - 124
76819	Tl	EPA 6010	81	76 - 124
76819	V	EPA 6010	101	76 - 124
76819	Zn	EPA 6010	98	76 - 124

Single Analyte Data

Sample Batch Information

Analysis : Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Ni, Ag, As, Mn, Se, Tl,

Batch # 76819 ***Matrix : SOLID***

		Preparation				Analysis			
Sample ID	Tag	Date	Time	By	Notes	Date	Time	By	Inst
153897-12BS		03/26/02	1030	MHU	TRACE	03/27/02	1400	FBS	ICP3
HPS2		03/26/02	1030	MHU	TRACE	03/27/02	1355	FBS	ICP3
HPS1		03/26/02	1030	MHU	TRACE	03/27/02	1352	FBS	ICP3
76819BLK		03/26/02	1030	MHU	TRACE	03/27/02	1206	FBS	ICP3
76819LCS		03/26/02	1030	MHU	TRACE	03/27/02	1209	FBS	ICP3
76819LCSD		03/26/02	1030	MHU	TRACE	03/27/02	1213	FBS	ICP3
153901-1MS		03/26/02	1030	MHU	TRACE	03/27/02	1217	FBS	ICP3
153901-1MSD		03/26/02	1030	MHU	TRACE	03/27/02	1221	FBS	ICP3
153901-1PDS		03/26/02	1030	MHU	TRACE	03/27/02	1224	FBS	ICP3
153901-1DUP		03/26/02	1030	MHU	TRACE	03/27/02	1228	FBS	ICP3
153901-1		03/26/02	1030	MHU	TRACE	03/27/02	1232	FBS	ICP3
153901-2		03/26/02	1030	MHU	TRACE	03/27/02	1235	FBS	ICP3
153901-3		03/26/02	1030	MHU	TRACE	03/27/02	1239	FBS	ICP3
153901-4		03/26/02	1030	MHU	TRACE	03/27/02	1251	FBS	ICP3
153901-5		03/26/02	1030	MHU	TRACE	03/27/02	1255	FBS	ICP3
153897-1		03/26/02	1030	MHU	TRACE	03/27/02	1259	FBS	ICP3
153897-2		03/26/02	1030	MHU	TRACE	03/27/02	1302	FBS	ICP3
153897-3		03/26/02	1030	MHU	TRACE	03/27/02	1306	FBS	ICP3
153897-4		03/26/02	1030	MHU	TRACE	03/27/02	1310	FBS	ICP3
153897-5		03/26/02	1030	MHU	TRACE	03/27/02	1314	FBS	ICP3
153897-6		03/26/02	1030	MHU	TRACE	03/27/02	1317	FBS	ICP3
153897-7		03/26/02	1030	MHU	TRACE	03/27/02	1321	FBS	ICP3
153897-8		03/26/02	1030	MHU	TRACE	03/27/02	1325	FBS	ICP3
153897-9		03/26/02	1030	MHU	TRACE	03/27/02	1337	FBS	ICP3
153897-10		03/26/02	1030	MHU	TRACE	03/27/02	1341	FBS	ICP3
153897-11		03/26/02	1030	MHU	TRACE	03/27/02	1344	FBS	ICP3
153897-12		03/26/02	1030	MHU	TRACE	03/27/02	1348	FBS	ICP3

Single Analyte Data
Sample Batch Information
Analysis : Hg

Batch # 77070 ***Matrix : SOLID***

		Preparation				Analysis			
Sample ID	Tag	Date	Time	By	Notes	Date	Time	By	Inst
WIPEBLK		03/27/02	1100	EAH		03/27/02	1652	EAH	HG1
153990-6		03/27/02	1100	EAH		03/27/02	1650	EAH	HG1
153990-5		03/27/02	1100	EAH		03/27/02	1648	EAH	HG1
153990-4		03/27/02	1100	EAH		03/27/02	1646	EAH	HG1
153990-3		03/27/02	1100	EAH		03/27/02	1644	EAH	HG1
153897-12		03/27/02	1100	EAH		03/27/02	1637	EAH	HG1
153897-11		03/27/02	1100	EAH		03/27/02	1635	EAH	HG1
153897-10		03/27/02	1100	EAH		03/27/02	1633	EAH	HG1
153897-9		03/27/02	1100	EAH		03/27/02	1631	EAH	HG1
153897-8		03/27/02	1100	EAH		03/27/02	1629	EAH	HG1
153897-7		03/27/02	1100	EAH		03/27/02	1627	EAH	HG1
153897-6		03/27/02	1100	EAH		03/27/02	1624	EAH	HG1
153897-5		03/27/02	1100	EAH		03/27/02	1622	EAH	HG1
153897-4		03/27/02	1100	EAH		03/27/02	1620	EAH	HG1
153897-3		03/27/02	1100	EAH		03/27/02	1618	EAH	HG1
153897-2		03/27/02	1100	EAH		03/27/02	1509	EAH	HG1
153897-1		03/27/02	1100	EAH		03/27/02	1507	EAH	HG1
153674-2		03/27/02	1100	EAH		03/27/02	1505	EAH	HG1
153674-1		03/27/02	1100	EAH		03/27/02	1503	EAH	HG1
153897-2DUP		03/27/02	1100	EAH		03/27/02	1457	EAH	HG1
153897-2MSD		03/27/02	1100	EAH		03/27/02	1455	EAH	HG1
153897-2MS		03/27/02	1100	EAH		03/27/02	1452	EAH	HG1
77070LCSD		03/27/02	1100	EAH		03/27/02	1442	EAH	HG1
77070LCS		03/27/02	1100	EAH		03/27/02	1444	EAH	HG1
77070BLK		03/27/02	1100	EAH	SOIL	03/27/02	1440	EAH	HG1

Georgia P[illegible]r Environmental Laboratory
5131 Maner Road, Bin 39110
Smyrna, GA 30080

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

ANALYSIS [illegible]EQUEST AND CHAIN OF CUSTODY RECORD

LAB USE ONLY

Control No. CC-[illegible]663
Sample Delivery Group: 4395

11 Page 1 of 2

12 ✓ Standard Turnaround Time

[ ] Rush in _____ Business Days
(Must be cleared through Env. Lab. prior to shipment)

Company: 1 GA. POWER COMPANY
Report To Address: 2 ROCHELLE ROUTZMAN
241 RALPH MCGILL BLVD, NE
ATLANTA, GA. 30308
Phone: 3 8-506-7780 Fax 8-506-1499
Contact: 4 ROCHELLE ROUTZMAN
Project Location: 5 PLANT YATES
Account Number: 6
Special Instructions: 7 METALS HSRA LIST

Sample Shipment Date: 8 2/19/02
Sample Received Date: 9
Sampled By: 10 DAVID D. PARKS
Print Name
Signature

Authorization to subcontract analysis will be assumed acceptable by customer unless stated otherwise.

PRESERVATIVE 20: 1

ANALYSIS REQUESTED 21: METALS HSRA LIST

Sample Type Key: 22
G-Grab C-Composite
O-Other

Matrix Key: 23
O-Oil SW-Surface Water
S-Solid GW-Ground Water
SL-Sludge WW-Waste Water
W-Wipe DW-Drinking Water

Preservative Key: 24
H-Hydrochloric Acid
N-Nitric Acid
S-Sulfuric Acid
SH-Sodium Hydroxide
SB-Sodium Bisulfide
P-Phosphoric Acid
ST-Sodium Thiosulfate
I-Ice
U-Unpreserved

LAB USE ONLY 13 LAB ID	Sample 14 Number	Collection 15 Date	Collection 15 Time	Sample 16 Description	17 Sample Type	18 Matrix	19 No. of Containers	METALS HSRA LIST	LAB USE ONLY 25 Comments
439501	01GYP020402	2/4/02	1400	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439502	02GYP020502	2/5/02	1355	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439503	03GYP020602	2/6/02	1400	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439504	04GYP020702	2/7/02	1425	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439505	05GYP020802	2/8/02	1300	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439506	06GYP020902	2/9/02	1400	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439507	07GYP021002	2/10/02	1400	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439508	08GYP021102	2/11/02	1330	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439509	09GYP021202	2/12/02	1335	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
439510	10GYP021302	2/13/02	1300	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	

Relinquished by: 26		Date/Time
Received by: 27		Date/Time
Relinquished by:		Date/Time
Received by:		Date/Time

LAB USE ONLY: Sample Disposition Information 28

Type:	Type:	Type:
Date:	Date:	Date:
Container:	Container:	Container:

707211B MAC

WHITE, CANARY & PINK—Laboratory GOLDENROD—Originator

(See Back For Instructions)

Georgia Power Environmental Laboratory
5131 Maner Road, Bin 39110
Smyrna, GA 30080

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

LAB USE ONLY

Control No. CC- 664
Sample Delivery Group: 4395

[11] Page 2 of 2

[12] ✓ Standard Turnaround Time

☐ Rush in _____ Business Days
(Must be cleared through Env. Lab. prior to shipment)

Company: [1] GEORGIA POWER COMPANY
Report To: ROCHELLE ROUTMAN
Address: [2] 241 RALPH MCGILL BLVD., NE
ATLANTA, GA. 30308
Phone: [3] 8-506-7780 Fax 8-506-1499
Contact: [4] ROCHELLE ROUTMAN
Project Location: [5] PLANT YATES
Account Number: [6]
Special Instructions: [7] METALS HSRA LIST

Sample Shipment Date: [8] 2/19/02
Sample Received Date: [9]
Sampled By: [10] DAVID D. PARKS
Print Name
Signature

Authorization to subcontract analysis will be assumed acceptable by customer unless stated otherwise.

PRESERVATIVE [20]: 1

ANALYSIS REQUESTED [21]: METALS HSRA LIST

Sample Type Key: [22]
G-Grab C-Composite
O-Other

Matrix Key: [23]
O-Oil SW-Surface Water
S-Solid GW-Ground Water
SL-Sludge WW-Waste Water
W-Wipe DW-Drinking Water

Preservative Key: [24]
H-Hydrochloric Acid
N-Nitric Acid
S-Sulfuric Acid
SH-Sodium Hydroxide
SB-Sodium Bisulfide
P-Phosphoric Acid
ST-Sodium Thiosulfate
I-Ice
U-Unpreserved

LAB USE ONLY [13] LAB ID	Sample [14] Number	Collection [15] Date	Collection [15] Time	Sample [16] Description	[17] Sample Type	[18] Matrix	[19] No. of Containers	METALS HSRA LIST	LAB USE ONLY [25] Comments
43951	11GYP021402	2/14/02	1330	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	
43952	12GYP021502	2/15/02	1300	GYPSUM FROM UNIT 1 SCRUBBER	G	SL	1	✓	

Relinquished by: [26] Date/Time
Received by: [27] Date/Time
Relinquished by: Date/Time
Received by: Date/Time

LAB USE ONLY: Sample Disposition Information [28]

Type: Date: Container:
Type: Date: Container:
Type: Date: Container:

707211B MAC

WHITE, CANARY & PINK—Laboratory GOLDENROD—Originator

(See Back For Instructions)

Environmental Laboratory
5131 Maner Road, Bin 39110
Smyrna, Georgia 30080

TRANSFER OF SAMPLES

4

WO#153847

GEORGIA POWER
A SOUTHERN COMPANY

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

Sample Delivery Group No. 4395

Lab Contact: S. Daniel-Broadnax | Project Name: Yates-Gypsum

☐ Fax Results To: Craig Scott
☐ Mail Results To:

Vendor Laboratory Name and Address: AST

Turnaround Time: (or expected date of results) 3/28/02
Rush Charges Authorized: ☐ Yes ☐ No Signature:

Date of Sample Transfer: 3/22/02

Sample Time	Sample Date	No. of Containers	Project ID No.	Lab. ID No.	Analysis Requested	REMARKS
1400	2/4/02	1	01GYP020402	439501 -1		
1355	2/5/02	1	02GYP020502	439502 -2	Total Element Concentration	
1400	2/6/02	1	03GYP020602	439503 -3	Ag, As, Ba, Be, Cd, Co, Cu,	EPA 3050B/
1425	2/7/02	1	04GYP020702	439504 -4	Mn, Ni, Pb, Sb, V, Zn, Se, Fe,	EPA 6010B/
1300	2/8/02	1	05GYP020802	439505 -5	Cr, Hg, Tl	+ 7470
1400	2/9/02	1	06GYP020902	439506 -6		
1400	2/10/02	1	07GYP021002	439507 -7		
1330	2/11/02	1	08GYP021102	439508 -8		
1335	2/12/02	1	09GYP021202	439509 -9		
1300	2/13/02	1	10GYP021302	439510 -10		
1300	2/14/02	1	11GYP021402	439511 -11		
1300	2/15/02	1	12GYP021502	439512 -12		

* Note: Attach copy of original Analysis Request

TRANSFERRED BY (Signature) | DATE | TIME

RECEIVED BY (Signature) Susan Dotto | TELEPHONE | TITLE | DATE 3/22/02 | TIME 1245

Co @ 1245, ice, no seal, pH ok, condition good

707454 MAC

WHITE—Laboratory CANARY—Originator PINK—Laboratory

ASI ANALYTICAL SERVICES, INC.

Environmental Monitoring & Laboratory Services
110 Technology Parkway, Norcross, GA 30092
(770)734-4200 FAX (770)734-4201

LOG-IN CHECKLIST

Attn: Mr. Craig Scott

Client: GEORGIA POWER GA SMYRNA
Project: Yates-Gypsum, Project#4395
Recvd : 03/22/2002

Logged By: BAM

NPDES:
Work Order: 153897

OBSERVATIONS

#Samples: 12 **#Containers:** 12
pH: n\a

Temp(C): 6 **Ice:** Yes **Custody Seal(s):** Not Present

CHECKLIST ITEMS**

1. COC included with Samples	Yes
2. Chain of Custody Complete	Yes
3. Sample Container(s) Intact	Yes
4. Sample Container(s) Match COC	Yes
5. Methods Designated by Client on COC	Yes
6. Params Designated by Client on COC	Yes
7. Temperature in Compliance	Yes
8. Sufficient Sample Volume for Analysis	Yes
9. Zero HeadSpace Maintained for VOA Analyses	N/A
10. Samples properly preserved	Yes
11. Samples Received within Allowable Hold Times	Yes

Sample Receipt and Non-Conformance

GEORGIA POWER
A SOUTHERN COMPANY

Sample Delivery Group 4395 Location Yates

Control Numbers 439501 - 439512

A. Method of Shipment: ☐ Hand Delivered ☒ Courier ☐ UPS/Fedex ☐ Other _____

a. Did shipment come with a shipping air bill?	☐ Y	☐ N	☒ N/A
b. If "yes" document carrier and air bill #: _____			

B. Preliminary Examination:

1. Was Chain of Custody initiated? If "no" proceed to number 2.	☒ Y	☐ N	
a. Were custody seals intact?	☐ Y	☐ N	☐ N/A
b. Were custody papers filled out properly?	☐ Y	☐ N	
c. Were custody papers signed?	☐ Y	☐ N	
2. Are sampling time(s) present?	☒ Y	☐ N	
3. Are sampling date(s) present?	☒ Y	☐ N	
4. Are samples received within the specified holding times?	☒ Y	☐ N	
5. Were samples packaged properly?	☒ Y	☐ N	

C. Sample Login:

1. Did all sample containers arrive intact?	☒ Y	☐ N	
2. Did all container labels agree with custody papers?	☒ Y	☐ N	
3. Were proper containers used for requested test(s)?	☒ Y	☐ N	☐ N/A
4. Were samples properly preserved for requested test(s)?	☒ Y	☐ N	☐ N/A
a. pH (acid)?	☐ < 2	☐ ≥ 2	☒ N/A
b. pH (base)?	☐ ≥ 12	☐ < 12	☒ N/A
c. temperature?	☒ < 4	☐ ≥ 4	☐ N/A
5. Was sufficient sample received for requested test(s)?	☒ Y	☐ N	
6. Were air bubbles present in VOA samples?	☐ Y	☐ N	☒ N/A

D. Corrective Action: (Complete this section only if needed)

1. Client notified verbally - Date: _____ Time: _____
   (attach written notification, e.g. e-mail, memo, etc.)
2. Samples processed as received ☐ Y ☐ N

E. Comments _____

Completed by: L Daniel - Broadway Date 2/22/02

PERFORMANCE BOND FOR WATER WELL CONTRACTORS

AND DRILLERS Bond No. 4993104

WATER WELL CONTRACTOR OR DRILLER _____

KNOW ALL MEN BY THESE PRESENTS.

That we SOUTHERN COMPANY SERVICES, INC., as Principal, and SAFECO INSURANCE COMPANY OF AMERICA, as Surety, are held and firmly bound unto the Director of the Environmental Protection Division ("Director"), Department of Natural Resources, State of Georgia and his successor or successors in office, as Obligee, in the full sum of TEN THOUSAND & No/100 Dollars ($10,000.00), for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Water Well Standards Act of 1985 (Ga. Laws 1985, p. 1192) (the "Act") requires that water well contractors and drillers file performance bonds with the Director to ensure compliance with the Act; and

WHEREAS, the above bound principal is subject to the terms and provisions of said Act.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall fully and faithfully perform the duties and in all things comply with the procedures and standards set forth in the Act as now or hereafter amended, and the rules and regulations promulgated pursuant thereto, including but not limited to the correction of any violation of such procedures and standards upon discovery, irrespective of whether such discovery is made before completion of any well subject to this bond, then this obligation shall be void; otherwise of full force and effect.

And Surety, for value received, agrees that no amendment to existing laws, rules or regulations, or adoption of new laws, rules or regulations shall in any way discharge its obligation on this bond, and does hereby waive notice of any such amendment, adoption, or modification.

This bond shall be effective from date of issuance or, in the case of a water well contractor, date of licensure and shall continue in effect until terminated by expiration, mutual agreement or cancellation upon 60 days written notice to Principal and Obligee; provided that the rights of the Obligee and beneficiaries under this bond which arose prior to such termination shall continue.

Unless sooner terminated, this bond shall terminate June 30, 2003

IN WITNESS WHEREOF the Principal and Surety have caused these presents to be duly signed and sealed, this 30th day of October, 2001.

Principal, By: _____ (L.S.)

Title: SAM H. DABBS, JR.
ASSISTANT SECRETARY

Approved as to sufficiency and accepted:

Environmental Protection Division,

Department of Natural Resources

SAFECO INSURANCE COMPANY OF AMERICA

Surety, By: _____ (L.S.)
Sandra J. Mathis, Attorney-In-Fact

05/20/2002 11:46 4[illegible]

SAFECO

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 6724

KNOW ALL BY THESE PRESENTS:

That SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA, each a Washington corporation, does each hereby appoint

****SANDRA S. CARTER; JUDY GAY CERA; GARY D. EKLUND; JUDY S. FLEMING; VIRGINIA B. MCMANUS; BARBARA S. MACARTHUR; SANDRA J. MATHIS; EDWARD L. MITCHELL; NANCY NIX; BARBARA THOMPSON; CYNTHIA I. RODOLPH; Atlanta, Georgia****

Southern Company

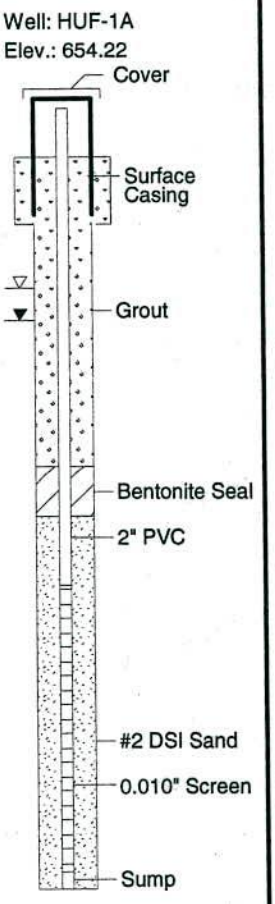
LOG OF BORING HUF - 1

(Page 1 of 1)

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8-22-01/8-29-01	Overburden/Tot. Depth	15.6'/25.6'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich	Boring Location	: N1565618.9;E1955396.5
Rig Type	: SIMCO	Surface Elev.	: 654.22
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 648.48 @ 24 Hrs

Depth in ft.	Surf. Elev. 654.22	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	654	ML		Dry, Med. Gray to Dark Yellow Orange, CLAYEY SILT (Mod. Wth'd SHALE)	1	23		
				3.0				
5	649	ML		Dry, Med. Light Gray, CLAYEY SILT, (Mod. Wth'd SHALE)	2	66		
				649.62 - TOB GWS (8/29/01)				
				648.48 - 24Hr GWS (9/25/01)				
					3	51		
10	644							
				12.0				
				Moist to Wet, Med. Gray to Dark Gray, Soft, Sl. to Mod. Wth'd SHALE Fragments w/ relict Rock structure logged as CLAYEY SILT	4	50/4"		
15	639							
				15.6 - Auger Refusal				
				16.1 - Set NW Casing, Started NQ3B Coring w/ Simco				
				Soft to Moderately Hard, Medium Gray, Moderately to Slightly Weathered, Thin Bedded, Very Fine Grained, SHALE	5			100/20
20	634							
					6			94/28
25	629							
				25.6 - BORING TERMINATED				
30	624			REMARKS: 80 deg. Joints, Moderately Weathered at:17.1, 17.7, 19.0, 20.0, 20.9, 23.3 21.2 - Near Vertical Joint, open, Slightly Weathered 16.1 to 25.6 - Bedding Near Vertical to 80 deg. w/ no evidence of Slickensides in the core.				
35	619							
40								



NOTES:
Reference Point for Measurements is Top of Riser Pipe - El. 658.23

LOG OF BORING HUF - 1

(Page 1 of 1)

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Southern Company

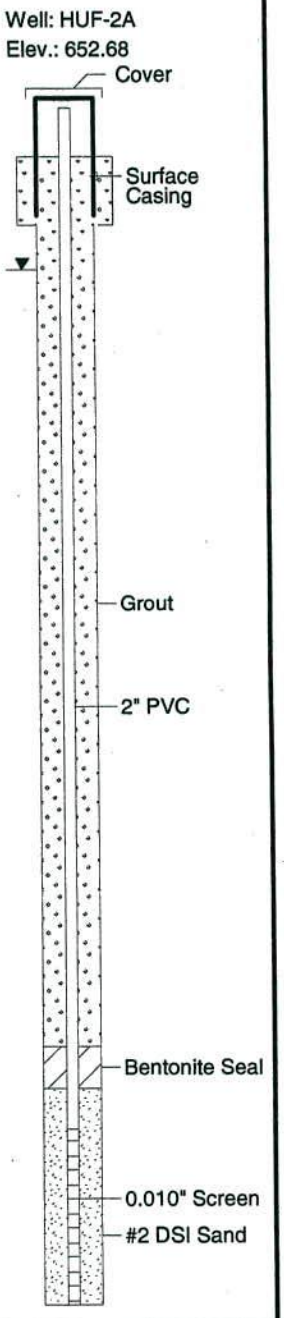
LOG OF BORING HUF-2

(Page 1 of 2)

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/23/01 - 8/30/01	Overburden/Tot. Depth	28.6' / 44.5'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich	Boring Location	: N1565615.5,E1954530.4
Rig Type	: SIMCO	Surface Elev.	: 652.68
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 648.80 @ 24 Hrs

Depth in ft.	Surf. Elev. 652.68	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	652	CL		Dark Yellowish-Orange to Light Brown, Slightly Fine SANDY, SILTY CLAY, moist	1	7		
				2.0				
5	647			Moist, Dark Gray to Dark Olive-Gray, Soft, Sl. to Mod. Wth'd SHALE Fragments w/ relict Rock structure logged as CLAYEY SILT	2	27		
				648.80 - 24 Hr GWS (9/25/01)				
10	642			>dry	3	46		
15	637			>moist	4	80/11"		
20	632			>dry	5	50/5"		
25	627			>wet	6	50/4"		
				28.6 - Auger Refusal				
30	622			29.5 - Set NW casing, Start coring NQ-3B w/ Simco				
35	617	SH		Moderately Hard, Dark Gray to Grayish Black, Unweathered, Thin Bedded (Slickensides parallel with Bedding), Very Fine Grained, SHALE	7			74/0
					8			78/10
40					9			28/0



NOTES:
Reference Point for Measurements is Top of Riser Casing - Elev. 657.09

LOG OF BORING HUF-2

(Page 1 of 2)

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04-05-2002

Southern Company

LOG OF BORING HUF-2

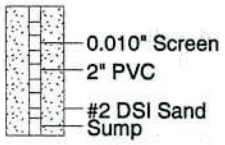
GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/23/01 - 8/30/01	Overburden/Tot. Depth	28.6' / 44.5'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich	Boring Location	: N1565615.5,E1954530.4
Rig Type	: SIMCO	Surface Elev.	: 652.68
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 648.80 @ 24 Hrs

Depth in ft.	Surf. Elev. 652.68	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
40	612	SH		Moderately Hard, Dark Gray to Grayish Black, Unweathered, Thin Bedded (Slickensides parallel with Bedding), Very Fine Grained, SHALE	9			28/0
45	607			44.5 - BORING TERMINATED				
50	602							
55	597							
60	592							
65	587							
70	582							
75	577							
80								

REMARKS:
29.5 to 44.5 - Slickensides 70 deg. to near vertical, spaced approx. 0.05' to 0.1'.

Well: HUF-2A
Elev.: 652.68



NOTES:
Reference Point for Measurements is Top of Riser Casing - Elev. 657.09

LOG OF BORING HUF-2

(Page 2 of 2)

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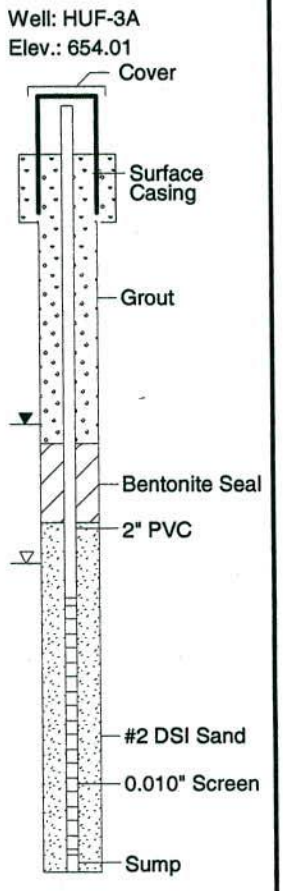
Southern Company

LOG OF BORING HUF - 3

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/28/01/9/12/01	Overburden/Tot. Depth	14.9'/25.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich	Boring Location	: N1565527, E1953737
Rig Type	: SIMCO	Surface Elev.	: 654.01
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 644.64 @24Hr

Depth in ft.	Surf. Elev. 654.01	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	654			Dark Yellowish-Orange to Reddish-Brown to Medium Light Gray, CLAYEY SILT, (Badly Weathered to Moderately Weathered SHALE), dry	1	25		
5	649				2	52		
10	644			7.0 Dry, Med. Gray with Dark Yellowish-Orange, Soft, Mod. Wth'd SHALE Fragments logged as CLAYEY SILT 644.64 - 24 Hr GWS (9/25/01) 639.81 - TOB GWS (9/12/01) > wet	3	50/5"		
15	639				4	50/2.5"		
20	634	SH		14.9 - Auger Refusal 15.0 - Set NW casing, Start coring NQ-3B, Simco (9/12/01) Soft, Medium Dark Gray to Dark Gray, Unweathered, Thin Bedded (Slickensides parallel with Bedding) Very Fine Grained, SHALE	5			100/88
25	629			25.0 - BORING TERMINATED	6			96/0
30	624							
35	619							
40								



REMARKS:
15.0 to 19.5 - Slickensides/Bedding spaced 0.1' to 0.9' on 40 deg. to 60 deg.
19.5 to 25.0 - Slickensides steepen to 70 deg. to near vertical with some calcite filling, spaced 0.1' to 0.2'.
22.2 - 60 deg. Slickensides, spaced 0.05', Calcite lined

NOTES:
Reference point for measurements is Top of Riser Pipe - Elev. 657.97

LOG OF BORING HUF - 3

(Page 1 of 1)

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04-05-2002

Southern Company

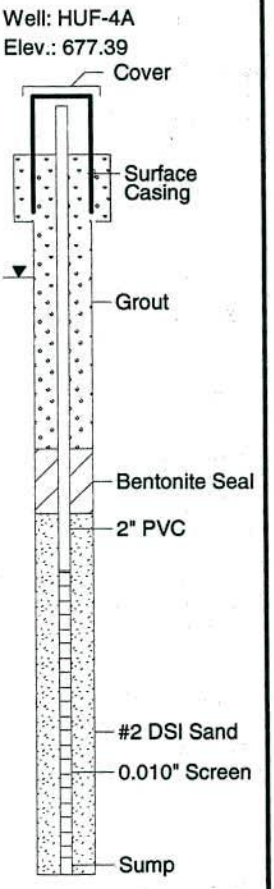
LOG OF BORING HUF- 4

(Page 1 of 1)

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/27/01 - 9/11/01	Overburden/Tot. Depth	16.8' / 25.2'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich	Boring Location	: N1565642.4,E1952686.4
Rig Type	: SIMCO	Surface Elev.	: 677.39
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 673.10 @ 24 Hr.

Depth in ft.	Surf. Elev. 677.39	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	677	SM		Light Brown to Yellowish-Orange, SILTY Fine SAND, with numerous Rock Fragments, dry	1	21		
				(Spoil Material)	2	21		
5	672			673.10 - GWS, 24 Hr. (9/25/01)				
				7.5	3	50/5"		
10	667			Dry, Med. Gray to Medium Dark Gray, Soft, Mod. Wth'd SHALE Fragments logged as CLAYEY SILT				
					4	50/4"		
15	662			>moist				
				16.8 - Auger Refusal				
				16.9 - Set NW casing, Start coring NQ-3B, Simco (9/11/01)	5			100/30
20	657	SH		Soft, Medium Dark Gray to Dark Gray, Unweathered Except as Noted, Thin Bedded (with Slickensides parallel to bedding), Very Fine Grained, SHALE	6			100/36
25	652			25.2 - BORING TERMINATED				
30	647							
35	642							
40								



REMARKS:
16.9 to 25.2 - 30 deg. Slickensides / Bedding spaced 0.05' to 0.4'
17.5 - Near Vertical Joint, Intact, Calcite lined
18.5 - 60 deg. Slickensides
19.9 - 60 deg. Joint, Intact, Calcite lined
22.0 - 30 deg. Joint, Intact, Calcite lined
22.6 and 23.0 - Very Soft, Slightly Weathered along bedding/ Slickensides
24.9 - 70 deg. Joint, Intact, Calcite lined

NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 682.44

LOG OF BORING HUF- 4

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LOG OF BORING HUF- 5

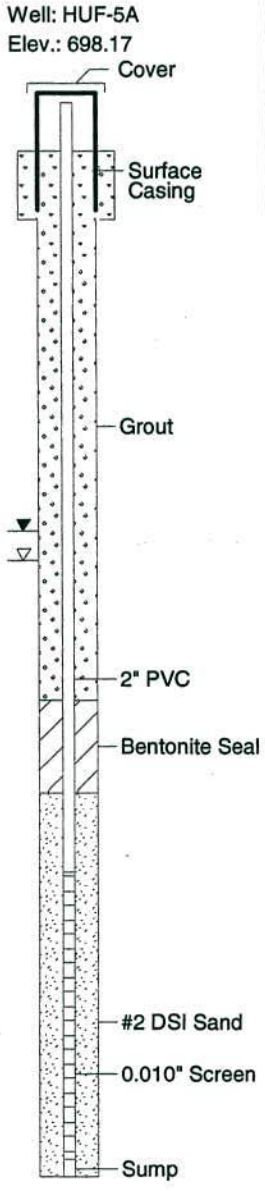
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/27/01 - 9/11/01	Overburden/Tot. Depth	26.5' / 35.9'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich	Boring Location	: N1565643.3,E1952068.4
Rig Type	: SIMCO	Surface Elev.	: 698.17
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 685.02 @ 24 Hr

Depth in ft.	Surf. Elev. 698.17	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	698	SM		Light Brown to Yellowish-Orange, SILTY Fine SAND, with Rock Fragments, dry (Spoil Material)	1	14		
5	693	CL		3.0 Orange-Brown, Slightly Fine SANDY, SILTY CLAY, moist	2	36		
10	688			7.0 Brown to Light Brown to Yellowish-Orange, CLAYEY SILT, (Badly Weathered SHALE), dry	3	42		
15	683			685.02 - GWS, 24 Hr (9/25/01) 683.97 - TOB GWS (9/11/01)	4	68		
20	678			17.0 Moist, Dark Gray, Soft, Mod. Wth'd SHALE Fragments with Relict Rock Structure, logged as CLAYEY SILT	5	80		
25	673			>Saturated 26.5 - Auger Refusal	6	50/5"		
30	668	SH		27.2 - Set NW casing, Start coring NQ-3B, Simco (9/11/01) Soft, Medium Gray to Dark Gray, Slightly Weathered to Unweathered, Thin Bedded (Slickensides parallel to bedding), Very Fine Grained, SHALE	7			78/0
35	663				8			68/0
40				35.9 - BORING TERMINATED				

REMARKS:
27.2 to 35.9 - Slickensides / Bedding on 30 deg. to 35 deg.



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 702.10

LOG OF BORING HUF- 5

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LOG OF BORING HUF-6

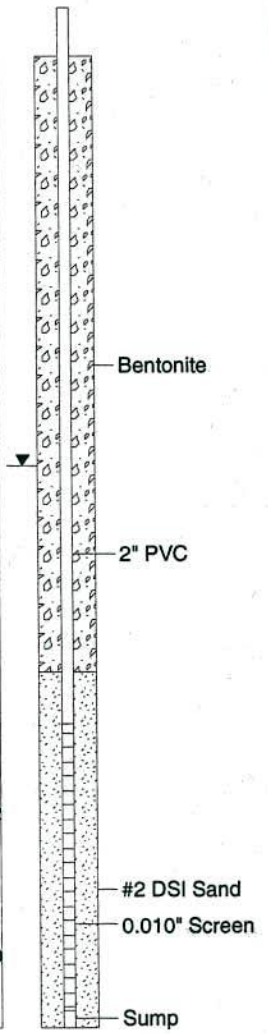
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/28/01 / 9/19/01	Overburden/Tot. Depth	21.5' / 34.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich	Boring Location	: N1564313.0,E1951971.0
Rig Type	: SIMCO/CME55	Surface Elev.	: 663.57
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 649.15 @24 Hr.

Depth in ft.	Surf. Elev. 663.57	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	663	SM		Light Brown to Yellowish-Orange, SILTY Fine SAND, with numerous Rock Fragments, moist	1	9		
				3.0 Moist, Light Gray to Dark Yellowish-Orange, Slightly Fine SANDY, SILTY CLAY (Decomposed Shale)	2	14		
5	658			>Some Relict Rock Structure, dry	3	22		
10	653			> Relict Rock Structure, dry	4	51		
15	648			649.15 - 24 Hr GWS (9/25/01)				
				17.0 Wet, Light Gray, Soft, Mod. Wth'd SHALE Fragments logged as CLAYEY SILT.	5	50/3"		
20	643			21.5 - Auger Refusal				
				21.7 - Set NW Casing, Start Coring NQ-3B, CME55, (9/19/01)	6			87/74
25	638	SH		Soft, Dark Gray, Unweathered, Thin Bedded (Very Slight Evidence of Slickensides on some 30 deg. Bedding), Very Fine Grained, SHALE with Calcite along most Bedding Surfaces.	7			100/92
30	633				8			104/90
35	628			34.0 - BORING TERMINATED				
40				REMARKS: 24.5 - 60 deg. Joint, Intact, Calcite lined 30.9 - 60 deg. Joint, Intact, Calcite lined				

Well: HUF-6
Elev.: 663.57



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 668.07

LOG OF BORING HUF-6

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LOG OF BORING HUF -7

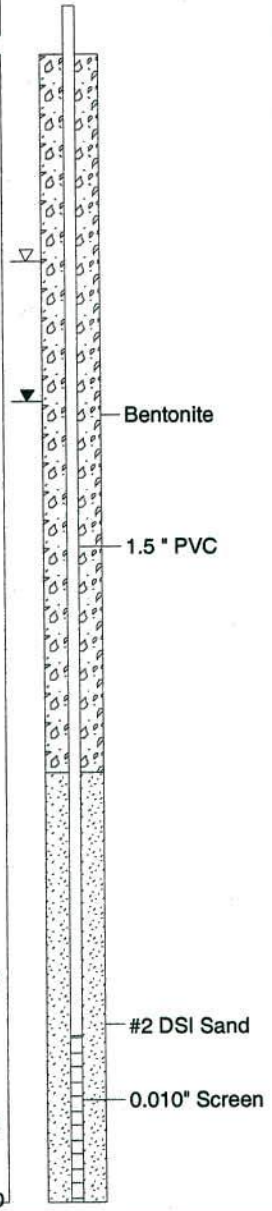
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/15/01 - 8/28/01	Overburden/Tot. Depth	29.6' / 49.8'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1563564 E1951603.2
Rig Type	: SIMCO/CME55	Surface Elev.	: 652.01
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 640.00 @24 Hr.

Depth in ft.	Surf. Elev. 652.01	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	652	CL		Tan to light brown to dark yellow, orange, silty fine sand Silty Clay with some organics, dry	1	3		
					2	7		
5	647			644.81 - TOB GWS (8/28/01)				
		ML		8.0 Tan red to brown silty fine sand, Clayey SILT, Dry.	3	52		
10	642			640.00 - 24 Hr GWS (9/25/01)				
				13.4	4	93/10.5"		
15	637			Dark gray to dark olive gray, silty fine sand (Numerous weathered shale fragments, broken along bedding, slickensided, dry.				
					5	99/10"		
20	632							
				22.0	6	72		
25	627			Same as above, except Wet and with Relict Rx. structure				
				29.6 - Auger Refusal				
30	622	SH		29.8 - Set NW Casing, Start Coring NQ-3B, CME55 (8/27/01)	7			52/0
				Soft, dark gray to grayish black, unweathered, thin bedded, (Slickensides parallel with bedding), very fine grained SHALE.				
35	617				8			34/0
					9			86/50
40								

Well: HUF-7
Elev.: 652.01



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 656.81

LOG OF BORING HUF -7

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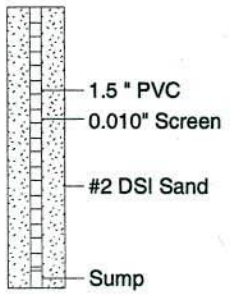
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/15/01 - 8/28/01	Overburden/Tot. Depth	29.6' / 49.8'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1563564 E1951603.2
Rig Type	: SIMCO/CME55	Surface Elev.	: 652.01
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 640.00 @24 Hr.

Depth in ft.	Surf. Elev. 652.01	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
40	612							
		SH		Soft, dark gray to grayish black, unweathered, thin bedded, (Slickensides parallel with bedding), very fine grained SHALE	9			86/50
45	607				10			58/48
50	602			49.8 - BORING TERMINATED				
55	597							
60	592							
65	587							
70	582							
75	577							
80								

Well: HUF-7
Elev.: 652.01



REMARKS:
29.8 to 41.0 - S.Sides 60 to 70 deg. with other jointing
41.0 - Angle of S.Sides decreases from 60 to 70 deg. to 30 to 40 deg. with less jointing
46.0 - Angle of S.Sides returns to 60 to 70 deg with less jointing.

NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 656.81

LOG OF BORING HUF -7

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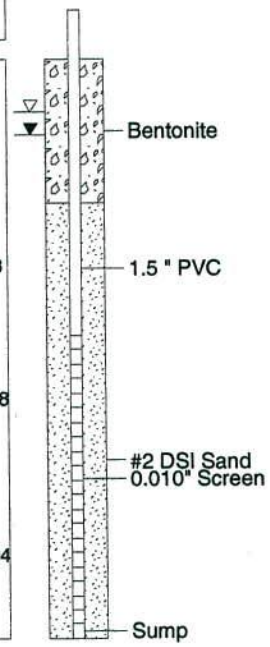
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LOG OF BORING HUF-8

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/28/01~8/29/01	Overburden/Tot. Depth	5.1' / 20.2'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1562095 E1951605
Rig Type	: SIMCO/CME55	Surface Elev.	: 614.79
Drilling Method	: 4.875"HSA/NQ-3B Core	G/W Elev.	: 612.19 @ 24 Hr

Depth in ft.	Surf. Elev. 614.79	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	614	CL		Light brown silty clayey fine SAND to sandy CLAY with some organics, Moist. 612.99 - TOB GWS (8/29/01) (Alluvium) 612.19 - 24 Hr. GWS (9/25/01)	1	2		
					2	70/11"		
5	609	SH		5.1- Auger Refusal 6.0- Set NW casing, begin coring NQ-3B with CME55 (8/29/01)	3			95/88
10	604			Soft, Dark gray to grayish black, unweathered, very thin bedded (with slickensides spaced as noted), very fine grained SHALE.	4			102/88
15	599				5			100/94
20	594			20.2 - BORING TERMINATED REMARKS: 10 deg. intact cal. filled joints at: 6.7, 7.6, 12.9, 13.0, 15.4, 15.5, 20.0 7.8- 80 deg. joint, intact, cal. filled. 60 deg. joints, intact, cal. filled, at: 8.5, 8.7, 10.3, 10.8, 11.5, 12.2, 14.2, 14.3, 16, 16.3, 17.4, 17.9, 18, 18.1, 18.9, 19.3, 19.5. 13.7 - 80 deg. joint, intact, cal. filled. Slickensides spaced ~0.3' to 0.7' apart, 6.0 to 20.2 on 30 deg. angle, and parallel with bedding, cal. filled, on some S. sides. 14.0- Near vertical joint, intact, cal. filled.				
25	589							
30	584							
35	579							
40								



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 619.39

LOG OF BORING HUF-8

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LOG OF BORING HUF -9

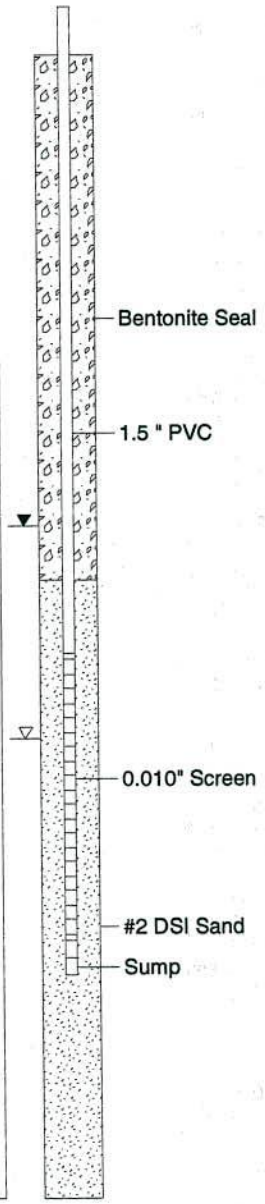
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/15/01~8/22/01	Overburden/Tot. Depth	29.4' / 49.7'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1562839.9 E1952975.4
Rig Type	: SIMCO/CME55	Surface Elev.	: 639.83
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 623.28 @ 24 Hr.

Depth in ft.	Surf. Elev. 639.83	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	639	FL		Dark yellow orange to light red silty CLAY with occasional rock fragments, Moist (FILL)	1	14		
5	634				2	5		
10	629	FL		7.0 Olive gray silty CLAY with occasional rock fragments, Moist, (FILL)	3	6		
15	624			> with silty fine sand, dry 623.28 - 24 Hr. GWS (9/25/01)	4	9		
20	619			17.5 Moist, Olive-Gray to Dark Yellowish-Orange, Soft, Sl. to Mod. Wth'd SHALE w/ relict Rock structure logged as CLAYEY SILT	5	33		
25	614			615.93 - TOB GWS (8/15/01) > Olive-Gray to Dark Gray, Wet 29.4 - Auger Refusal	6	50/5"		
30	609	SH		29.7 - Set NW casing, begin coring NQ-3B, CME 55 (8/22/01) Soft, dark gray to grayish black, unweathered, thin bedded with slickensides parellel to bedding, very fine grained SHALE.	7			12/0
35	604				8			34/0
40					9			32/0

Well: HUF-9
Elev.: 639.83



NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 643.53

LOG OF BORING HUF -9

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LOG OF BORING HUF -9

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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/15/01~8/22/01	Overburden/Tot. Depth	29.4' / 49.7'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1562839.9 E1952975.4
Rig Type	: SIMCO/CME55	Surface Elev.	: 639.83
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 623.28 @ 24 Hr.

Depth in ft.	Surf. Elev. 639.83	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
40	599	SH		Soft, dark gray to grayish black, unweathered, thin bedded with slickensides parellel to bedding, very fine grained SHALE.	9			32/0
45	594				10			36/0
50	589			49.7 - BORING TERMINATED				
55	584							
60	579							
65	574							
70	569							
75	564							
80								

Well: HUF-9
Elev.: 639.83



#2 DSI Sand

REMARKS:
Low recovery due to blocky nature of core caused by intersection of high angled slickensides (>60 deg.) and high angled joints.

NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 643.53

LOG OF BORING HUF -9

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LOG OF BORING HUF-10

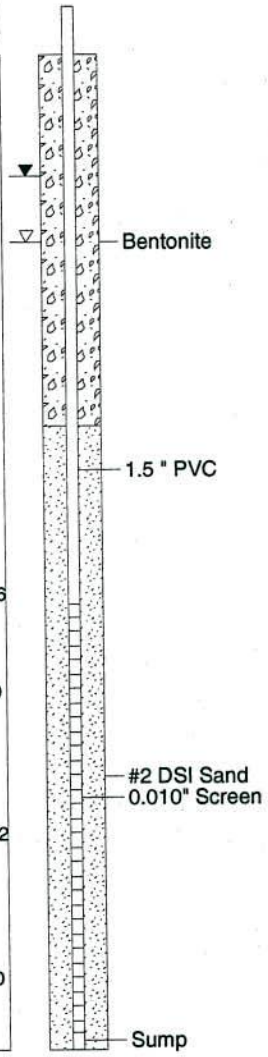
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/20/01~8/29/01	Overburden/Tot. Depth	17.8' / 34.8'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1563850.6 E1953859.9
Rig Type	: SIMCO/CME55	Surface Elev.	: 639.62
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 635.38 @ 24 Hr.

Depth in ft.	Surf. Elev. 639.62	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	639	FL		Mottled tan to dark yellow orange to olive gray, silty fine sandy, silty CLAY with occastional rock fragments of sandstone. (FILL)	1	27		
				635.38 - 24 Hr. GWS (9/25/01)	2	15		
5	634			633.12 - TOB GWS (8/20/01)				
				7.0 Dry, Dark Olive-Gray to Dark Gray, Soft, Sl. to Mod. Wth'd SHALE w/ Rock Fragments, logged as CLAYEY SILT	3	44		
10	629							
				Wet, Dark gray, Sl. to Mod. Weathered SHALE, with relict rock structure.	4	93/10"		
15	624			17.8- Auger Refusal				
				18.0 - Set NW casing, start coring NQ-3B, CME 55 (8/28/01)	5			100/96
20	619	SH		Soft, dark gray to grayish black, unweathered, thin bedded (slickensides parallel to bedding), very fine grained, SHALE	6			86/60
				REMARKS: 18.0 to 24.8 - Slickensides, spaced ~ 0.5' on 50 to 60 deg. 19.2 - 80 deg. joint, intact, calcite filled. 20.9 - Intersection of 35, 60 and 70 deg joints, intact, cal. filled. 21.3 - 60 deg. joint, intact, cal. filled. 21.5 - Intetsection of 65 deg and near vertical joints, intact, cal. filled. 23.1 - Intersection of 60 deg. joints, cal. filled, intact. 25.3 - 40 deg. joint, intact, cal. filled. 25.9 - Intersection of 65 and 50 deg. joints, intact, cal. filled. 28.5 to 34.8 - S. Sides, spaced 0.1' to 0.05' on 60 to 70 deg.	7			102/62
25	614							
30	609				8			58/20
35	604			34.8 - BORING TERMINATED				
40								

Well: HUF-10
Elev.: 639.62



NOTES:
Reference Point for Measurement is Top of Riser Pipe - Elev. 644.02

LOG OF BORING HUF-10

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LOG OF BORING HUF-11

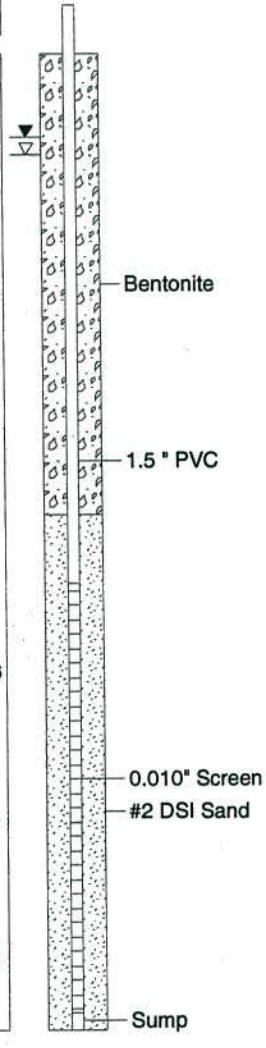
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/20/01~9/11/01	Overburden/Tot. Depth	18.8' / 34.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1564403.3 E1955447.2
Rig Type	: SIMCO/CME55	Surface Elev.	: 645.24
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 642.35 @ 24 Hr.

Depth in ft.	Surf. Elev. 645.24	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	645	FL		Tan to dark yellow orange silty fine sand, clayey SILT with rock fragments, Dry. (FILL)	1	6		
				3.0 642.35 - 24 Hr. GWS (9/25/01) 641.70 - TOB GWS (9/11/01) Dry, Light Olive-Gray, Soft, Sl. to Mod. Wth'd SHALE w/ some Relict Rock Structure, logged as CLAYEY SILT	2	54		
5	640							
					3	68		
10	635			> Slickensides, Dry.				
					4	63		
15	630			> Moist				
				18.8- Auger Refusal				
20	625			19.0 - Set NW casing, start coring NQ-3B, CME 55 (9/11/01)	5			52/16
25	620	SH		Soft, dark gray to grayish black, unweathered, thin bedded (40 to 50 deg. slickensides parallel to bedding), very fine grained, SHALE.	6			32/0
30	615				7			82/8
35	610			34.0 - BORING TERMINATED				
40				REMARKS: 19.0 to 34.0 - 2 sets of silickensides. 1 set near vertical, 1 set 40 to 50 deg, parallel with bedding, spaced 0.1' to 0.4' 20 deg. Joints, intact, cal. filled, at: 30.9, 31.3, 31.4, 32.0, 32.5.				

Well: HUF-11
Elev.: 645.24



NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 650.84

LOG OF BORING HUF-11

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LOG OF BORING HUF-12

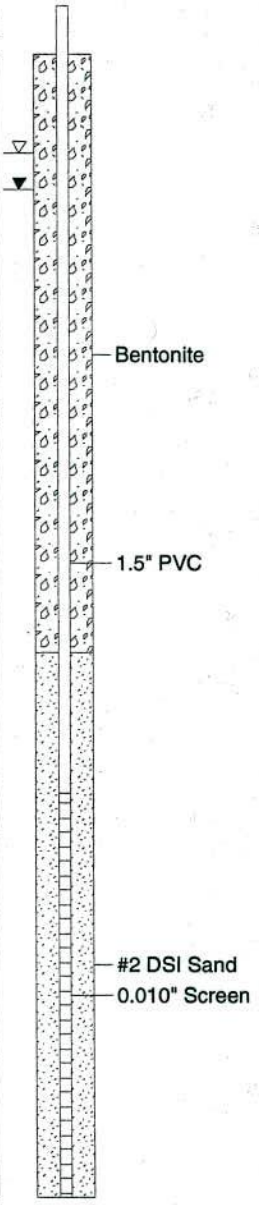
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/22/01 - 9/17/01	Overburden/Tot. Depth	23.3' / 41.5'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1565126,E1954938
Rig Type	: SIMCO/CME55	Surface Elev.	: 647.88
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 643.16 @ 24 Hr.

Depth in ft.	Surf. Elev. 647.88	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	647			Dry, Medium Gray to Red-Brown, Soft, Mod. Wth'd SHALE, logged as CLAYEY SILT	1	31		
				644.48 - TOB GWS (8/22/01) 643.16 - 24 Hr. GWS (9/25/01)	2	72		
5	642			Dry, Olive-Gray to Medium Gray, Moderately to Slightly Weathered SHALE logged as CLAYEY SILT.				
					3	50/5"		
10	637			> Moist				
					4	93		
15	632			> w/ Relict Rock Structure				
					5	85		
20	627			> Moist				
				23.3 - Auger Refusal				
25	622			26.5 - Set NW casing, Start coring NQ-3B, CME55 (9/17/01)	6			56/8
30	617	SH		Soft, dark gray to grayish black, unweathered except as noted, thin bedded (Both angles of slickensides approximately parallel to bedding), very fine grained, SHALE.	7			46/0
35	612				8			90/30
40								

Well: HUF-12
Elev.: 647.88



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 652.18

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LOG OF BORING HUF-12

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Southern Company

LOG OF BORING HUF-12

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/22/01 - 9/17/01	Overburden/Tot. Depth	23.3' / 41.5'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1565126,E1954938
Rig Type	: SIMCO/CME55	Surface Elev.	: 647.88
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 643.16 @ 24 Hr.

Depth in ft.	Surf. Elev. 647.88	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
40	607	SH		See Sheet #1 for Rock Description	8			90/30
				41.5 - BORING TERMINATED				
45	602							
50	597							
55	592							
60	587							
65	582							
70	577							
75	572							
80								

REMARKS:
26.5 to 37.0 - Slickensides spaced 0.1' to 0.4' on 60 deg., has some near vertical "sheared" appearance
31.5 to 36.5 - Possibly Slightly Weathered
37.0 to 41.5 - Slickensides 0.1' to 1.0' on 30 deg. angle not as well developed.
37.8 - 60 deg. Joint, Intact, Calcite lined
39.4 - 40 deg. Joint, Intact, Calcite lined

Well: HUF-12
Elev.: 647.88



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 652.18

LOG OF BORING HUF-12

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LOG OF BORING HUF-12P

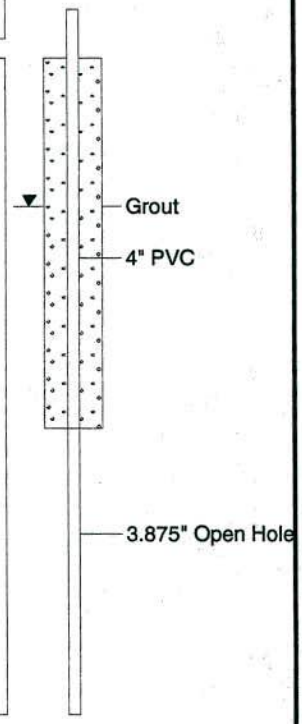
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/26/01 - 9/27/01	Tot. Depth	: 23.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Geldbaugh	Boring Location	: N1565126,E1954928
Rig Type	: CME55	Surface Elev.	: 647.88
Drilling Method	: 4.875"HSA	G/W Elev.	: 642.70

Depth in ft.	Surf. Elev. 647.88	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	647			Boring was augered to 13.0 ft. and 13.0 ft. of 4" PVC was set and grouted.				
5	642							
10	637							
13.0				3.875" Open Hole in Moderately to Badly Weathered SHALE				
15	632							
20	627							
23.0				23.0 - BORING TERMINATED				
25	622							
30	617							
35	612							
40								

Well: HUF-12P
Elev.: 647.88



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 649.68

LOG OF BORING HUF-12P

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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/26/01 - 9/27/01	Tot. Depth	: 10.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Filipovich	Boring Location	: N1565136,E1954931
Rig Type	: SIMCO	Surface Elev.	: 647.88
Drilling Method	: 4.875"HSA	G/W Elev.	: DRY @ 10.0'

Depth in ft.	Surf. Elev. 647.88	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD	Well: HUF-12PS Elev.: 647.88
0	647			Boring was augered to 10.0 ft.					
				4.875" Open Hole in Moderately to Badly Weathered SHALE					Open Hole
5	642								
10	637			10.0 - BORING TERMINATED					
15	632								
20	627								
25	622								
30	617								
35	612								
40									

NOTES:
Ground Surface is Reference Point for Measurements - Elev. 647.88

LOG OF BORING HUF-12PS

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LOG OF BORING HUF-13

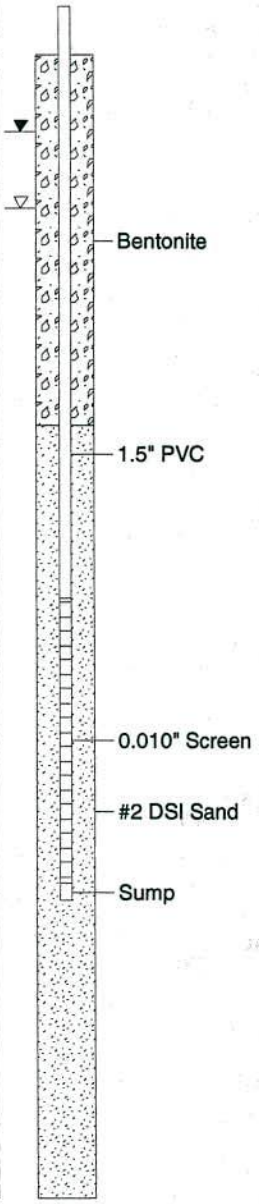
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/22/01~9/12/01	Overburden/Tot. Depth	14.1' / 99.7'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 4
Driller	: Filipovich/Geldbaugh	Boring Location	: N1564499 E1954474
Rig Type	: SIMCO/CME55	Surface Elev.	: 641.77
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 639.07 @ 24 Hr.

Depth in ft.	Surf. Elev. 641.77	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	641	FL		Yellow brown fine sandy silty CLAY, (FILL)	1	15		
				639.07 - 24 Hr. GWS (9/25/01)				
				2.5				
5	636			Dry, Dark olive gray to occasional yellow-orange, moderately weathered SHALE, (Crumbles to silty CLAY).	2	36		
				636.37 - TOB GWS (8/22/01)				
					3	50/5"		
10	631			Wet, Dark olive gray to Dark Gray, moderately weathered SHALE, (Crumbles to silty CLAY).				
				14.1 - Auger Refusal				
				14.7 - Set NW casing, Start coring NQ-3B with CME-55 on 9/11/01				
15	626				4			60/8
20	621				5			74/18
25	616	SH		Soft dark gray to grayish black, unweathered, thin bedded, (slickensides parallel to bedding), very fine grained SHALE	6			74/20
30	611				7			80/18
35	606				8			94/12
40					9			52/12

Well: HUF-13
Elev.: 641.77



NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 646.97

LOG OF BORING HUF-13

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LOG OF BORING HUF-13

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/22/01~9/12/01	Overburden/Tot. Depth	14.1' / 99.7'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 4
Driller	: Filipovich/Geldbaugh	Boring Location	: N1564499 E1954474
Rig Type	: SIMCO/CME55	Surface Elev.	: 641.77
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 639.07 @ 24 Hr.

Well: HUF-13
Elev.: 641.77

Depth in ft.	Surf. Elev. 641.77	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
80	561	SH		Soft dark gray to grayish black, unweathered, thin bedded (slickensides parellel to bedding), very fine grained, SHALE	17			86/28
85	556				18			62/20
90	551				19			78/46
95	546				20			70/16
100	541			99.7 - BORING TERMINATED				
105	536							
110	531							
115	526							
120								

#2 DSI Sand

REMARKS
14.7 to 34.7 - Slickensides variable from 30 to 40 deg, spaced 0.1' to 0.3'
60 to 70 deg. Slickensides at: 21.0', 21.9, 24, 30.8 & 34.0'
21.3 - 70 deg Joint, intact, cal. filled
31.4 - 35 deg. Joint, Intact, Calcite lined
28.0 - Near vertical silckenside, approx. perpendicular to bedding / slickensides.
34.7 to 54.7 - Slickensides, vary from 35 to 45 deg., spaced 0.1' to 0.4'
54.7 to 69.7 - Core loss due to piece of core hung in bit, Not allowing core to enter inner barrel, drill rate indicative of consistent rock.
74.7 to 84.0 - Slickensides, spaced 0.1 to 1.0', on 30 to 40 deg. parellel to bedding.
75.9 - Slickensides ~ perpendicular to axis of core.
79.1 - Near vertical Slickensides
81.0 - 45 deg. joint, intact, cal. filled.
84 to 95.0 - Slickensides spaced 0.05' to 0.2', 60 deg. to 80 deg.
94.0 - 80 deg. joint, intact, cal. filled.

NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 646.97

LOG OF BORING HUF-13

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LOG OF BORING HUF-13

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/22/01~9/12/01	Overburden/Tot. Depth	14.1' / 99.7'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 4
Driller	: Filipovich/Geldbaugh	Boring Location	: N1564499 E1954474
Rig Type	: SIMCO/CME55	Surface Elev.	: 641.77
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 639.07 @ 24 Hr.

Well: HUF-13
Elev.: 641.77

Depth in ft.	Surf. Elev. 641.77	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
40	601	SH		Soft dark gray to grayish black, unweathered, thin bedded (slickensides parellel to bedding), very fine grained, SHALE	9			52/12
45	596				10			72/18
50	591				11			72/0
55	586				12			4/0
60	581				13			6/0
65	576				14			8/0
70	571				15			44/0
75	566				16			104/48
80					17			86/28

#2 DSI Sand

NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 646.97

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LOG OF BORING HUF -14

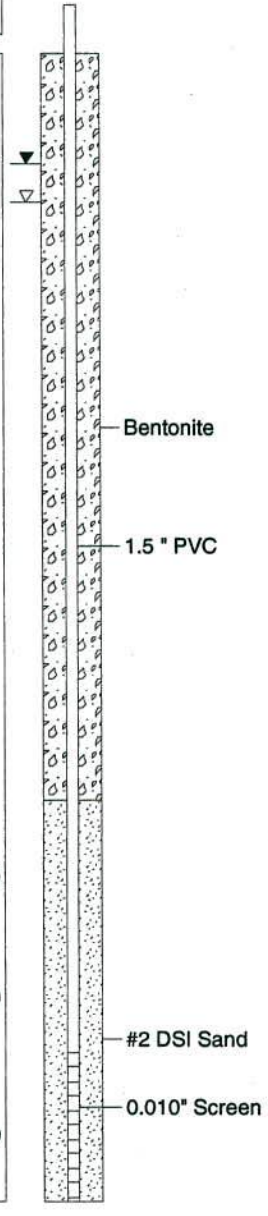
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/22/01 - 8/30/01	Overburden/Tot. Depth	24.2' / 50.4'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1564857.9 E1953968.5
Rig Type	: SIMCO/CME55	Surface Elev.	: 646.28
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 642.46 @ 24 Hr.

Depth in ft.	Surf. Elev. 646.28	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	646	ML		Olive gray to brown to tan silty fine sandy, clayey SILT, Dry.	1	20		
				642.46 - 24 Hr. GWS (9/25/01)	2	18		
5	641			641.08 - TOB GWS (8/30/01)				
				7.0				
				Dry, Dark Gray to Dark Olive Gray,Slightly to Moderately Weathered SHALE with Relict Rock Structure (Crumbles to silty CLAY).	3	18		
10	636							
					4	57		
15	631							
					5	90		
20	626							
25	621			24.2- Auger Refusal				
				27.0 - Set NW casing, start coring NQ-3B, CME 55 (9/25/01)	6			59/20
30	616	SH		Soft dark gray to grayish black, unweathered, thin bedded, slickensides parallel to bedding, very fine grained SHALE	7			70/20
35	611				8			68/10
40								

Well: HUF-14
Elev.: 646.28



NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 649.78

LOG OF BORING HUF -14

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LOG OF BORING HUF -14

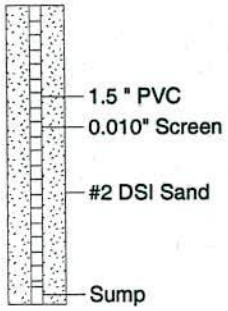
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/22/01 - 8/30/01	Overburden/Tot. Depth	24.2' / 50.4'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1564857.9 E1953968.5
Rig Type	: SIMCO/CME55	Surface Elev.	: 646.28
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 642.46 @ 24 Hr.

Depth in ft.	Surf. Elev. 646.28	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
40	606				8			68/10
45	601	SH		Soft dark gray to grayish black, unweathered, thin bedded, slickensides parallel to bedding, very fine grained SHALE	9			92/40
50	596				10			76/10
55	591							
60	586							
65	581							
70	576							
75	571							
80								

Well: HUF-14
Elev.: 646.28



50.4 - BORING TERMINATED

REMARKS:
27.0 to 50.4 - Slickensides parellel with bedding on 30 deg. to 40 deg. becoming steeper (to 70 to 80 deg) and back to 30 to 40 deg in last run.
37.0 - 50 deg. joint, intact, cal. filled.
37.2 - 25 deg. joint, intact, cal. filled.
42.2 - 70 deg. joint, intact, cal. filled.
44.4 -m 20 deg. joint, intact, cal. filled.
49.0 - 10 deg. jointmech open, cal. filled.

Core broken by drilling along slickensides/bedding and intersection with joints.

NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 649.78

LOG OF BORING HUF -14

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LOG OF BORING HUF-14P

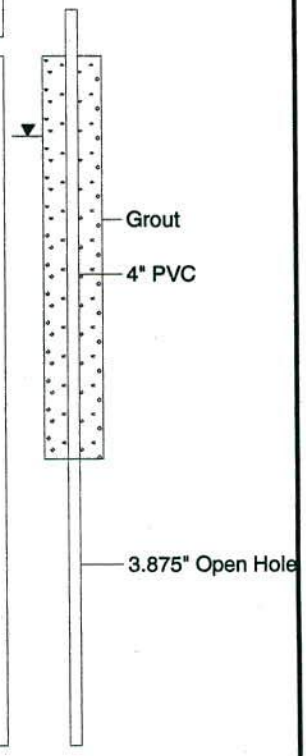
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/25/01 - 9/26/01	Tot. Depth	: 24.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Geldbaugh	Boring Location	: N1564857.9,E1953980.5
Rig Type	: CME55	Surface Elev.	: 646.28
Drilling Method	: 4.875"HSA	G/W Elev.	: 643.55

Depth in ft.	Surf. Elev. 646.28	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	646			Boring was augered to 14.0 ft. and 14.0 ft. of 4" PVC was set and grouted.				
5	641							
10	636							
15	631			14.0 3.875" Open Hole in Moderately to Badly Weathered SHALE				
20	626							
25	621			24.0 - BORING TERMINATED				
30	616							
35	611							
40								

Well: HUF-14P
Elev.: 646.28



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 647.88

LOG OF BORING HUF-14P

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LOG OF BORING HUF-14PS

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/25/01 - 9/26/01	Tot. Depth	: 10.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Filipovich	Boring Location	: N1564857.9,E1953990.5
Rig Type	: SIMCO	Surface Elev.	: 646.28
Drilling Method	: 4.875"HSA	G/W Elev.	: DRY @ 10.0'

Depth in ft.	Surf. Elev. 646.28	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD	Well: HUF-14PS Elev.: 646.28
0	646			Boring was augered to 10.0 ft.					
				4.875" Open Hole in Moderately to Badly Weathered SHALE					Open Hole
5	641								
10	636			10.0 - BORING TERMINATED					
15	631								
20	626								
25	621								
30	616								
35	611								
40									

NOTES:
Ground Surface is Reference Point for Measurements - Elev. 646.28

LOG OF BORING HUF-14PS

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LOG OF BORING HUF-15

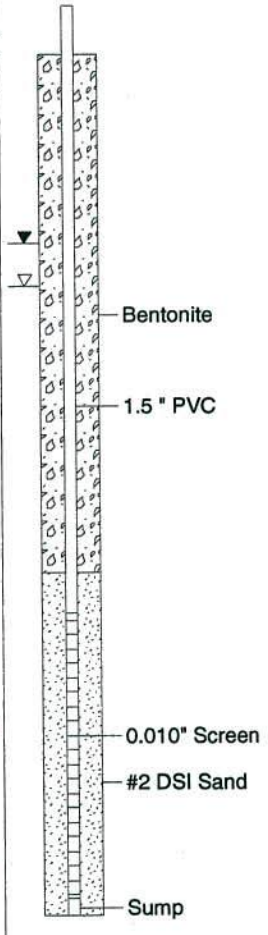
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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/14/01~8/16/01	Overburden/Tot. Depth	20.0' / 46.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1564546.5 E1953146.6
Rig Type	: SIMCO/CME55	Surface Elev.	: 651.46
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 644.96 @24Hr.

Depth in ft.	Surf. Elev. 651.46	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	651	ML		Mottled red brown to tan to off-white slightly fine sandy, clayey SILT	1	26		
					2	19		
5	646			644.96 - 24 Hr GWS (9/25/01) 643.46 - TOB GWS (8/14/01)				
				7.5 Dry, Olive black to dark gray with some dark yellow orange and tan, soft, badly weathered SHALE with rock fragments, logged as slightly fine sandy, slightly CLAYEY SILT.	3	40		
10	641							
				>Dark Gray, Slightly to Moderately Weathered, SHALE	4	91/12"		
15	636			18.6 - Auger Refusal				
20	631	SH		20.0 - Set NW casing, start coring NQ-3B, CME 55 (8/16/01)	5			0/0
					6			60/8
25	626				7			0/0
30	621			Soft dark gray to grayish black, unweathered, thin bedded (slickensides parallel to bedding), very fine grained SHALE				
					8			66/26
35	616							
					9			90/0
40								

Well: HUF-15
Elev.: 651.46



NOTES:
Hole collapased before 1.5" PVC could be installed on 8/16. Came back on 9/12 and reamed hole with NW casing advancer and installed piezometer as described above.

Reference Point for Measurements is Top of Riser Pipe - Elev. 655.96

LOG OF BORING HUF-15

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LOG OF BORING HUF-15

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/14/01~8/16/01	Overburden/Tot. Depth	20.0' / 46.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1564546.5 E1953146.6
Rig Type	: SIMCO/CME55	Surface Elev.	: 651.46
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 644.96 @24Hr.

Well: HUF-15
Elev.: 651.46

Depth in ft.	Surf. Elev. 651.46	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
40	611	SH		Soft dark gray to grayish black, unweathered, thin bedded (slickensides parallel to bedding), very fine grained SHALE	9			90/0
45	606				10			86/40
50	601			46.0 - BORING TERMINATED				
55	596							
60	591							
65	586							
70	581							
75	576							
80								

REMARKS:
Slickensides are approx. vertical. Probable cause of low/no recovery due to blocking-out.

21.0 - Slickensided surfaces are ~ 0,05' apart, they are wavey to smooth, they are open and can slide/move, not bonded togather. These are cut by joints of varying orientation giving the core/shale a blocky look.
32.5 - 80 deg. slickensides with thin calcite veins.

The creation of the blocks as described above tend to cause block-outs during coring, giving lower recoveries and RQD's.

NOTES:
Hole collapased before 1.5" PVC could be installed on 8/16. Came back on 9/12 and reamed hole with NW casing advancer and installed piezometer as described above.

Reference Point for Measurements is Top of Riser Pipe - Elev. 655.96

LOG OF BORING HUF-15

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LOG OF BORING HUF-15P

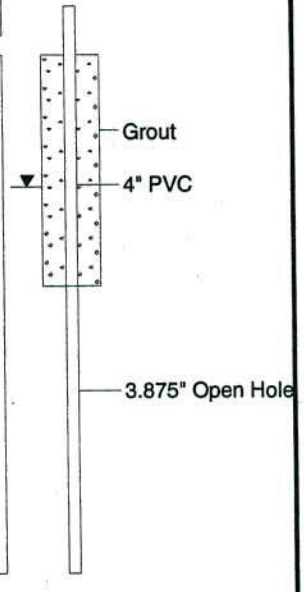
(Page 1 of 1)

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/25/01 - 9/26/01	Tot. Depth	: 18.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Geldbaugh	Boring Location	: N1564546.5,E1953156.6
Rig Type	: CME55	Surface Elev.	: 651.45
Drilling Method	: 4.875"HSA	G/W Elev.	: 645.15

Depth in ft.	Surf. Elev. 651.45	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	651			Boring was augered to 8.0 ft. and 8.0 ft. of 4" PVC was set and grouted.				
5	646							
				8.0				
10	641			3.875" Open Hole in Moderately to Badly Weathered SHALE				
15	636							
				18.0 - BORING TERMINATED				
20	631							
25	626							
30	621							
35	616							
40								

Well: HUF-15P
Elev.: 651.45



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 653.15

LOG OF BORING HUF-15P

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LOG OF BORING HUF-15PS

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/25/01 - 9/26/01	Tot. Depth	: 5.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Filipovich	Boring Location	: N1564546.5,E1953166.6
Rig Type	: SIMCO	Surface Elev.	: 651.45
Drilling Method	: 4.875"HSA	G/W Elev.	: DRY

Depth in ft.	Surf. Elev. 651.45	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	651			Boring was augered to 5.0 ft.				
				4.875" Open Hole in Overburden Material				
5	646			5.0 - BORING TERMINATED				
10	641							
15	636							
20	631							
25	626							
30	621							
35	616							
40								

Well: HUF-15PS
Elev.: 651.45



NOTES:
Ground Surface is Reference Point for Measurements - Elev. 651.45

LOG OF BORING HUF-15PS

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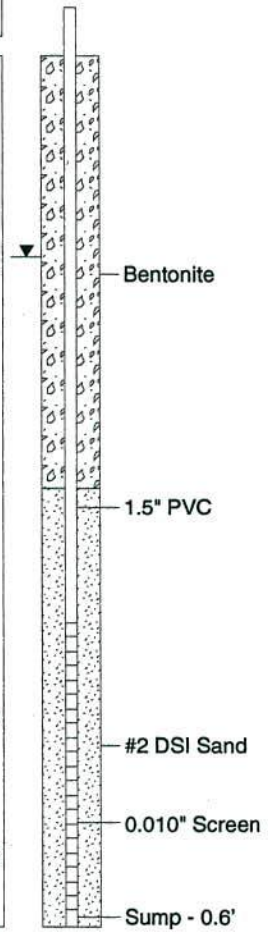
LOG OF BORING HUF-16

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/16/01-8/23/01	Overburden/Tot. Depth	20.8' / 30.3'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1563691.6,E1952568.5
Rig Type	: SIMCO/CME55	Surface Elev.	: 650.96
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 644.01 @ 24Hr.

Depth in ft.	Surf. Elev. 650.96	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	650	FL		Dark Olive-Gray to Olive-Gray to Dark Yellowish-Orange, Slightly Fine SANDY, CLAYEY SILT, with occasional SHALE Fragments, dry	1	14		
				>moist	2	8		
5	645			644.06 - TOB GWS (8/16/01) 644.01 - 24 Hr GWS (9/25/01)				
				>with more SHALE Fragments	3	21		
10	640			(FILL)				
				12.0 Dry, Soft, Dark Olive-Gray to Dark Gray, SHALE as numerous Fragments logged as CLAYEY SILT.	4	50/4"		
15	635			>moist, with relict Rock structure	5	50/4.5"		
20	630	SH		20.8 - Auger Refusal, Set NW casing, Start coring NQ-3B w/ CME55 (8/23/01)	6			91/60
25	625			Moderately Hard, Dark Gray to Grayish Black, Unweathered, Thin Bedded (Slickensides along bedding are not as well developed), Very Fine Grained, SHALE with occasional Very Thin Lenses of Pyrite.	7			96/52
30	620			30.3 - BORING TERMINATED				
35	615			REMARKS: 20.8 to 30.3 - Slickensides / Bedding vary from 40 deg. to 45 deg. with wider spacing, not as well developed as other portions of site. 21.9 - 15 deg. Joint, Intact, Calcite lined 22.2 - 40 deg. Joint, Intact, Calcite lined 24.2 - 60 deg. Joint, Mech. Open 24.8 - 60 deg. Joint, Intact, Calcite lined 25.8 - 15 deg. Joint, Mech. Open 26.6 - 50 deg. Joint, Intact, Calcite lined 29.9 - 30 deg. Joint, Intact, Calcite lined				
40								

Well: HUF-16
Elev.: 650.96



NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 655.46

LOG OF BORING HUF-16

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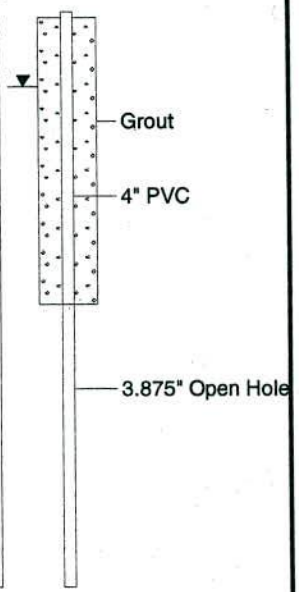
Southern Company

LOG OF BORING HUF-16P

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/26/01 - 9/27/01	Tot. Depth	: 20.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Geldbaugh	Boring Location	: N1563691.6,E1952558.5
Rig Type	: CME55	Surface Elev.	: 650.96
Drilling Method	: 4.875"HSA	G/W Elev.	: 648.52

Depth in ft.	Surf. Elev. 650.96	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	650			Boring was augered to 10.0 ft. and 10.0 ft. of 4" PVC was set and grouted.				
5	645							
10	640			10.0 3.875" Open Hole in Moderately to Badly Weathered SHALE				
15	635							
20	630			20.0 - BORING TERMINATED				
25	625							
30	620							
35	615							
40								



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 651.16

LOG OF BORING HUF-16P

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LOG OF BORING HUF-16PS

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/26/01 - 9/27/01	Tot. Depth	: 5.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Filipovich	Boring Location	: N1563691.6,E1952548.5
Rig Type	: SIMCO	Surface Elev.	: 650.96
Drilling Method	: 4.875"HSA	G/W Elev.	: DRY @ 5.0'

Depth in ft.	Surf. Elev. 650.96	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD	Well: HUF-16PS Elev.: 650.96
0	650			Boring was augered to 5.0 ft.					Open Hole
				4.875" Open Hole in Moderately to Badly Weathered SHALE					
5	645			5.0 - BORING TERMINATED					
10	640								
15	635								
20	630								
25	625								
30	620								
35	615								
40									

NOTES:
Ground Surface is Reference Point for Measurements - Elev. 650.96

LOG OF BORING HUF-16PS

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LOG OF BORING HUF-17

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GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/16/01- 8/22/01	Overburden/Tot. Depth	27.1' / 45.2'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1562780.1 E1952040.2
Rig Type	: SIMCO/CME55	Surface Elev.	: 626.86
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 621.33 @ 24 Hr.

Depth in ft.	Surf. Elev. 626.86	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	626	CL		Light brown to dark yellow orange slightly fine sandy, SILTY CLAY, Moist	1	6		
				2.5				
5	621			621.33 - 24 Hr. GWS (9/25/01)	2	19		
				618.56 - TOB GWS (8/16/01)				
				Dry, soft, dark olive gray, moderately weathered SHALE, with some relict rock structures, logged as CLAYEY SILT.	3	50/5.5"		
10	616							
					4	50/4"		
15	611							
					5	50/4"		
20	606							
				> Wet	6	50/3"		
25	601			27.1- Auger Refusal				
				28.0 - Set NW casing, start coring NQ-3B, CME 55 (8/22/01)	7			95/0
30	596							
		SH		Soft dark gray to grayish black, unweathered, thin bedded (slickensides parallel to bedding), very fine grained, SHALE	8			56/0
35	591							
					9			48/16
40								

Well: HUF-17
Elev.: 626.86

Bentonite

1.5 " PVC

#2 DSI Sand

0.010" Screen

NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 628.46

LOG OF BORING HUF-17

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LOG OF BORING HUF-17

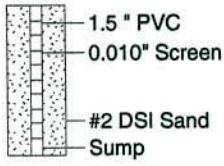
GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/16/01- 8/22/01	Overburden/Tot. Depth	27.1' / 45.2'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1562780.1 E1952040.2
Rig Type	: SIMCO/CME55	Surface Elev.	: 626.86
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 621.33 @ 24 Hr.

Depth in ft.	Surf. Elev. 626.86	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
40	586	SH		Soft dark gray to grayish black, unweathered, thin bedded (slickensides parallel to bedding), very fine grained, SHALE	9			48/16
45	581				10			60/25
				45.2 - BORING TERMINATED				
50	576							
55	571							
60	566							
65	561							
70	556							
75	551							
80								

REMARKS:
Slickensides ~ 30 to 40 deg. 2nd set, Not parallel to bedding.

Well: HUF-17
Elev.: 626.86



NOTES:
Reference Point for Measurements is Top of Riser Pipe - Elev. 628.46

LOG OF BORING HUF-17

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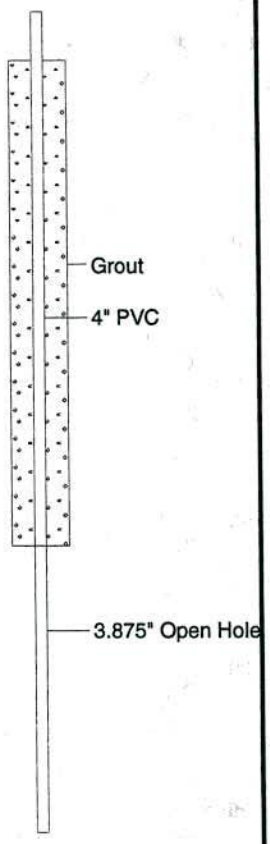
Southern Company

LOG OF BORING HUF-17P

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/26/01 - 9/27/01	Tot. Depth	: 27.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Geldbaugh	Boring Location	: N1562795.1,E1952040.2
Rig Type	: CME55	Surface Elev.	: 626.86
Drilling Method	: 4.875"HSA	G/W Elev.	: 625.45

Depth in ft.	Surf. Elev. 626.86	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	626			Boring was augered to 17.0 ft. and 17.0 ft. of 4" PVC was set and grouted.				
5	621							
10	616							
15	611							
				17.0 3.875" Open Hole in Moderately to Badly Weathered SHALE				
20	606							
25	601							
				27.0 - BORING TERMINATED				
30	596							
35	591							
40								



NOTES:
Top of Riser Pipe is Reference Point for Measurements - Elev. 629.46

LOG OF BORING HUF-17P

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LOG OF BORING HUF-17PS

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/26/01 - 9/27/01	Tot. Depth	: 10.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: NA
Driller	: Filipovich	Boring Location	: N1562797.1,E1952052.2
Rig Type	: SIMCO	Surface Elev.	: 626.86
Drilling Method	: 4.875"HSA	G/W Elev.	: DRY

Depth in ft.	Surf. Elev. 626.86	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD	Well: HUF-17PS Elev.: 626.86
0	626			Boring was augered to 10.0 ft.					
				4.875" Open Hole in Moderately to Badly Weathered SHALE					Open Hole
5	621								
10	616			10.0 - BORING TERMINATED					
15	611								
20	606								
25	601								
30	596								
35	591								
40									

NOTES:
Ground Surface is Reference Point for Measurements - Elev. 626.86

LOG OF BORING HUF-17PS

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LOG OF BORING HUF-18

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 9/17/01 - 9/18/01	Overburden/Tot. Depth	4.5' / 19.5'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Geldbaugh	Boring Location	: N1564995.2,E1952429.9
Rig Type	: CME55	Surface Elev.	: 655.02
Drilling Method	: NQ-3B Core	G/W Elev.	: 654.52 @ 24 Hr.

Depth in ft.	Surf. Elev. 655.02	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
0	655			654.52 - 24 Hr. GWS (9/25/01) Soft, Moderately Weathered, SHALE				
5	650	SH		4.5 - Casing Advancer Refusal, Set NW casing, Start Coring NQ-3B	1			38/28
10	645			Soft, Medium Dark Gray to Dark Gray, Unweathered except as noted, Thin Bedded (Slickensides parallel to Bedding), Very Fine Grained, SHALE.	2			56/16
15	640				3			34/0
20	635			19.5 - BORING TERMINATED				
25	630			REMARKS: 4.5 to 15.0 - Core is Slightly Weathered 4.5 to 19.5 - 45 deg. Slickensides, spaced 0.1' to 0.2'. 18.5 - Near Vertical Slickenside, Oblique to Bedding.				
30	625							
35	620							
40								

Well:
Elev.: 655.02

NOTES:
Ground Surface is Reference Point for Measurements - Elev. 655.02

No piezometer set. Hole collapsed twice before 1.5" PVC could be placed in hole.

LOG OF BORING HUF-18

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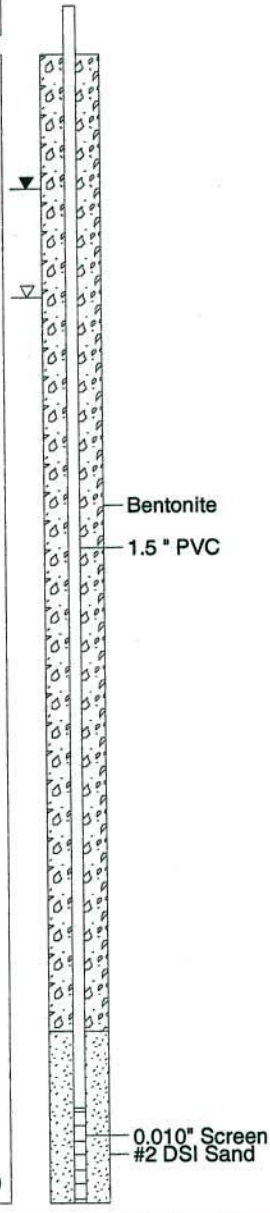
LOG OF BORING HUF-19

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/15/01~8/21/01	Overburden/Tot. Depth	37.2' / 56.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1563317 E1953388.9
Rig Type	: SIMCO/CME55	Surface Elev.	: 638.54
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 633.91 @ 24 Hr.

Depth in ft.	Surf. Elev. 638.54	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph (10 50)	Rec'y/RQD
0	638	FL		Light brown to brown, slightly clayey, fine sandy SILT with sandstone rock fragments. (FILL)	1	9		
5	633			633.91 - 24 Hr. GWS (9/25/01)	2	6		
				7.0 630.14 - TOB GWS (8/15/01)	3	27		
10	628			Dry, soft, dark olive green, moderately weathered, with numerious rock fragments, SHALE, logged as slightly clayey, fine sandy, SILT.				
				>Wet	4	50/5"		
15	623							
					5	50/5"		
20	618			>Dry sample				
					6	50/3"		
25	613			>Wet				
				>Wet	7	50/3"		
30	608							
				>Wet	8	50/3"		
35	603			37.2 - Auger Refusal				
		SH		38.6 - Set NW casing, start coring NQ-3B, CME 55(8/21/01)	9			63/0
40								

Well: HUF-19
Elev.: 638.54



NOTES:
Hole collapased before 1.5" PVC could be installed on 8/15. Came back on 9/12 and reamed hole with NW casing advancer and installed piezometer as described above.

Reference Point for Measurements is Top of Riser Pipe - Elev. 641.54

LOG OF BORING HUF-19

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LOG OF BORING HUF-19

GEORGIA POWER COMPANY
PLANT HAMMOND
HUFFAKER ROAD MONOFILL SITE

Date Start/Compl.	: 8/15/01~8/21/01	Overburden/Tot. Depth	37.2' / 56.0'
Logged By	: R. D. Wood, P.G.	No. of Core Boxes	: 1
Driller	: Filipovich/Geldbaugh	Boring Location	: N1563317 E1953388.9
Rig Type	: SIMCO/CME55	Surface Elev.	: 638.54
Drilling Method	: 4.875" HSA/NQ-3B Core	G/W Elev.	: 633.91 @ 24 Hr.

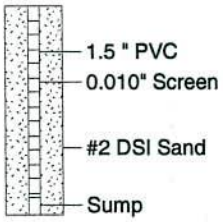
Depth in ft.	Surf. Elev. 638.54	USCS	GRAPHIC	DESCRIPTION	Samples	Blow Count	Blow Count Graph 10 50	Rec'y/RQD
40	598	SH		Soft, dark gray to grayish black, unweathered, thin bedded (slickensides parallel to bedding), very fine grained, SHALE	9			63/0
45	593				10			102/48
50	588				11			56/10
55	583				12			64/20
60	578			56.0 - BORING TERMINATED				
65	573							
70	568							
75	563							
80								

REMARKS:
40.9 - 70 deg. slickensides with calcite XLS.
41.8 - 45 deg. joint, intact, with calcite lining.
41.9 - 70 deg. joint, mechanically open,
42.5 - Intersection of two 70 deg. joints, intact.
43.4 - 50 deg. joint, intact.
44.1 - 60 deg. joint, mech. open with calcite lining.
45.2 - 60 deg. joint., mech. open.

Slickensides/ bedding variable 70 to 80 deg. Wavey to smooth.

Core losses due to blocking out caused by blocky nature of this SHALE. Blockiness caused by intersections of high angle (near vertical) slickensides with high and moderate angled joints.

Well: HUF-19
Elev.: 638.54



NOTES:
Hole collapased before 1.5" PVC could be installed on 8/15. Came back on 9/12 and reamed hole with NW casing advancer and installed piezometer as described above.

Reference Point for Measurements is Top of Riser Pipe - Elev. 641.54

LOG OF BORING HUF-19

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LAW & COMPANY

Consulting and Analytical Chemists

3770 GREEN INDUSTRIAL WAY
CHAMBLEE, GA 30341

PHONE: 770-216-2044
FAX: 770-216-2045

Chemical Report

10/05/01

Laboratory Number: 964684-687 Page: 1 of 1

Received: 09/27/01

Southern Company
Attn: Ron Wood
241 Ralph McGill Blvd.
Atlanta, GA 30308

Description: Project name: Huffaker Road Site

Lab ID	Sample ID	CEC9081 (meq/100g)
964684	BS-1 1.0' & 4.0' composite	12.4
964685	BS-2 1.0' & 4.0' composite	12.6
964686	BS-3 2.0'	15.4
964687	BS-4 2.0'	14.2

*****

Respectfully Submitted,
LAW & COMPANY
By: Thomas E. Lanty

dh

Samples are retained for a period of thirty to sixty days after completion of testing. After that time, samples are disposed of in an environmentally sound manner unless other arrangements are made by the client.

GEOHYDRO

CORPORATE OFFICE

1000 Cobb Place Boulevard
Suite 290
Kennesaw, Georgia 30144-3684
(770) 426-7100

BRANCH OFFICES

259 Wynburn Avenue
Suite D
Athens, GA 30601-1952
(706) 548-7170

100 East Callahan St.
Suite E
Rome, GA 30161-5400
(706) 234-0696

LETTER OF TRANSMITTAL

TO: Southern Company Services
241 Ralph McGill Blvd.
Bin# 10160
Atlanta,GA 30308

DATE: 11/5/01

Our Number: 117-01-55440

ATTENTION: Mr. Gary McWhorter

RE: Geotechnical Lab Testing
Huffaker Rd.

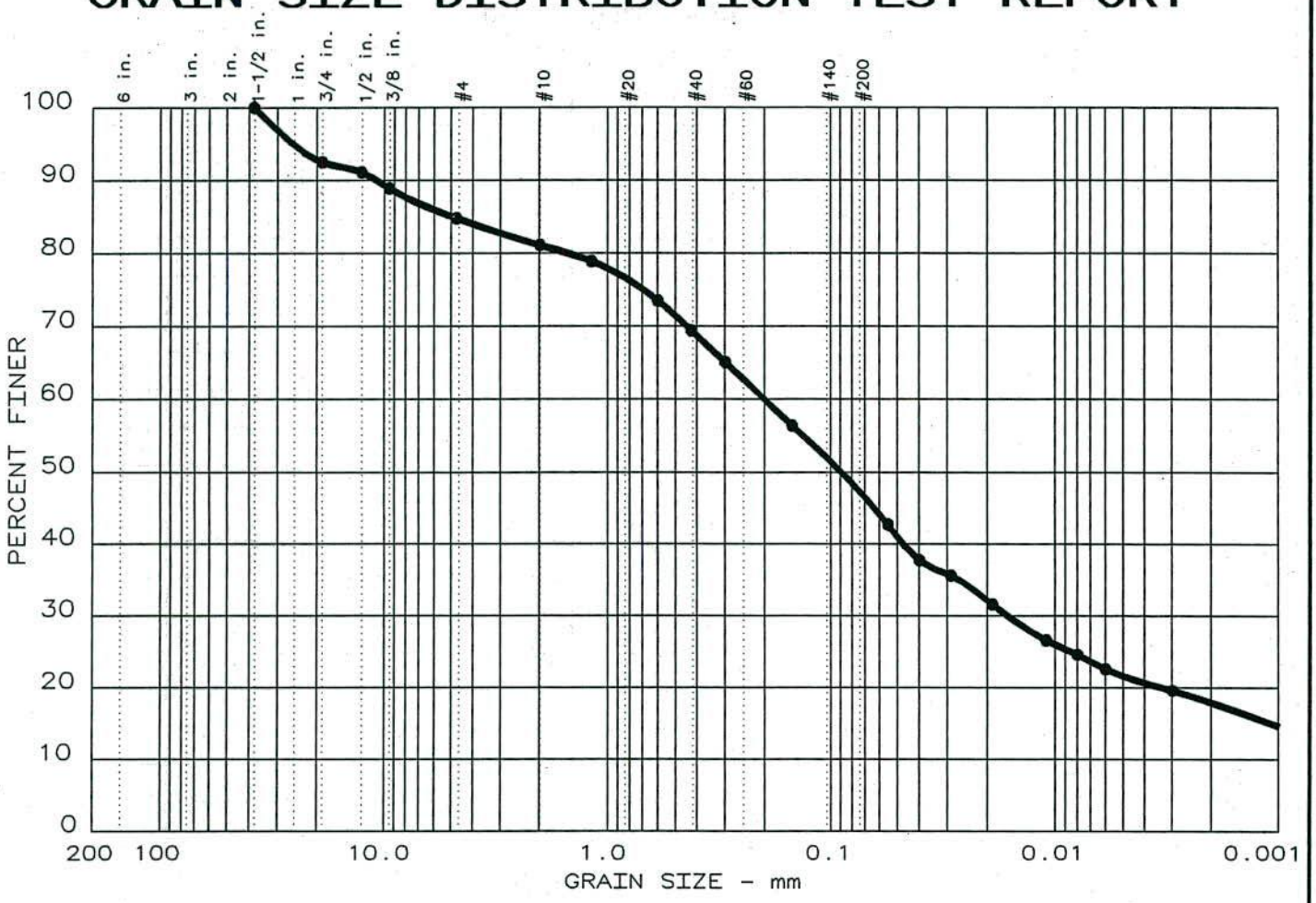
We are sending you:

Copies	*DESCRIPTION*
6 ✓	Sieve Analysis with hydrometer (D-422)
6 ✓	Standard Compaction Tests (D-698)
6 ✓	Atterberg Limits Results (D-4318)
6 ✓	Specific Gravity Results (D-894)
6 ✓	Hydraulic Conductivity (D-5084)

REMARKS: Results for the requested analysis. Call me if you have any questions.

Signed:
for Michael C. Woody

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	15.2	37.2	26.0	21.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	23	6	4.95	0.200	0.0891	0.0162	0.0011			

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark gray brown silty clayey sand with gravel	SC-SM	

Project No.: 111-01-55440
Project: SCS-Huffaker Road
● Location: BS-1

Date: 10/26/01

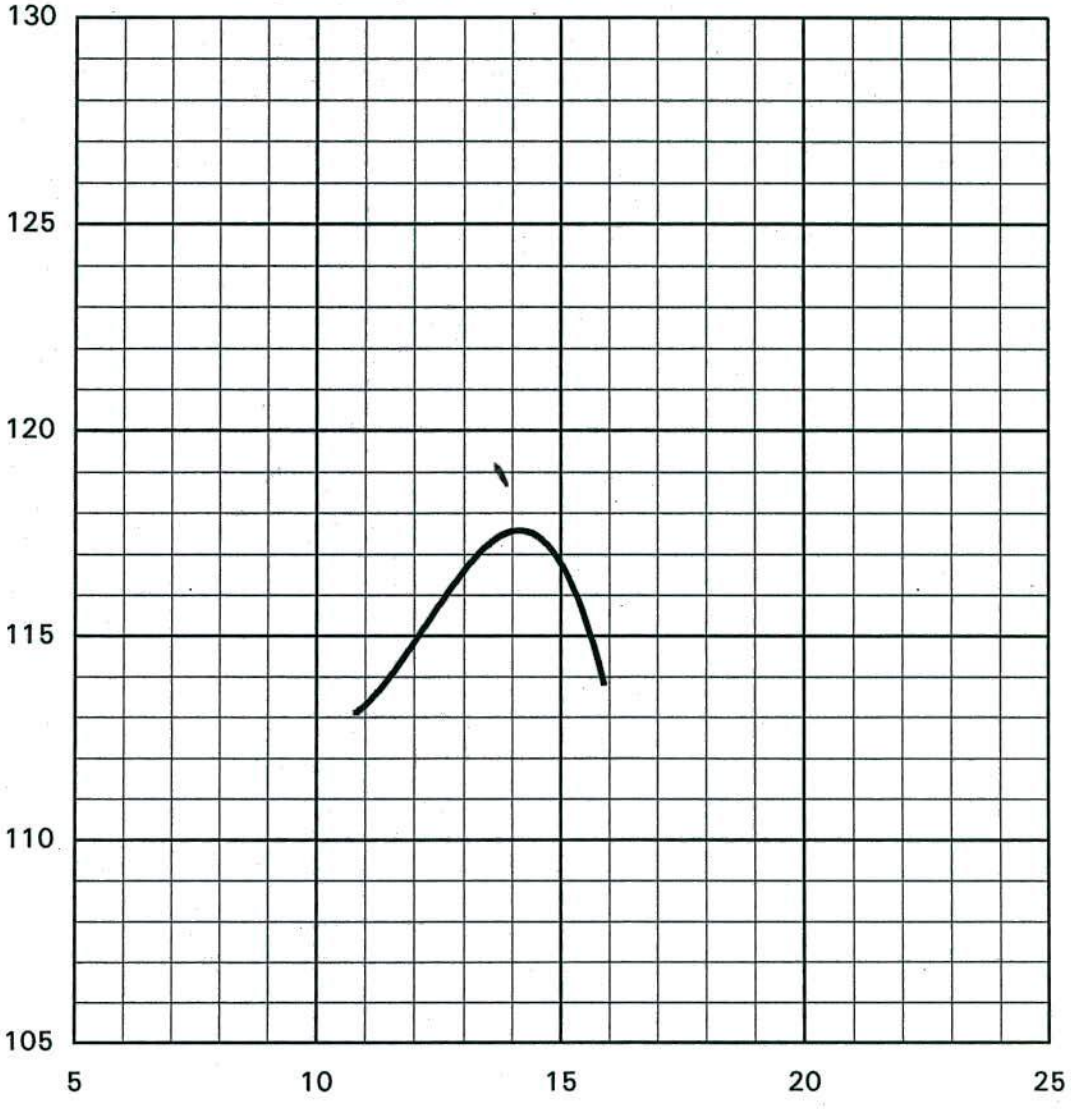
Remarks:
Depth: 1.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 15

Dry Density vs. Moisture Content



SAMPLE NO.:	BS-1	ASTM Spec.	Blows/ Layer	No. of Layers:	Wt. of Hammer; lbs	Mold Dia., in.	Borrow Location
Natural Moisture Content, %	12.0	D-698	56	3	5.5	5.998	Bulk Sample
Optimum Moisture Content, %	14.1						
Maximum Dry Density, pcf	117.4						

Depth/ Elev.	Classification	PI	LL	PL	% > #200 sieve	% > 3/4" sieve
-1.0'	Dark gray brown silty clayey sand w/ gravel (SC-SM)	9	27	18	55.0	7.5

Remarks: Fines classify as CL

GEO-HYDRO

Project:
SCS - Huffaker Road

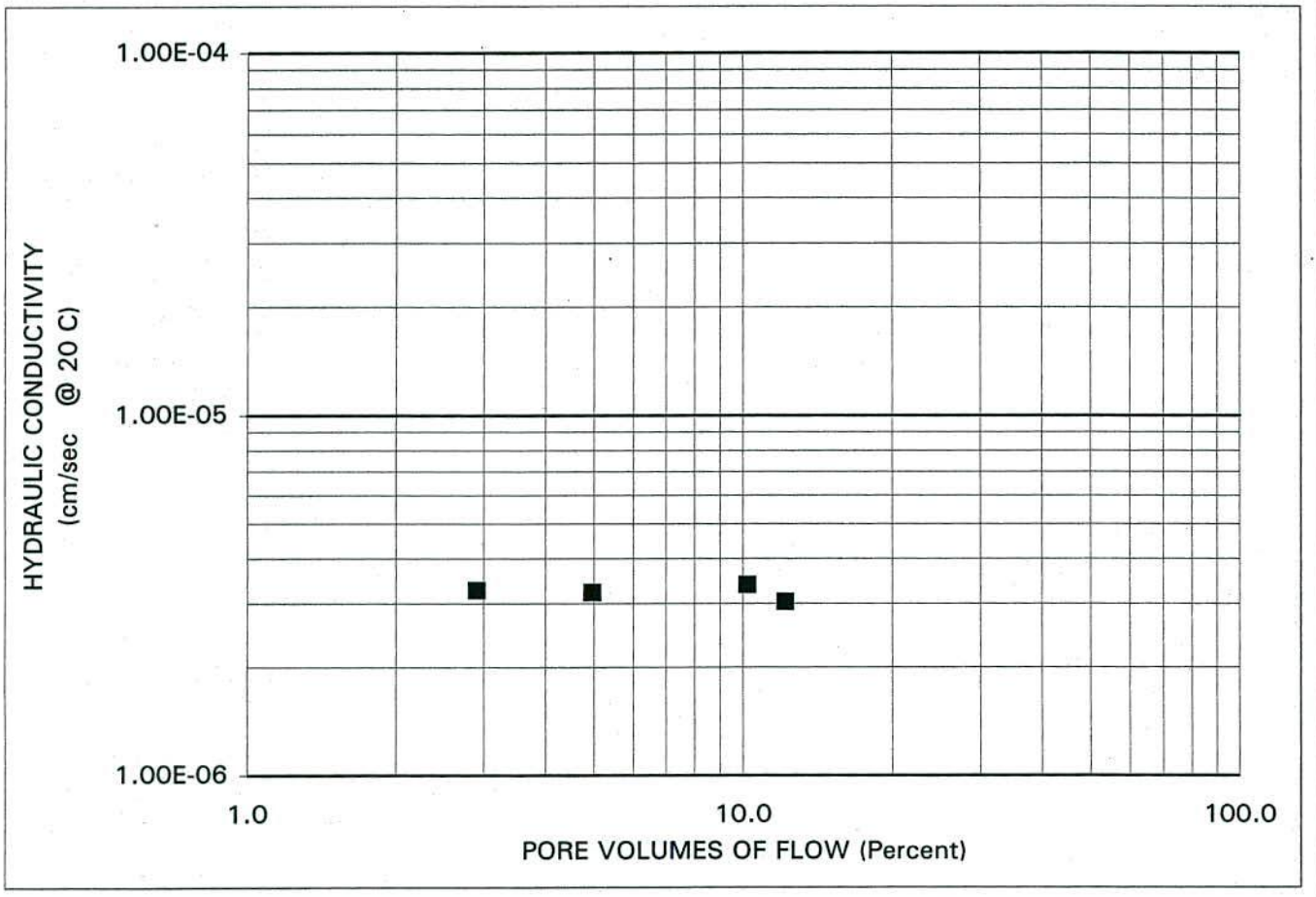
Geo-Hydro Project No.:	Contract No.:	Date:
117-01-55440		10/22/01

Compaction Test Report

GEOHYDRO

HYDRAULIC CONDUCTIVITY
LABORATORY TEST RESULTS

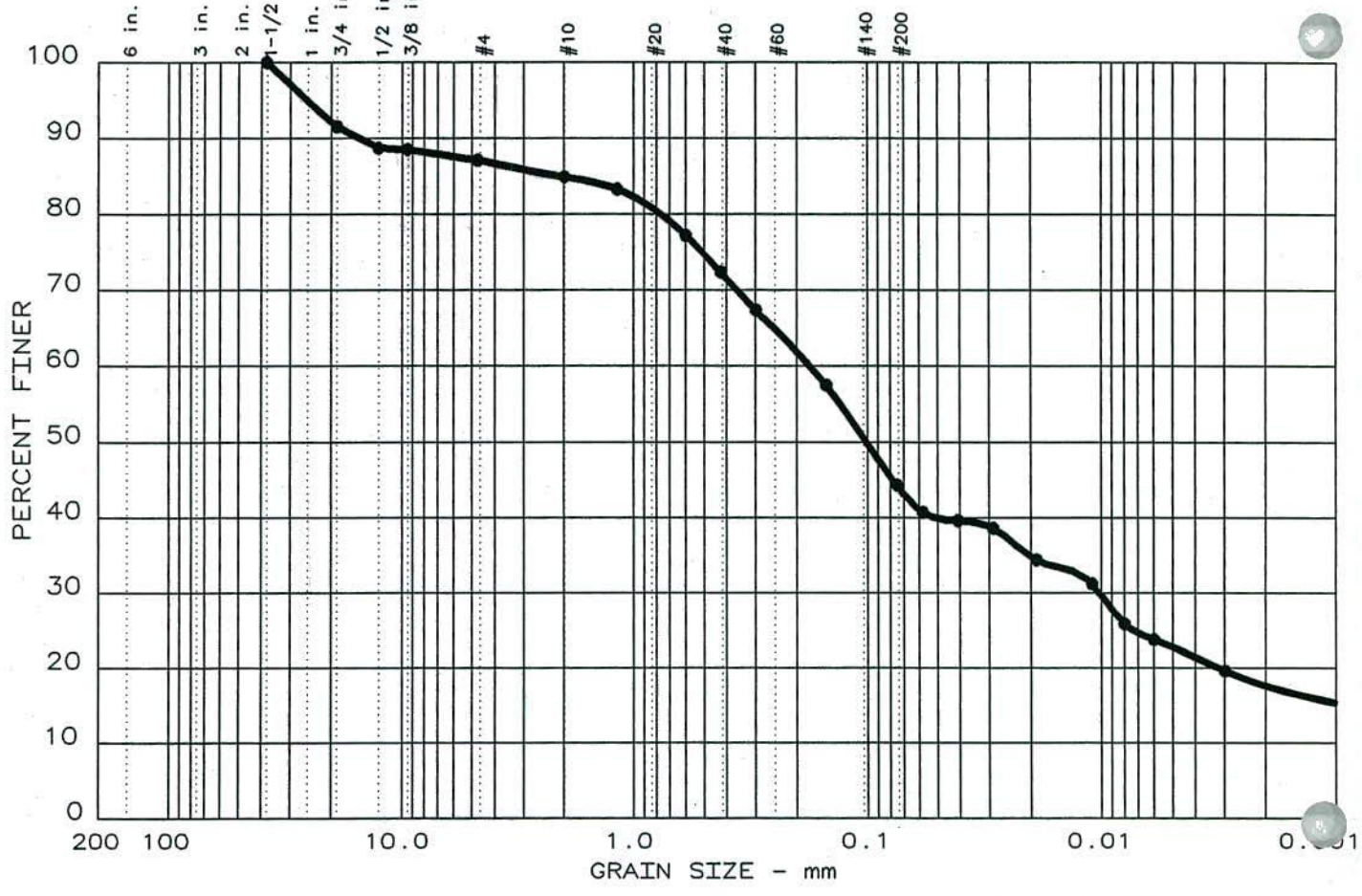
Project Name:	SCS-Huffaker Rd.	**Date:**	11/1/01
Project Number:	117 - 01 - 55440	**Test Method:**	ASTM D - 5084
Sample Location:	BS-1	**Sample Depth:**	1 ft
Sample Description:	Dark gray brown silty clayey sand w/ gravel (SC-SM)		



Specimen Parameters	Before Saturation	After Permeation
Specimen Diameter (cm)	7.29	7.29
Specimen Length (cm)	7.62	7.62
Moisture Content (%)	13.9	18.8
Dry Unit Weight (pcf)	111.5	111.5
Specific Gravity	2.69	2.69
Void Ratio	0.505	0.505
Porosity (%)	33.6	33.6
Saturation (%)	74.1	100.0

Sample Preparation Method	Remolded Sample
Magnitude of Total Backpressure (psi)	100.0
Type of Permeant Liquid Used	Deaired water
Maximum Effective Consolidation Stress (psi)	3.0
Minimum Effective Consolidation Stress (psi)	3.0
Range of Hydraulic Gradient Used	13.0
Hydraulic Conductivity (cm/sec @ 20° C)	**3.2E-06**

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	12.9	42.8	21.5	22.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	23	5	2.09	0.174	0.101	0.0101				

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark gray brown silty clayey sand	SC-SM	

Project No.: 111-01-55440
Project: SCS-Huffaker Road
● Location: BS-1

Date: 10/26/01

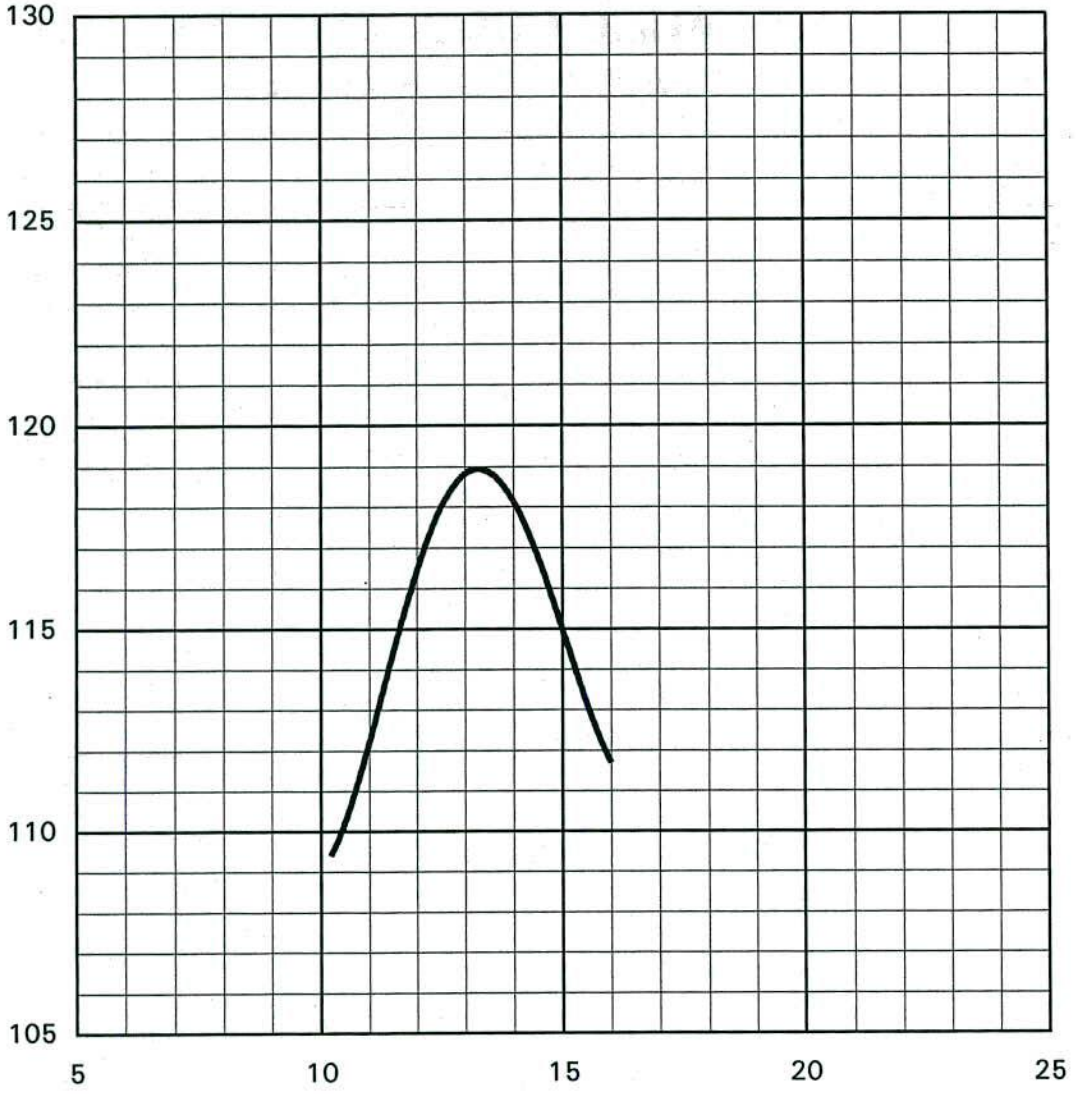
Remarks:
Depth: 4.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 16

Dry Density vs. Moisture Content



SAMPLE NO.:	BS-1	ASTM Spec.	Blows/ Layer	No. of Layers:	Wt. of Hammer; lbs	Mold Dia., in.	Borrow Location
Natural Moisture Content, %	14.5	D-698	25	3	5.5	3.998	Bulk Sample
Optimum Moisture Content, %	13.2						
Maximum Dry Density, pcf	119.0						

Depth/ Elev.	Classification	PI	LL	PL	% > #200 sieve	% > 3/4" sieve
-4.0'	Dark gray brown silty clayey sand (SC-SM)	5	23	18	55.7	8.5

Remarks: Fines classify as CL-ML

GEO-HYDRO

Project:
SCS - Huffaker Road

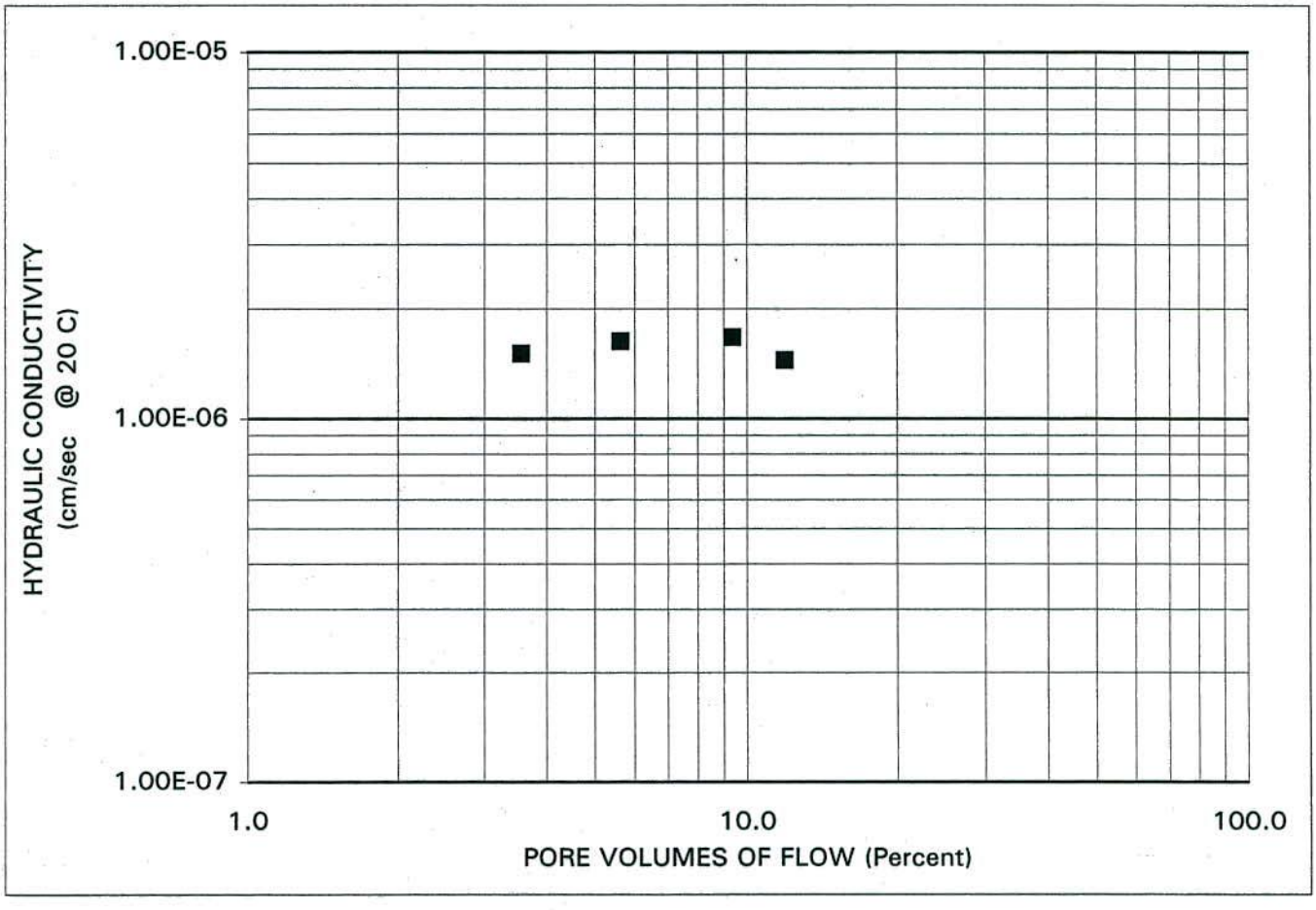
Geo-Hydro Project No.:	Contract No.:	Date:
117-01-55440		10/22/01

Compaction Test Report

GEOHYDRO

HYDRAULIC CONDUCTIVITY
LABORATORY TEST RESULTS

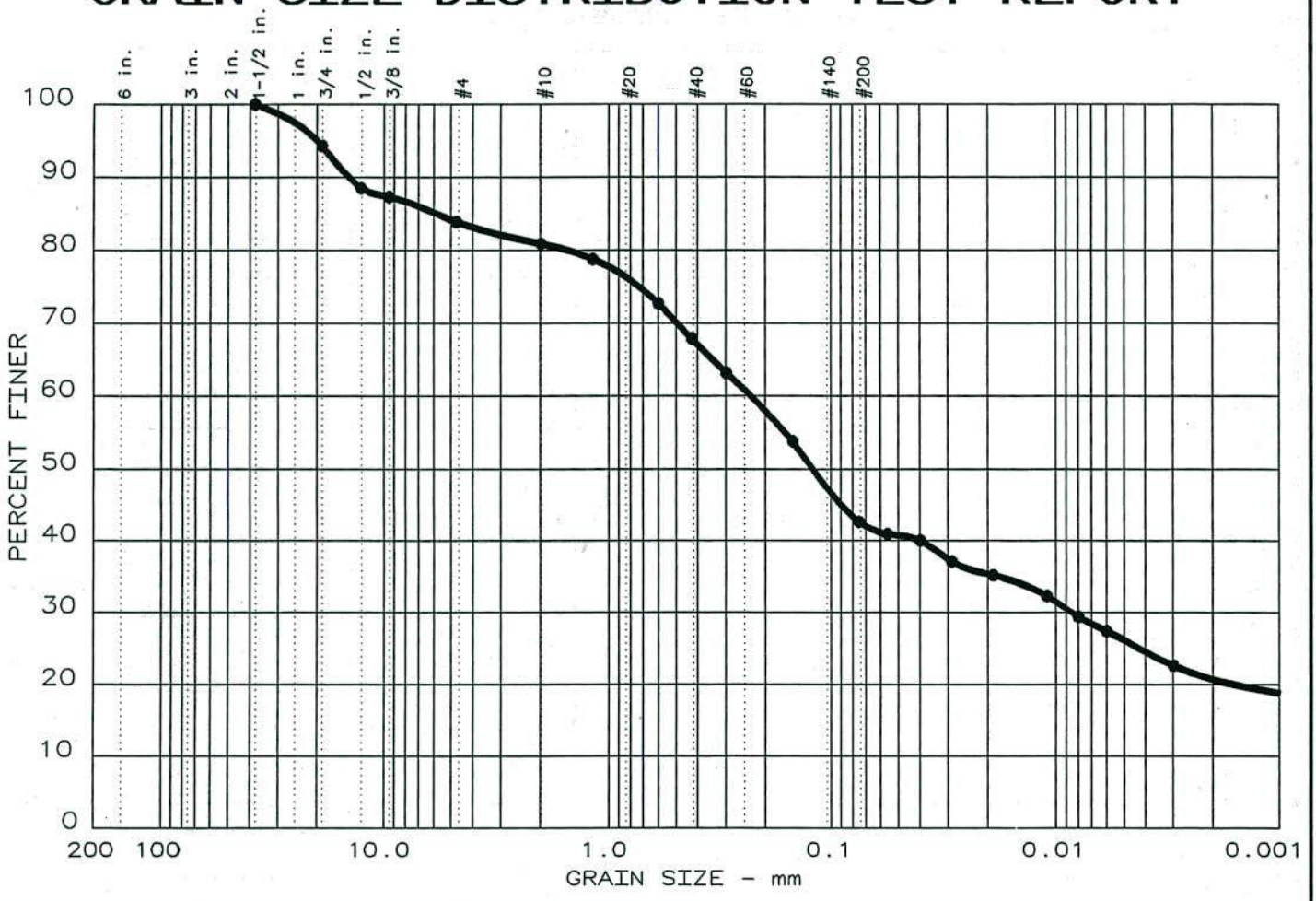
Project Name:	SCS-Huffaker Rd.	**Date:**	11/1/01
Project Number:	117 - 01 - 55440	**Test Method:**	ASTM D - 5084
Sample Location:	BS-1	**Sample Depth:**	4 ft
Sample Description:	Dark gray brown silty clayey sand (SC-SM)		



Specimen Parameters	Before Saturation	After Permeation
Specimen Diameter (cm)	7.28	7.28
Specimen Length (cm)	7.61	7.61
Moisture Content (%)	13.3	17.6
Dry Unit Weight (pcf)	113.3	113.3
Specific Gravity	2.67	2.67
Void Ratio	0.471	0.471
Porosity (%)	32.0	32.0
Saturation (%)	75.6	100.0

Sample Preparation Method	Remolded Sample
Magnitude of Total Backpressure (psi)	100.0
Type of Permeant Liquid Used	Deaired water
Maximum Effective Consolidation Stress (psi)	3.0
Minimum Effective Consolidation Stress (psi)	3.0
Range of Hydraulic Gradient Used	13.0
Hydraulic Conductivity (cm/sec @ 20° C)	**1.6E-06**

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	16.1	41.3	16.5	26.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	28	8	5.82	0.232	0.120	0.0085				

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark tan brown clayey sand with gravel	SC	

Project No.: 111-01-55440
Project: SCS-Huffaker Road
● Location: BS-2

Date: 10/26/01

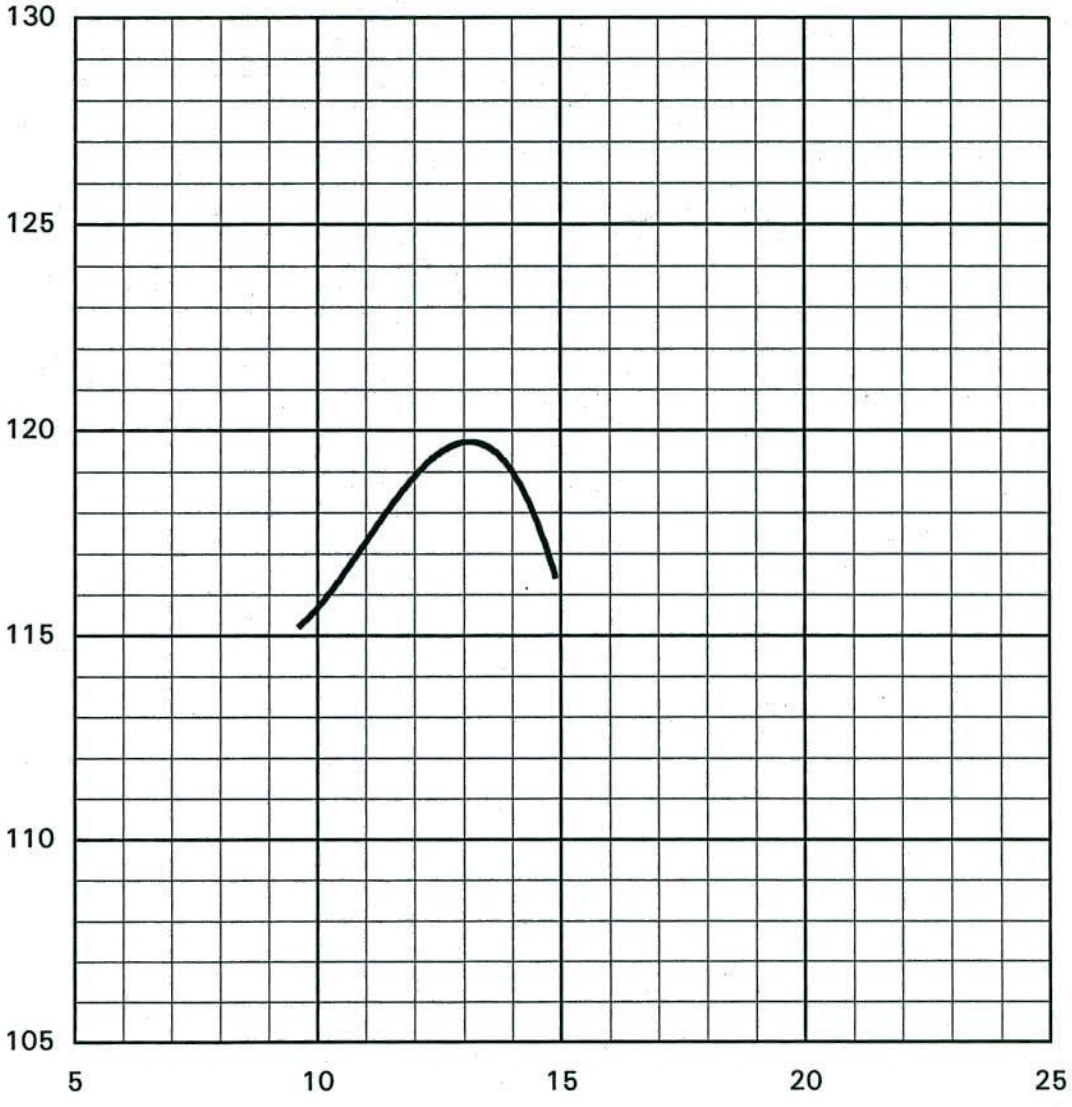
Remarks:
Depth: 1.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 17

Dry Density vs. Moisture Content



SAMPLE NO.:	BS-2	ASTM Spec.	Blows/ Layer	No. of Layers:	Wt. of Hammer; lbs	Mold Dia., in.	Borrow Location
Natural Moisture Content, %	17.9	D-698	25	3	5.5	3.998	Bulk Sample
Optimum Moisture Content, %	13.0						
Maximum Dry Density, pcf	119.6						

Depth/ Elev.	Classification	PI	LL	PL	% > #200 sieve	% > 3/4" sieve
-1.0'	Dark tan brown clayey sand w/ gravel (SC)	8	28	20	57.4	5.7

Remarks: Fines classify as CL

GEOHYDRO

Project: SCS - Huffaker Road

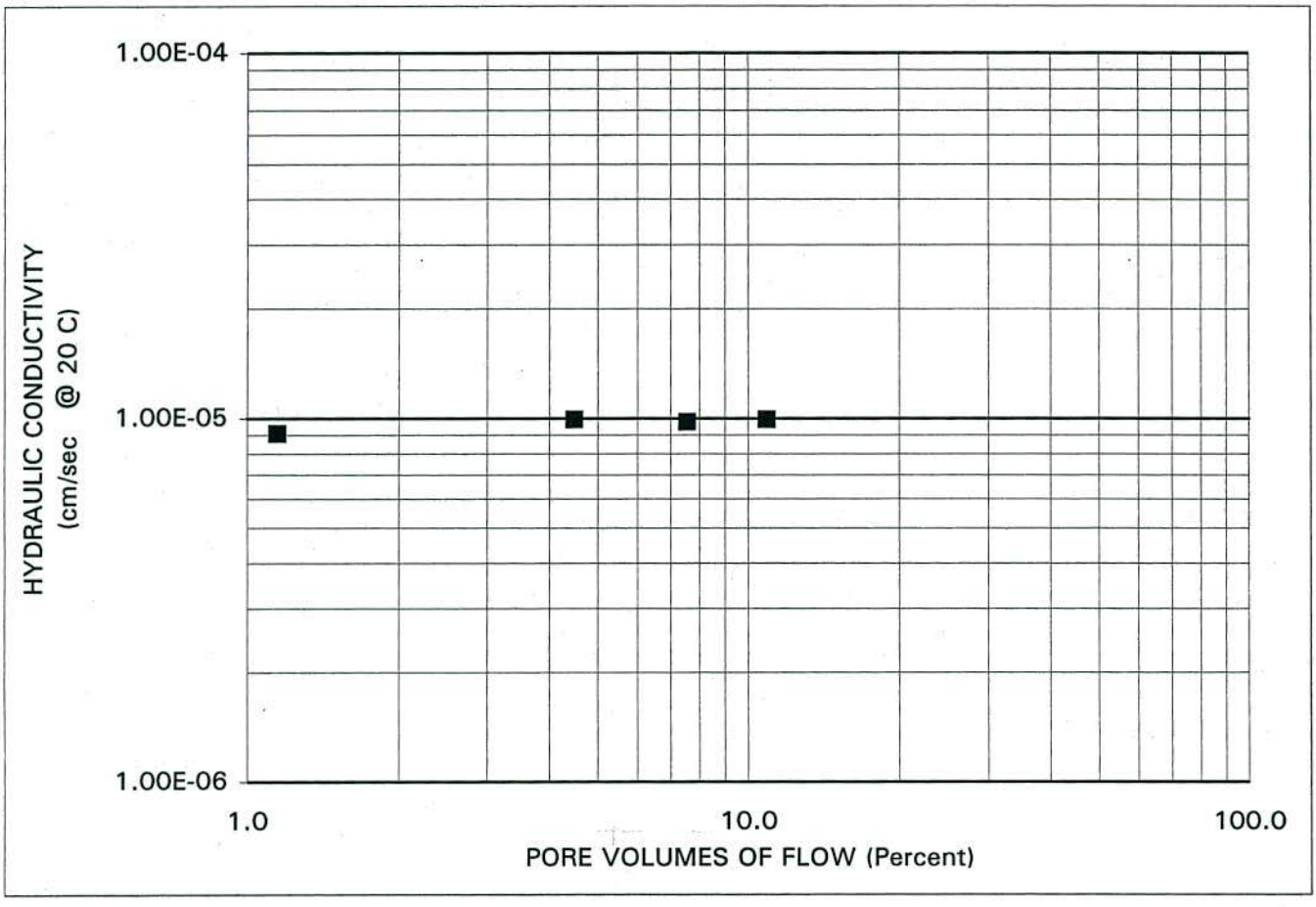
Geo-Hydro Project No.:	Contract No.:	Date:
117-01-55440		10/22/01

Compaction Test Report

GEOHYDRO

HYDRAULIC CONDUCTIVITY
LABORATORY TEST RESULTS

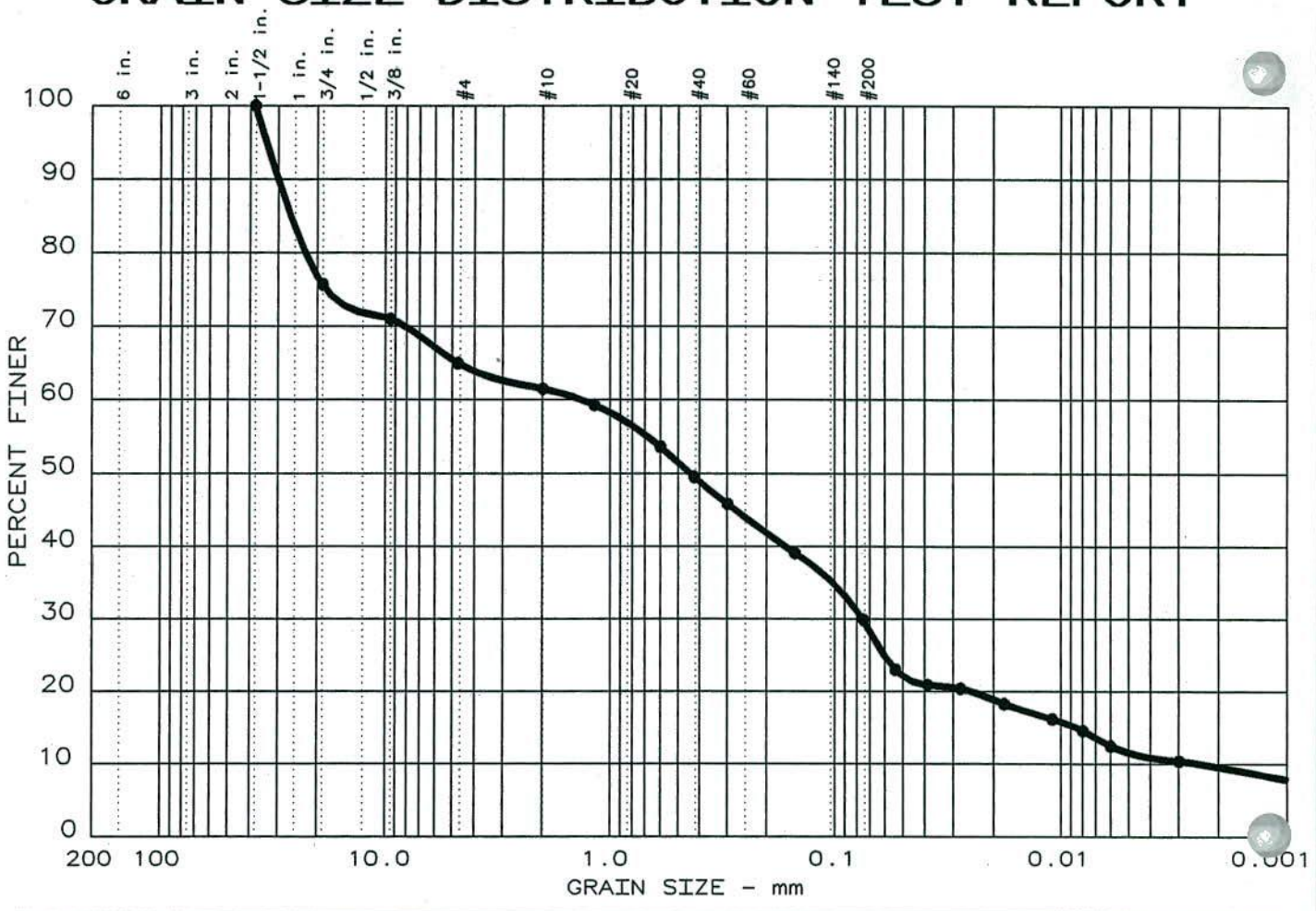
Project Name:	SCS-Huffaker Rd.	**Date:**	11/1/01
Project Number:	117 - 01 - 55440	**Test Method:**	ASTM D - 5084
Sample Location:	BS-2	**Sample Depth:**	1 ft
Sample Description:	Dark tan brown clayey sand w/ gravel (SC)		



Specimen Parameters	Before Saturation	After Permeation
Specimen Diameter (cm)	7.28	7.28
Specimen Length (cm)	7.61	7.61
Moisture Content (%)	13.3	18.1
Dry Unit Weight (pcf)	113.6	113.6
Specific Gravity	2.72	2.72
Void Ratio	0.494	0.494
Porosity (%)	33.0	33.0
Saturation (%)	73.3	100.0

Sample Preparation Method	Remolded Sample
Magnitude of Total Backpressure (psi)	100.0
Type of Permeant Liquid Used	Deaired water
Maximum Effective Consolidation Stress (psi)	3.0
Minimum Effective Consolidation Stress (psi)	3.0
Range of Hydraulic Gradient Used	13.0
Hydraulic Conductivity (cm/sec @ 20° C)	**9.7E-06**

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	35.0	35.1	18.3	11.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	26	9	26.3	1.33	0.442	0.0750	0.0085	0.0024	1.78	562.3

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark tan brown silty sand with gravel	SM	

Project No.: 111-01-55440
Project: SCS-Huffaker Road
● Location: BS-2

Date: 10/26/01

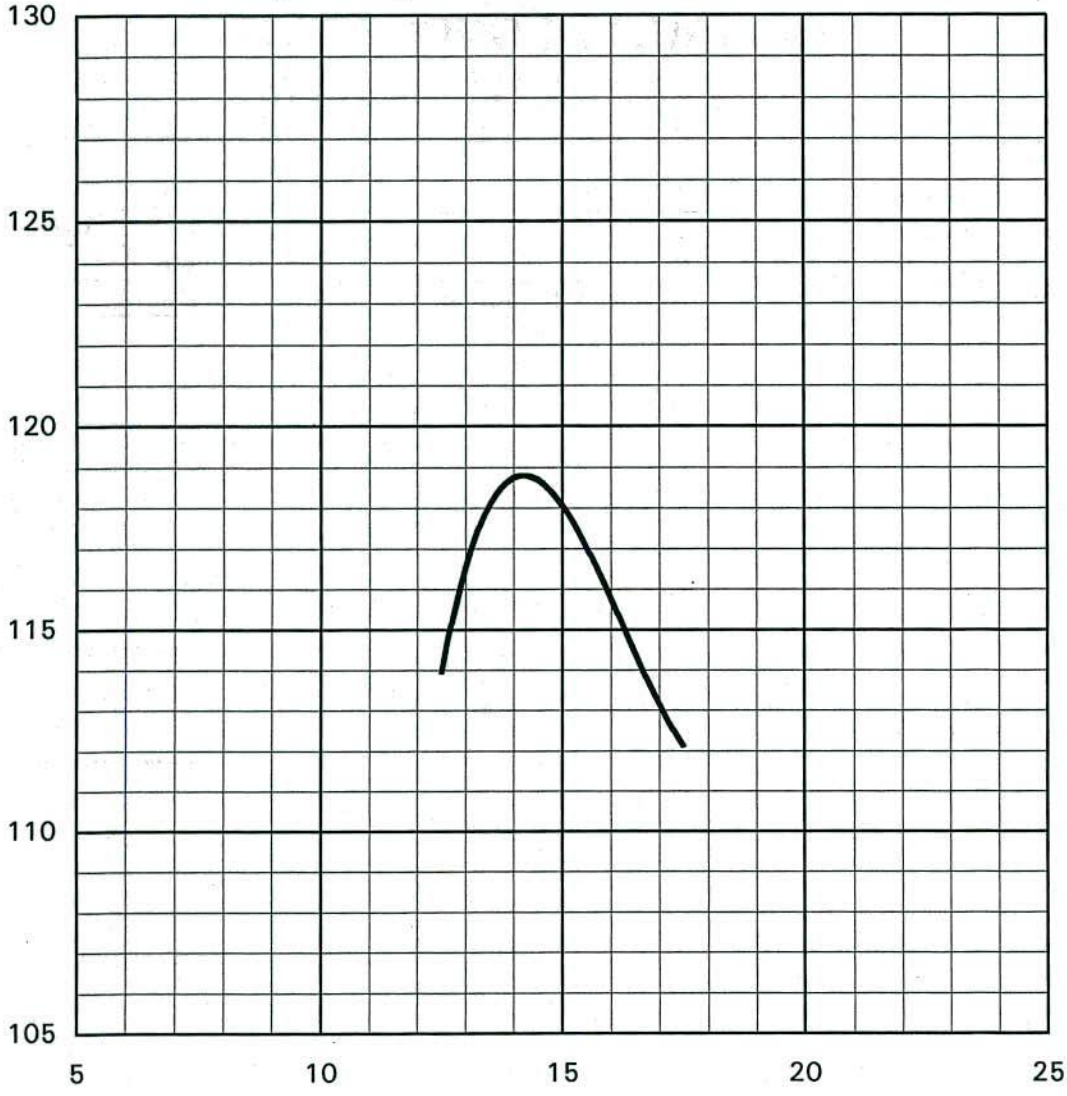
Remarks:
Depth: 4.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 18

Dry Density vs. Moisture Content



SAMPLE NO.:	BS-2	ASTM Spec.	Blows/ Layer	No. of Layers:	Wt. of Hammer; lbs	Mold Dia., in.	Borrow Location
Natural Moisture Content, %	14.2	D-698	25	3	5.5	3.998	Bulk Sample
Optimum Moisture Content, %	14.1						
Maximum Dry Density, pcf	118.8						

Depth/ Elev.	Classification	PI	LL	PL	% > #200 sieve	% > 3/4" sieve
-4.0'	Dark tan brown silty sand with gravel (SM)	9	26	17	70.1	24.3

Remarks: Fines classify as CL

GEO-HYDRO

Project: SCS - Huffaker Road

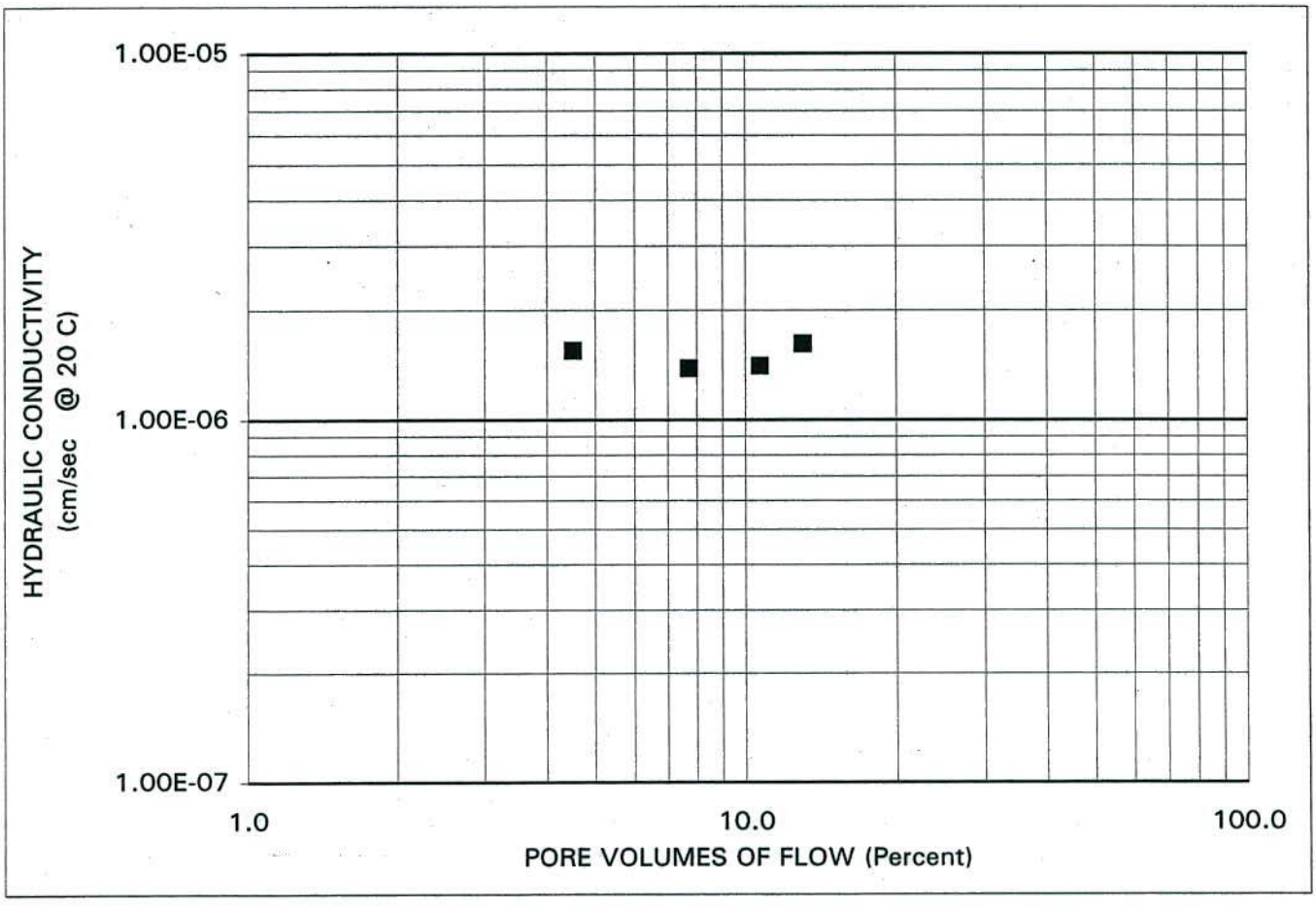
Geo-Hydro Project No.:	Contract No.:	Date:
117-01-55440		10/22/01

Compaction Test Report

GEOHYDRO

HYDRAULIC CONDUCTIVITY
LABORATORY TEST RESULTS

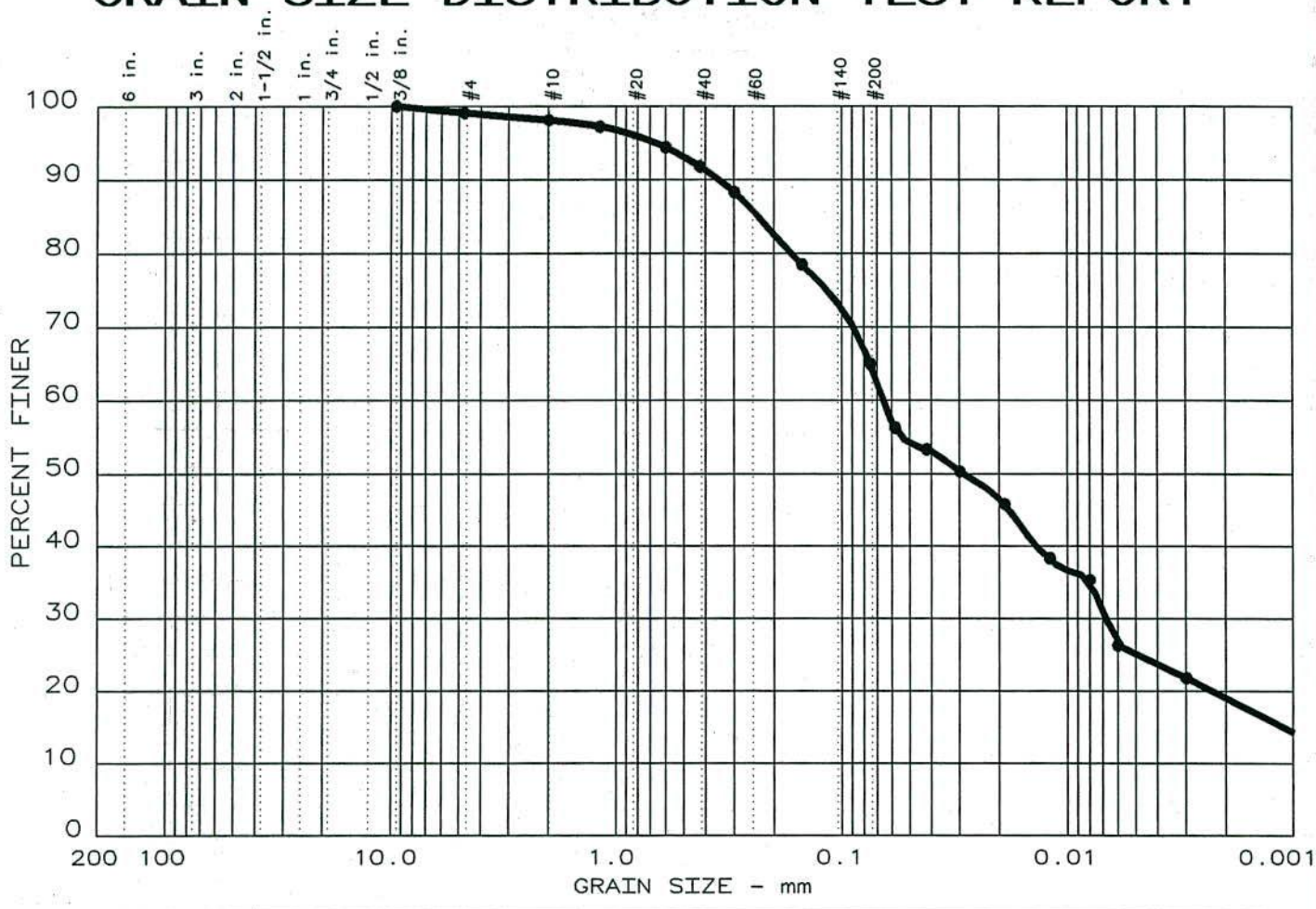
Project Name:	SCS-Huffaker Rd.	**Date:**	11/1/01
Project Number:	117 - 01 - 55440	**Test Method:**	ASTM D - 5084
Sample Location:	BS-2	**Sample Depth:**	4 ft
Sample Description:	Dark tan brown silty sand w/ gravel (SM)		



Specimen Parameters	Before Saturation	After Permeation
Specimen Diameter (cm)	7.29	7.29
Specimen Length (cm)	7.61	7.61
Moisture Content (%)	14.1	18.5
Dry Unit Weight (pcf)	112.9	112.9
Specific Gravity	2.72	2.72
Void Ratio	0.504	0.504
Porosity (%)	33.5	33.5
Saturation (%)	76.2	100.0

Sample Preparation Method	Remolded Sample
Magnitude of Total Backpressure (psi)	100.0
Type of Permeant Liquid Used	Deaired water
Maximum Effective Consolidation Stress (psi)	3.0
Minimum Effective Consolidation Stress (psi)	3.0
Range of Hydraulic Gradient Used	18.0
Hydraulic Conductivity (cm/sec @ 20° C)	**1.5E-06**

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.9	34.1	39.9	25.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	25	7	0.232		0.0288	0.0068	0.0011			

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark gray brown sandy silty clay	CL-ML	

Project No.: 111-01-55440
Project: SCS-Huffaker Road
● Location: BS-3

Date: 10/26/01

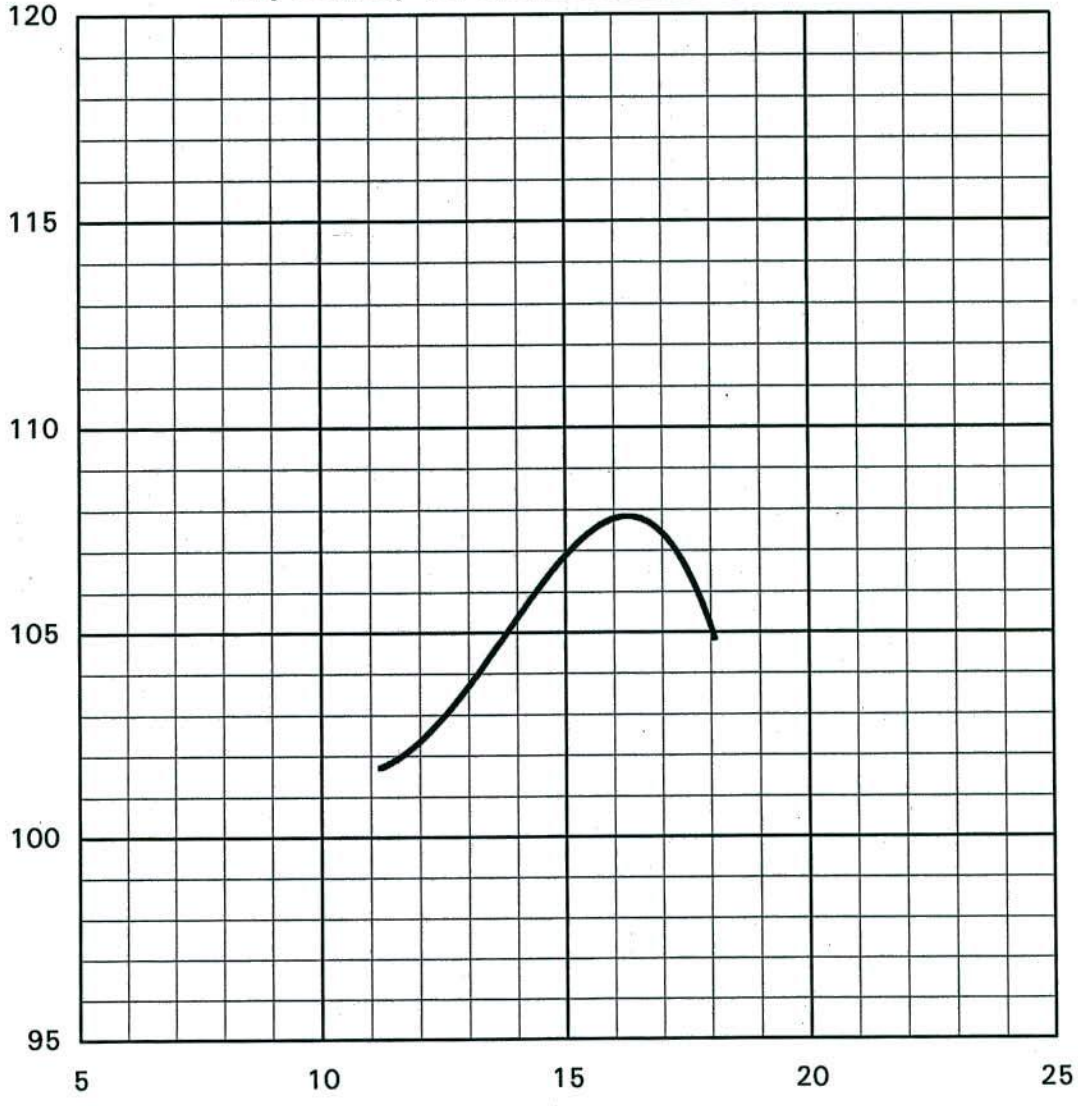
Remarks:
Depth: 2.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 19

Dry Density vs. Moisture Content



SAMPLE NO.:	BS-3	ASTM Spec.	Blows/ Layer	No. of Layers:	Wt. of Hammer; lbs	Mold Dia., in.	Borrow Location
Natural Moisture Content, %	13.2	D-698	25	3	5.5	3.998	Bulk Sample
Optimum Moisture Content, %	16.2						
Maximum Dry Density, pcf	107.8						

Depth/ Elev.	Classification	PI	LL	PL	% > #200 sieve	% > 3/4" sieve
-2.0'	Dark gray brown sandy silty clay (CL-ML)	7	25	18	35.0	0.0

Remarks: Fines classify as CL-ML

GEO-HYDRO

Project:
SCS - Huffaker Road

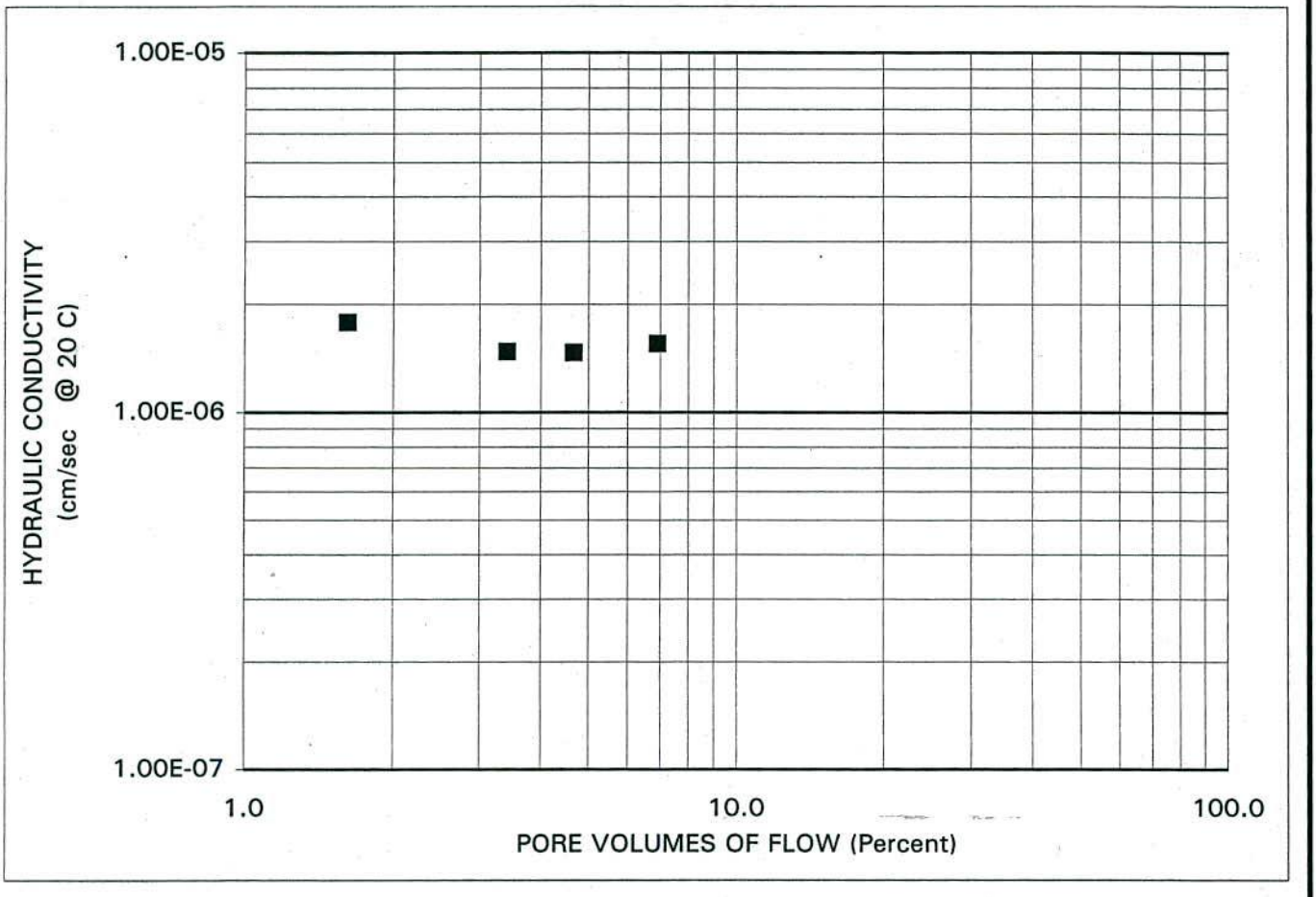
Geo-Hydro Project No.:	Contract No.:	Date:
117-01-55440		10/22/01

Compaction Test Report

GEOHYDRO

HYDRAULIC CONDUCTIVITY
LABORATORY TEST RESULTS

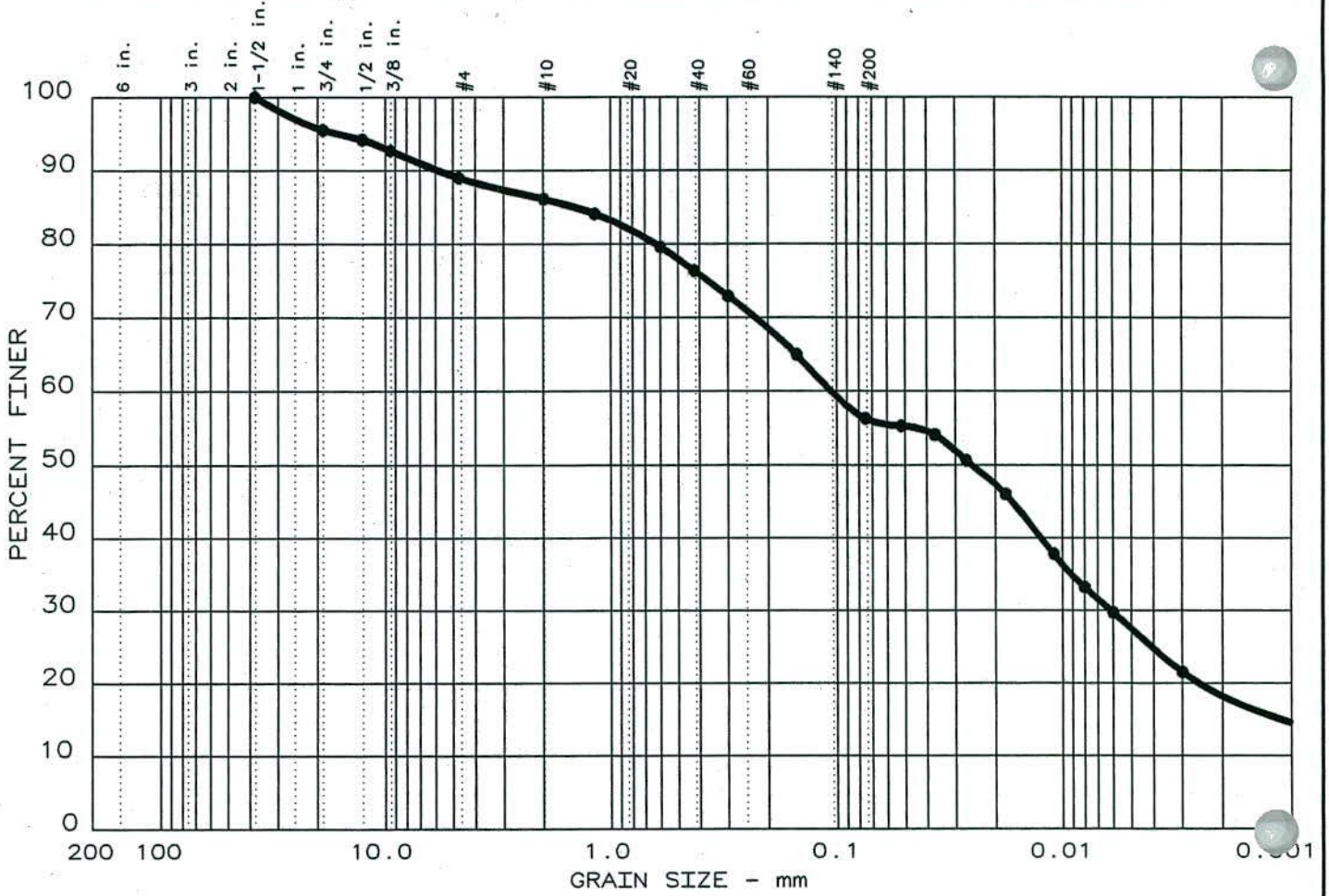
Project Name:	SCS-Huffaker Rd.	**Date:**	11/1/01
Project Number:	117 - 01 - 55440	**Test Method:**	ASTM D - 5084
Sample Location:	BS-3	**Sample Depth:**	2 ft
Sample Description:	Dark gray brown sandy silty clay (CL-ML)		



Specimen Parameters	Before Saturation	After Permeation
Specimen Diameter (cm)	7.29	7.29
Specimen Length (cm)	7.60	7.60
Moisture Content (%)	16.3	21.4
Dry Unit Weight (pcf)	102.4	102.4
Specific Gravity	2.53	2.53
Void Ratio	0.542	0.542
Porosity (%)	35.1	35.1
Saturation (%)	76.1	100.0

Sample Preparation Method	Remolded Sample
Magnitude of Total Backpressure (psi)	100.0
Type of Permeant Liquid Used	Deaired water
Maximum Effective Consolidation Stress (psi)	3.0
Minimum Effective Consolidation Stress (psi)	3.0
Range of Hydraulic Gradient Used	13.0
Hydraulic Conductivity (cm/sec @ 20° C)	**1.6E-06**

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	11.0	32.7	28.9	27.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	23	6	1.41	0.106	0.0254	0.0061	0.0011			

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark gray brown sandy silty clay	CL-ML	

Project No.: 111-01-55440
Project: SCS-Huffaker Road
● Location: BS-4

Date: 10/26/01

Remarks:

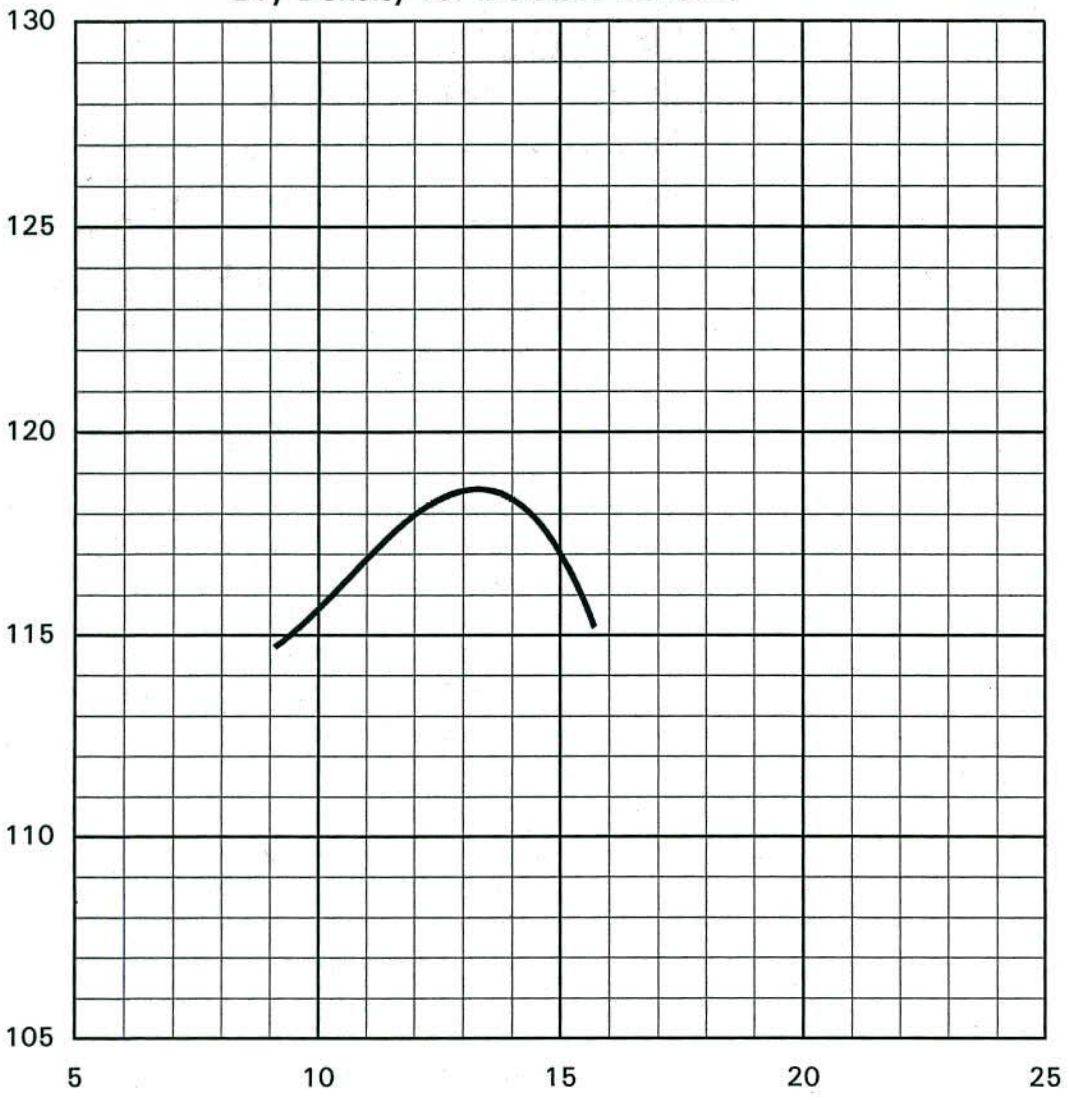
Depth: 2.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 20

Dry Density vs. Moisture Content



SAMPLE NO.:	BS-4	ASTM Spec.	Blows/ Layer	No. of Layers:	Wt. of Hammer; lbs	Mold Dia., in.	Borrow Location
Natural Moisture Content, %	11.8	D-698	25	3	5.5	3.998	Bulk Sample
Optimum Moisture Content, %	13.2						
Maximum Dry Density, pcf	118.4						

Depth/ Elev.	Classification	PI	LL	PL	% > #200 sieve	% > 3/4" sieve
-2.0'	Dark gray brown sandy silty clay (CL-ML)	6	23	17	43.7	4.5

Remarks: Fines classify as CL-ML

GEO-HYDRO

Project: SCS - Huffaker Road

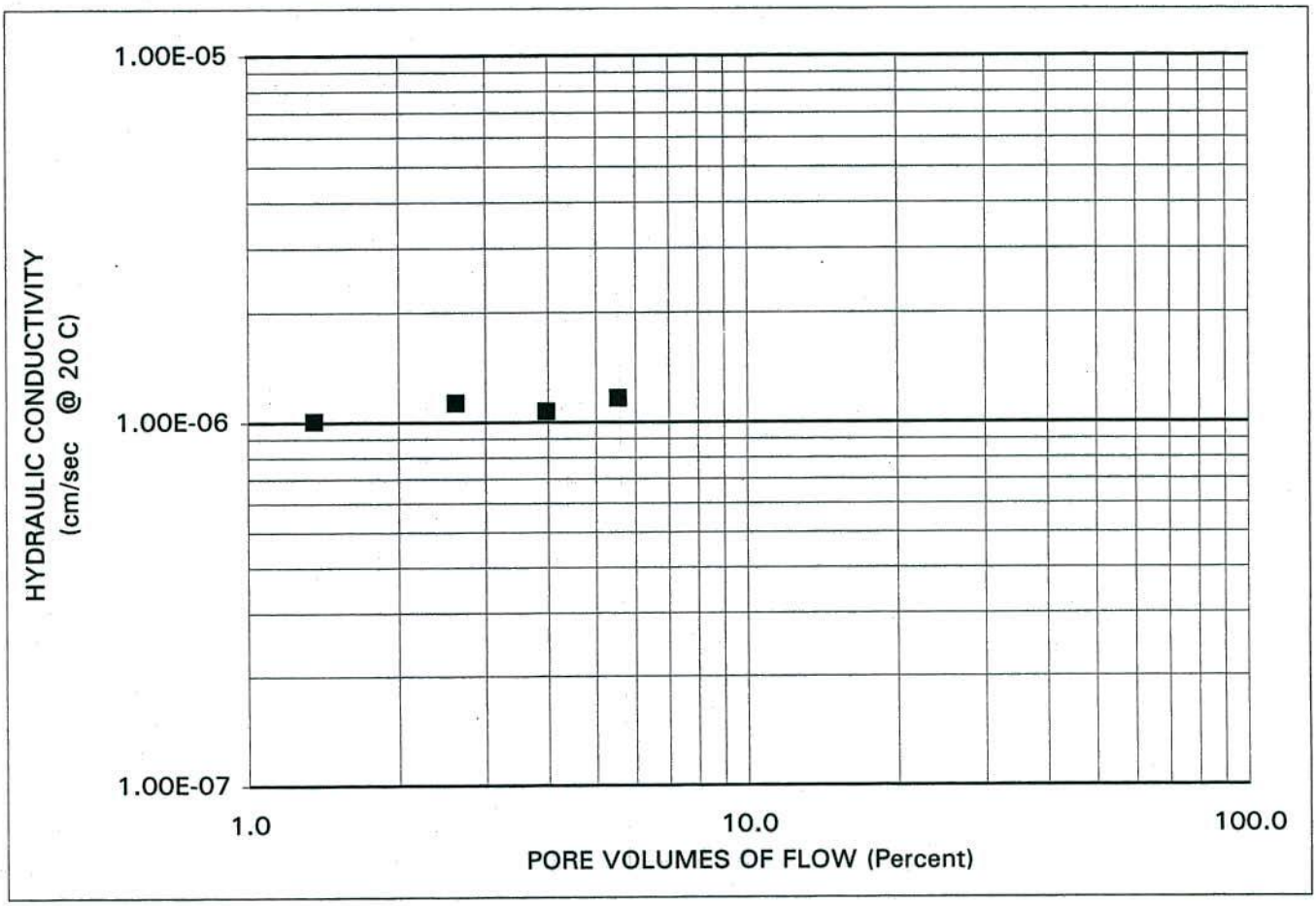
Geo-Hydro Project No.:	Contract No.:	Date:
117-01-55440		10/22/01

Compaction Test Report

GEO-HYDRO

HYDRAULIC CONDUCTIVITY
LABORATORY TEST RESULTS

Project Name:	SCS-Huffaker Rd.	**Date:**	11/1/01
Project Number:	117 - 01 - 55440	**Test Method:**	ASTM D - 5084
Sample Location:	BS-4	**Sample Depth:**	2 ft
Sample Description:	Dark gray brown sandy silty clay (CL-ML)		



Specimen Parameters	Before Saturation	After Permeation
Specimen Diameter (cm)	7.29	7.29
Specimen Length (cm)	7.61	7.61
Moisture Content (%)	13.3	16.7
Dry Unit Weight (pcf)	104.9	104.9
Specific Gravity	2.58	2.58
Void Ratio	0.355	0.355
Porosity (%)	26.2	26.2
Saturation (%)	96.9	100.0

Sample Preparation Method	Remolded Sample
Magnitude of Total Backpressure (psi)	100.0
Type of Permeant Liquid Used	Deaired water
Maximum Effective Consolidation Stress (psi)	3.0
Minimum Effective Consolidation Stress (psi)	3.0
Range of Hydraulic Gradient Used	13.0
Hydraulic Conductivity (cm/sec @ 20° C)	**1.1E-06**

GEOHYDRO

CORPORATE OFFICE

1000 Cobb Place Boulevard
Suite 290
Kennesaw, Georgia 30144-3684
(770) 426-7100

BRANCH OFFICES

259 Wynburn Avenue
Suite D
Athens, GA 30601-1952
(706) 548-7170

100 East Callahan St.
Suite E
Rome, GA 30161-5400
(706) 234-0696

LETTER OF TRANSMITTAL

TO: Southern Company Services
241 Ralph McGill Blvd.
Bin# 10160
Atlanta,GA 30308

DATE: 10/16/01

Our Number: 117-01-55440

ATTENTION: Mr. Gary McWhorter

RE: Geotechnical Lab Testing
Huffaker Rd.

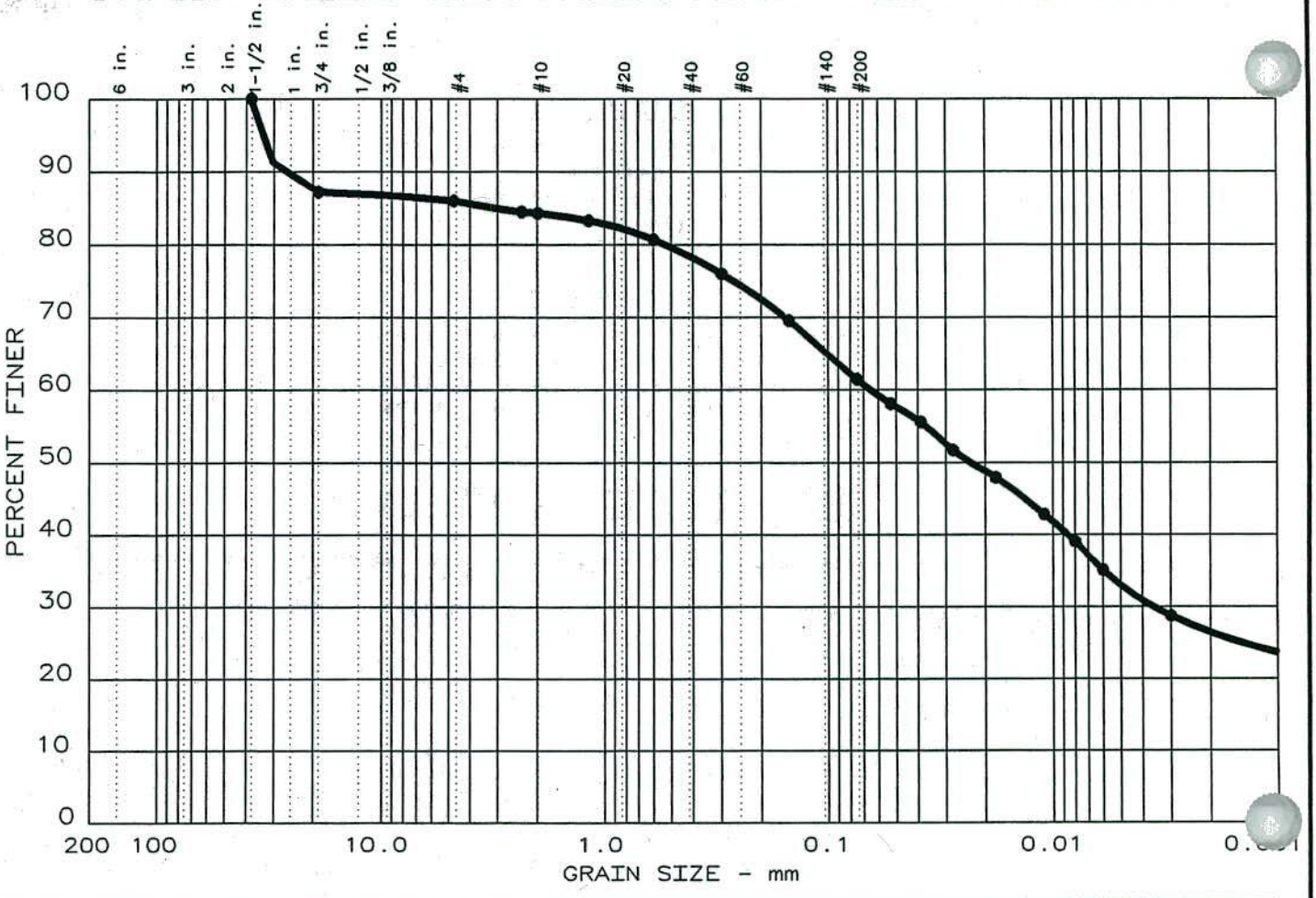
We are sending you:

Copies		*DESCRIPTION*
9	√	Sieve Analysis with hydrometer
5	√	Sieve Analysis

REMARKS: Results for the requested analysis. Call me if you have any questions.

Signed: Michael C. Woody

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	14.0	24.5	28.5	33.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	2.99		0.0232	0.0036				

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark tan brown silty clay with sand	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-4 Jar S1

Date: 10/08/01

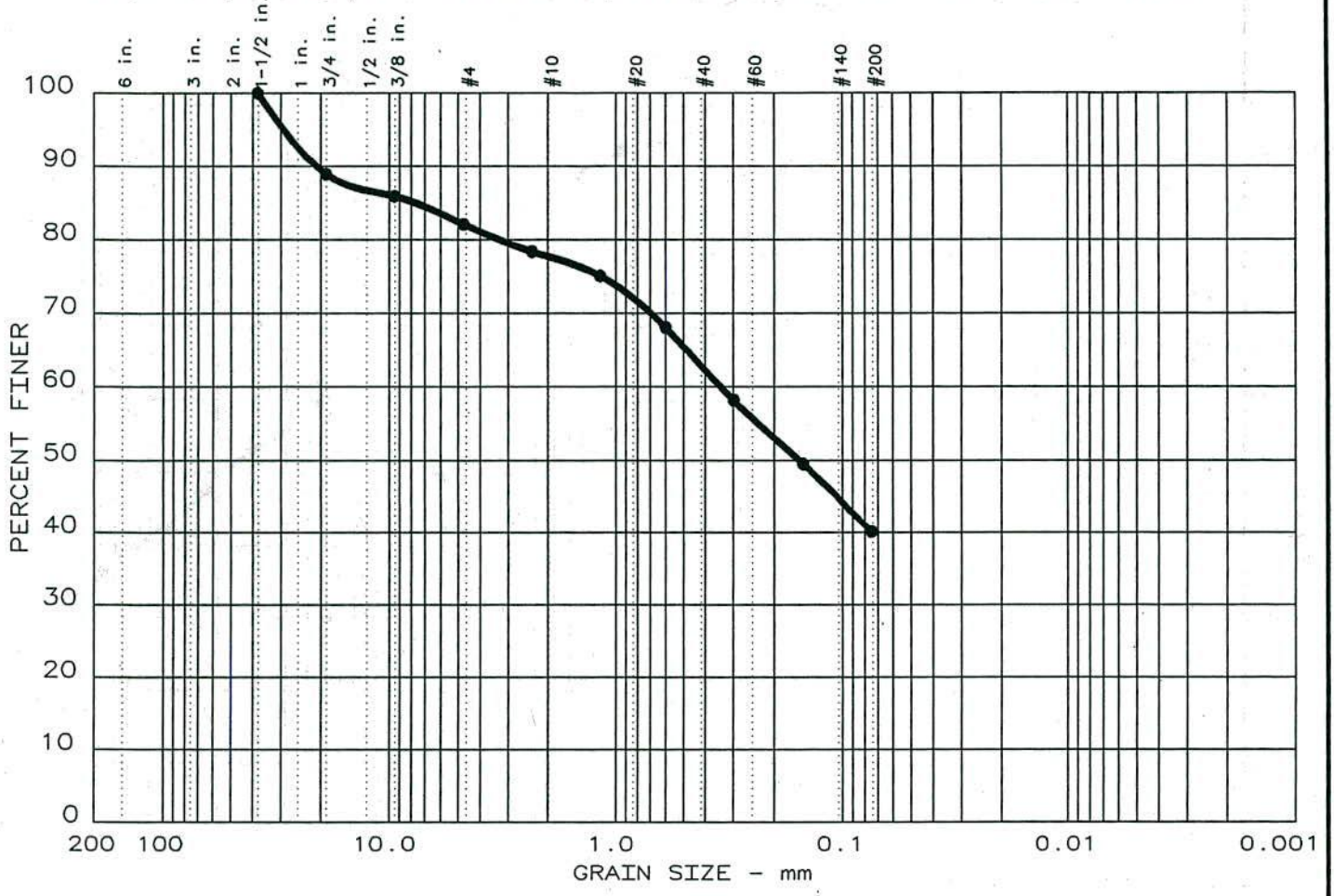
Remarks:
Depth : 0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 1

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	17.9	42.0	40.1	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	7.50	0.339	0.155					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan brown silty sand w/ gravel	SM	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-5 Jar S1

Date: 10/08/01

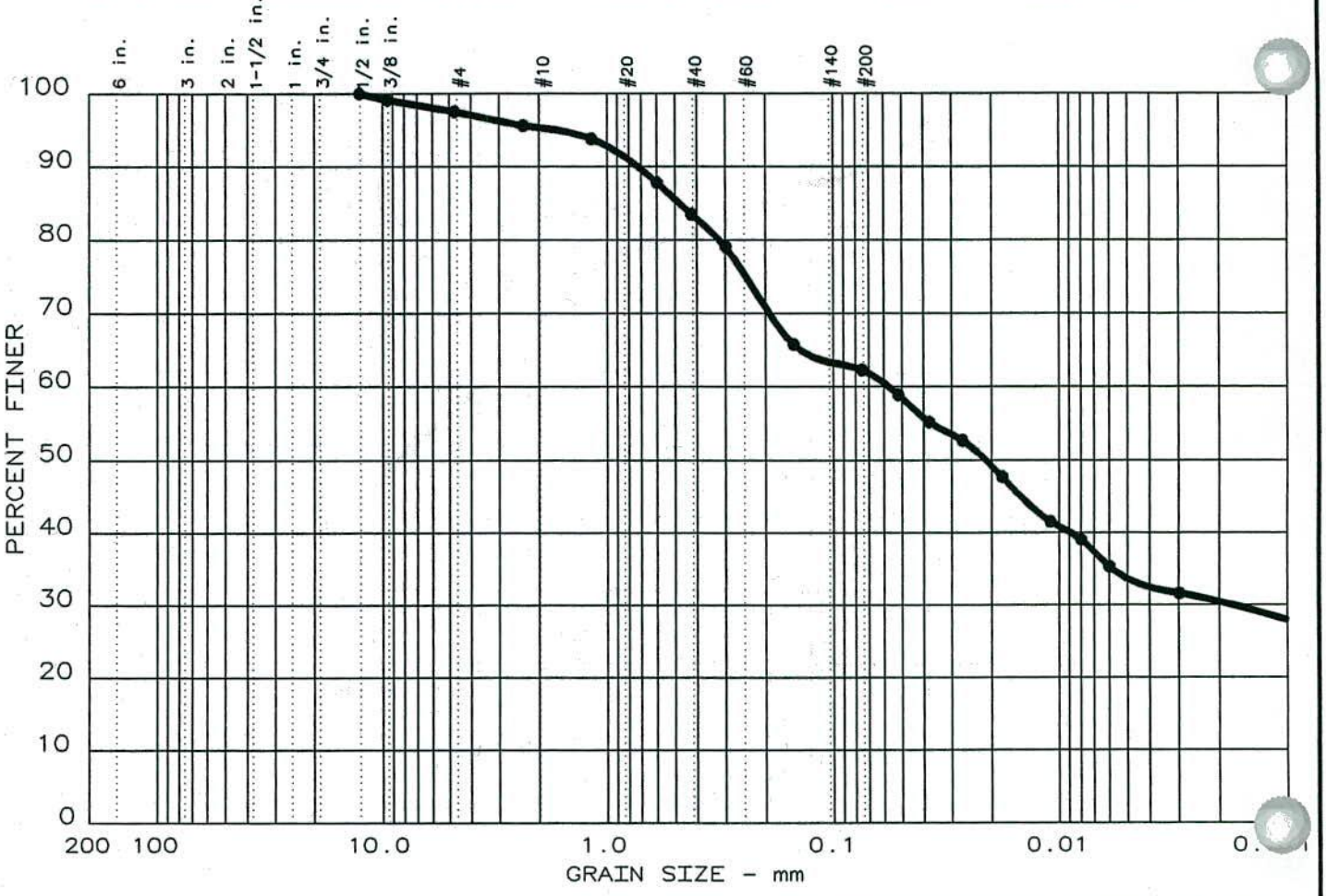
Remarks:
Depth : 0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 2

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	2.5	35.2	28.7	33.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	0.473		0.0211	0.0017				

MATERIAL DESCRIPTION	USCS	AASHTO
● Gray brown sandy silty clay	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-5 Jar S2

Date: 10/08/01

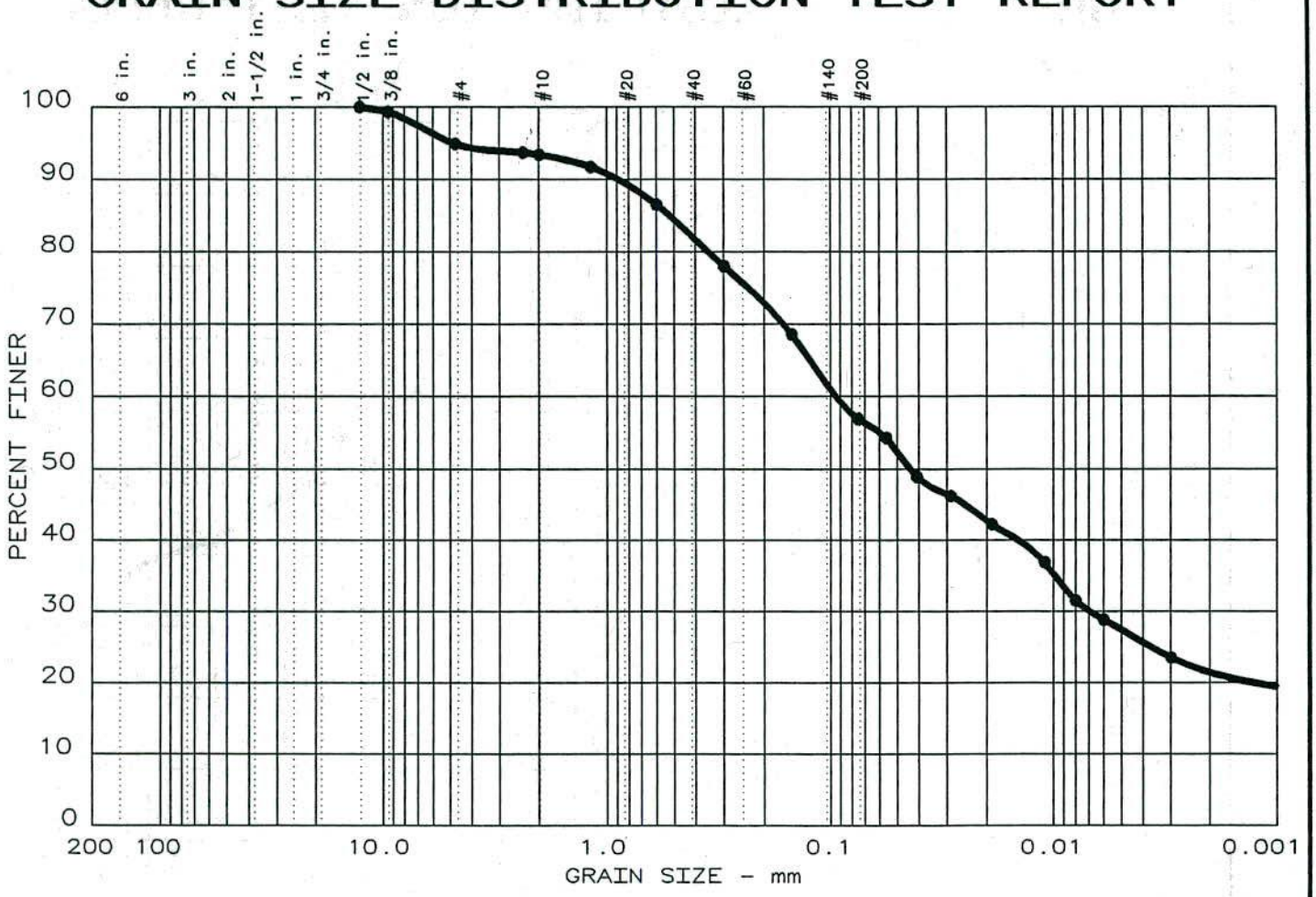
Remarks:
Depth : 3.5 to 5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 3

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	5.1	38.0	29.5	27.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	0.519	0.0933	0.0437	0.0069				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan brown sandy silt	ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-6 Jar S1

Date: 10/08/01

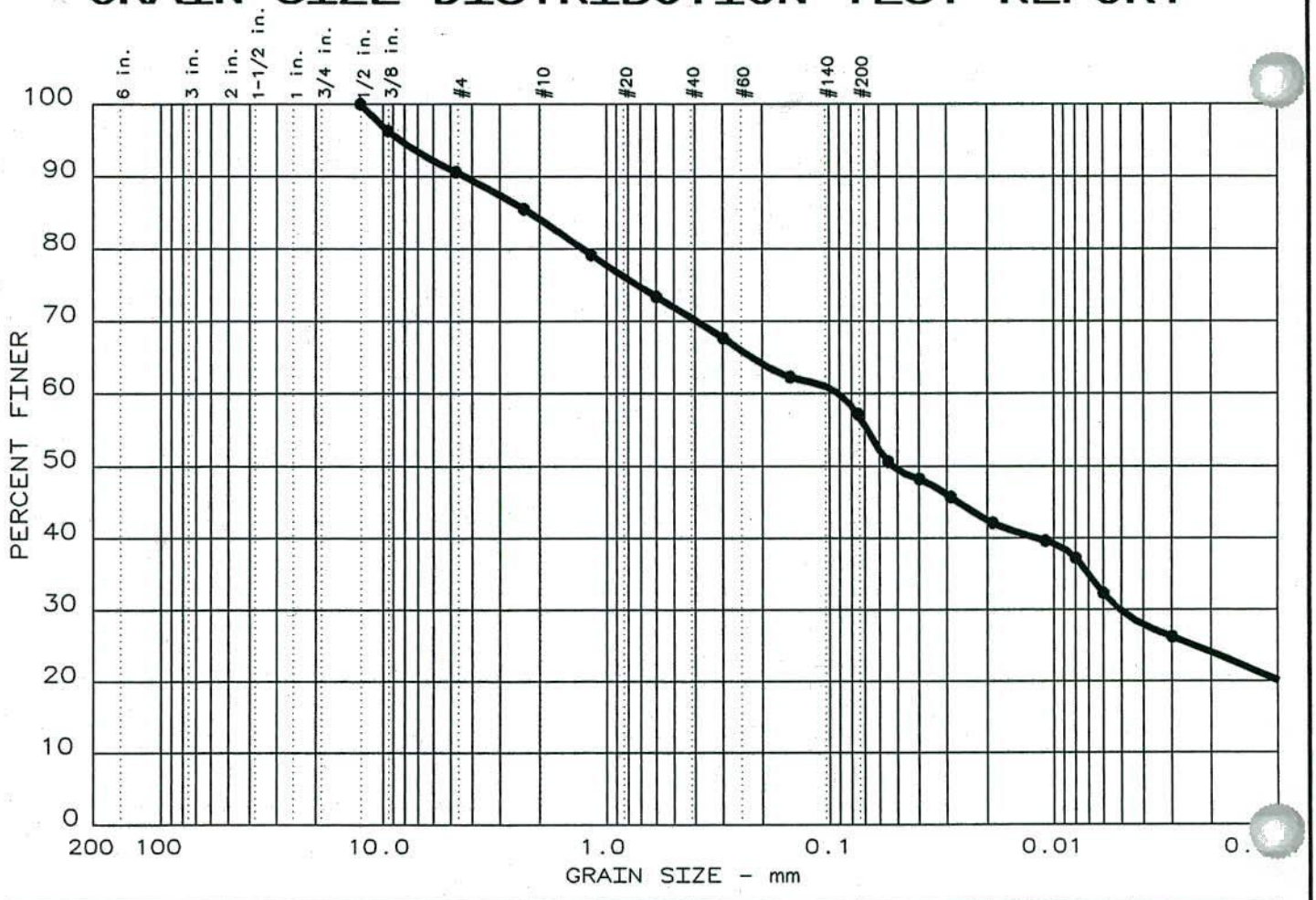
Remarks:
Depth : 0.0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 4

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	9.4	33.4	27.4	29.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	2.21	0.0912	0.0525	0.0051				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan gray brown sandy silty clay	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-7 Jar S1

Date: 10/10/01

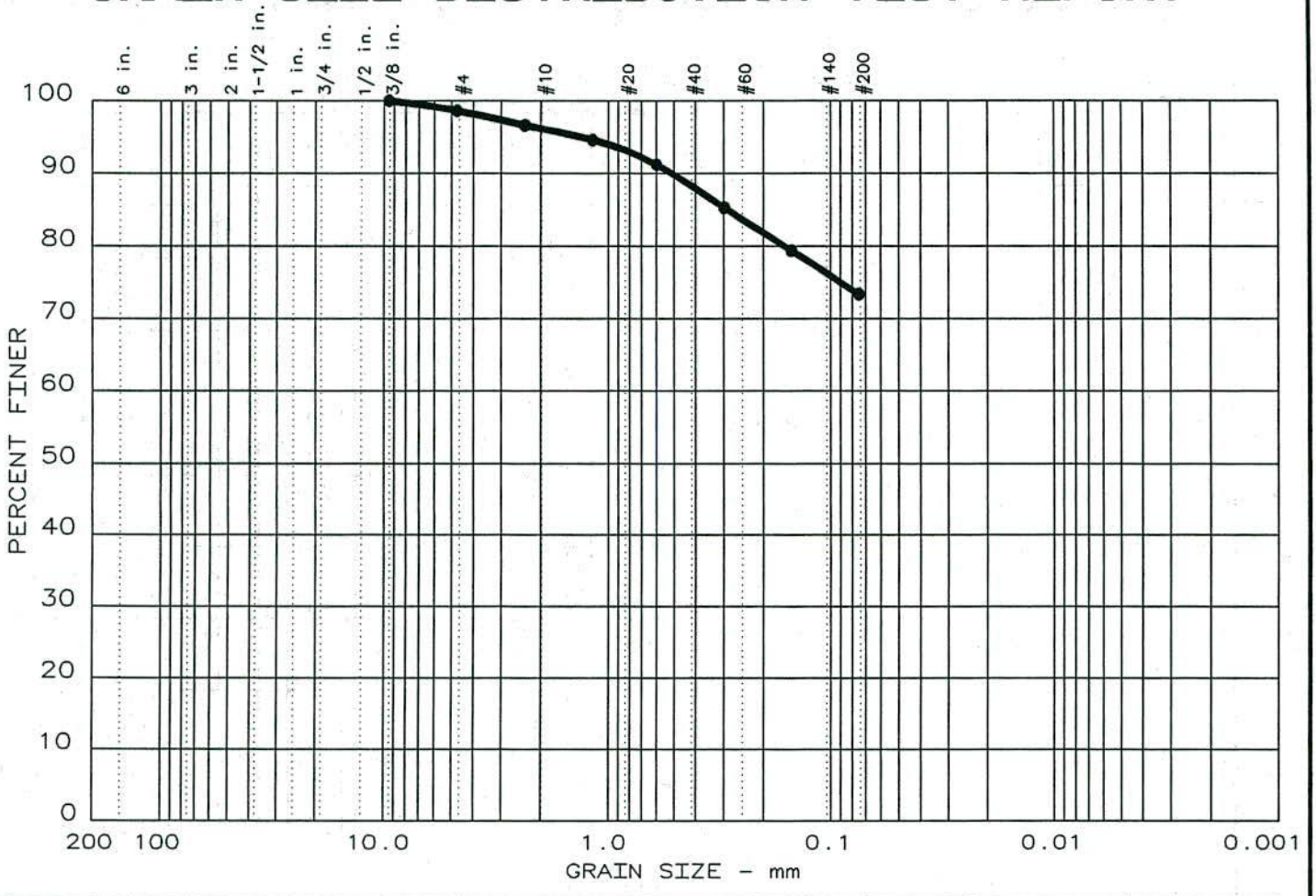
Remarks:
Depth: 0.0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 5

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	1.4	25.2	73.4	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	0.288							

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan gray brown silty clay with sand	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-7 Jar S2

Date: 10/10/01

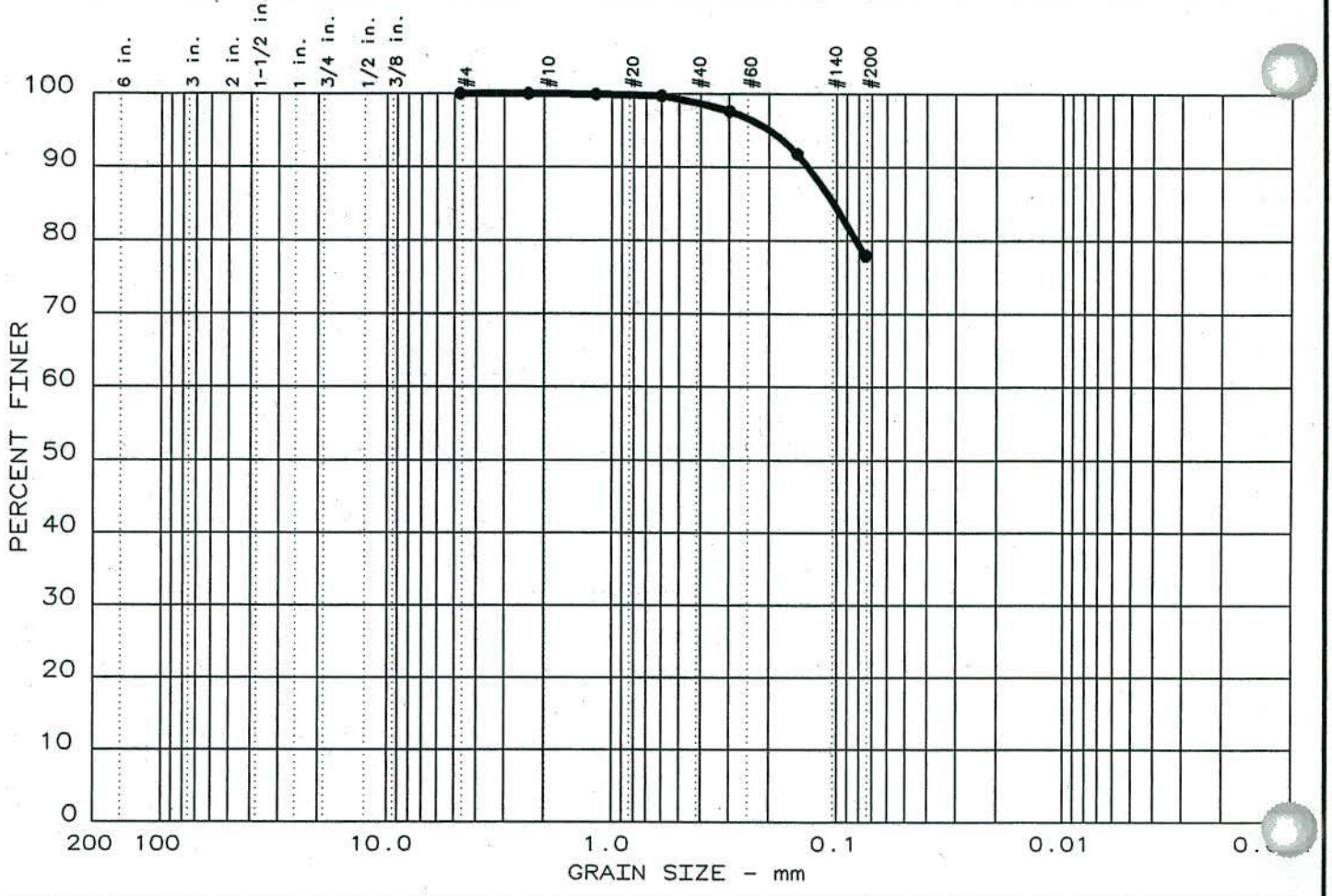
Remarks:
Depth: 3.5 to 5.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 6

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	22.0	78.0	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	0.102							

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark brown silty clay with sand	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-8 Jar S1

Date: 10/10/01

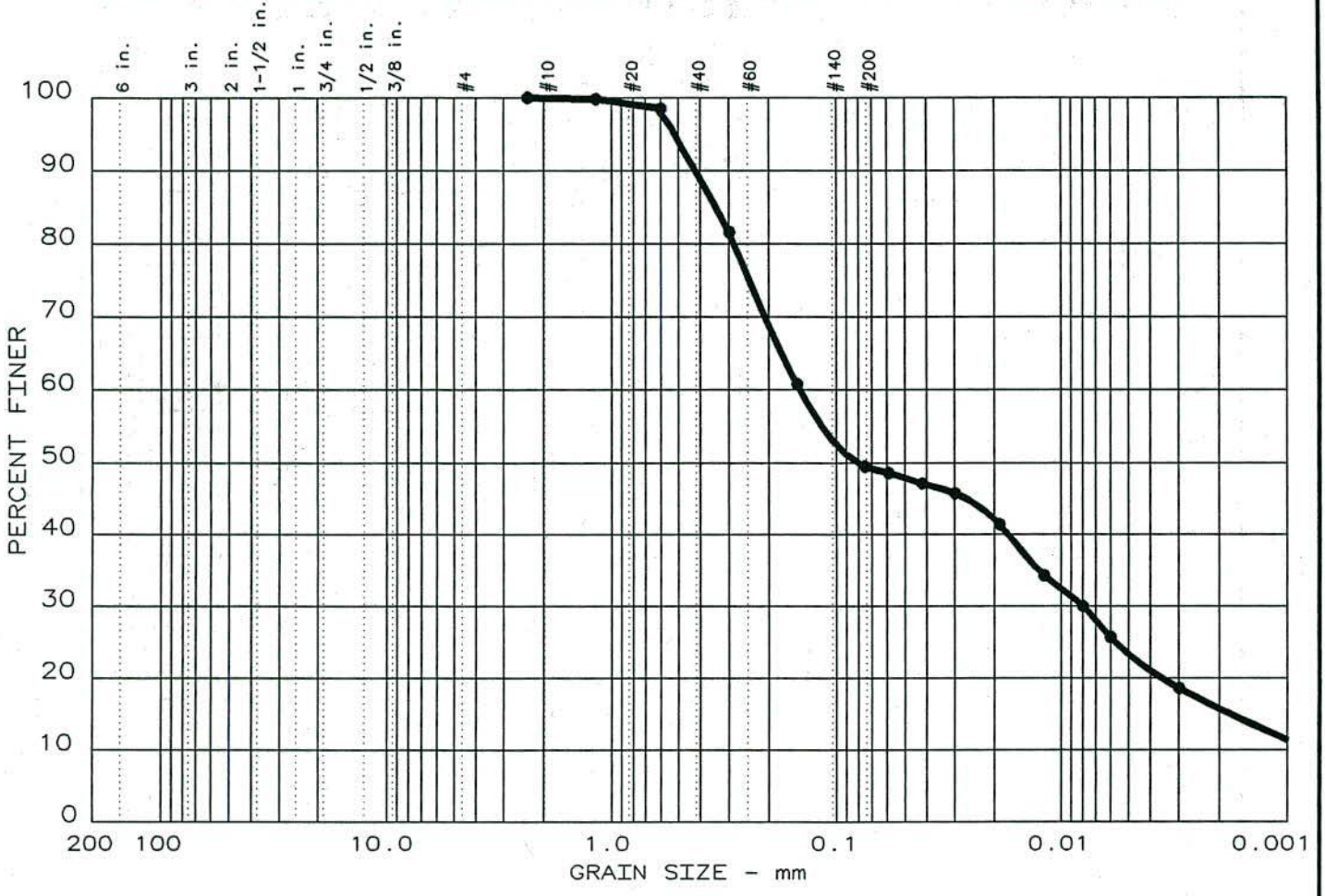
Remarks:
Depth: 0.0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 7

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.0	50.5	26.2	23.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	0.343	0.145	0.0804	0.0079	0.0018			

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan brown silty sand with clay	SM	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-8 Jar S2

Date: 10/10/01

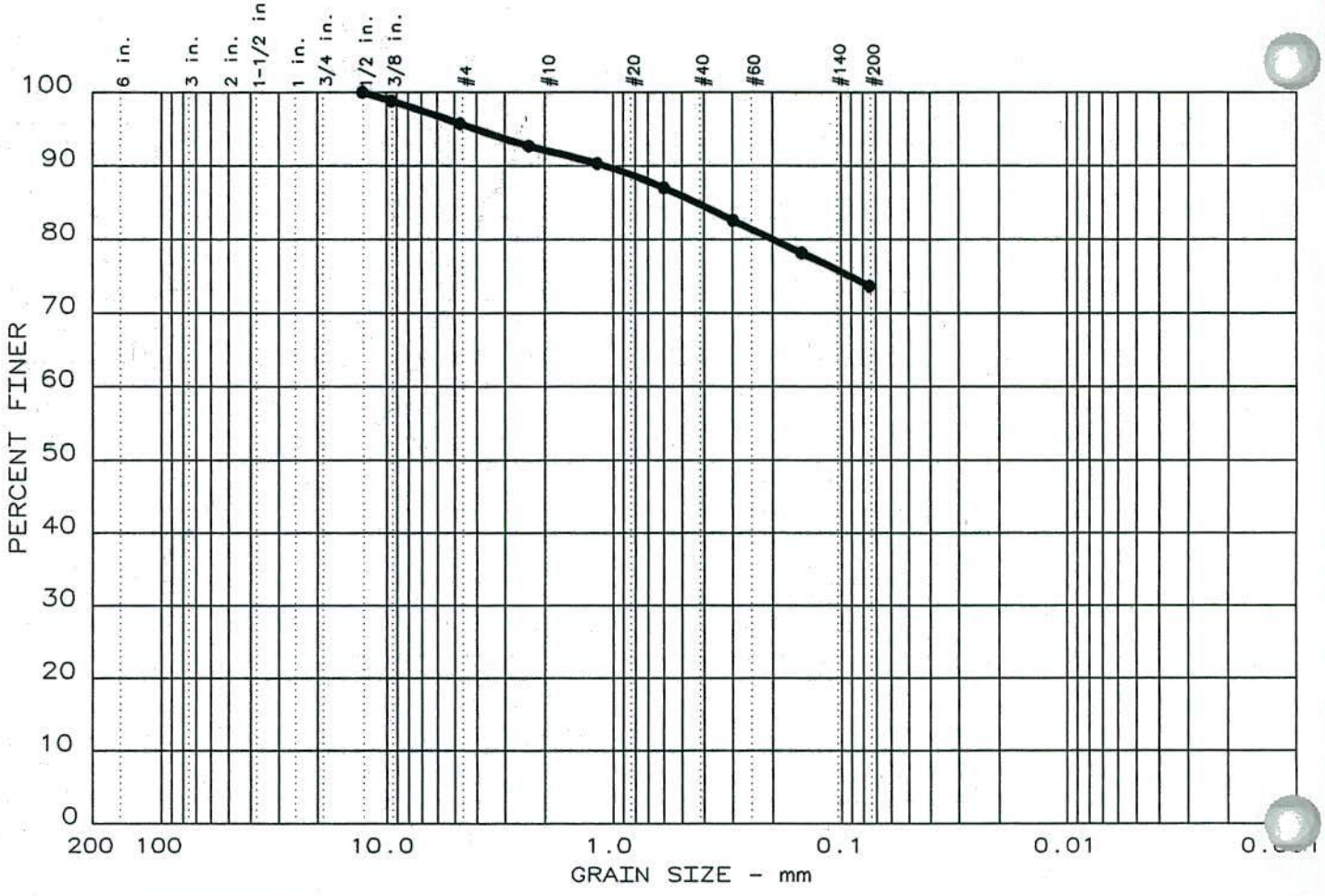
Remarks:
Depth: 3.5 to 5.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 8

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3''	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	4.3	22.0	73.7	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	–	–	0.422							

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan gray brown silty clay with sand	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-10 Jar S1

Date: 10/10/01

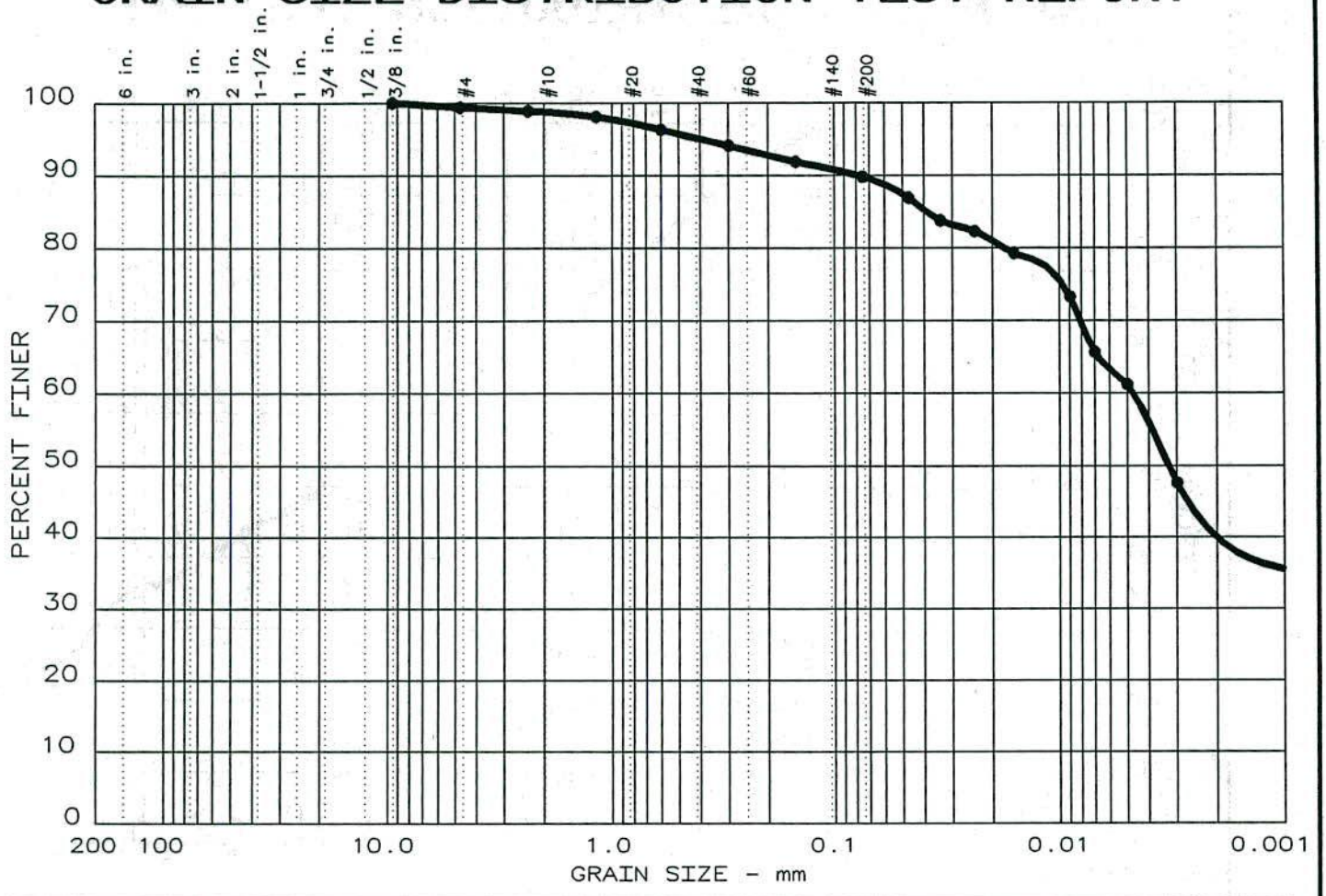
Remarks:
Depth: 0.0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 9

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	0.6	9.6	28.6	61.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	–	–			0.0033					

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan gray silty clay	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-10 Jar S2

Date: 10/10/01

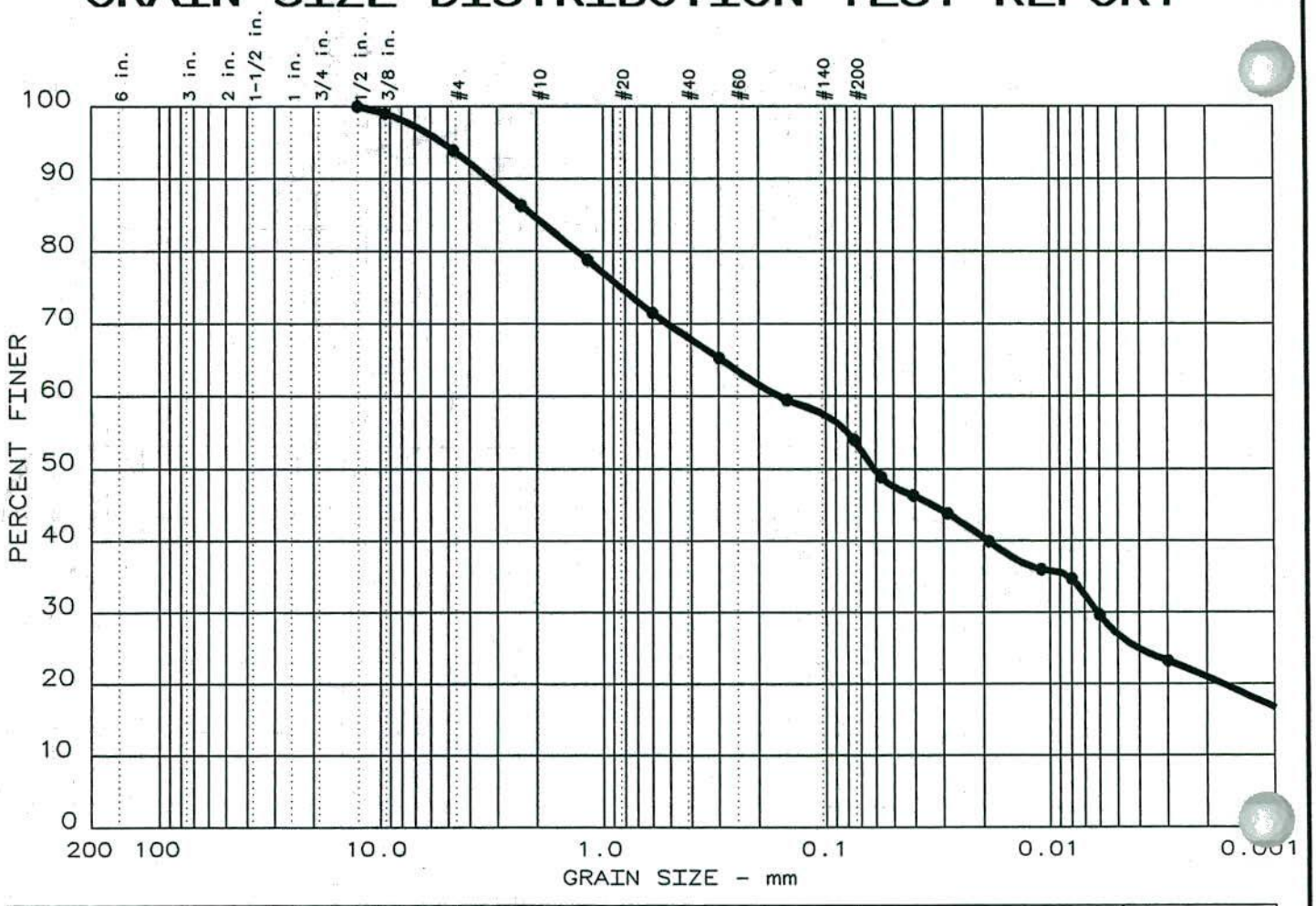
Remarks:
Depth: 3.5 to 5.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 10

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	6.1	39.9	27.1	26.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	2.09	0.162	0.0603	0.0061				

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark brown sandy silt with clay	ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-13 Jar S1

Date: 10/10/01

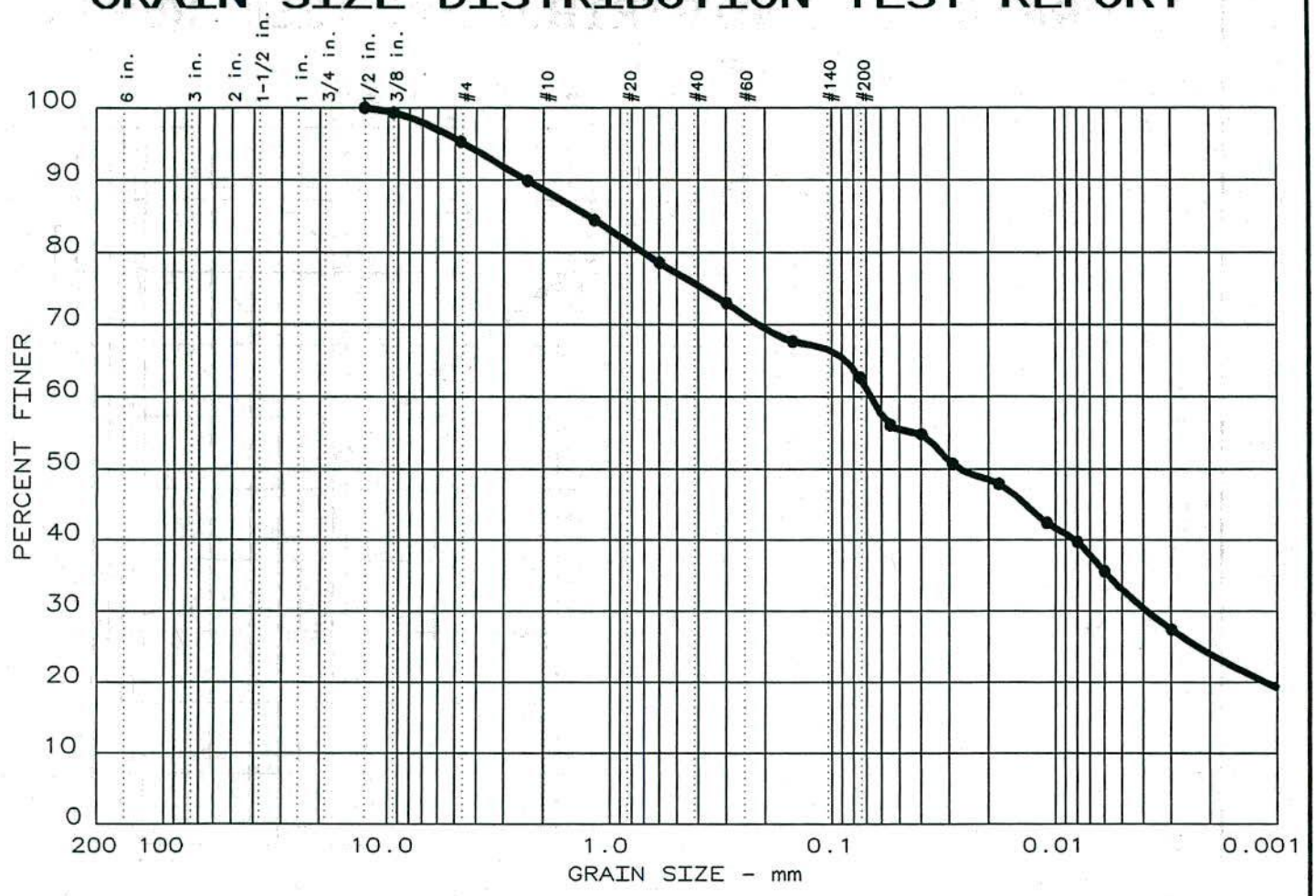
Remarks:
Depth: 0.0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 11

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	4.7	32.6	29.7	33.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	–	–	1.24		0.0269	0.0038				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan gray brown sandy silty clay	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-15 Jar S1

Date: 10/10/01

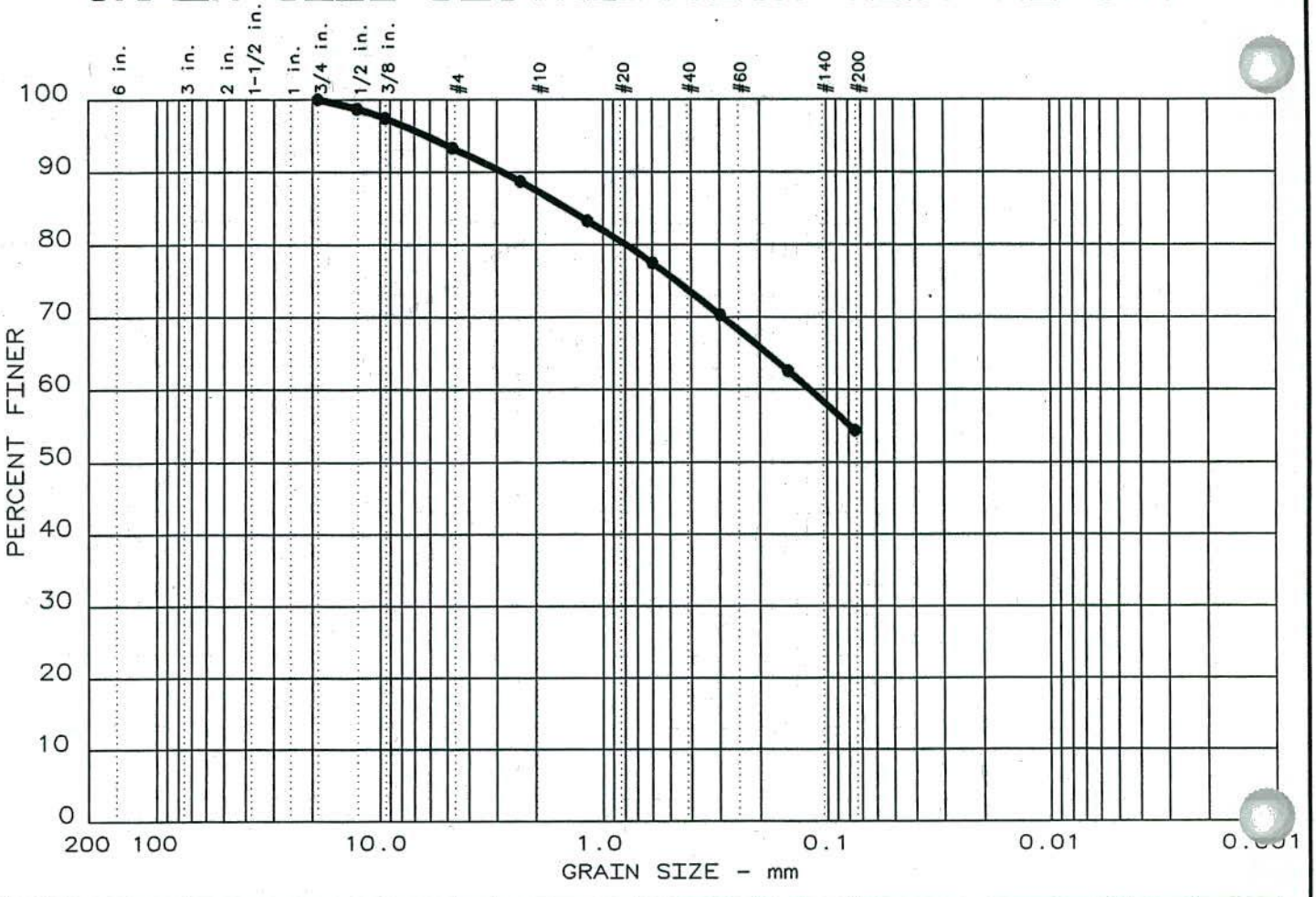
Remarks:
Depth: 0.0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 12

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	6.7	38.9	54.4	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	1.45	0.119						

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan gray brown sandy silty clay	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-15 Jar S2

Date: 10/10/01

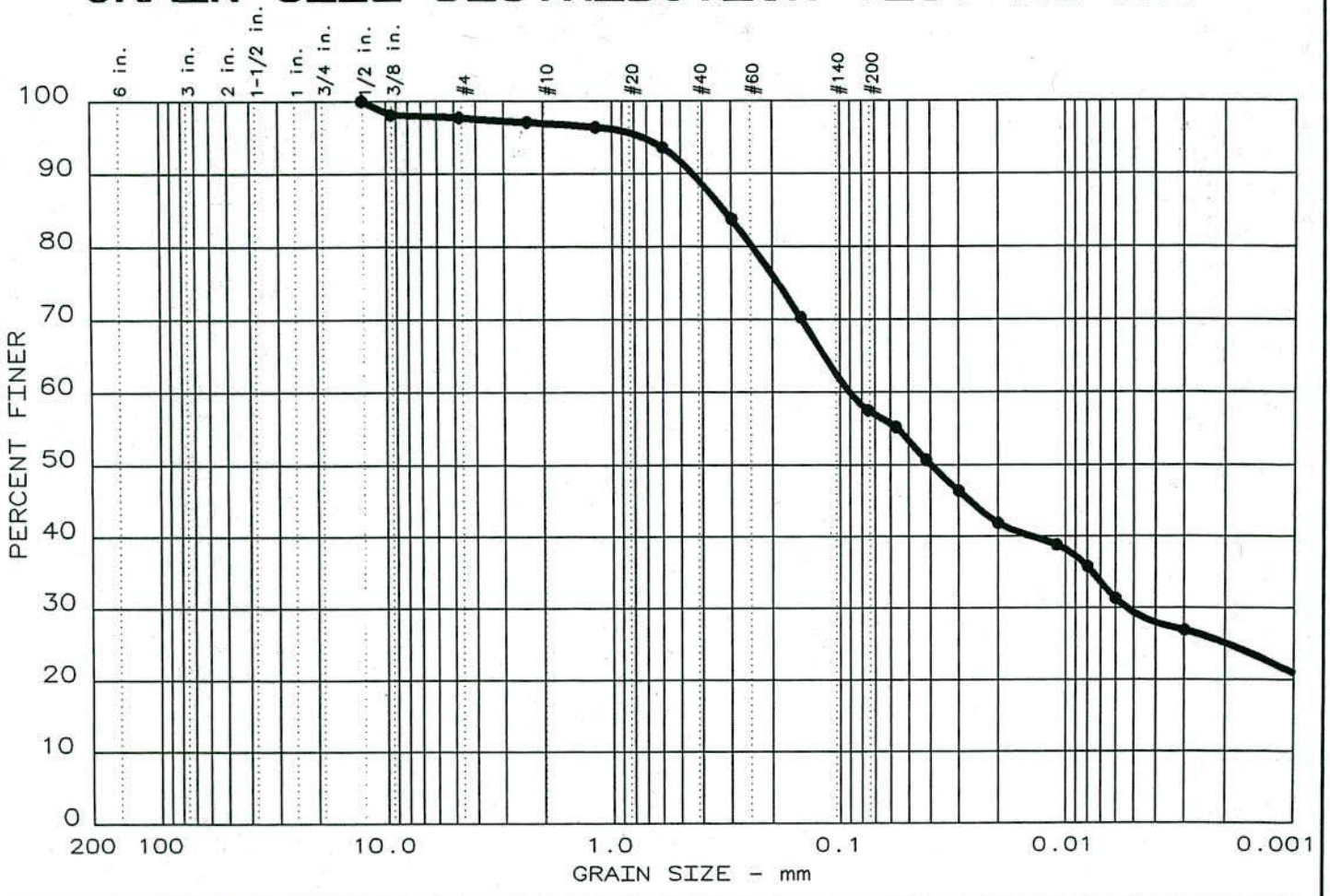
Remarks:
Depth: 3.5 to 5.0 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 13

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	0.0	2.3	40.2	28.2	29.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	-	-	0.320	0.0902	0.0398	0.0053				

MATERIAL DESCRIPTION	USCS	AASHTO
● Tan brown sandy silty clay	CL-ML	

Project No.: 117-01-55440
Project: SCS - Huffaker Rd.
● Location: HUF-17 Jar S1

Date: 10/10/01

Remarks:
Depth: 0.0 to 1.5 ft

GRAIN SIZE DISTRIBUTION TEST REPORT

GEO-HYDRO ENGINEERS, INC.

Fig. No.: 14

Huffaker Road Site - Permeability Tests

HUF-15

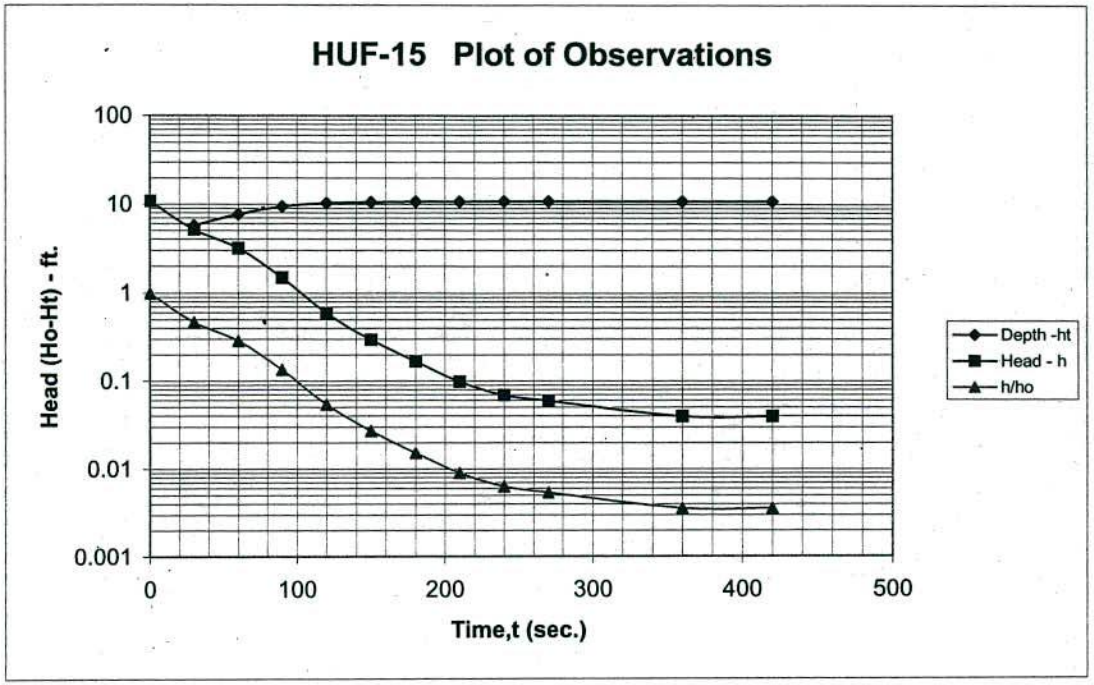
Time	Depth - h_t	$h=h_o-h_t$	h/ho	Depth to GWS - ho
0	0	11.00	1	11
30	5.8	5.20	0.472727	
60	7.8	3.20	0.290909	
90	9.5	1.50	0.136364	
120	10.4	0.60	0.054545	
150	10.7	0.30	0.027273	
180	10.83	0.17	0.015455	
210	10.9	0.10	0.009091	
240	10.93	0.07	0.006364	
270	10.94	0.06	0.005455	
360	10.96	0.04	0.003636	
420	10.96	0.04	0.003636	
720	11	0.00	0	

R_c= 0.0625 dh 11.00 t_0 = 53.3

R_w= 0.1573 $h_{37\%}$ = 4.07 L_s= 10

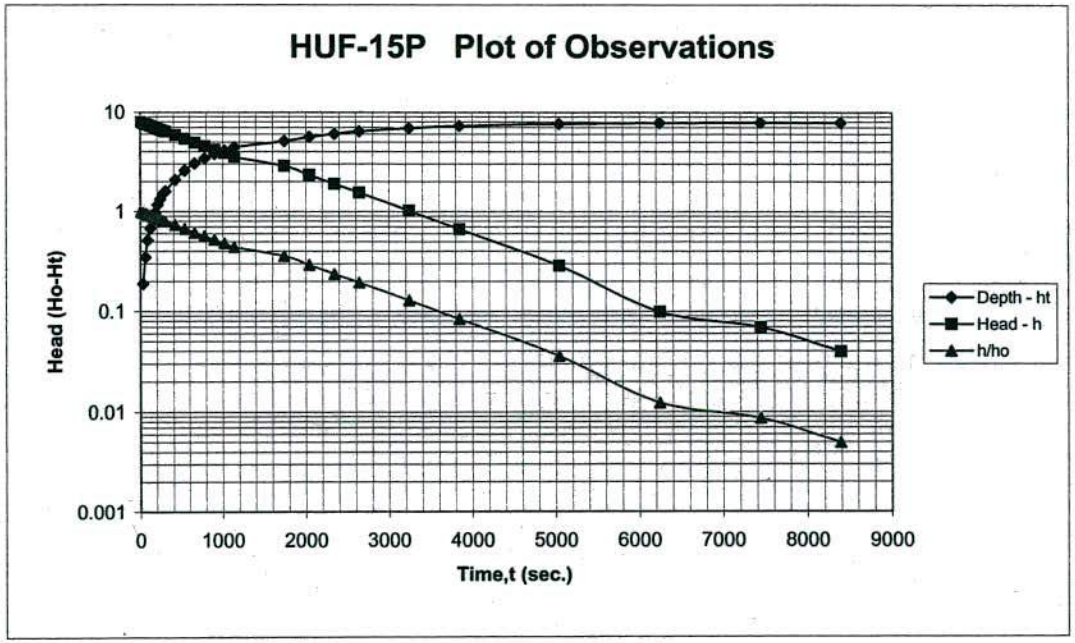
$k = (R_w^2 \, Ln(L_s/R_c))/2L_s \, t_o$ = **1.18E-04 ft./sec.**

1.02E+01 ft./day ghm



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Time	HUF-15P Depth - h_t	$h=h_o-h_t$	h/ho	Depth to GWS - ho
0	0	8	1	
30	0.19	7.81	0.97625	8
60	0.35	7.65	0.95625	
90	0.52	7.48	0.935	
120	0.68	7.32	0.915	
150	0.85	7.15	0.89375	
180	0.99	7.01	0.87625	
210	1.18	6.82	0.8525	
240	1.34	6.66	0.8325	
270	1.5	6.5	0.8125	
300	1.6	6.4	0.8	
420	2.09	5.91	0.73875	
540	2.59	5.41	0.67625	
660	3.05	4.95	0.61875	
780	3.42	4.58	0.5725	
900	3.8	4.2	0.525	
1020	4.13	3.87	0.48375	
1140	4.45	3.55	0.44375	
1740	5.12	2.88	0.36	
2040	5.65	2.35	0.29375	
2340	6.09	1.91	0.23875	
2640	6.44	1.56	0.195	
3240	6.97	1.03	0.12875	
3840	7.33	0.67	0.08375	
5040	7.71	0.29	0.03625	
6240	7.9	0.1	0.0125	
7440	7.93	0.07	0.00875	
8390	7.96	0.04	0.005	



R_c= 0.1667 dh 7.96 t_0 = 1718

R_w= 0.16145 $h_{37\%}$ = 2.9452 L_s= 10

$k = (R_w^2 \ln(L_s/R_c))/2L_s t_o$: **3.11E-06 ft./sec.**

2.68E-01 ft./day ghm

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HUF-15PS

Time(sec)	ht	$h=h_o-h_t$	Depth - ft.	GWS-ho
0	0	5	0.14	DRY @ 5'
60	0.02	4.98	0.16	
120	0.03	4.97	0.17	
180	0.04	4.96	0.18	
240	0.05	4.95	0.19	
360	0.06	4.94	0.2	
540	0.07	4.93	0.21	
720	0.08	4.92	0.22	
1020	0.1	4.9	0.24	
1320	0.12	4.88	0.26	
1920	0.13	4.87	0.27	
3720	0.17	4.83	0.31	
5520	0.2	4.8	0.34	
15240	0.28	4.72	0.42	
108240	0.42	4.58	0.56	

h_1 = 4.72 t_1 = 15240

h_2 = 4.58 t_2 = 108240

Δh = 0.14 Δt = 93000

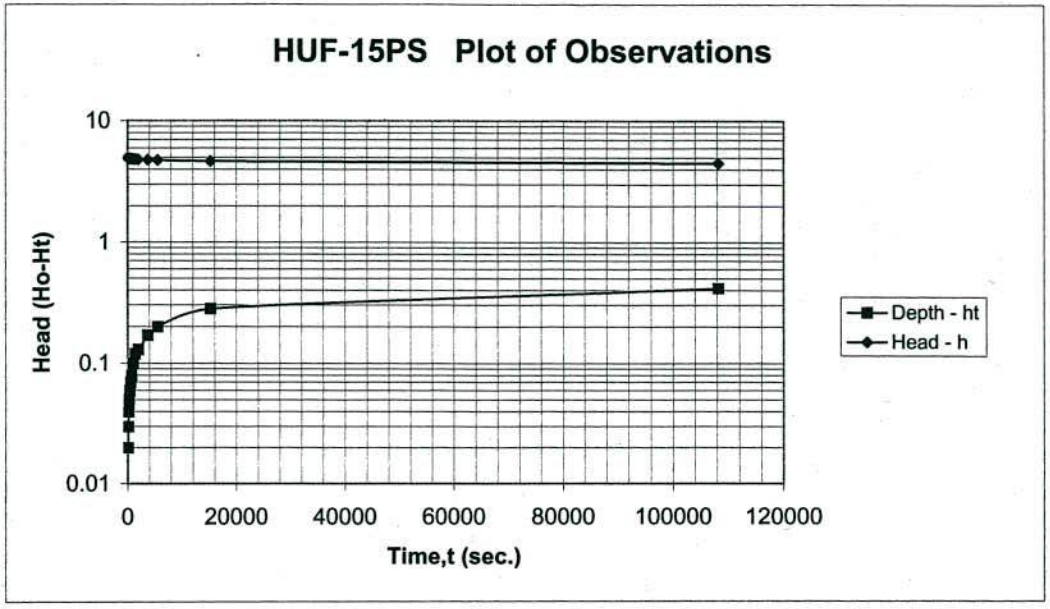
Q = 1.95247E-07 =A*^h/^t

A = 0.1297

K= Q/iA = $\Delta h/\Delta t$ w/i=1

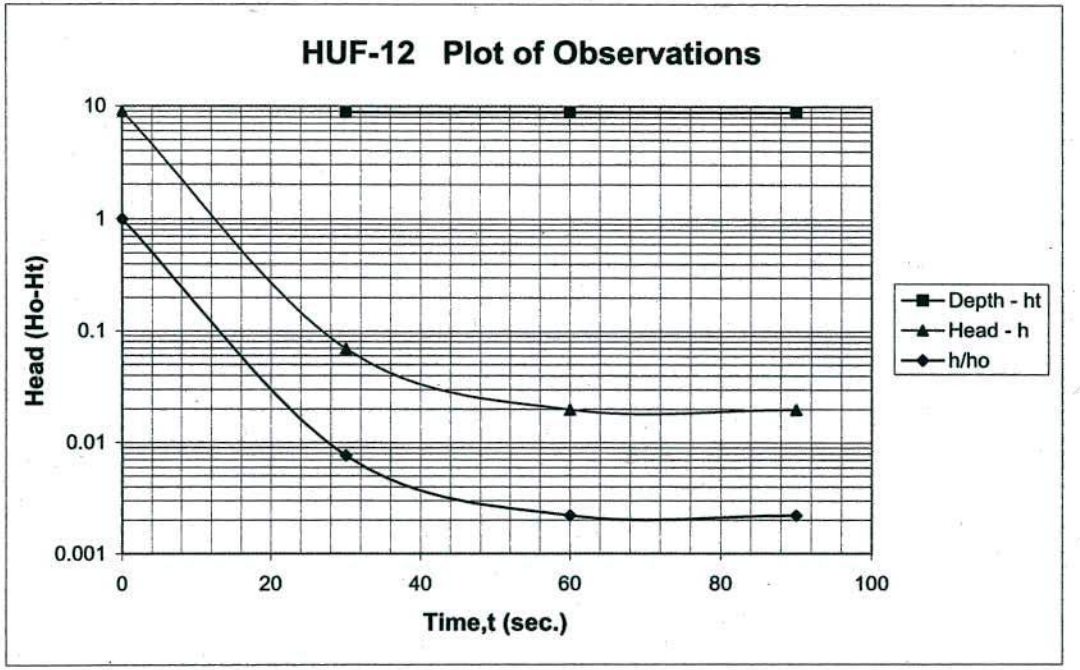
$k = \frac{\Delta h}{\Delta t}$ **1.51E-06 ft./sec.**

1.30E-01 ft./day



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HUF-12				GWS-ho
Time (sec)	Depth - ht	$h=h_o-h_t$	h/ho	9.02
0	0	9.02	1	
30	8.95	0.07	0.007761	
60	9	0.02	0.002217	
90	9	0.02	0.002217	
120	9.02	0	0	
420	9.02	0	0	



R_c= 0.0625 dh 9 t_0 = 19.1

R_w= 0.1242 $h_{37\%}$ = 3.33 L_s= 15

$k = (R_w^2 \ln(L_s/R_c))/2L_s t_o$ = **1.48E-04 ft./sec.**

1.27E+01 ft./day ghm

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HUF-12P

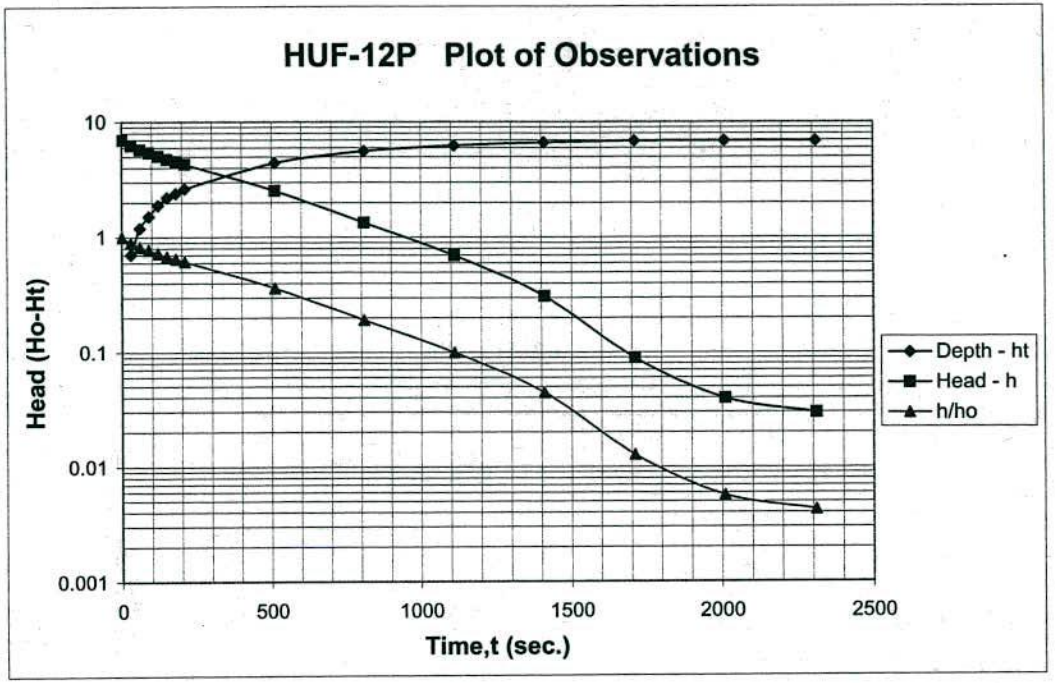
Time(sec)	Depth - ht	$h=h_o-h_t$	h/ho	GWS-ho
0	0	6.98	1	6.98
30	0.71	6.27	0.898281	
60	1.2	5.78	0.82808	
90	1.52	5.46	0.782235	
120	1.9	5.08	0.727794	
150	2.21	4.77	0.683381	
180	2.41	4.57	0.654728	
210	2.64	4.34	0.621777	
510	4.43	2.55	0.36533	
810	5.64	1.34	0.191977	
1110	6.28	0.7	0.100287	
1410	6.67	0.31	0.044413	
1710	6.89	0.09	0.012894	
2010	6.94	0.04	0.005731	
2310	6.95	0.03	0.004298	

R_c= 0.1667 dh= 6.95 t_0 = 508

R_w= 0.16145 $h_{37\%}$ = 2.5715 L_s= 10

$k = (R_w^2 \, Ln(L_s/R_c))/2L_s \, t_o$: **1.05E-05 ft./sec.**

9.08E-01 ft./day ghm



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GWS
DRY @ 10'

HUF-12PS

Time (sec)	ht	$h=h_o-h_t$	Depth - ft.
0	0	10	0.17
60	0.06	9.94	0.23
120	0.07	9.93	0.24
180	0.09	9.91	0.26
240	0.1	9.9	0.27
420	0.15	9.85	0.32
600	0.22	9.78	0.39
900	0.28	9.72	0.45
1200	0.32	9.68	0.49
1560	0.38	9.62	0.55
1860	0.46	9.54	0.63
2160	0.49	9.51	0.66
2760	0.57	9.43	0.74
3360	0.65	9.35	0.82
3960	0.71	9.29	0.88
13380	1.42	8.58	1.59

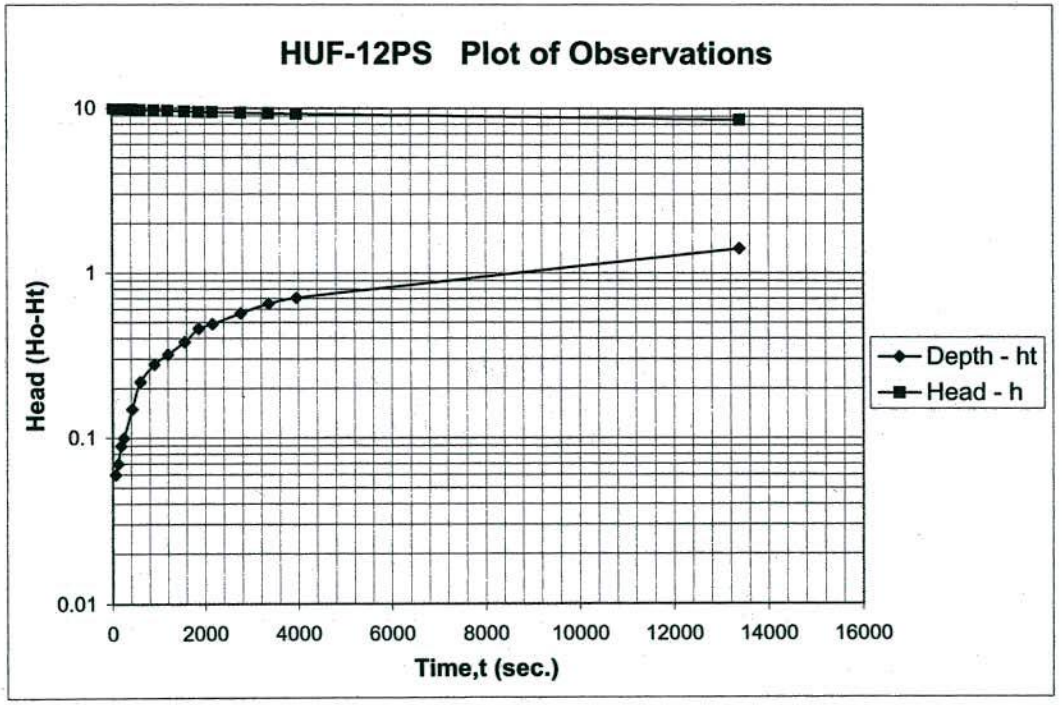
h_1 = 9.29 t_1 = 3960
h_2 = 8.58 t_2 = 13380
Δh = 0.71 Δt = 9420

Q = 9.776E-06 =A*^h/^t
A = 0.1297

K= Q/iA = ^h/^t w/i=1

$k = \frac{\Delta h}{\Delta t}$ **7.54E-05 ft./sec.**

6.51E+00 ft./day
ghm



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HUF-14

Time (sec)	Depth - ht	$h=h_o-h_t$	h/ho
0	0	7.32	1
30	4.9	2.42	0.330601
60	5.8	1.52	0.20765
90	6.75	0.57	0.077869
120	7.03	0.29	0.039617
150	7.2	0.12	0.016393
180	7.25	0.07	0.009563
210	7.28	0.04	0.005464
240	7.28	0.04	0.005464
300	7.32	0	0

GWS-ho 7.32

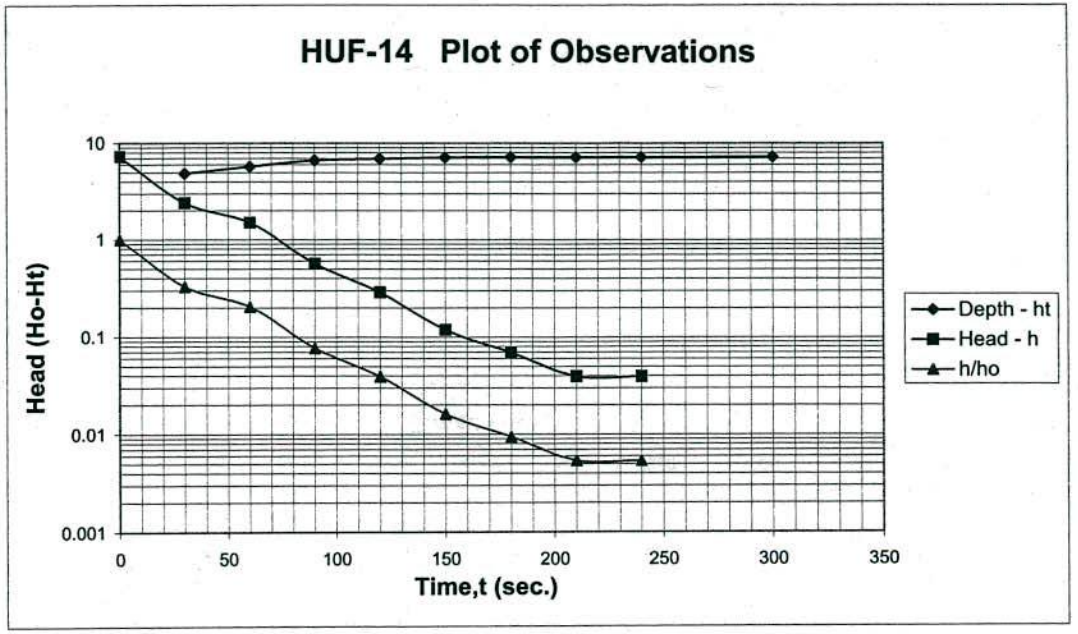
R_c= 0.0625 h_o = 7.32 t_0 = 28.2

R_w= 0.1242 $h_{37\%}$ = 2.7084 L_s= 15

$k = (R_w^2 \, Ln(L_s/R_c))/2L_s \, t_o$ = **9.99E-05 ft./sec.**

8.63E+00 ft./day

ghm



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HUF-14P

Time (sec)	Depth - ht	$h=h_o-h_t$	h/ho	GWS-ho
0	0	4.33	1	4.33
180	0.04	4.29	0.990762	
360	0.08	4.25	0.981524	
540	0.11	4.22	0.974596	
840	0.19	4.14	0.95612	
1140	0.24	4.09	0.944573	
1440	0.3	4.03	0.930716	
2040	0.41	3.92	0.905312	
2640	0.53	3.8	0.877598	
3240	0.6	3.73	0.861432	
5040	0.91	3.42	0.789838	
6840	1.18	3.15	0.727483	

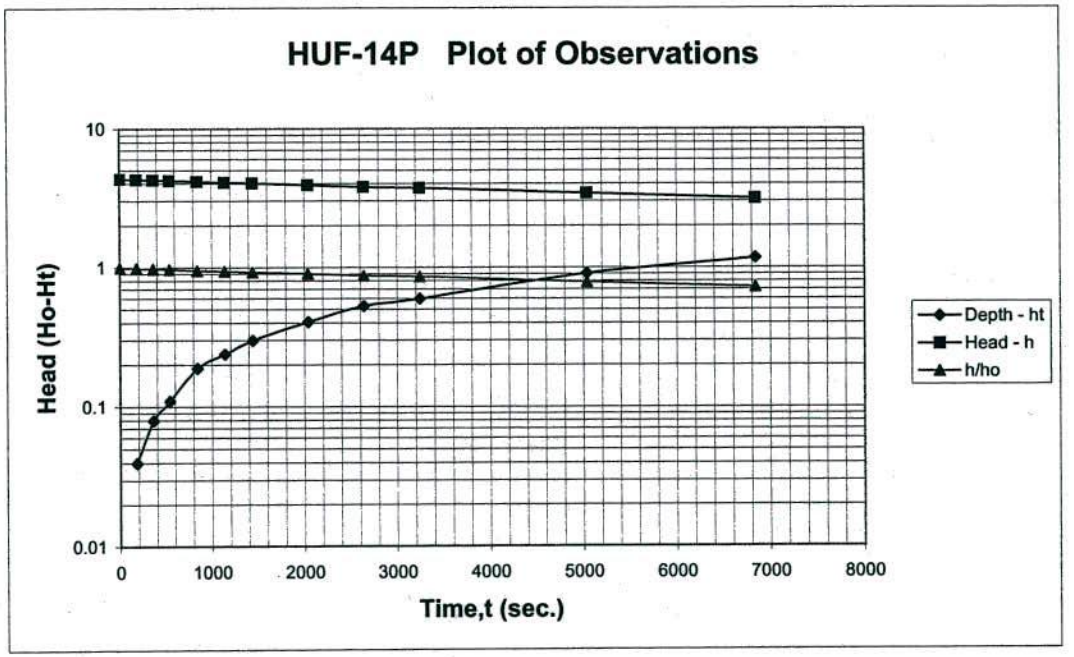
R_c= 0.1667 dh= 1.18 t_o = 22566

R_w= 0.16145 $h_{37\%}$ = 0.4366 L_s= 10

$k = (R_w^2 \, Ln(L_s/R_c))/2L_s \, t_o$ = **2.36E-07 ft./sec.**

2.04E-02 ft./day

ghm



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HUF-14PS

Time (sec)	ht	$h=h_o-h_t$	Depth - ft.	GWS
0	0	10	0.2	DRY @ 10'
180	0.02	9.98	0.22	
360	0.04	9.96	0.24	
540	0.05	9.95	0.25	
840	0.07	9.93	0.27	
1140	0.08	9.92	0.28	
1440	0.09	9.91	0.29	
2040	0.1	9.9	0.3	
2640	0.11	9.89	0.31	
3240	0.12	9.88	0.32	
5040	0.15	9.85	0.35	
6840	0.18	9.82	0.38	
57180	0.45	9.55	0.65	

h_1 = 9.82 t_1 = 6840

h_2 = 9.55 t_2 = 57180

Δh = 0.27 Δt = 50340

Q = 6.9565E-07 =A*^h/^t

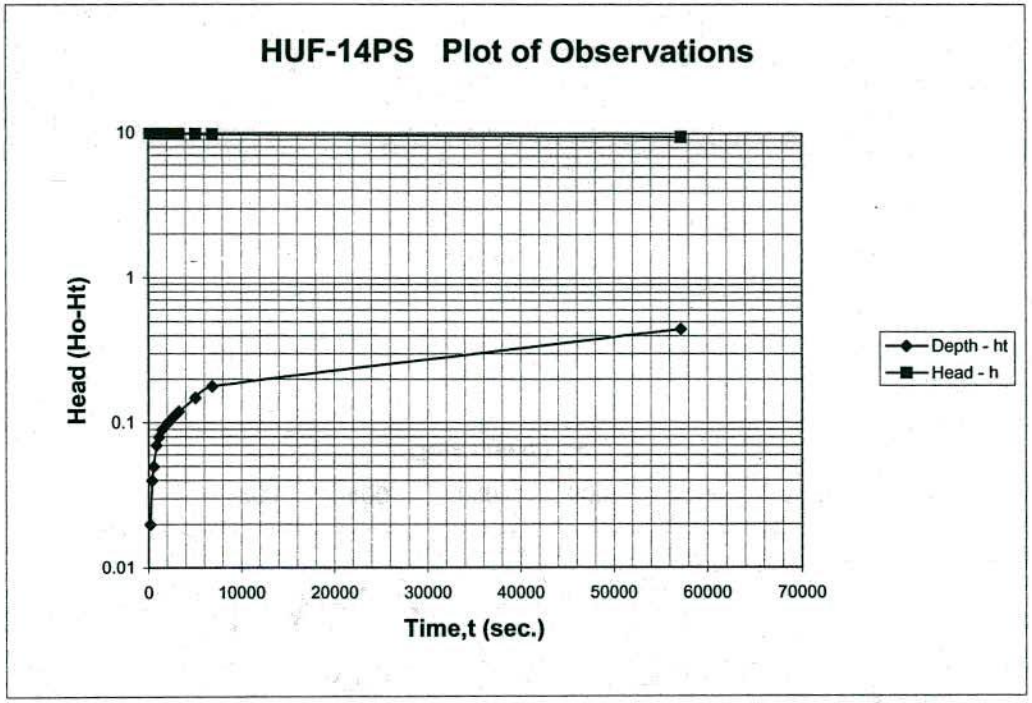
A = 0.1297

K= Q/iA = ^h/^t w/i=1

$k = \frac{\Delta h}{\Delta t}$ **5.36E-06** **ft./sec.**

4.63E-01 **ft./day**

ghm



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HUF-16

Time (sec)	Depth - ht	$h=h_o-h_t$	h/ho	GWS-ho
0	0	11.45	1	11.45
30	11.15	0.3	0.026201	
60	11.16	0.29	0.025328	
90	11.2	0.25	0.021834	
120	11.23	0.22	0.019214	
150	11.25	0.2	0.017467	
180	11.25	0.2	0.017467	
210	11.28	0.17	0.014847	
240	11.29	0.16	0.013974	
270	11.3	0.15	0.0131	
330	11.38	0.07	0.006114	
390	11.38	0.07	0.006114	
690	11.38	0.07	0.006114	
990	11.39	0.06	0.00524	

R_c= 0.0625 **dh= 0.24 t_0 = 303

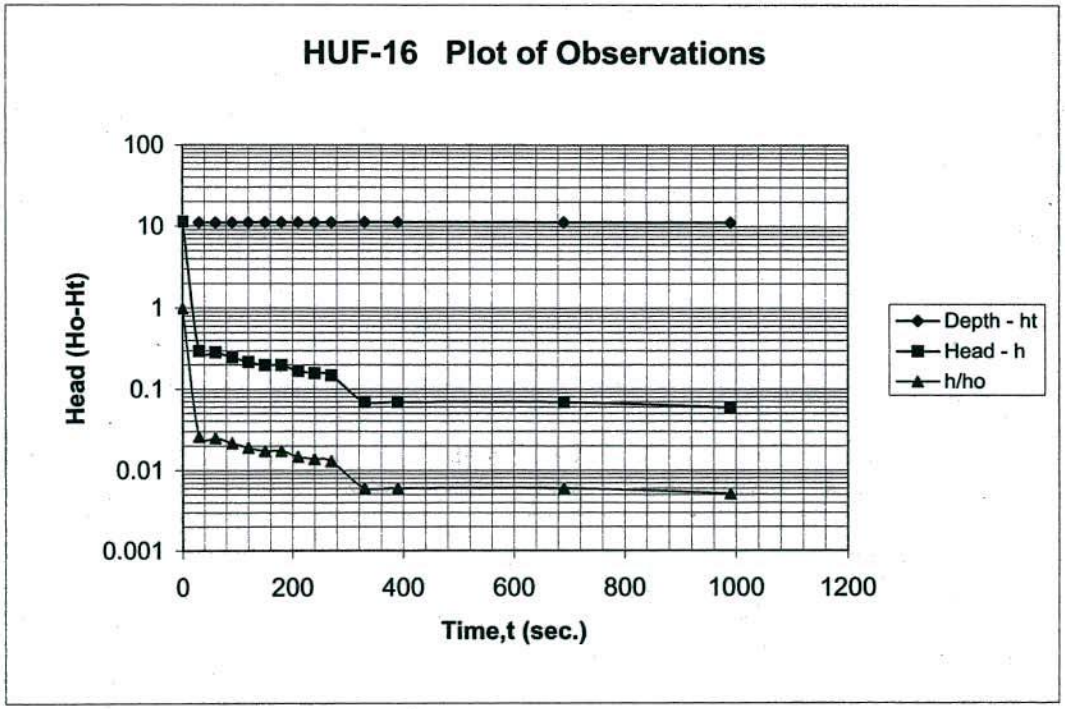
R_w= 0.1242 $h_{37\%}$ = 0.0888 L_s= 10

**dh=0.3-0.06

$k = (R_w^2 \, Ln(L_s/R_c))/2L_s \, t_o$: **1.29E-05 ft./sec.**

1.12E+00 ft./day

ghm



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HUF-16P

Time (sec)	Depth - ht	$h=h_o-h_t$	h/ho	GWS-ho
0	0	2.64	1	2.64
60	0	2.64	1	
420	0.01	2.63	0.996212	
780	0.02	2.62	0.992424	
1140	0.04	2.6	0.984848	
1740	0.08	2.56	0.969697	
2340	0.11	2.53	0.958333	
6060	0.31	2.33	0.882576	
13320	0.73	1.91	0.723485	
15660	0.86	1.78	0.674242	

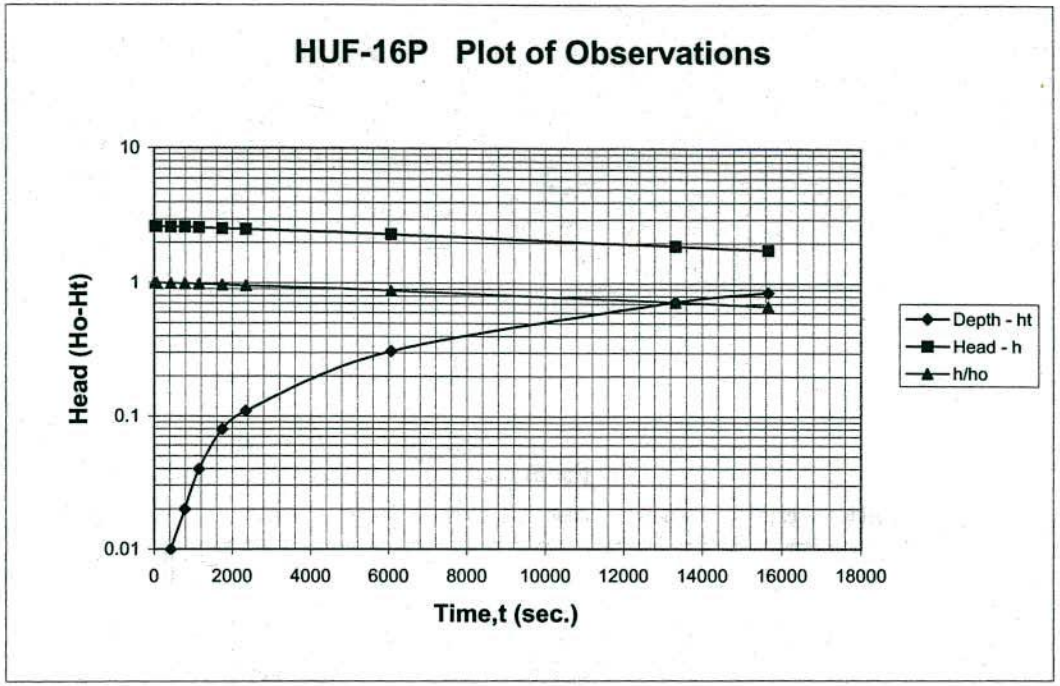
R_c= 0.1667 dh= 0.86 t_0 = 42282

R_w= 0.16145 $h_{37\%}$ = 0.3182 L_s= 10

$k = (R_w^2 \ln(L_s/R_c))/2L_s t_o$: **1.26E-07 ft./sec.**

1.09E-02 ft./day

ghm



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HUF-16PS

Time (sec)	ht	h=ho-ht	Depth - ft.	GWS DRY @ 5'
0	0	5	0.19	
60	0	5	0.19	
120	0.01	4.99	0.2	
180	0.02	4.98	0.21	
480	0.04	4.96	0.23	
780	0.05	4.95	0.24	
1080	0.06	4.94	0.25	
1680	0.08	4.92	0.27	
2280	0.09	4.91	0.28	
5970	0.12	4.88	0.31	
13050	0.17	4.83	0.36	

h_1 = 4.91 t_1 = 2280

h_2 = 4.83 t_2 = 13050

Δh = 0.08 Δt = 10770

Q = 9.634E-07 =A*^h/^t

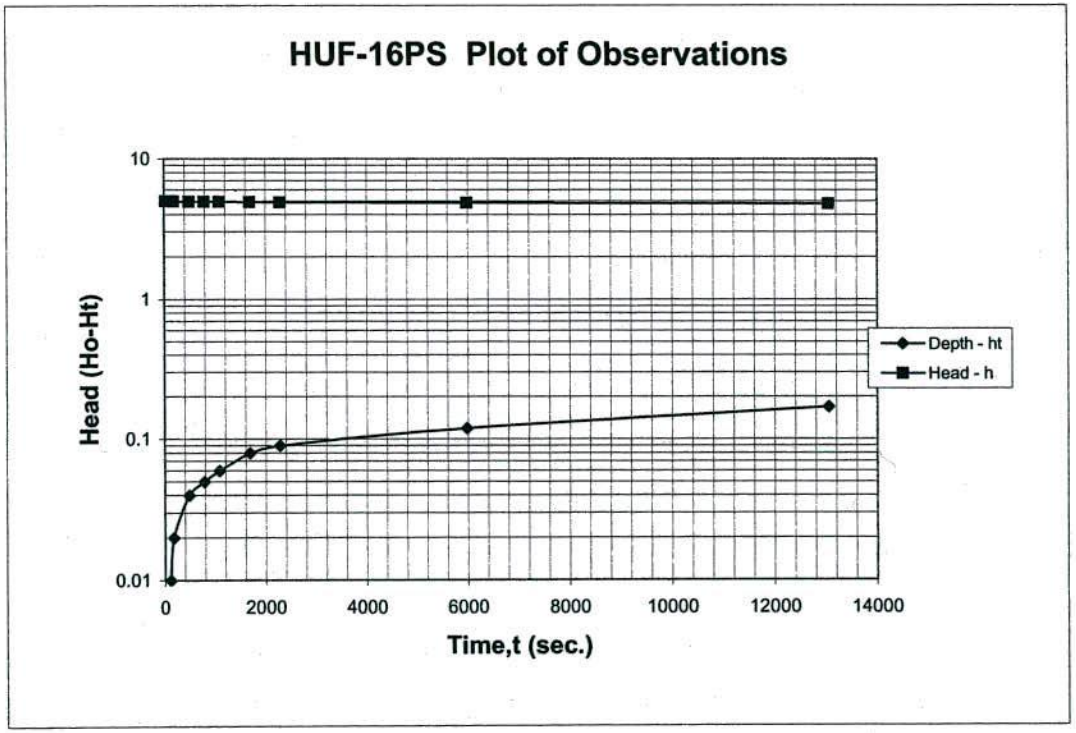
A = 0.1297

K= Q/iA = ^h/^t w/i=1

$k = \frac{\Delta h}{\Delta t}$ **7.43E-06 ft./sec.**

6.42E-01 ft./day

ghm



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HUF-17

Time (sec)	Depth - ht	$h=h_o-h_t$	h/ho	GWS-ho
0	0	7.13	1	7.13
30	4.9	2.23	0.312763	
60	5.9	1.23	0.172511	
90	6.25	0.88	0.123422	
120	6.49	0.64	0.089762	
150	6.58	0.55	0.077139	
180	6.66	0.47	0.065919	
210	6.7	0.43	0.060309	
240	6.76	0.37	0.051893	
270	6.8	0.33	0.046283	
330	6.88	0.25	0.035063	
390	6.9	0.23	0.032258	
450	6.94	0.19	0.026648	
750	7.02	0.11	0.015428	
1050	7.05	0.08	0.01122	

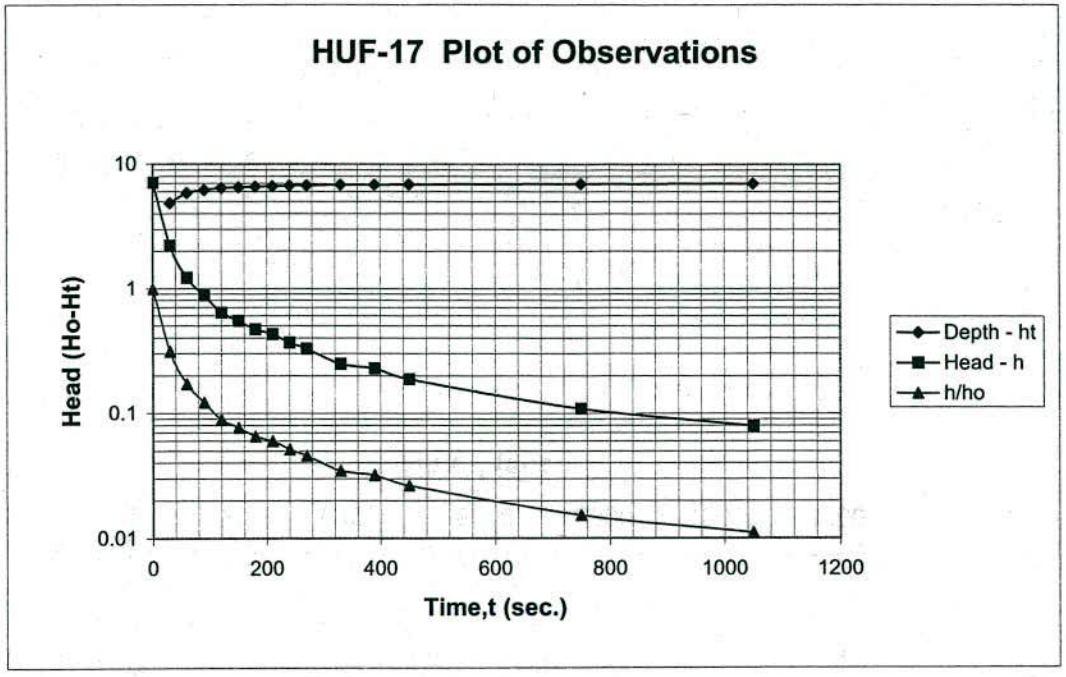
R_c= 0.0625 **dh= 0.56 t_0 = 449

R_w= 0.1242 $h_{37\%}$ = 0.2072 L_s= 15

**dh=0.64-0.08

$k = (R_w^2 \, Ln(L_s/R_c))/2L_s \, t_o$ = **6.28E-06 ft./sec.**

5.42E-01 ft./day ghm



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HUF-17P

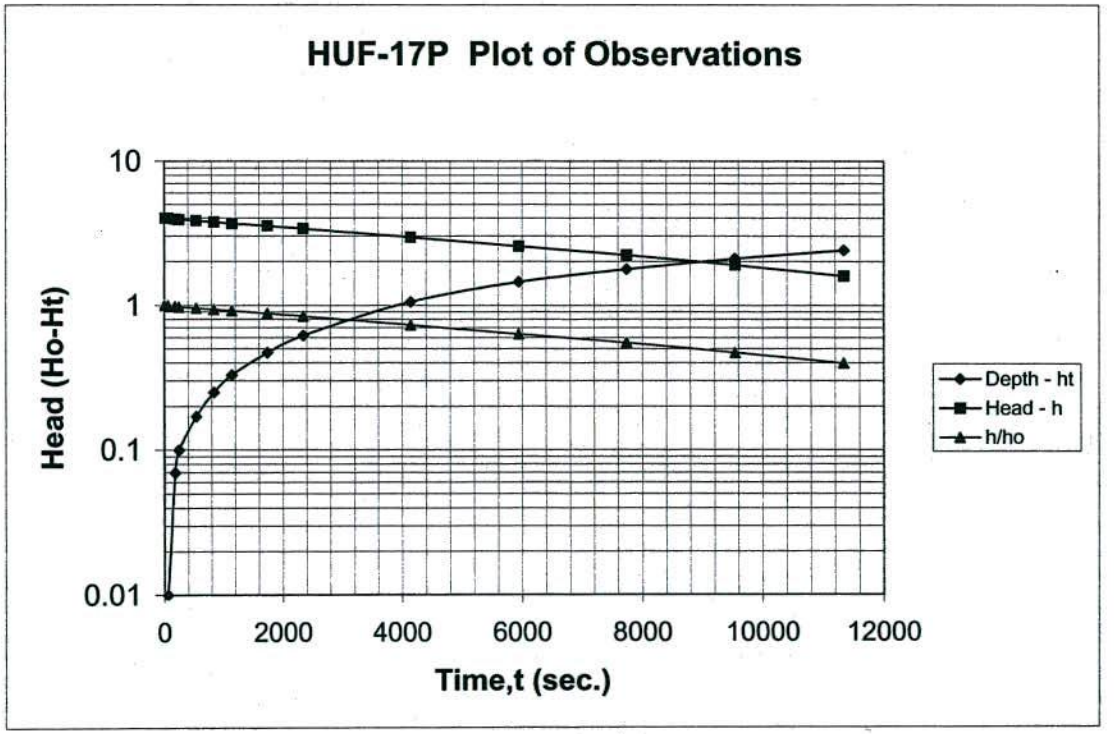
Time (sec)	Depth - ht	h=ho-ht	h/ho	GWS-ho
0	0	4.01	1	4.01
60	0.01	4	0.997506	
180	0.07	3.94	0.982544	
240	0.1	3.91	0.975062	
540	0.17	3.84	0.957606	
840	0.25	3.76	0.937656	
1140	0.33	3.68	0.917706	
1740	0.47	3.54	0.882793	
2340	0.62	3.39	0.845387	
4140	1.06	2.95	0.735661	
5940	1.46	2.55	0.63591	
7740	1.78	2.23	0.55611	
9540	2.11	1.9	0.473815	
11340	2.41	1.6	0.399002	

R_c= 0.1667 dh= 2.41 t_o = 14681

R_w= 0.16145 $h_{37\%}$ = 0.8917 L_s= 10

$P_h = (R_w^2 \ln(L_s/R_c))/2L_s t_o$ 3.63E-07 ft./sec. GHM

3.14E-02 ft./day



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HUF-17PS

GWS

Time (sec)	Depth - ht	$h=h_o-h_t$	Depth - ft.	DRY @ 10'
0	0	10	0.13	
120	0.04	9.96	0.17	
240	0.07	9.93	0.2	
360	0.09	9.91	0.22	
480	0.1	9.9	0.23	
780	0.12	9.88	0.25	
1080	0.13	9.87	0.26	
1680	0.14	9.86	0.27	
2280	0.18	9.82	0.31	
4080	0.28	9.72	0.41	
5880	0.36	9.64	0.49	
7680	0.41	9.59	0.54	
9480	0.45	9.55	0.58	
11280	0.46	9.54	0.59	

h_1 = 9.64 t_1 = 5880

h_2 = 9.54 t_2 = 11280

Δh = 0.1 Δt = 5400

Q = 2.4019E-06 =A*^h/^t

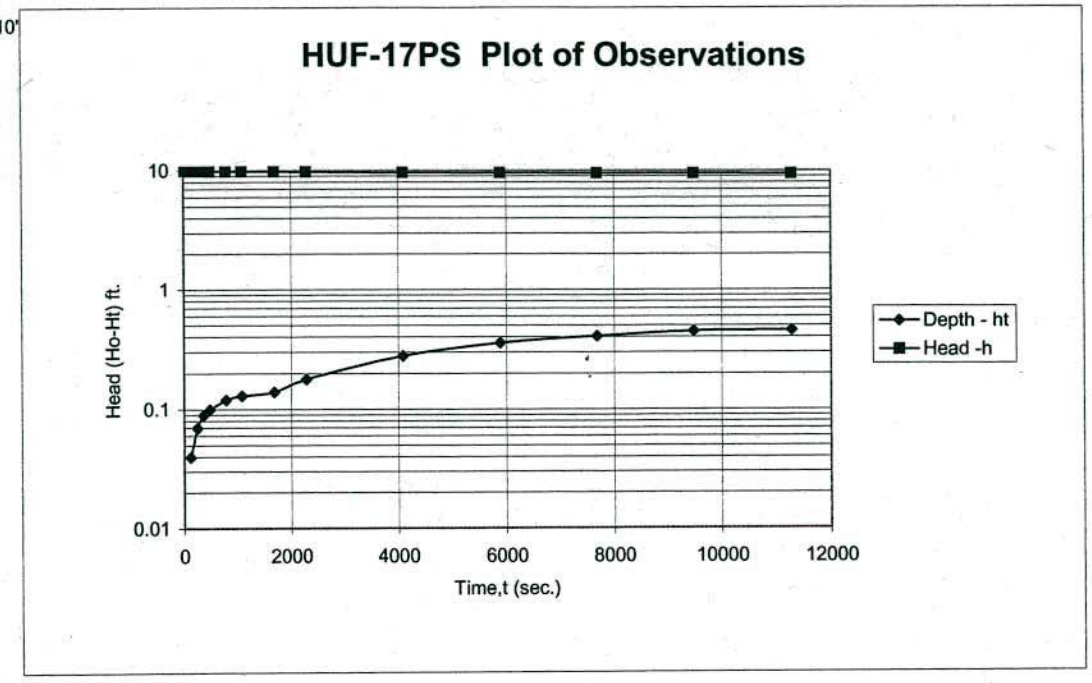
A = 0.1297

K= Q/iA = $\Delta h/\Delta t$ w/i=1

$k = \frac{\Delta h}{\Delta t}$ **1.85E-05** **ft./sec.**

1.60E+00 **ft./day**

ghm



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Smyrna, Georgia 30080
Tel 404.799.2100

GEORGIA POWER
A SOUTHERN COMPANY

October 23, 2002

Jim Redwine
Southern Company Services
42 Inverness Center Parkway
Bin B263
Birmingham, AL 35242

RE: Hammond Arsenic Sorption Analytical Results

The Environmental Laboratory has completed the analysis of your samples and reports the results on the attached pages. All results relate only to the contents of the samples submitted. This report may not be reproduced except in full without the written consent of the Environmental Laboratory. Specific analytes are covered under NELAC accreditation. The full scope of this accreditation can be found at:

http://corpcomm.southernco.com/gpc/environmental_affairs/laboratory.htm#accreditation.

All samples will be disposed of after 30 days unless otherwise instructed.

If you have any questions, please advise.

Respectfully submitted,

D.A.Di

D. A. Davis
Senior Environmental Specialist

CC: Terri Hartsfield

Georgia Power Company
Environmental Laboratory
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(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

REPORT SUMMARY

SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD	QC HBN
590201	Huffaker Rd 1 - A, Water	09/12/02 00:00	EPA 6010B	62653
590202	Huffaker Rd 2 - A, Water	09/12/02 00:00	EPA 6010B	62653
590203	Huffaker Rd 3 - A, Water	09/12/02 00:00	EPA 6010B	62653
590204	Sorption Control, Water	09/17/02 00:00	EPA 6010B	62653
590205	Huffaker Rd 1 - B, Water	09/12/02 00:00	EPA 6010B	62653
590206	Huffaker Rd 1 - C, Water	09/12/02 00:00	EPA 6010B	62653
590207	Huffaker Rd 2 - B, Water	09/12/02 00:00	EPA 6010B	62653
590208	Huffaker Rd 2 - C, Water	09/12/02 00:00	EPA 6010B	62653
590209	Huffaker Rd 3 - B, Water	09/12/02 00:00	EPA 6010B	62653
590210	Huffaker Rd 3 - C, Water	09/12/02 00:00	EPA 6010B	62653
590211	Control #3, #4, Water	09/17/02 08:41	EPA 6010B	63571
590212	Control #17, #18, Water	09/17/02 08:41	EPA 6010B	63571
590213	Control #20, #19, Water	09/17/02 08:42	EPA 6010B	63571
590214	Control #7, #1, Water	09/17/02 08:43	EPA 6010B	63571
590215	Control #10, #16, Water	09/17/02 08:47	EPA 6010B	63571

October 23, 2002

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Certificate of Analysis

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Sample Information

Sample ID:	590201	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Residual / Overburden	Received Date/Time:	09/23/02 14:24	Purchase Order:	
Field ID:	Huffaker Rd 1 - A	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	ND	0.0090	mg/L	ECS	09/26/02

October 23, 2002

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Birmingham, AL 35242

Sample Information

Sample ID:	590202	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Fill and Cover	Received Date/Time:	09/23/02 14:24	Purchase Order:	
Field ID:	Huffaker Rd 2 - A	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	ND	0.0090	mg/L	ECS	09/26/02

October 23, 2002

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Sample Information

Sample ID:	590203	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Overburden	Received Date/Time:	09/23/02 14:24	Purchase Order:	
Field ID:	Huffaker Rd 3 - A	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	ND	0.0090	mg/L	ECS	09/26/02

October 23, 2002

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Certificate of Analysis

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Birmingham, AL 35242

Sample Information

Sample ID:	590204	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/17/02 00:00	Workorder ID:	5902
Description:	Sorption Control	Received Date/Time:	09/23/02 14:24	Purchase Order:	
Field ID:	Sorption Control	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	0.097	0.0090	mg/L	ECS	09/26/02

October 23, 2002

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Sample Information

Sample ID:	590205	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Residual / Overburden	Received Date/Time:	09/23/02 16:08	Purchase Order:	
Field ID:	Huffaker Rd 1 - B	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	ND	0.0090	mg/L	ECS	09/26/02

October 23, 2002

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Birmingham, AL 35242

Sample Information

Sample ID:	590206	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Residual / Overburden	Received Date/Time:	09/23/02 16:08	Purchase Order:	
Field ID:	Huffaker Rd 1 - C	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	0.017	0.0090	mg/L	ECS	09/26/02

October 23, 2002

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Georgia Power Company
Environmental Laboratory
5131 Maner Road
Smyrna, GA 30080
(404) 799-2100
(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590207	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Fill and Cover	Received Date/Time:	09/23/02 16:08	Purchase Order:	
Field ID:	Huffaker Rd 2 - B	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	ND	0.0090	mg/L	ECS	09/26/02

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(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590208	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Fill and Cover	Received Date/Time:	09/23/02 16:08	Purchase Order:	
Field ID:	Huffaker Rd 2 - C	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	ND	0.0090	mg/L	ECS	09/26/02

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Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590209	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Overburden	Received Date/Time:	09/23/02 16:08	Purchase Order:	
Field ID:	Huffaker Rd 3 - B	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	0.011	0.0090	mg/L	ECS	09/26/02

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(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590210	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/12/02 00:00	Workorder ID:	5902
Description:	Overburden	Received Date/Time:	09/23/02 16:08	Purchase Order:	
Field ID:	Huffaker Rd 3 - C	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	ND	0.0090	mg/L	ECS	09/26/02

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(404) 799-2141 (FAX)

Certificate of Analysis

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Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590211	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/17/02 08:41	Workorder ID:	5902
Description:	As sorption control	Received Date/Time:	10/22/02 16:02	Purchase Order:	
Field ID:	Control #3, #4	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	0.087	0.0090	mg/L	ECS	09/30/02

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Smyrna, GA 30080
(404) 799-2100
(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590212	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/17/02 08:41	Workorder ID:	5902
Description:	As sorption control	Received Date/Time:	10/22/02 16:02	Purchase Order:	
Field ID:	Control #17, #18	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	0.091	0.0090	mg/L	ECS	09/30/02

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Smyrna, GA 30080
(404) 799-2100
(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590213	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/17/02 08:42	Workorder ID:	5902
Description:	As sorption control	Received Date/Time:	10/22/02 16:02	Purchase Order:	
Field ID:	Control #20, #19	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	0.097	0.0090	mg/L	ECS	09/30/02

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Smyrna, GA 30080
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(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590214	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/17/02 08:43	Workorder ID:	5902
Description:	As sorption control	Received Date/Time:	10/22/02 16:02	Purchase Order:	
Field ID:	Control #7, #1	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	0.094	0.0090	mg/L	ECS	09/30/02

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Smyrna, GA 30080
(404) 799-2100
(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Sample Information

Sample ID:	590215	Matrix:	Water	Analysis Request:	NA
Location:	Hammond	Sample Date/Time:	09/17/02 08:47	Workorder ID:	5902
Description:	As sorption control	Received Date/Time:	10/22/02 16:02	Purchase Order:	
Field ID:	Control #10, #16	Collector:			

INORGANICS

Analyte	Date Prepared	Prep Method	Prep By	Analytical Method	Result	Reporting Limit	Units	Analyst	Date Analyzed
Arsenic	09/25/02	EPA 3010	ECS	EPA 6010B	0.090	0.0090	mg/L	ECS	09/30/02

October 23, 2002

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Smyrna, GA 30080
(404) 799-2100
(404) 799-2141 (FAX)

Certificate of Analysis

Jim Redwine
Southern Company Services
Inverness Office Park
Bin B263
Birmingham, AL 35242

Method Blank Report

Client ID: Southern Company Services
Workorder ID: Hammond Sorption
Laboratory ID: 15278
Sample ID: MB for HBN 62653 [DIGM/1323]
Matrix: Water

Parameter	Date Prepared	Analytical Method	Date Analyzed	Result	Reporting Limit	Units
INORGANICS						
Arsenic	09/25/02	EPA 6010B	09/26/02	ND	0.045	mg/L

October 23, 2002

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10/2/02 11:26

Workorder 5902
Description ASTM D 4646 Standard Test Method for 24-h Batch-Type Measurement of Contaminant Sorption by Soils and Sediments

Air Dry Weights	9/12/02 Initial Weight (grams)	9/13/02 Air Dry Weight (grams)	9/16/02 Air Dry Weight (grams)	9/16/02 % Moisture
Huffaker 1	5935.3	5866.2	5858.8	2.37%
Huffaker 2	6623.8	6425.3	6383.1	2.89%
Huffaker 3	6808.4	6379.4	6366.6	1.72%

pH		Weight (grams)	Extraction Vessel	Initial pH Solution	Mixture pH Beginning	Mixture pH End
Huffaker 1	A	75.8	7	7.1	5.06	5.17
	B	70	4	7.3	5.43	5.23
	C	69.3	1	7.1	5.08	5.08
Huffaker 2	A	70.7	8	6.6	4.91	5.01
	B	68.9	10	6.9	4.5	4.55
	C	70.4	16	6.9	4.55	4.68
Huffaker 3	A	68.2	20	6.9	4.38	4.49
	B	69.8	19	6.9	4.57	4.35
	C	68.7	17	6.6	4.47	4.46
Blank			3	7.3	6.28	6.5

Distribution Ratio		Arsenic (ug/mL) Initial	Arsenic (ug/mL) Final	Soil Oven Dried Basis (g)	Distribution Ratio (ml/g)	Average (ml/g)	St Dev (ml/g)
Huffaker 1	A	0.094	0.008	75.8	200		
	B	0.087	0.008	70.0	204	165	64
	C	0.094	0.017	69.3	91		
Huffaker 2	A	0.091	0.009	70.7	180		
	B	0.090	0.004	68.9	470	289	158
	C	0.090	0.008	70.4	217		
Huffaker 3	A	0.097	0.004	68.2	445		
	B	0.097	0.011	69.8	164	349	160
	C	0.091	0.004	68.7	439		
Average Control		0.092					

Volume (mL) 1400

Completed by: MC Nichols 10/2/02

Reviewed by: D.H.A. Dio 10/02/2002

Initial concentration - result for split of initial arsenic solution used
Arsenic concentrations by ICP with MDL of 0.009 ug / ml, results are as measured
Huffacker 2A - Original result -0.004, confirmed on reanalysis as -0.0119 +/- 0.0116. Used 0.009 (MDL).

Georgia Power Environmental Laboratory
5131 Maner Road, Bin 39110
Smyrna, GA 30080

Phone: (404) 799-2100 Fax: (404) 799-2141
Company: 8-530-2100 Fax: 8-530-2141

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

LAB USE ONLY

Control No. CC- 15002

Sample Delivery Group: 5902

11 Page _____ of _____

☑ 12 Standard Turnaround Time

☐ Rush in _____ Business Days
(Must be cleared through Env. Lab. prior to shipment)

Company: 1 _____

Report To Address: 2 _____

Phone: 3 _____ Fax _____

Contact: 4 _____

Project Location: 5 Huffaker Rd / Hammond

Account Number: 6 _____

Special Instructions: 7 _____

Sample Shipment Date: 8 09/12/02

Sample Received Date: 9 09/12/02

Sampled By: 10 _____
Print Name

_____
Signature

Authorization to subcontract analysis will be assumed acceptable by customer unless stated otherwise.

PRESERVATIVE 20: U

ANALYSIS REQUESTED 21: As - ICP

Sample Type Key: 22
G-Grab C-Composite
O-Other

Matrix Key: 23
O-Oil SW-Surface Water
S-Solid GW-Ground Water
SL-Sludge WW-Waste Water
W-Wipe DW-Drinking Water

Preservative Key: 24
H-Hydrochloric Acid
N-Nitric Acid
S-Sulfuric Acid
SH-Sodium Hydroxide
SB-Sodium Bisulfide
P-Phosphoric Acid
ST-Sodium Thiosulfate
I-Ice
U-Unpreserved

LAB USE ONLY 13 LAB ID	Sample 14 Number	Collection 15 Date	Collection 15 Time	Sample 16 Description	17 Sample Type	18 Matrix	19 No. of Containers	As - ICP			LAB USE ONLY 25 Comments
	HA-1	09/12/02	—	Residual / Overburden	G	S	2	3	3	590201, 590205, 590206	
	HA-2	09/12/02	—	Fill + Cover	G	S	2	3	3	590202, 590207, 590208	
	HA 3	09/12/02	—	Overburden	G	S	2	3	3	590203, 590209, 590210	
	DUPLICATE CONTROL	9/17/02								590204	
	CONTROL #3, #4										590211
	CONTROL 17, 18										590212
	CONTROL 20, 19										590213
	CONTROL 7, 1										590214
	CONTROL 10, 16										590215

Relinquished by: 26 Date/Time

Received by: 27 Date/Time

Relinquished by: Date/Time

Received by: Date/Time

LAB USE ONLY: Sample Disposition Information 28

Type: _____ Date: _____ Container: _____

Type: _____ Date: _____ Container: _____

Type: _____ Date: _____ Container: _____

****

SESOIL-84: SEASONAL CYCLES OF WATER, SEDIMENT, AND POLLUTANTS IN SOIL ENVIRONMENTS
DEVELOPERS: M. BONAZOUNTAS, ARTHUR D. LITTLE INC. (617)864-5770 X5871
J. WAGNER, DIS/ADLPIPE, INC., (617)492-1991, X5820
MODIFIED EXTENSIVELY BY: D.M. HETRICK
OAK RIDGE NATIONAL LABORATORY (615) 576-7556
VERSION: JANUARY 1995

****

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: BASIC MODEL; K_d SOIL=289 mg/L
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

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-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:			4	
YEARS TO BE SIMULATED:			100	
AREA (CM**2):			0.120E+10	
APPLICATION AREA LATITUDE (DEG.):			34.2	
SPILL (1) OR STEADY APPLICATION (0):	0			
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0			
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1			
DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13E

YEAR - 100 ANNUAL SUMMARY REPORT

-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	6.964
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	6.964
TOTAL PRECIPITATION (CM)	125.511
TOTAL INFILTRATION (CM)	10.590
TOTAL EVAPOTRANSPIRATION (CM)	6.362
TOTAL SURFACE RUNOFF (CM)	114.921
TOTAL GRW RUNOFF (CM)	4.228
TOTAL MOISTURE RETENTION (CM)	0.000
TOTAL YIELD (CM)	119.148

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 7.208E-01
ADSORBED SOIL (UG/G) 1.622E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 1.856E+00
ADSORBED SOIL (UG/G) 4.177E+01

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SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.703E+00
ADSORBED SOIL (UG/G) 6.082E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.098E+00
ADSORBED SOIL (UG/G) 6.971E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.228E+00
ADSORBED SOIL (UG/G) 7.263E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.259E+00
ADSORBED SOIL (UG/G) 7.334E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.266E+00
ADSORBED SOIL (UG/G) 7.348E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

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SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

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SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 1.966E-01
ADSORBED SOIL (UG/G) 5.680E+01

MAX. POLL. DEPTH (M) 1.837E+01

**********EXECUTION COMPLETED **********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: BASIC MODEL; K_d SOIL =165 mg/L
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000

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ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:			4	
YEARS TO BE SIMULATED:			100	
AREA (CM**2):			0.120E+10	
APPLICATION AREA LATITUDE (DEG.):			34.2	
SPILL (1) OR STEADY APPLICATION (0):	0			
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0			
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1			
DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	7.3

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	6.964
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	6.964
TOTAL PRECIPITATION (CM)	125.511
TOTAL INFILTRATION (CM)	10.590
TOTAL EVAPOTRANSPIRATION (CM)	6.362
TOTAL SURFACE RUNOFF (CM)	114.921
TOTAL GRW RUNOFF (CM)	4.228
TOTAL MOISTURE RETENTION (CM)	0.000
TOTAL YIELD (CM)	119.148

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AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 7.208E-01
ADSORBED SOIL (UG/G) 1.622E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 1.856E+00
ADSORBED SOIL (UG/G) 4.177E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.703E+00
ADSORBED SOIL (UG/G) 6.082E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.098E+00
ADSORBED SOIL (UG/G) 6.971E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.228E+00
ADSORBED SOIL (UG/G) 7.263E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.259E+00
ADSORBED SOIL (UG/G) 7.334E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.266E+00
ADSORBED SOIL (UG/G) 7.348E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

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SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

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SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.448E-01
ADSORBED SOIL (UG/G) 5.686E+01

MAX. POLL. DEPTH (M) 1.841E+01

**********EXECUTION COMPLETED**********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: BASIC MODEL; K_d SOIL=2890 mg/L
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

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-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:				4
YEARS TO BE SIMULATED:				100
AREA (CM**2):				0.120E+10
APPLICATION AREA LATITUDE (DEG.):				34.2
SPILL (1) OR STEADY APPLICATION (0):	0			
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0			
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1			
DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	0.13E+03

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	6.964
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	6.964
TOTAL PRECIPITATION (CM)	125.511
TOTAL INFILTRATION (CM)	10.590
TOTAL EVAPOTRANSPIRATION (CM)	6.362

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TOTAL SURFACE RUNOFF (CM) 114.921
TOTAL GRW RUNOFF (CM) 4.228
TOTAL MOISTURE RETENTION (CM) 0.000
TOTAL YIELD (CM) 119.148

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 7.208E-01
ADSORBED SOIL (UG/G) 1.622E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 1.856E+00
ADSORBED SOIL (UG/G) 4.177E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.703E+00
ADSORBED SOIL (UG/G) 6.082E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.098E+00
ADSORBED SOIL (UG/G) 6.971E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.228E+00
ADSORBED SOIL (UG/G) 7.263E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.259E+00
ADSORBED SOIL (UG/G) 7.334E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.266E+00
ADSORBED SOIL (UG/G) 7.348E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

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SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.351E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

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SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.267E+00
ADSORBED SOIL (UG/G) 7.350E+01

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 1.966E-02
ADSORBED SOIL (UG/G) 5.682E+01

MAX. POLL. DEPTH (M) 1.831E+01

**********EXECUTION COMPLETED**********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: INTRINSIC PERMEABILITY ASH = 0.10E-07 CM^2
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0

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POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:	4
YEARS TO BE SIMULATED:	100
AREA (CM**2):	0.120E+10
APPLICATION AREA LATITUDE (DEG.):	34.2
SPILL (1) OR STEADY APPLICATION (0):	0
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1

DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-07	0.10E-07	0.10E-07	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	7.003

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AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	7.003
TOTAL PRECIPITATION (CM)	125.137
TOTAL INFILTRATION (CM)	11.670
TOTAL EVAPOTRANSPIRATION (CM)	6.672
TOTAL SURFACE RUNOFF (CM)	113.467
TOTAL GRW RUNOFF (CM)	4.997
TOTAL MOISTURE RETENTION (CM)	0.000
TOTAL YIELD (CM)	118.464

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1		
	SOIL MOISTURE (UG/ML)	2.003E-06
	ADSORBED SOIL (UG/G)	4.506E-05
SUBLAYER 2		
	SOIL MOISTURE (UG/ML)	4.782E-05
	ADSORBED SOIL (UG/G)	1.076E-03
SUBLAYER 3		
	SOIL MOISTURE (UG/ML)	5.441E-04
	ADSORBED SOIL (UG/G)	1.224E-02
SUBLAYER 4		
	SOIL MOISTURE (UG/ML)	3.931E-03
	ADSORBED SOIL (UG/G)	8.844E-02
SUBLAYER 5		
	SOIL MOISTURE (UG/ML)	2.024E-02
	ADSORBED SOIL (UG/G)	4.554E-01
SUBLAYER 6		
	SOIL MOISTURE (UG/ML)	7.911E-02
	ADSORBED SOIL (UG/G)	1.780E+00
SUBLAYER 7		
	SOIL MOISTURE (UG/ML)	2.446E-01
	ADSORBED SOIL (UG/G)	5.503E+00
SUBLAYER 8		
	SOIL MOISTURE (UG/ML)	6.142E-01
	ADSORBED SOIL (UG/G)	1.382E+01
SUBLAYER 9		
	SOIL MOISTURE (UG/ML)	1.281E+00
	ADSORBED SOIL (UG/G)	2.882E+01
SUBLAYER 10		
	SOIL MOISTURE (UG/ML)	2.265E+00
	ADSORBED SOIL (UG/G)	5.095E+01

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SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 2.265E+00
ADSORBED SOIL (UG/G) 5.096E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 2.266E+00
ADSORBED SOIL (UG/G) 5.098E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.266E+00
ADSORBED SOIL (UG/G) 5.099E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 2.267E+00
ADSORBED SOIL (UG/G) 5.101E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 2.267E+00
ADSORBED SOIL (UG/G) 5.102E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 2.268E+00
ADSORBED SOIL (UG/G) 5.103E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 2.269E+00
ADSORBED SOIL (UG/G) 5.105E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 2.269E+00
ADSORBED SOIL (UG/G) 5.106E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 2.270E+00
ADSORBED SOIL (UG/G) 5.107E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 2.270E+00
ADSORBED SOIL (UG/G) 5.109E+01

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 2.271E+00
ADSORBED SOIL (UG/G) 5.110E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 2.272E+00
ADSORBED SOIL (UG/G) 5.111E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.272E+00
ADSORBED SOIL (UG/G) 5.113E+01

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SUBLAYER 4
SOIL MOISTURE (UG/ML) 2.273E+00
ADSORBED SOIL (UG/G) 5.114E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 2.273E+00
ADSORBED SOIL (UG/G) 5.115E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 2.274E+00
ADSORBED SOIL (UG/G) 5.117E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 2.275E+00
ADSORBED SOIL (UG/G) 5.118E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 2.275E+00
ADSORBED SOIL (UG/G) 5.119E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 2.276E+00
ADSORBED SOIL (UG/G) 5.121E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 2.276E+00
ADSORBED SOIL (UG/G) 5.122E+01

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 2.386E+00
ADSORBED SOIL (UG/G) 6.894E+02

MAX. POLL. DEPTH (M) 1.883E+01

**********EXECUTION COMPLETED**********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: INTRINSIC PERMEABILITY ASH = 0.10E-09 CM^2
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

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GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:	4
YEARS TO BE SIMULATED:	100
AREA (CM**2):	0.120E+10
APPLICATION AREA LATITUDE (DEG.):	34.2
SPILL (1) OR STEADY APPLICATION (0):	0
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1

DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-09	0.10E-09	0.10E-09	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	6.580
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	6.580
TOTAL PRECIPITATION (CM)	126.517
TOTAL INFILTRATION (CM)	5.343
TOTAL EVAPOTRANSPIRATION (CM)	4.253
TOTAL SURFACE RUNOFF (CM)	121.174
TOTAL GRW RUNOFF (CM)	1.090
TOTAL MOISTURE RETENTION (CM)	0.000
TOTAL YIELD (CM)	122.264

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 2.614E+00
ADSORBED SOIL (UG/G) 5.882E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.010E+00
ADSORBED SOIL (UG/G) 6.773E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

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SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.817E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.030E+00
ADSORBED SOIL (UG/G) 6.816E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.029E+00
ADSORBED SOIL (UG/G) 6.816E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.029E+00
ADSORBED SOIL (UG/G) 6.816E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.029E+00
ADSORBED SOIL (UG/G) 6.815E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.029E+00
ADSORBED SOIL (UG/G) 6.815E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.029E+00
ADSORBED SOIL (UG/G) 6.815E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.029E+00
ADSORBED SOIL (UG/G) 6.815E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.029E+00
ADSORBED SOIL (UG/G) 6.814E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.028E+00
ADSORBED SOIL (UG/G) 6.814E+01

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SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.028E+00
ADSORBED SOIL (UG/G) 6.814E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.028E+00
ADSORBED SOIL (UG/G) 6.813E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.028E+00
ADSORBED SOIL (UG/G) 6.813E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.028E+00
ADSORBED SOIL (UG/G) 6.813E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.028E+00
ADSORBED SOIL (UG/G) 6.812E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.028E+00
ADSORBED SOIL (UG/G) 6.812E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.027E+00
ADSORBED SOIL (UG/G) 6.812E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.027E+00
ADSORBED SOIL (UG/G) 6.811E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.027E+00
ADSORBED SOIL (UG/G) 6.811E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.027E+00
ADSORBED SOIL (UG/G) 6.811E+01

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 1.119E-02
ADSORBED SOIL (UG/G) 3.234E+00

MAX. POLL. DEPTH (M) 1.831E+01

**********EXECUTION COMPLETED**********

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****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: INTRINSIC PERMEABILITY SOIL = 0.10E-09 CM^2
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:				4
YEARS TO BE SIMULATED:				100
AREA (CM**2):				0.120E+10
APPLICATION AREA LATITUDE (DEG.):				34.2
SPILL (1) OR STEADY APPLICATION (0):				0
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:				0
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)				1
DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1

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PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-9
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	7.242
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	7.242
TOTAL PRECIPITATION (CM)	124.646
TOTAL INFILTRATION (CM)	45.146
TOTAL EVAPOTRANSPIRATION (CM)	11.010
TOTAL SURFACE RUNOFF (CM)	79.500
TOTAL GRW RUNOFF (CM)	34.136
TOTAL MOISTURE RETENTION (CM)	0.000
TOTAL YIELD (CM)	113.636

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 8.705E-01
ADSORBED SOIL (UG/G) 1.959E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 1.990E+00
ADSORBED SOIL (UG/G) 4.478E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.693E+00
ADSORBED SOIL (UG/G) 6.060E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 2.980E+00
ADSORBED SOIL (UG/G) 6.706E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.065E+00
ADSORBED SOIL (UG/G) 6.897E+01

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SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.085E+00
ADSORBED SOIL (UG/G) 6.942E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.952E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

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SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.090E+00
ADSORBED SOIL (UG/G) 6.953E+01

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 2.787E-01
ADSORBED SOIL (UG/G) 8.053E+01

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MAX. POLL. DEPTH (M) 1.842E+01

**********EXECUTION COMPLETED**********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: BASIC MODEL; POROSITY = 0.01
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100E-01
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:	4
YEARS TO BE SIMULATED:	100
AREA (CM**2):	0.120E+10
APPLICATION AREA LATITUDE (DEG.):	34.2
SPILL (1) OR STEADY APPLICATION (0):	0

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MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.: 0
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0) 1

DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13E

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE 0.000E+00
SOIL ZONE 2 0.000E+00
SOIL ZONE 3 0.000E+00
LOWER SOIL ZONE 0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%) 0.709
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%) 0.709
TOTAL PRECIPITATION (CM) 124.590
TOTAL INFILTRATION (CM) 6.528
TOTAL EVAPOTRANSPIRATION (CM) 1.250
TOTAL SURFACE RUNOFF (CM) 118.063
TOTAL GRW RUNOFF (CM) 5.278
TOTAL MOISTURE RETENTION (CM) 0.000
TOTAL YIELD (CM) 123.340

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 1.201E+00
ADSORBED SOIL (UG/G) 2.703E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 2.335E+00
ADSORBED SOIL (UG/G) 5.255E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.859E+00
ADSORBED SOIL (UG/G) 6.434E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.017E+00
ADSORBED SOIL (UG/G) 6.789E+01

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SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.050E+00
ADSORBED SOIL (UG/G) 6.863E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.056E+00
ADSORBED SOIL (UG/G) 6.876E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.056E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

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SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.878E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.057E+00
ADSORBED SOIL (UG/G) 6.877E+01

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LOWER SOIL ZONE:

SUBLAYER 1

SOIL MOISTURE (UG/ML) 2.168E-01
ADSORBED SOIL (UG/G) 6.264E+01

MAX. POLL. DEPTH (M) 1.838E+01

**********EXECUTION COMPLETED**********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: BASIC MODEL; POROSITY = 0.9
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.9
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

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NUMBER OF SOIL LAYERS:		4		
YEARS TO BE SIMULATED:		100		
AREA (CM**2):		0.120E+10		
APPLICATION AREA LATITUDE (DEG.):		34.2		
SPILL (1) OR STEADY APPLICATION (0):	0			
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0			
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1			
DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13E

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	63.938
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	63.938
TOTAL PRECIPITATION (CM)	126.944
TOTAL INFILTRATION (CM)	36.976
TOTAL EVAPOTRANSPIRATION (CM)	31.642
TOTAL SURFACE RUNOFF (CM)	89.968
TOTAL GRW RUNOFF (CM)	5.334
TOTAL MOISTURE RETENTION (CM)	0.001
TOTAL YIELD (CM)	95.302

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
- SOIL MOISTURE (UG/ML) 2.509E-02
- ADSORBED SOIL (UG/G) 5.646E-01

SUBLAYER 2
- SOIL MOISTURE (UG/ML) 1.854E-01
- ADSORBED SOIL (UG/G) 4.172E+00

SUBLAYER 3
- SOIL MOISTURE (UG/ML) 6.570E-01
- ADSORBED SOIL (UG/G) 1.478E+01

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SUBLAYER 4
SOIL MOISTURE (UG/ML) 1.503E+00
ADSORBED SOIL (UG/G) 3.382E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 2.538E+00
ADSORBED SOIL (UG/G) 5.711E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.446E+00
ADSORBED SOIL (UG/G) 7.753E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 4.031E+00
ADSORBED SOIL (UG/G) 9.071E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 4.313E+00
ADSORBED SOIL (UG/G) 9.705E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 4.414E+00
ADSORBED SOIL (UG/G) 9.932E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

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SUBLAYER 7
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.991E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

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SUBLAYER 10

SOIL MOISTURE (UG/ML) 4.441E+00
ADSORBED SOIL (UG/G) 9.992E+01

LOWER SOIL ZONE:

SUBLAYER 1

SOIL MOISTURE (UG/ML) 3.769E-01
ADSORBED SOIL (UG/G) 1.089E+02

MAX. POLL. DEPTH (M) 1.839E+01

**********EXECUTION COMPLETED**********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN:BASIC MODEL; As ASH = 680 mg/kg
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000

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LIGAND MOLECULAR WEIGHT (G/MOL): .000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:			4	
YEARS TO BE SIMULATED:			100	
AREA (CM**2):			0.120E+10	
APPLICATION AREA LATITUDE (DEG.):			34.2	
SPILL (1) OR STEADY APPLICATION (0):	0			
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0			
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1			
DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13E

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	6.964
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	6.964
TOTAL PRECIPITATION (CM)	125.511
TOTAL INFILTRATION (CM)	10.590
TOTAL EVAPOTRANSPIRATION (CM)	6.362
TOTAL SURFACE RUNOFF (CM)	114.921
TOTAL GRW RUNOFF (CM)	4.228
TOTAL MOISTURE RETENTION (CM)	0.000
TOTAL YIELD (CM)	119.148

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1

SOIL MOISTURE (UG/ML)	7.208E+00
ADSORBED SOIL (UG/G)	1.622E+02

SUBLAYER 2

SOIL MOISTURE (UG/ML)	1.856E+01
ADSORBED SOIL (UG/G)	4.177E+02

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SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.703E+01
ADSORBED SOIL (UG/G) 6.081E+02

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.098E+01
ADSORBED SOIL (UG/G) 6.970E+02

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.227E+01
ADSORBED SOIL (UG/G) 7.261E+02

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.259E+01
ADSORBED SOIL (UG/G) 7.333E+02

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.265E+01
ADSORBED SOIL (UG/G) 7.346E+02

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

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SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

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SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.266E+01
ADSORBED SOIL (UG/G) 7.349E+02

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 1.966E+00
ADSORBED SOIL (UG/G) 5.681E+02

MAX. POLL. DEPTH (M) 1.837E+01

**********EXECUTION COMPLETED**********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN:BASIC MODEL; As ASH = 6.8 mg/kg
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000

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DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:	4
YEARS TO BE SIMULATED:	100
AREA (CM**2):	0.120E+10
APPLICATION AREA LATITUDE (DEG.):	34.2
SPILL (1) OR STEADY APPLICATION (0):	0
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1

DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13E

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-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	6.964
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	6.964
TOTAL PRECIPITATION (CM)	125.511
TOTAL INFILTRATION (CM)	10.590
TOTAL EVAPOTRANSPIRATION (CM)	6.362
TOTAL SURFACE RUNOFF (CM)	114.921
TOTAL GRW RUNOFF (CM)	4.228
TOTAL MOISTURE RETENTION (CM)	0.000
TOTAL YIELD (CM)	119.148

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AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 7.206E-02
ADSORBED SOIL (UG/G) 1.621E+00

SUBLAYER 2
SOIL MOISTURE (UG/ML) 1.856E-01
ADSORBED SOIL (UG/G) 4.175E+00

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.703E-01
ADSORBED SOIL (UG/G) 6.082E+00

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.099E-01
ADSORBED SOIL (UG/G) 6.972E+00

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.228E-01
ADSORBED SOIL (UG/G) 7.264E+00

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.260E-01
ADSORBED SOIL (UG/G) 7.335E+00

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.267E-01
ADSORBED SOIL (UG/G) 7.350E+00

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

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SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 2
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 3
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 5
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

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SUBLAYER 6
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 7
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 8
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 9
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

SUBLAYER 10
SOIL MOISTURE (UG/ML) 3.268E-01
ADSORBED SOIL (UG/G) 7.353E+00

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 1.967E-02
ADSORBED SOIL (UG/G) 5.682E+00

MAX. POLL. DEPTH (M) 1.837E+01

**********EXECUTION COMPLETED**********

****** MONTHLY SESOIL MODEL OPERATION ******
MONTHLY SITE SPECIFIC SIMULATION

RUN: BASIC MODEL; K_d SOIL=289 mg/L; 1000 YEARS
REGION: ROME 8 SW
SOIL TYPE: Ash
COMPOUND: Arsenic
WASHLOAD DATA :
APPLICATION AREA: Huffaker Road By-Product Storage

GENERAL INPUT PARAMETERS

-- SOIL INPUT PARAMETERS --

SOIL DENSITY (G/CM**3):	1.45
INTRINSIC PERMEABILITY (CM**2):	.000
DISCONNECTEDNESS INDEX (-):	12.0
POROSITY (-):	.100
ORGANIC CARBON CONTENT (%):	10.0
CATION EXCHANGE CAPACITY (MILLI EQ./100G DRY SOIL):	.000
FREUNDLICH EXPONENT (-):	1.00

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-- CHEMICAL INPUT PARAMETERS --

SOLUBILITY (UG/ML):	.370E+05
DIFFUSION COEFFICIENT IN AIR (CM**2/SEC):	.000
HENRYS LAW CONSTANT (M**3-ATM/MOLE):	.000
ADSORPTION COEFFICIENT ON ORGANIC CARBON(KOC):	.000
ADSORPTION COEFFICIENT ON SOIL (K):	22.5
MOLECULAR WEIGHT (G/MOL):	74.9
VALENCE (-):	.000
NEUTRAL HYDROLYSIS CONSTANT (/DAY):	.000
BASE HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
ACID HYDROLYSIS CONSTANT (L/MOL-DAY):	.000
DEGRADATION RATE IN MOISTURE (/DAY):	.000
DEGRADATION RATE ON SOIL (/DAY):	.000
LIGAND-POLLUTANT STABILITY CONSTANT (-):	.000
NO. MOLES LIGAND/MOLE POLLUTANT (-):	.000
LIGAND MOLECULAR WEIGHT (G/MOL):	.000

-- APPLICATION INPUT PARAMETERS --

NUMBER OF SOIL LAYERS:				4
YEARS TO BE SIMULATED:				100
AREA (CM**2):				0.120E+10
APPLICATION AREA LATITUDE (DEG.):				34.2
SPILL (1) OR STEADY APPLICATION (0):	0			
MODIFIED SUMMERS MODEL USED (1) OR NOT (0) FOR GWR. CONC.:	0			
INITIAL CHEMICAL CONCENTRATIONS GIVEN (1) OR NOT GIVEN (0)	1			
DEPTHS (CM):	0.18E+04	1.0	1.0	0.15E+03
NUMBER OF SUBLAYERS/LAYER	10	10	10	1
PH (CM):	0.00	0.00	0.00	0.00
INTRINSIC PERMEABILITIES (CM**2):	0.10E-08	0.10E-08	0.10E-08	0.10E-10
KDEL RATIOS (-):		1.0	1.0	1.0
KDES RATIOS (-):		1.0	1.0	1.0
OC RATIOS (-):		1.0	1.0	1.0
CEC RATIOS (-):		1.0	1.0	1.0
FRN RATIOS(-):		1.0	1.0	1.0
ADS RATIOS(-):		1.0	1.0	13

YEAR -1000 ANNUAL SUMMARY REPORT

-- TOTAL INPUTS (UG) --

UPPER SOIL ZONE	0.000E+00
SOIL ZONE 2	0.000E+00
SOIL ZONE 3	0.000E+00
LOWER SOIL ZONE	0.000E+00

-- HYDROLOGIC CYCLE COMPONENTS --

AVERAGE SOIL MOISTURE ZONE 1 (%)	6.964
AVERAGE SOIL MOISTURE BELOW ZONE 1 (%)	6.964
TOTAL PRECIPITATION (CM)	125.511
TOTAL INFILTRATION (CM)	10.590
TOTAL EVAPOTRANSPIRATION (CM)	6.362

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TOTAL SURFACE RUNOFF (CM) 114.921
TOTAL GRW RUNOFF (CM) 4.228
TOTAL MOISTURE RETENTION (CM) 0.000
TOTAL YIELD (CM) 119.148

AVERAGE POLLUTANT CONCENTRATIONS -- NOTE: ONLY NON-ZERO VALUES ARE PRINTED

UPPER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 1.629E-06
ADSORBED SOIL (UG/G) 3.665E-05

SUBLAYER 2
SOIL MOISTURE (UG/ML) 4.052E-05
ADSORBED SOIL (UG/G) 9.117E-04

SUBLAYER 3
SOIL MOISTURE (UG/ML) 4.786E-04
ADSORBED SOIL (UG/G) 1.077E-02

SUBLAYER 4
SOIL MOISTURE (UG/ML) 3.586E-03
ADSORBED SOIL (UG/G) 8.070E-02

SUBLAYER 5
SOIL MOISTURE (UG/ML) 1.906E-02
ADSORBED SOIL (UG/G) 4.289E-01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 7.644E-02
ADSORBED SOIL (UG/G) 1.720E+00

SUBLAYER 7
SOIL MOISTURE (UG/ML) 2.428E-01
ADSORBED SOIL (UG/G) 5.462E+00

SUBLAYER 8
SOIL MOISTURE (UG/ML) 6.196E-01
ADSORBED SOIL (UG/G) 1.394E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 1.306E+00
ADSORBED SOIL (UG/G) 2.939E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 2.349E+00
ADSORBED SOIL (UG/G) 5.286E+01

SOIL ZONE 2:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 2.350E+00
ADSORBED SOIL (UG/G) 5.288E+01

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SUBLAYER 2
SOIL MOISTURE (UG/ML) 2.351E+00
ADSORBED SOIL (UG/G) 5.289E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.351E+00
ADSORBED SOIL (UG/G) 5.291E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 2.352E+00
ADSORBED SOIL (UG/G) 5.292E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 2.353E+00
ADSORBED SOIL (UG/G) 5.293E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 2.353E+00
ADSORBED SOIL (UG/G) 5.295E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 2.354E+00
ADSORBED SOIL (UG/G) 5.296E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 2.355E+00
ADSORBED SOIL (UG/G) 5.298E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 2.355E+00
ADSORBED SOIL (UG/G) 5.299E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 2.356E+00
ADSORBED SOIL (UG/G) 5.301E+01

SOIL ZONE 3:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 2.356E+00
ADSORBED SOIL (UG/G) 5.302E+01

SUBLAYER 2
SOIL MOISTURE (UG/ML) 2.357E+00
ADSORBED SOIL (UG/G) 5.303E+01

SUBLAYER 3
SOIL MOISTURE (UG/ML) 2.358E+00
ADSORBED SOIL (UG/G) 5.305E+01

SUBLAYER 4
SOIL MOISTURE (UG/ML) 2.358E+00
ADSORBED SOIL (UG/G) 5.306E+01

SUBLAYER 5
SOIL MOISTURE (UG/ML) 2.359E+00

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ADSORBED SOIL (UG/G) 5.308E+01

SUBLAYER 6
SOIL MOISTURE (UG/ML) 2.360E+00
ADSORBED SOIL (UG/G) 5.309E+01

SUBLAYER 7
SOIL MOISTURE (UG/ML) 2.360E+00
ADSORBED SOIL (UG/G) 5.311E+01

SUBLAYER 8
SOIL MOISTURE (UG/ML) 2.361E+00
ADSORBED SOIL (UG/G) 5.312E+01

SUBLAYER 9
SOIL MOISTURE (UG/ML) 2.362E+00
ADSORBED SOIL (UG/G) 5.314E+01

SUBLAYER 10
SOIL MOISTURE (UG/ML) 2.362E+00
ADSORBED SOIL (UG/G) 5.315E+01

LOWER SOIL ZONE:

SUBLAYER 1
SOIL MOISTURE (UG/ML) 2.229E+00
ADSORBED SOIL (UG/G) 6.439E+02

MAX. POLL. DEPTH (M) 1.890E+01

**********EXECUTION COMPLETED**********

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APPENDIX C

"CHECK OFF LIST" - TO BE USED BY EPD FOR EVALUATING THE ADEQUACY OF CONSULTANT'S MUNICIPAL SOLID WASTE LANDFILL SITE ACCEPTABILITY ASSESSMENTS

I QUALIFICATIONS

(a)	Is the report primarily an engineering report, a geological report, or sub-surface investigation?	Geological/subsurface investigation
(b)	Was the report signed by a geologistor an engineer registered in Georgia	Yes
(c)	Provide registration number.	012687 (P.E.) 602 (P.G.)
(d)	Did the P.G. or P.E. actually visit the site?	Yes
(e)	Did the drilling contractor have a bond as required by the Water Well Standards Act?	Yes, Section 3.3.3, pp. 23-24 and Appendix G
(f)	Who was the drilling contractor?	Southern Company Services, Inc.
(g)	Was the site map prepared by or under the supervision of an engineer or surveyor registered in Georgia?	Yes
(h)	Who was the engineer/surveyor?	Georgia Power Land Department
(i)	Were drilling operations observed by an engineer or geologist?	Yes
(j)	Who was this person?	Ronald Wood, Geologist, Section 3.3.3, p. 24
(k)	Did the P.G. or P.E. check boring logs, drawings, etc.?	Yes
(l)	If (k) above is no, explain why not?	Not applicable

II MAPPING

(a)	Were site topographic maps showing perennial and intermittent streams, surface water bodies, wetlands, rock outcroppings, borehole locations, site boundaries, steep slopes and other environmental, geological, engineering, or cultural/ demographic features provided?	Yes, Drawing No. H-628-11, Figure 1-1, Figure 1-3, Figure 3-1, Figure 3-3
(b)	Was a potentiometric map of the water table provided?	Yes, Figure 3-7 and Figure 3-8
(c)	Was a map showing drinking water wells (public or domestic) within ½ mile of the site boundaries provided?	Yes, Figure 1-5
(d)	Was a map showing the approximate location of the 100-year flood elevation provided?	Yes, Figure 1-2
(e)	Was a map showing recommended ground- and surface-water monitoring locations provided?	Recommendations will be made later, Section 5.6, pp. 48-49

III BORINGS

(a)	What type of drilling rig performed the boring operations?	SIMCO 2800, CME 55, Section 3.3.3, p. 23
(b)	Describe sampling procedures:	Soils were sampled with a split-spoon sampler on 5-foot centers, beginning at a depth of 5 feet, to auger refusal. Rock coring was performed using a NQ triple barrel coring system. Section 3.3.4, p. 24
(c)	Were SPT's performed?	Yes
(d)	Were undisturbed samples collected?	No
(e)	Were descriptive boring logs provided?	Yes, Appendix H

(f) What criteria were used by the consultant to establish boring depths (describe)?

Soil borings - auger refusal; Rock coring - 20' below the groundwater table, with a minimum of 10 feet of rock core or until recovery exceeded 95% within the last 5 feet.

(g) Were water level measurements performed upon boring completion and at least 24 hours later?

As shown on boring logs, Appendix H

(h) Have the borings been plugged under the direction of a P.E. or P.G.?

Temporary piezometers were installed in borings HUF-1 through HUF-19, except HUF-18. HUF18 is an open rock hole. The overburden slug test holes (boring designation suffix of PS) were backfilled with native soil under the direction of a P.G. The cased, weathered rock slug test holes (boring designation suffix of P) have not been abandoned. All holes will be abandoned in accordance with the Water Well Standards Act.

(i) How many borings were drilled?

29 soil borings at 19 locations Table 3-1, p. 25 and Figure 3-3

(j) Is the boring density at least one boring per twenty acres?

Yes

IV ANALYSIS

(a) Where and how far away are the nearest public drinking water sources (e.g., trailer parks, industries, etc.)?

No public water supply wells within 2 miles. Six private wells <1/2 mile from the site, up-gradient, Section 1.11, pp. 13-15

(b) Where and how far away are the nearest municipal drinking water sources?

City of Rome, surface water intake, Etowah River, >4 miles
City of Rome, surface water intake, Oostanaula River, >4 miles
Floyd County, well, Kingston Road, east of Rome, >4 miles
Floyd County, well, Fulton Road, east of Rome, >10 miles

(c) Do the criteria for water supply watershed protection apply?

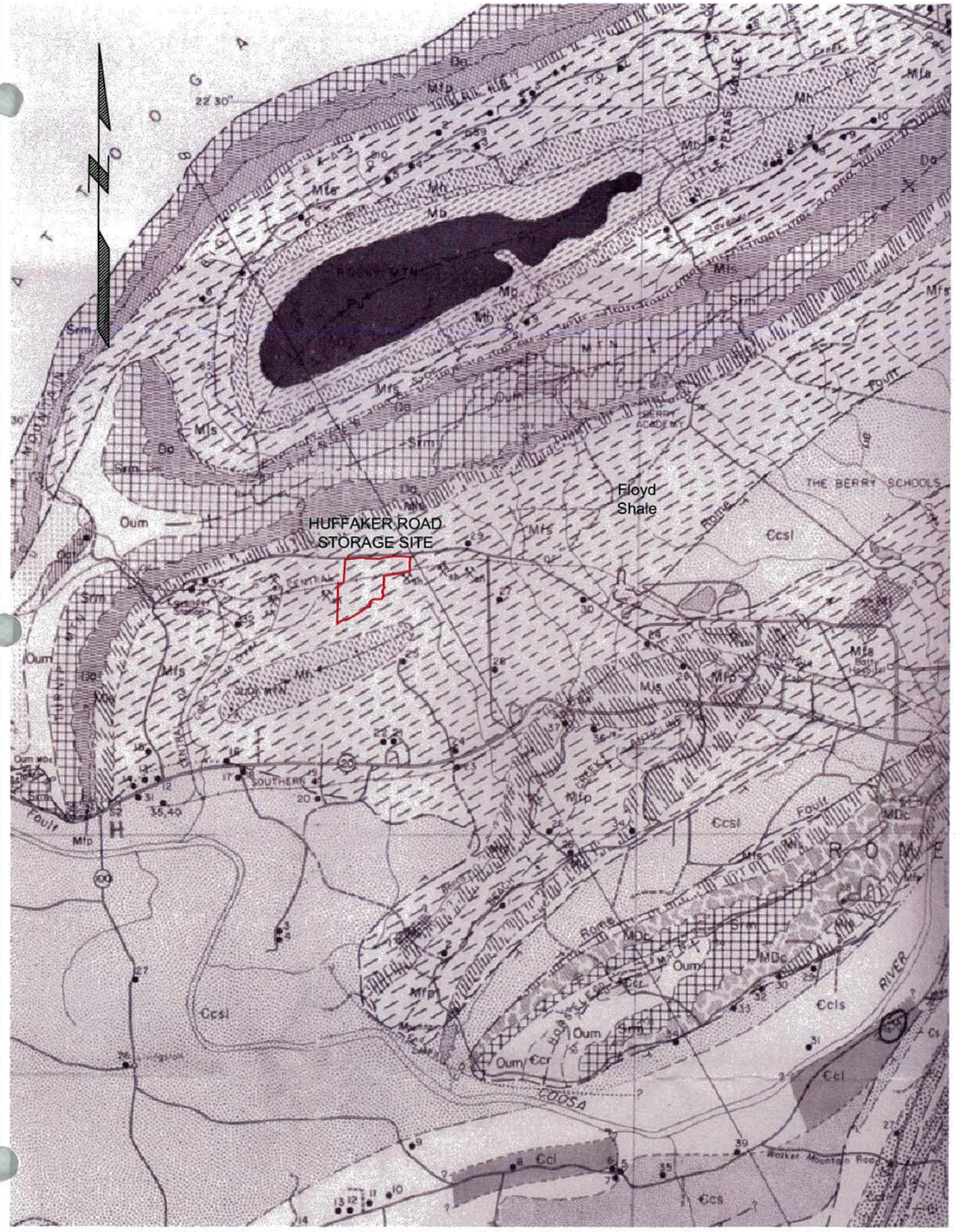
No, Section 1.9, p. 13

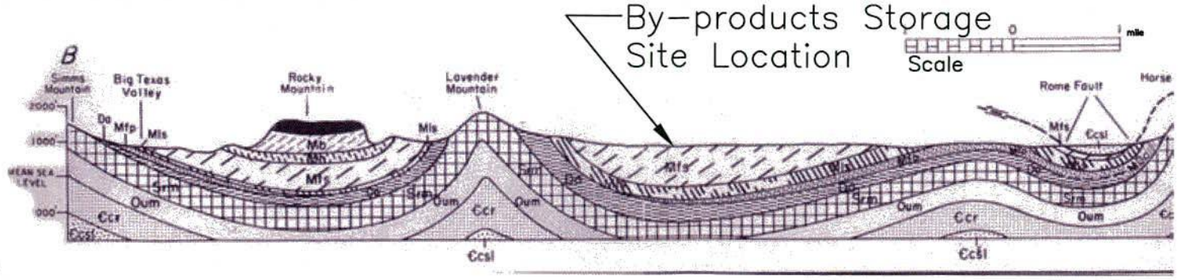
(d)	Do the criteria for wellhead protection areas apply?	No, Section 1.11, p. 15
(e)	Were water level measurements performed during wet (winter and spring) or dry (summer and fall) seasons?	Yes, Both
(f)	Have ground-water flow directions been identified?	Yes, Figures 3-7 and Figure 3-8
(g)	What is the annual anticipated fluctuation in the water table?	Will be determined with future readings
(h)	Has an analysis been performed to identify maximum trench depth?	See Section 5.3, p. 48
(i)	What are the measured horizontal and vertical hydraulic conductivities?	Remolded soil lab values – 3.12×10^{-6} cm/sec average, Table 3-2, p. 27 Overburden slug test values – 6.60×10^{-4} cm/sec average, Table 3-5, p. 32
(j)	Were any actual field measurements made of horizontal hydraulic conductivity and laboratory measurements made of vertical hydraulic conductivity?	Yes, Section 3.3.5, pp. 26-27 and Section 3.5.4, pp. 31-32
(k)	What is the recommended separation between the top of the water table (wet season) and the base of the liner?	>5 feet, Section 5.3, p. 48
(l)	Is the site entirely or partially within a Most Significant Ground - Water Recharge Area?	No, Figure 1-4
(m)	Have water quality monitoring locations been recommended?	General recommendations, Section 5.6, p. 48-49
(n)	Are monitoring specifications (including well design, analytical parameters, sampling frequency, etc.) recommended?	No
(o)	Where and how far away is the nearest airport?	Russell Airport, 8 miles from site, north of Rome

(p)	Is the site zoned for solid waste disposal?	Yes, Special Use Permit, Section 1.13, p. 16 and Appendix D
(q)	Where and how far away is the nearest commercial development?	1.75 miles east of the site on Technology Parkway
(r)	Describe this development:	Neaton of Rome, manufacturing facility for steering wheels
(s)	Is the site within ½ mile of a county boundary or within 5,708 yards of a National Historic Site?	No, Section 1.7, p. 12
(t)	Is the site susceptible to sinkholes, expansive soils, erosion, seismic impact zones, or any other geologic, topographic, or other feature that could impact the integrity of the landfill?	No
(u)	Is an undisturbed buffer zone recommended?	Yes, Section 5.5, p. 48
(v)	If (u) above is yes, what is the recommended width?	25 feet for wetlands, 50 feet along the railroad and 200 feet along property lines and existing creek, Section 5.5, p. 48
(w)	Was an analysis performed of potential pathways whereby leachate could reach human receptors?	Yes, Section 4.4, pp. 44 - 45
(x)	Are there any unique flora or fauna habitats within the site boundary?	No, Section 1.5, p. 11
(y)	Describe the general character of highway access to the site:	Access onto the monofill site is from Huffaker Road. Section 1.2.1, p. 10.
(z)	Is the applicant under any sort of time constraint (e.g., option to purchase, existing landfill has limited capacity, etc.)?	Yes
(aa)	If (z) above is yes, describe:	Current ash storage space has limited remaining capacity and additional space for storage of air quality control by-products is anticipated in the near future.

(bb)	Using the LeGrand method, what is the pollution potential of the site under natural conditions?	Assuming a clay liner, two media – 12.4, Section 4.3, pp. 43 - 44
(cc)	What is the general anticipated life expectancy of the site?	Approximately 50 years
(dd)	Approximately how many people live or work within ½ mile of the site boundary?	Approximately 35 people, most east of the site
(ee)	What percentage of these persons obtain drinking water from:	0% domestic wells 100% public water supply
(ff)	What would be the pollution potential of the site after installing a liner (using EPD's recommended modifications to the LeGrand method)?	12.4 - possible but not likely, Section 4.3, pp. 43 - 44
(gg)	If water supply watershed protection criteria are appropriate, what is the recommended buffer _____ (in feet) and the recommended setback _____(in feet).	not applicable

(Note: The above checklist is only intended to be used as a tool to insure that EPD will receive as complete a report as possible. An omission of any particular piece or pieces of information will not necessarily result in an automatic rejection of the site assessment report.)





LEGEND

Pennsylvanian rocks undivided
Includes Gizzard Formation at base and Sewanee Conglomerate above

Mb — Bangor Limestone

Mfs — Floyd Shale
Mfs—Floyd Shale undifferentiated
Mh—Hartselle Sandstone Member at or near top
Ml—Limestone unit at base

MDc — Chert of Mississippian and Devonian age
MDc—Mississippian and Devonian chert undifferentiated
Mfp—Fort Payne Chert
Mls—Lavender Shale Member
Da—Armuchee Chert

Srm — Red Mountain Formation

Oum — Upper and Middle Ordovician undivided
Includes Murfreesboro, Ridley, Moccasin, and Bays Formations

On — Newala Limestone

Odol — Attalla Conglomerate

O-Ck — Knox Group
Ccr
O-Ck—Knox Group undivided; includes Longview Limestone, Chepultepec Dolomite, and Copper Ridge Dolomite
Ccr—Copper Ridge Dolomite; approximately the lower half of the Knox Group

Ccsl / Ccls / Ccs — Western belt
Ccl — Conasauga Formation
Ccd / Ccs — Eastern belt
Ccl—Limestone outcrop
Ccsl—Mostly shale and some limestone
Ccls—Mostly limestone and some shale
Ccs—Siliceous shale and thin-bedded sandstone
Ccd—Dolomite
Cc—Shale and limestone mixed
Ccs—Mostly shale

Cr — Rome Formation
Cs — Shady Dolomite

MISSISSIPPIAN PENNSYLVANIAN — CARBONIFEROUS
SILURIAN DEVONIAN
ORDOVICIAN
CAMBRIAN

Reference Drawings

GPC Land Department Map File No. H-628-10 Ash Monofill Site
GPC Land Department Map File No. H-628-11 Site Topographic Map
ES1164S1-1 Figure 1-1 Topographic Map of General Site Area
ES1164S1-2 Figure 1-2 Flood Zone Map
ES1164S1-3 Figure 1-3 Wetland Boundaries
ES1164S1-4 Figure 1-4 Proximity of Site to Significant Groundwater Recharge Areas
ES1164S1-5 Figure 1-5 Location of Public and Domestic Water Supply Sources
ES1164S3-1 Figure 3-1 Shale Outcrops
ES1164S3-3 Figure 3-3 Bore Hole Locations and Sections
ES1164S3-4 Figure 3-4 Geologic Cross-Section A-A Along Strike
ES1164S3-5 Figure 3-5 Geologic Cross-Section B-B Perpindicular to Strike
ES1164S3-6 Figure 3-6 Groundwater Elevations Over Time
ES1164S3-7 Figure 3-7 Potentiometric Surface Map Readings Taken January 28, 2002
ES1164S3-8 Figure 3-8 Potentiometric Surface Map Readings Taken September 11, 2002
ES1164S4-1 Figure 4-1 SESOIL Model Simulation
ES1164S5-1 Figure 5-1 Areas Favorable and Unfavorable for Private By-Products Facility
ES1164S5-2 Figure 5-2 Cell Depth and Relationship to Groundwater
ES1164S5-3 Figure 5-3 Typical Monitoring Well Design

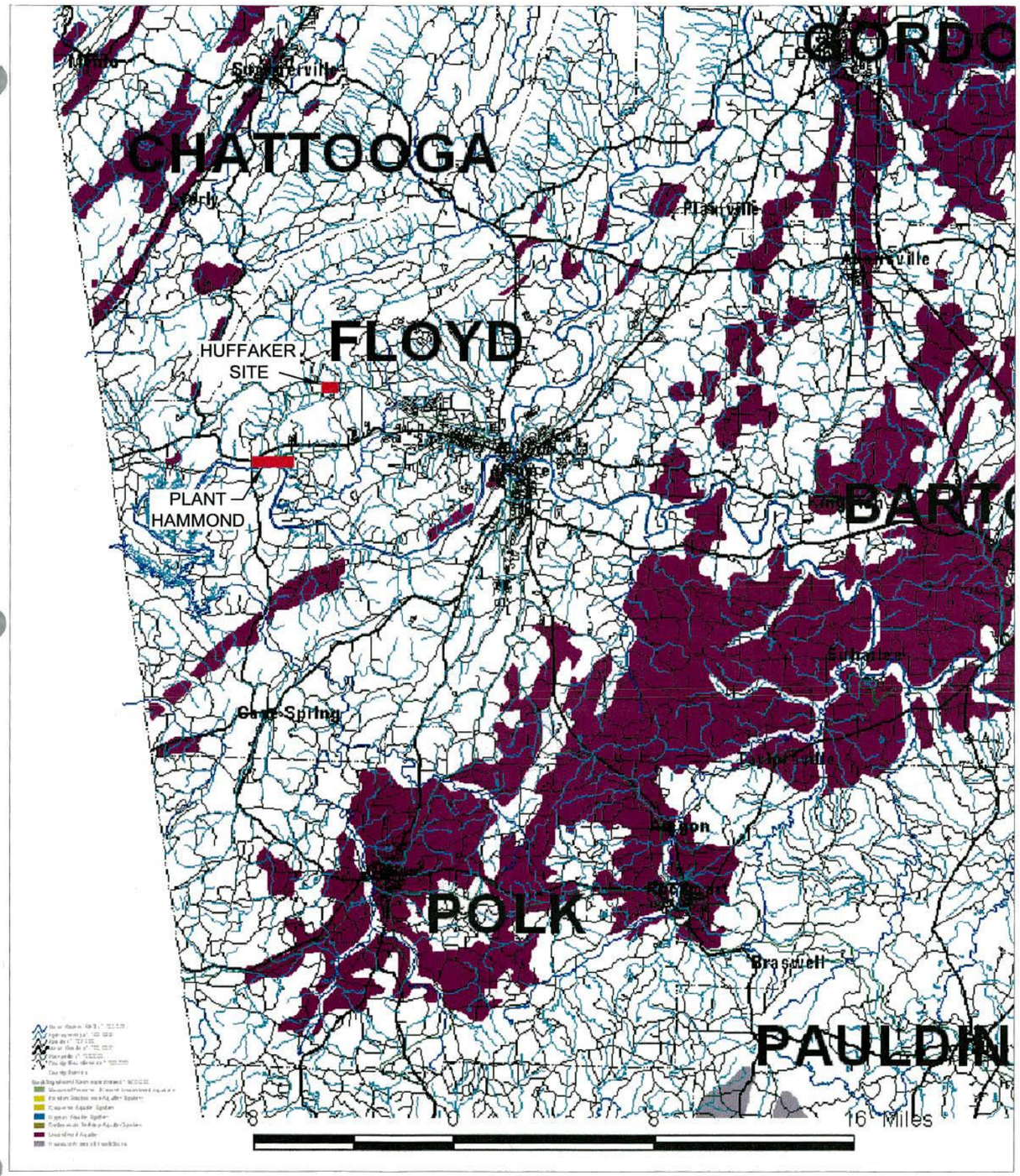
(After Cressler, 1970)

Southern Company Services, Inc.

Figure 3-2
Plant Hammond - Huffaker Road
Coal Combustion By-Products
Storage Site
Regional Geology

ES1164s3-2

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Reference Drawings

GPC Land Department Map File No. H-628-10 Ash Monofill Site
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ES1164S3-7 Figure 3-7 Potentiometric Surface Map Readings Taken January 28, 2002
ES1164S3-8 Figure 3-8 Potentiometric Surface Map Readings Taken September 11, 2002
ES1164S4-1 Figure 4-1 SESOIL Model Simulation
ES1164S5-1 Figure 5-1 Areas Favorable and Unfavorable for Private By-Products Facility
ES1164S5-2 Figure 5-2 Cell Depth and Relationship to Groundwater
ES1164S5-3 Figure 5-3 Typical Monitoring Well Design

LEGEND:

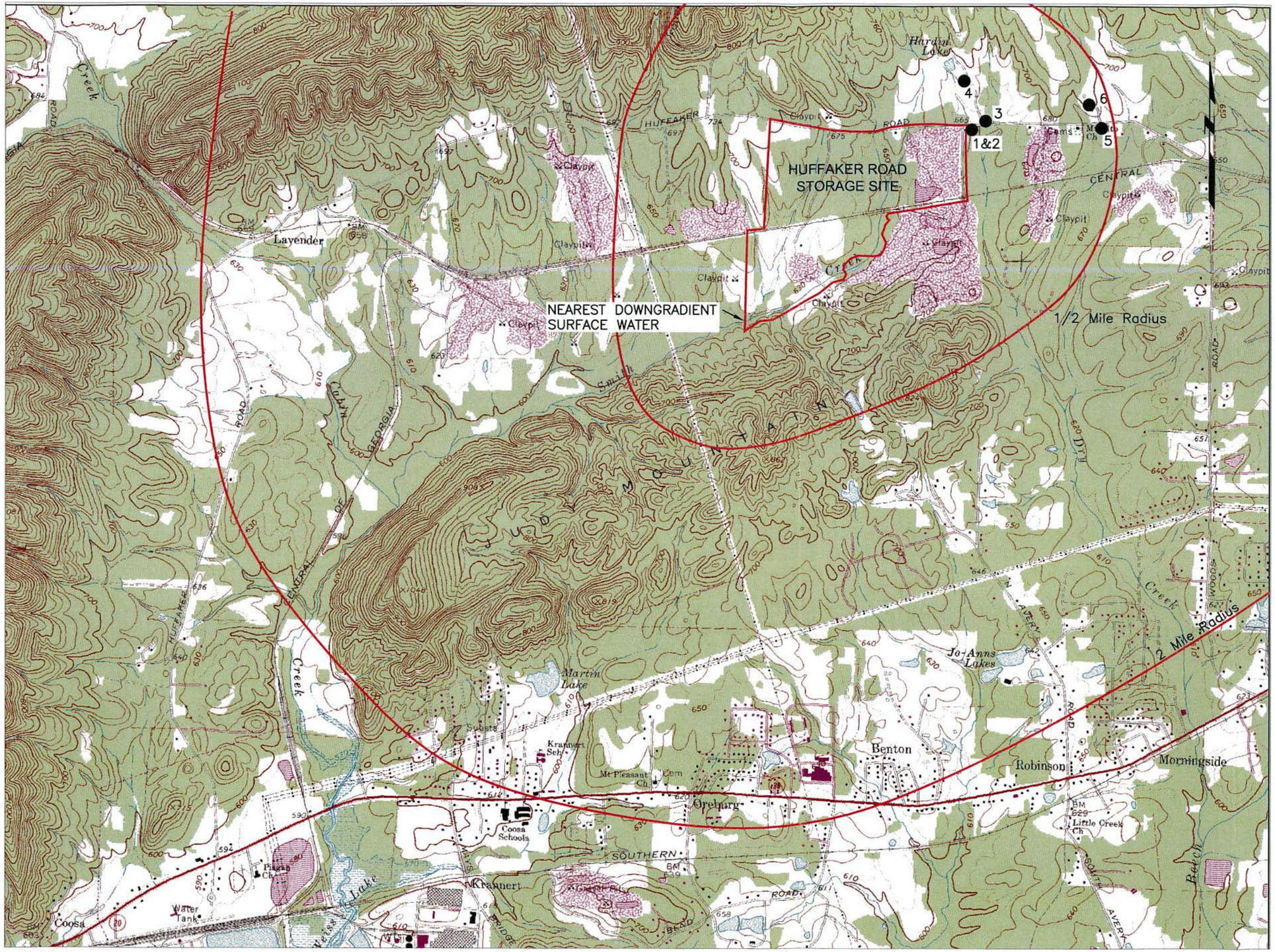
Significant Groundwater Recharge Area

Southern Company Services, Inc.

Figure 1-4
Plant Hammond - Huffaker Road
Coal Combustion By-Products
Storage Site
Proximity of Site to Significant Groundwater Recharge Site
(After, USGS, Digital Environmental Atlas of Georgia (GGSP))

ES1164s1-4

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Reference Drawings

GPC Land Department Map File No. H-628-10 Ash Monofill Site
GPC Land Department Map File No. H-628-11 Site Topographic Map
ES1164S1-1 Figure 1-1 Topographic Map of General Site Area
ES1164S1-2 Figure 1-2 Flood Zone Map
ES1164S1-3 Figure 1-3 Wetland Boundaries
ES1164S1-4 Figure 1-4 Proximity of Site to Significant Groundwater Recharge Areas
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ES1164S3-2 Figure 3-2 Regional Geology
ES1164S3-3 Figure 3-3 Bore Hole Locations and Sections
ES1164S3-4 Figure 3-4 Geologic Cross-Section A-A Along Strike
ES1164S3-5 Figure 3-5 Geologic Cross-Section B-B Perpindicular to Strike
ES1164S3-6 Figure 3-6 Groundwater Elevations Over Time
ES1164S3-7 Figure 3-7 Potentiometric Surface Map Readings Taken January 28, 2002
ES1164S3-8 Figure 3-8 Potentiometric Surface Map Readings Taken September 11, 2002
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ES1164S5-1 Figure 5-1 Areas Favorable and Unfavorable for Private By-Products Facility
ES1164S5-2 Figure 5-2 Cell Depth and Relationship to Groundwater
ES1164S5-3 Figure 5-3 Typical Monitoring Well Design

Legend

● Domestic wells within ½ mile radius and public water supply wells and surface water intakes within 2 miles.

(After Kemron, 2001)

Southern Company Services, Inc.

Figure 1-5
Plant Hammond - Huffaker Road
Coal Combustion By-Products
Storage Site
Location of Public and Domestic Water
Supply Sources

ES1164s1-5

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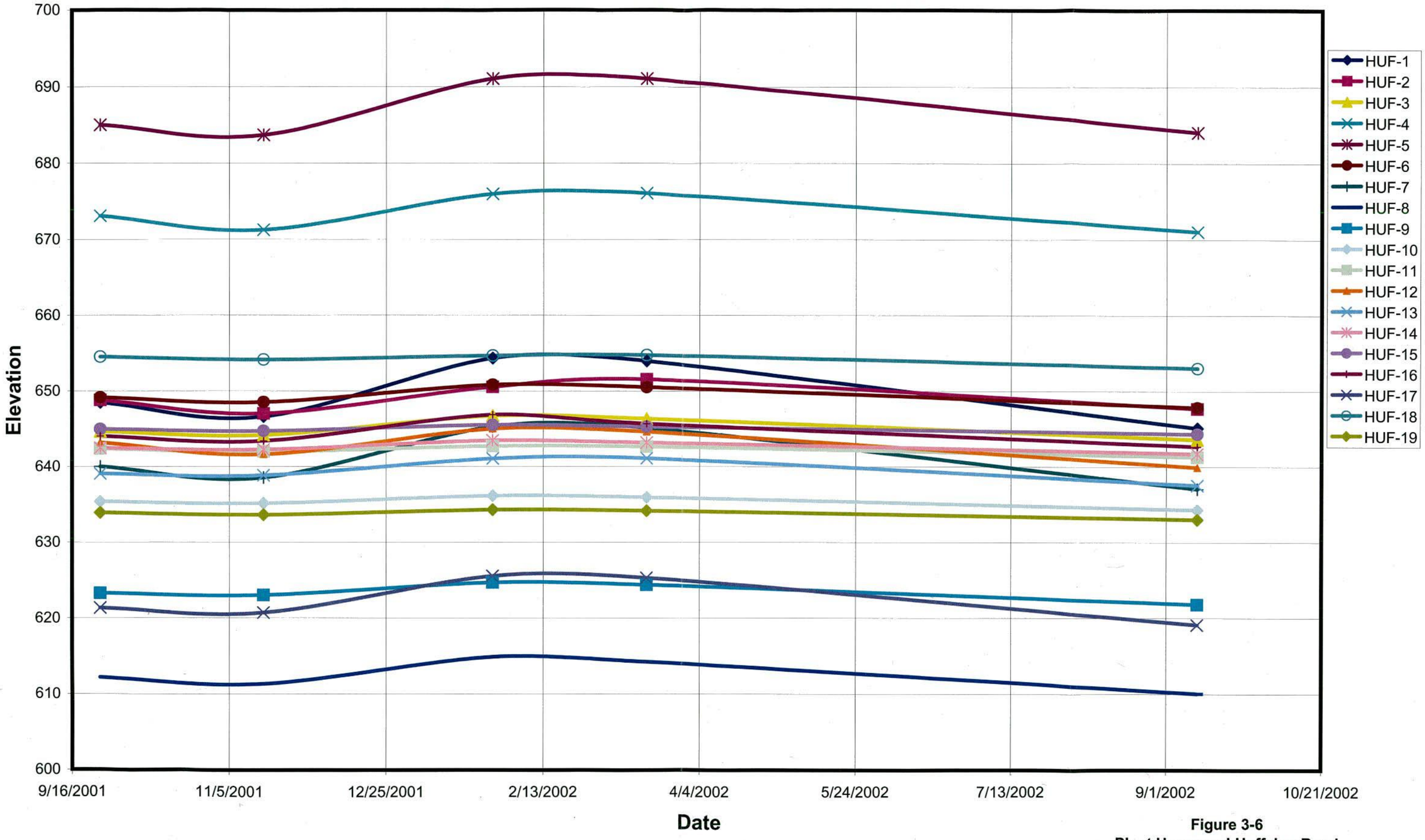
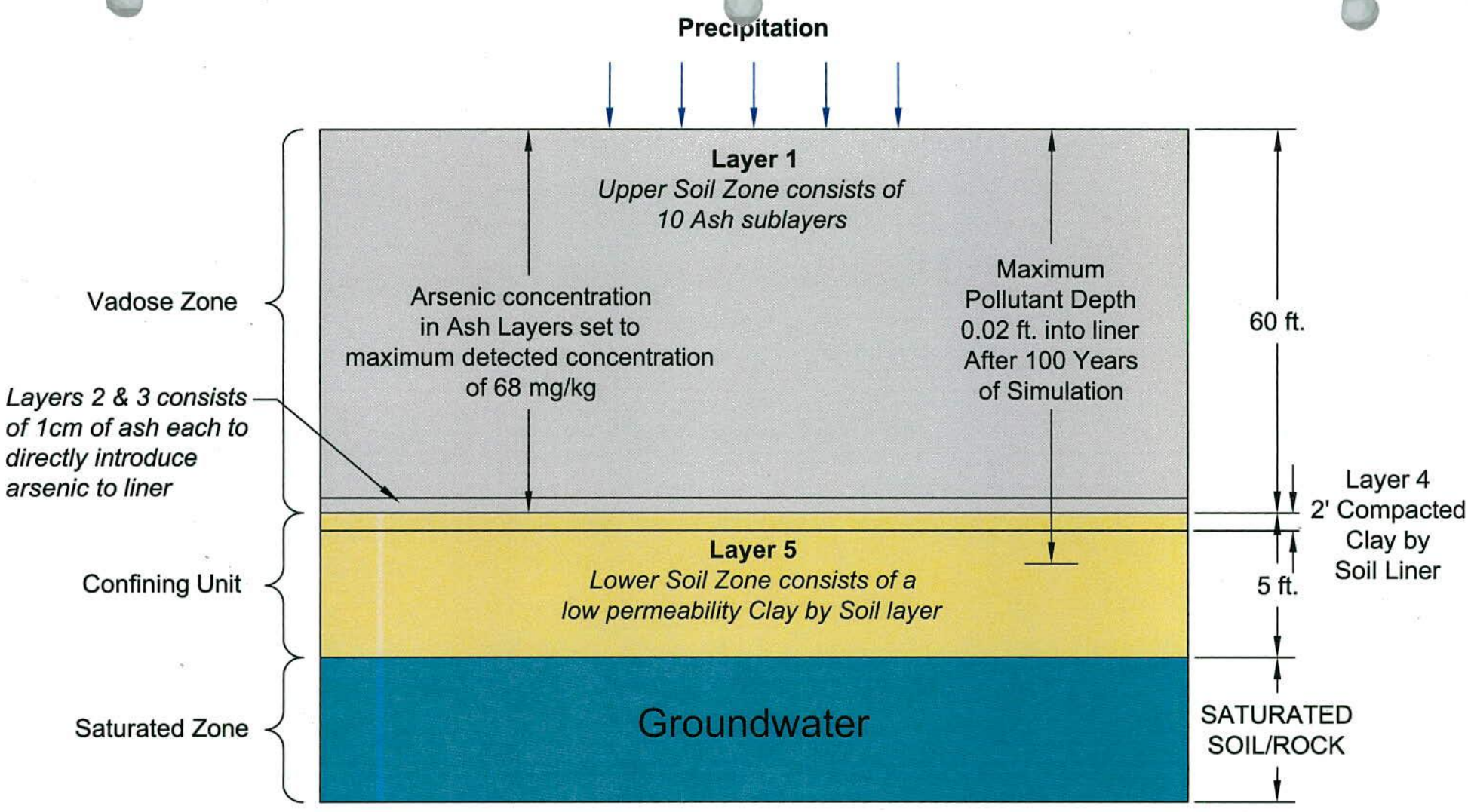


Figure 3-6
Plant Hammond-Huffaker Road
Coal Combustion By-Products Storage Site
Groundwater Elevations Over Time

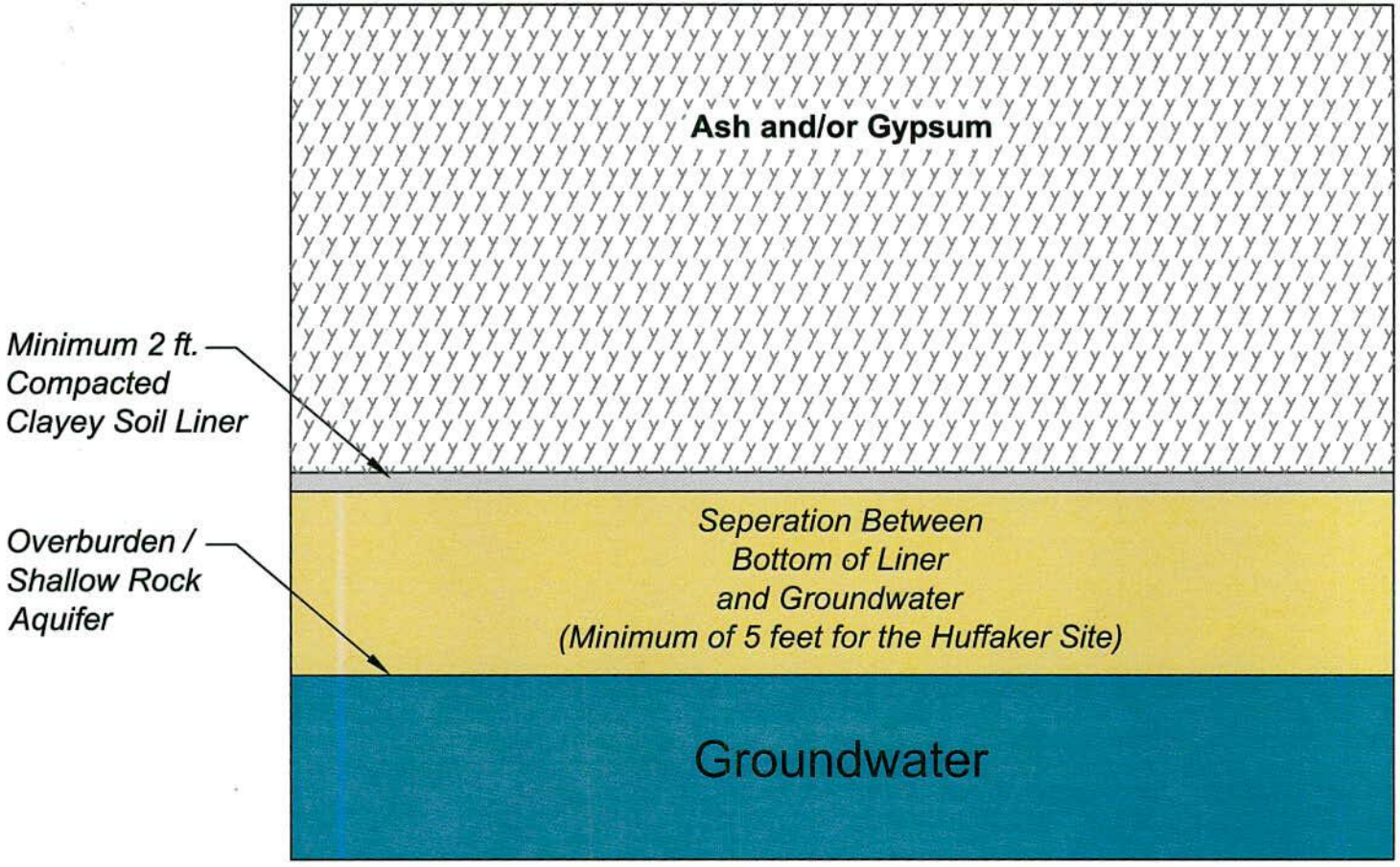
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Huffaker Road Proposed Ash Monofill
SESOIL Model Simulation

Figure 4-1
Plant Hammond - Huffaker Road
Coal Combustion By-Products
Storage Site
SESOIL Model Simulation

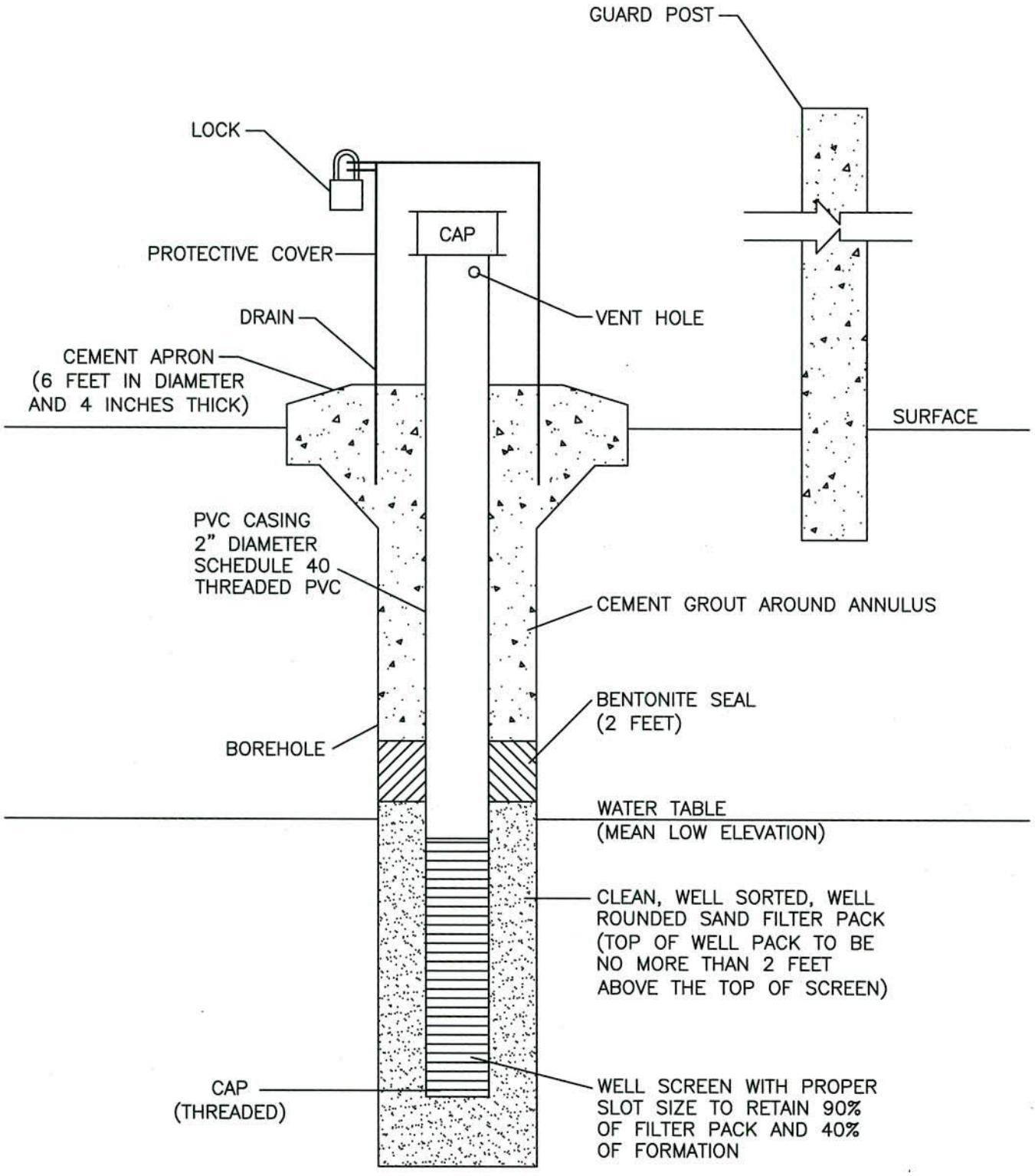
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NTS

Figure 5-2
Plant Hammond - Huffaker Road
Coal Combustion By-Products
Storage Site
Cell Depth and Relationship to
Groundwater

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NOT TO SCALE

Figure 5-3
Plant Hammond - Huffaker Road
Coal Combustion By-Products
Storage Site
Typical Monitoring Well Design

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Bin 39110
5131 Manor Road
Smyrna, Georgia 30080
Tel 404.799.2100

September 19, 2001

GEORGIA POWER
A SOUTHERN COMPANY

ENVIRONMENTAL LABORATORY
Huffaker Road Site (Boral Brick) Wetlands,
Threatened and Endangered Species

MR. G. H. McWHORTER:

The above referenced site was surveyed on August 2, 2001 and August 10, 2001 for the presence of threatened and endangered species and wetlands. **No threatened or endangered species or their habitats were identified during these surveys.**

The site contains several excavated and/or diked pits and holding ponds associated with the clay mining operations. Some of these have hydrophytic vegetation in or around portions of the ponded area. These pits and ponds are incidental to the mining operation or are used to control runoff from the site to comply with the DNR permit requirements.

It is our opinion that these pits and ponds are non-jurisdictional because they are the products of an ongoing mining operation and are not "waters of the United States" subject to Corps of Engineers (COE) jurisdiction. A reply from the Savannah District, COE agreeing or disagreeing with our opinion concerning the site wetlands is still pending.

The remaining vegetation on the site is primarily what has been planted for erosion control. It consists mainly of planted pines, lespedeza, and broomsedge.

The site south of Cabin (Smith?) Creek was not included in our survey so we can not give any opinions concerning its T&E or wetland status.

George N. Guill
Environmental Specialist Sr.

XC:
M. C. Nichols
W. J. Candler
J. K. Reynolds

Amphibians, Mammals and Reptiles of Floyd County, Georgia

Data from Georgia Department of Natural Resources, Georgia Natural Heritage Program

Vertebrate Characterization Abstract State (VCAS) Database

 10:06:11 09 OCT 2002

GROUP	COMMON_NAME	SCIENTIFIC_NAME:
AMPHIBIAN	AMERICAN TOAD	BUFO AMERICANUS
AMPHIBIAN	BARKING TREEFROG	HYLA GRATIOSA
AMPHIBIAN	BULLFROG	RANA CATESBEIANA
AMPHIBIAN	CAVE SALAMANDER	EURYCEA LUCIFUGA
AMPHIBIAN	COPE'S GRAY TREEFROG	HYLA CHRYSOSCELIS
AMPHIBIAN	DUSKY SALAMANDER	DESMOGNATHUS FUSCUS
AMPHIBIAN	EASTERN NARROWMOUTH TOAD	GASTROPHRYNE CAROLINENSIS
AMPHIBIAN	EASTERN NEWT	NOTOPHTHALMUS VIRIDESCENS
AMPHIBIAN	EASTERN SPADEFOOT	SCAPHIOPUS HOLBROOKII
AMPHIBIAN	FOUR-TOED SALAMANDER	HEMIDACTYLIUM SCUTATUM
AMPHIBIAN	GREEN FROG	RANA CLAMITANS
AMPHIBIAN	LONGTAIL SALAMANDER	EURYCEA LONGICAUDA
AMPHIBIAN	MARBLED SALAMANDER	AMBYSTOMA OPACUM
AMPHIBIAN	MOUNTAIN CHORUS FROG	PSEUDACRIS BRACHYPHONA
AMPHIBIAN	MUD SALAMANDER	PSEUDOTRITON MONTANUS
AMPHIBIAN	NORTHERN CRICKET FROG	ACRIS CREPITANS
AMPHIBIAN	PICKEREL FROG	RANA PALUSTRIS
AMPHIBIAN	RED SALAMANDER	PSEUDOTRITON RUBER
AMPHIBIAN	SLIMY SALAMANDER	PLETHODON GLUTINOSUS
AMPHIBIAN	SOUTHERN LEOPARD FROG	RANA SPHENOCEPHALA
AMPHIBIAN	SOUTHERN REDBACK SALAMANDER	PLETHODON SERRATUS
AMPHIBIAN	SOUTHERN TWO-LINED SALAMANDER	EURYCEA CIRRIGERA
AMPHIBIAN	SPOTTED SALAMANDER	AMBYSTOMA MACULATUM
AMPHIBIAN	SPRING PEEPER	PSEUDACRIS CRUCIFER
AMPHIBIAN	SPRING SALAMANDER	GYRINOPHILUS PORPHYRITICUS
AMPHIBIAN	THREE-LINED SALAMANDER	EURYCEA GUTTOLINEATA
AMPHIBIAN	TIGER SALAMANDER	AMBYSTOMA TIGRINUM
AMPHIBIAN	WOODHOUSE'S TOAD	BUFO FOWLERI
MAMMAL	BEAVER	CASTOR CANADENSIS
MAMMAL	BIG BROWN BAT	EPTESICUS FUSCUS
MAMMAL	BLACK RAT	RATTUS RATTUS
MAMMAL	BOBCAT	FELIS RUFUS
MAMMAL	COTTON MOUSE	PEROMYSCUS GOSSYPINUS
MAMMAL	COYOTE	CANIS LATRANS
MAMMAL	EASTERN CHIPMUNK	TAMIAS STRIATUS
MAMMAL	EASTERN COTTONTAIL	SYLVILAGUS FLORIDANUS
MAMMAL	EASTERN HARVEST MOUSE	REITHRODONTOMYS HUMULIS
MAMMAL	EASTERN MOLE	SCALOPUS AQUATICUS
MAMMAL	EASTERN PIPISTRELLE	PIPISTRELLUS SUBFLAVUS
MAMMAL	EASTERN SPOTTED SKUNK	SPILOGALE PUTORIUS
MAMMAL	EASTERN WOODRAT	NEOTOMA FLORIDANA
MAMMAL	EVENING BAT	NYCTICEIUS HUMERALIS
MAMMAL	FOX SQUIRREL	SCIURUS NIGER
MAMMAL	GOLDEN MOUSE	OCHROTOMYS NUTTALLI
MAMMAL	GRAY FOX	UROCYON CINEREOARGENTEUS
MAMMAL	GRAY SQUIRREL	SCIURUS CAROLINENSIS
MAMMAL	HISPID COTTON RAT	SIGMODON HISPIDUS
MAMMAL	HOARY BAT	LASIURUS CINEREUS
MAMMAL	HOUSE MOUSE	MUS MUSCULUS
MAMMAL	LEAST SHREW	CRYPTOTIS PARVA
MAMMAL	LITTLE BROWN MYOTIS	MYOTIS LUCIFUGUS
MAMMAL	LONG-TAILED WEASEL	MUSTELA FRENATA
MAMMAL	MARSH RICE RAT	ORYZOMYS PALUSTRIS
MAMMAL	MINK	MUSTELA VISON
MAMMAL	NORTHERN MYOTIS	MYOTIS SEPTENTRIONALIS

Amphibians, Mammals and Reptiles of Floyd County, Georgia

Data from Georgia Department of Natural Resources, Georgia Natural Heritage Program
Vertebrate Characterization Abstract State (VCAS) Database

GROUP	COMMON_NAME	SCIENTIFIC_NAME
MAMMAL	NORWAY RAT	RATTUS NORVEGICUS
MAMMAL	RACCOON	PROCYON LOTOR
MAMMAL	RED BAT	LASIURUS BOREALIS
MAMMAL	RED FOX	VULPES VULPES
MAMMAL	SILVER-HAIRED BAT	LASIONYCTERIS NOCTIVAGANS
MAMMAL	SOUTHEASTERN SHREW	SOREX LONGIROSTRIS
MAMMAL	SOUTHERN FLYING SQUIRREL	GLAUCOMYS VOLANS
MAMMAL	SOUTHERN SHORT-TAILED SHREW	BLARINA CAROLINENSIS
MAMMAL	STRIPED SKUNK	MEPHITIS MEPHITIS
MAMMAL	SWAMP RABBIT	SYLVILAGUS AQUATICUS
MAMMAL	VIRGINIA OPOSSUM	DIDELPHIS VIRGINIANA
MAMMAL	WHITE-FOOTED MOUSE	PEROMYSCUS LEUCOPUS
MAMMAL	WHITE-TAILED DEER	ODOCOILEUS VIRGINIANUS
MAMMAL	WILD PIG	SUS SCROFA
MAMMAL	WOODCHUCK	MARMOTA MONAX
MAMMAL	WOODLAND VOLE	MICROTUS PINETORUM
REPTILE	ALABAMA MAP TURTLE	GRAPTEMYS PULCHRA
REPTILE	BROADHEAD SKINK	EUMECES LATICEPS
REPTILE	BROWN SNAKE	STORERIA DEKAYI
REPTILE	COACHWHIP	MASTICOPHIS FLAGELLUM
REPTILE	COMMON GARTER SNAKE	THAMNOPHIS SIRTALIS
REPTILE	COMMON KINGSNAKE	LAMPROPELTIS GETULA
REPTILE	COMMON MUSK TURTLE	STERNOTHERUS ODORATUS
REPTILE	COPPERHEAD	AGKISTRODON CONTORTRIX
REPTILE	CORN SNAKE	ELAPHE GUTTATA
REPTILE	COTTONMOUTH	AGKISTRODON PISCIVORUS
REPTILE	EASTERN BOX TURTLE	TERRAPENE CAROLINA
REPTILE	EASTERN FENCE LIZARD	SCELOPORUS UNDULATUS
REPTILE	EASTERN HOGNOSE SNAKE	HETERODON PLATIRHINOS
REPTILE	EASTERN MILK SNAKE	LAMPROPELTIS TRIANGULUM TRIANGULUM
REPTILE	EASTERN MUD TURTLE	KINOSTERNON SUBRUBRUM
REPTILE	EASTERN RIBBON SNAKE	THAMNOPHIS SAURITUS
REPTILE	FIVE-LINED SKINK	EUMECES FASCIATUS
REPTILE	GREEN ANOLE	ANOLIS CAROLINENSIS
REPTILE	GROUND SKINK	SCINCELLA LATERALIS
REPTILE	LOGGERHEAD MUSK TURTLE	STERNOTHERUS MINOR
REPTILE	MAP TURTLE	GRAPTEMYS GEOGRAPHICA
REPTILE	MUD SNAKE	FARANCIA ABACURA
REPTILE	NORTHERN WATER SNAKE	NERODIA SIPEDON
REPTILE	PAINTED TURTLE	CHRYSEMYS PICTA
REPTILE	PINE SNAKE	PITUOPHIS MELANOLEUCUS
REPTILE	PLAINBELLY WATER SNAKE	NERODIA ERYTHROGASTER
REPTILE	PRAIRIE KINGSNAKE	LAMPROPELTIS CALLIGASTER
REPTILE	QUEEN SNAKE	REGINA SEPTEMVITTATA
REPTILE	RACER	COLUBER CONSTRICTOR
REPTILE	RAT SNAKE	ELAPHE OBSOLETA
REPTILE	REDBELLY SNAKE	STORERIA OCCIPITOMACULATA
REPTILE	RINGNECK SNAKE	DIADOPHIS PUNCTATUS
REPTILE	RIVER COOTER	PSEUDEMYS CONCINNA
REPTILE	ROUGH GREEN SNAKE	OPHEODRYS AESTIVUS
REPTILE	SCARLET SNAKE	CEMOPHORA COCCINEA
REPTILE	SIX-LINED RACERUNNER	CNEMIDOPHORUS SEXLINEATUS
REPTILE	SLENDER GLASS LIZARD	OPHISAURUS ATTENUATUS
REPTILE	SLIDER	TRACHEMYS SCRIPTA
REPTILE	SMOOTH EARTH SNAKE	VIRGINIA VALERIAE

Amphibians, Mammals and Reptiles of Floyd County, Georgia

Data from Georgia Department of Natural Resources, Georgia Natural Heritage Program

Vertebrate Characterization Abstract State (VCAS) Database

GROUP	COMMON_NAME	SCIENTIFIC_NAME
REPTILE	SNAPPING TURTLE	CHELYDRA SERPENTINA
REPTILE	SOUTHEASTERN CROWNED SNAKE	TANTILLA CORONATA
REPTILE	SOUTHEASTERN FIVE-LINED SKINK	EUMECES INEXPECTATUS
REPTILE	SPINY SOFTSHELL	APALONE SPINIFERA
REPTILE	WORM SNAKE	CARPHOPHIS AMOENUS

115 Records Processed

Possible Avian Species

Pied-billed Grebe
Great Blue Heron
Green Heron
Black Vulture
Turkey Vulture
Canada Goose
Wood Duck
Gadwall
American Wigeon
Mallard
Blue-winged Teal
Ring-necked Duck
Hooded Merganser
Ruddy Duck
Northern Harrier
Sharp-shinned Hawk
Cooper's Hawk
Red-shouldered Hawk
Broad-winged Hawk
Red-tailed Hawk
American Kestrel
Wild Turkey
Northern Bobwhite
American Coot
Killdeer
Greater Yellowlegs
Lesser Yellowlegs
Solitary Sandpiper
Spotted Sandpiper
American Woodcock
Common Snipe
Mourning Dove
Yellow-billed Cuckoo
Eastern Screech-Owl
Great Horned Owl
Barred Owl
Chuck-will's-widow
Whip-poor-will
Chimney Swift
Ruby-throated Hummingbird
Belted Kingfisher
Red-headed Woodpecker
Red-bellied Woodpecker
Yellow-bellied Sapsucker
Downy Woodpecker
Hairy Woodpecker
Northern Flicker
Pileated Woodpecker
Eastern Wood-Pewee
Eastern Phoebe
Great Crested Flycatcher

Boral Brick Site, Huffaker Rd., Floyd Co. - GA Power

Vegetation as described by owner:
Sparse vegetation:
young planted pine,
grassland/lespedeza,
holding ponds with some aquatic veg,
surrounding mixed pine/hardwood

Eastern Kingbird
Loggerhead Shrike
White-eyed Vireo
Yellow-throated Vireo
Blue-headed Vireo
Red-eyed Vireo
Blue Jay
American Crow
Horned Lark
Purple Martin
Tree Swallow
Northern Rough-winged Swallow
Barn Swallow
Carolina Chickadee
Tufted Titmouse
White-breasted Nuthatch
Brown-headed Nuthatch
Carolina Wren
House Wren
Winter Wren
Golden-crowned Kinglet
Ruby-crowned Kinglet
Blue-gray Gnatcatcher
Eastern Bluebird
Veery
Swainson's Thrush
Hermit Thrush
Wood Thrush
American Robin
Gray Catbird
Northern Mockingbird
Brown Thrasher
European Starling
Cedar Waxwing
Blue-winged Warbler
Golden-winged Warbler
Tennessee Warbler
Orange-crowned Warbler
Northern Parula
Yellow Warbler
Chestnut-sided Warbler
Magnolia Warbler
Cape May Warbler
Yellow-rumped Warbler
Black-throated Green Warbler
Blackburnian Warbler
Yellow-throated Warbler
Pine Warbler
Prairie Warbler
Palm Warbler
Bay-breasted Warbler
Black-and-white Warbler

American Redstart
Ovenbird
Kentucky Warbler
Common Yellowthroat
Hooded Warbler
Yellow-breasted Chat
Summer Tanager
Eastern Towhee
Chipping Sparrow
Field Sparrow
Savannah Sparrow
Grasshopper Sparrow
Fox Sparrow
Song Sparrow
Swamp Sparrow
White-throated Sparrow
White-crowned Sparrow
Dark-eyed Junco
Northern Cardinal
Blue Grosbeak
Indigo Bunting
Bobolink
Red-winged Blackbird
Eastern Meadowlark
Common Grackle
Brown-headed Cowbird
Orchard Oriole
House Finch
American Goldfinch

Bin 10221
241 Ralph McGill Boulevard NE
Atlanta, Georgia 30308-3374

GEORGIA POWER
A SOUTHERN COMPANY

April 15, 2002
Certified Mail

BORAL BRICK INCORPORATION/HAMMOND ASH SITE
FLOYD COUNTY
Corps Project # 200113480
Plant Hammond Huffmaker Road Ash Monofill Site, Wetland Boundary Lines

Mr. Justin Hammonds
Project Manager, North Area Section
Department of the Army
Savannah District, Corps of Engineers
1590 Adamson Parkway
The Plaza, Suite 130
Morrow, GA 30260-1763

Dear Mr. Hammonds:

This correspondence is in reply to your letter dated February 1, 2002, requesting Georgia Power to submit new topographic maps with additional information of the Boral Bricks, Incorporated Clay Mining Operation near Rome, Floyd County, Georgia. As requested, the drawing in attachment 1 (H-628-10) indicates the location of the jurisdictional wetlands on the proposed Huffaker Road Monofill Site. These wetlands, along the pre-mining course of Cabin Smith Creek, were delineated under the jurisdiction of the U. S. Corps of Engineers. Also in attachment 2, as information only, is the preliminary drawing of the **Huffaker Road Ash Monofill Site Topographic Map** showing these wetlands. The wetlands shown on these maps are under the jurisdiction of the US Army Corps of Engineers and before any activity takes place within these wetlands, proper permits will be obtained.

If you have any questions or comments concerning this correspondence, please contact Jason K. Reynolds of my staff at (404) 506-7080 or jakreyno@southernco.com.

Sincerely,

J. Reynolds for.

M.E. Wilder
Land and Water Programs Manager

JKR/

cc: Mr. Necholas Ogden
Chief, Regulatory Functions Branch
Savannah District United States Army Corps of Engineers
100 West Oglethorpe Avenue
Savannah, Georgia 31402-0889 c:

Mr. Edward B. Johnson
Chief, North Area Section
Department of the Army
Savannah District, Corps of Engineers
1590 Adamson Parkway
The Plaza, Suite 130
Morrow, GA 30260-1763

Ms. Mary Dills
Project Manager, North Area Section
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KEMRON
ENVIRONMENTAL SERVICES

1300 Spring Street, NW ■ Atlanta, Georgia 30309 ■ Telephone (404) 636-0928 ■ FAX (404) 636-7162 ■ http://www.kemron.com

Project 6950-017

25 October 2001

Mr. Dennis Nix
Environmental Affairs
Georgia Power Company
241 Ralph McGill Boulevard, NE
Atlanta, Georgia 30308-3374

Re: Water Supply Well and Surface Water Intake Survey
Huffaker Road Monofill Site, Floyd County, Georgia

Dear Mr. Nix:

KEMRON Environmental Services, Inc. (KEMRON) is pleased to submit six copies of the letter report including the results of the water resources survey conducted at the Huffaker Road Monofill Site, Floyd County, Georgia. The report has been revised pursuant to our telephone conversations on 18 and 23 October 2001.

As you may recall, there was a discrepancy as to the ownership of one of the parcels within the boundaries of the subject property. KEMRON's previous report indicated that this parcel was owned by Georgia Power, but your staff indicated the property was actually owned by Boral Bricks. After investigation, KEMRON has determined that the discrepancy was caused by the new grid system adopted by the Floyd County Tax Assessors Office. Specifically, the parcel numbers listed on the Floyd County Tax Assessment Maps have been revised since Georgia Power obtained a copy of the tax map for the area. Copies of both the previous tax map for the subject property (Sheet 756) and the current version (Map F12) are enclosed.

The parcel of concern is located at the northwest corner of the Boral Bricks site. The parcel is currently designated as Parcel 36 on Map F12 and formerly designated as Parcel 12 on Sheet 756. The parcel is not listed on the current tax assessment database, as can be seen on the attached printout. On 28 September 2001, tax assessors' staff indicated that undesignated properties are owned by public utilities and that Parcel 36 was owned by Georgia Power. This information was provided to Georgia Power in the report dated 10 October 2001. After discovery of the discrepancy, we contacted the assessors' office again on 19 October 2001. Based on Sheet 756, Boral Bricks is the owner. We assume that the property has not changed ownership, and have revised the report to show Boral Bricks as the current owner of the subject parcel.

If you have any questions, or if you need additional information, please contact me at (404) 636-0928.

Sincerely,
KEMRON Environmental Services, Inc.

Carole A. Phelan, P.E.
Project Manager

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Protecting Our Environmental Future

REAL ESTATE

	New Map		H	OWNER'S NAME	NC	PROPERTY ADDRESS
01	F12 - - 021 -			BORAL BRICKS INC	NIA	HUFFAKER RD
02	F12 - - 023 -			BORAL BRICKS INC	NIA	HUFFAKER RD
03	F12 - - 024 -			BORAL BRICKS INC	NIA	OFF LAVENDER RD
04	F12 - - 025 -			BORAL BRICKS INC	NIA	OFF HUFFAKER RD
05	F12 - - 026 -			BORAL BRICKS INC	NIA	OFF HUFFAKER RD
06	F12 - - 027 -			BORAL BRICKS INC	NIA	OFF AVERY RD
07	F12 - - 028 -			DIDRICK JOE & ELOISE D	NAA	AVERY RD ÷ 524N Ron
08	F12 - - 029 -			BORAL BRICKS INC	NIA	OFF HUFFAKER RD
09	F12 - - 030 -			BORAL BRICKS INC	NIA	OFF HUFFAKER RD
10	F12 - - 031 -			BORAL BRICKS INC	NIA	OFF HUFFAKER RD
11	F12 - - 032 -			BORAL BRICKS INC	NIA	OFF HUFFAKER RD
12	F12 - - 033 -			BORAL BRICKS INC	NIA	OFF HUFFAKER RD
13	F12 - - 034 -			BORAL BRICKS INC	NIA	LAVENDER RD
14	F12 - - 035 -			BORAL BRICKS INC	NIA	LAVENDER RD
15	F12 - - 037 -			BORAL BRICKS INC	NIA	LAVENDER RD
16	F12 - - 039 -			SIKES CORPORATION	NIA	
17	F12 - - 040 -			BORAL BRICKS INC	HIA	HUFFACKER RD
18	F13W - - 001 -			SISSON GEORGE & GLADYS	NRO	574 WOODS RD NW
19	F13W - - 002 -		H1	BROWNLOW MARY ELAINE	NAA	WOODS RD NW 569
20	F13W - - 003 -			DOBBS LILAH S & HARRIE	NRO	

Inquire to one of above accounts ? (Y/N/F1/E)_

KEMRON
ENVIRONMENTAL SERVICES

1300 Spring Street, NW ■ Atlanta, Georgia 30309 ■ Telephone (404) 636-0928 ■ FAX (404) 636-7162 ■ http://www.kemron.com

Project 6950-017

25 October 2001

Mr. Dennis Nix
Environmental Affairs
Georgia Power Company
241 Ralph McGill Boulevard, NE
Atlanta, Georgia 30308-3374

Re: Water Supply Well and Surface Water Intake Survey
Huffaker Road Monofill Site, Floyd County, Georgia

Dear Mr. Nix:

KEMRON Environmental Services, Inc. (KEMRON) is pleased to submit this letter report including the results of the water resources survey conducted at the Huffaker Road Monofill Site, Floyd County, Georgia. The purpose of this project was to conduct a water supply well and surface water intake survey in accordance with the specifications for a Private Industry Disposal Facility, as outlined in Chapter 391-3-4-.05(k) of the Rules for Solid Waste Management, and Circular 14, Appendix A, Criteria for Performing Site Acceptability Studies for Solid Waste Landfills. These documents specify that all public water supply wells and surface water intakes within two miles and private (domestic) water supply wells within ½ mile of a landfill must be identified.

The survey components included visiting the site and meeting or contacting by telephone local residences and agencies to determine if wells are located in the area of concern. Activities included contacting city and county agencies as well as searching the USGS and EPD databases. The records search, interviews, and a summary of the information gathered are summarized below:

SITE DESCRIPTION

KEMRON located the site from information and topographic maps provided by Georgia Power. The subject site is located along Huffaker Road approximately 10 miles northwest of downtown Rome, Georgia. Huffaker Road is the northern boundary of the property, while the railroad and Smith Creek act as the southern boundary of the property. The subject site is owned by Boral Bricks which excavates clay on site for the production of bricks. A general location map of the subject site was provided by Georgia Power and is included as Figure 1.

RECORDS SEARCH

KEMRON searched the water well database of the United States Geological Survey (USGS) for all water supply wells located within 2 miles of the subject site boundaries. The USGS database listed 15 water supply wells within the two mile radius according to the specified latitude and longitude coordinates. KEMRON searched the State of Georgia Environmental Protection Division (EPD) database for all water supply sources within Floyd County. The EPD database listed 12 water supply sources, but none of these are located within the two mile radius. The database search tables are included as Exhibit I.

KEMRON contacted the Floyd County Health Department regarding water supply wells in the area, but could not obtain useful information. The Health Department maintains limited files which include only analytical data for wells that have been voluntarily tested. The active well locations are not specified.

KEMRON visited the City of Rome and Floyd County Water Departments to determine the availability of public water in the vicinity of the site. Public water mains service Avery Road, Woods Road, and a portion of Huffaker Road. There is a gap in service along Huffaker Road directly in front of the subject site. The water main east of the subject site stops at the entrance along the eastern boundary of the subject site. The water main west of the subject site stops at a fire hydrant located greater than ½ mile west of the subject site. Public water is provided to Boral Bricks at the northeast corner of the site.

KEMRON also visited the Floyd County Tax Assessors Office to obtain a tax map of the area and to identify the owners of the subject property and adjacent properties. The tax assessment map of the area has been reproduced as Figure 2. Exhibit II contains a key to the property owners on Figure 2 and also provides the tax assessment database printout.

FIELD RECONNAISSANCE

Field reconnaissance activities were performed on 28 September and 3 October 2001. KEMRON drove and walked the two mile radius searching for the water supply wells listed in the USGS database. The database wells were found to be private water supply wells which are located outside the ½ mile radius. No public wells were identified within a two mile radius. KEMRON surveyed the ½ mile radius to identify private wells not listed in the databases and observed six private wells. The locations of the six private water supply wells identified within a ½ mile radius are plotted on a USGS topographical map included as Figure 3. A listing of the six private wells is provided in Table 1. Field logs and telephone records are included as Exhibit III.

SITE AND ADJACENT PROPERTIES

The site and adjacent properties are shown on Figure 2. During the week of 1 October 2001, KEMRON contacted adjacent property owners by telephone or personal visit to verify the presence of water supply wells or withdrawal points on their property.

- Boral Bricks (Parcels 4, 5, 21, 23-26, 29-37, and 40): Boral Bricks owns the subject site and several adjacent properties. The site manager, Mr. Terry Bandy, confirmed the locations of two unused water supply wells at the property (see WELLS WITHIN RADII).

- Hammond and Hardin Properties (Parcels 6 and 7): Mr Hardin confirmed the presence of water supply wells on both parcels (see WELLS WITHIN RADII).

- Sikes Corporation (Parcels 8 and 39): Florida Tile, a division of Sikes Corporation, was contacted about the properties. Mr. Tony Wehunt, Plant Controller, is not aware of any water supply wells at the properties.

All but two property owners within the ½ mile radius were contacted by phone or visited to verify the presence of water supply wells or withdrawal points on their property. The communications are described below. Two property owners were not contacted because phone numbers could not be found or the phone number found was out of order. Both properties are located at the end of Avery Road. This location was driven on 3 October 2001 and no water wells were observed.

- Mr. Joe Didrick was contacted concerning his 70-acre property on Avery Road partially within the ½ mile radius. Mr. Didrick indicated that no water supply well exists on his property, but there is a spring located at the northeast corner of his property. Mr. Didrick did not indicate that the spring was used for water supply. KEMRON could not locate this spring, but has shown the approximate location of the spring on Figure 3. The spring appears to be just outside the ½ mile radius.

- Mr. Tim West with Timber Inland Forest was contacted concerning several properties Inland Container Corporation owns within the ½ mile radius. Mr. West refused to answer any questions concerning water supply wells.

- Mr. Buddy Smith was contacted concerning his property located on Huffaker Road. Mr. Smith confirmed the presence of a water supply well on the property (see WELLS WITHIN RADII).

- Mr. John Gilreath was contacted concerning his property located within the ½ mile radius. He has no water supply wells on his property.

- Mr. Richard Land of General Shale (also known as Chattahoochee Brick Company) was contacted concerning property within the ½ mile radius. Mr. Land was not aware of any water supply wells on the property.

- Mrs. Nora Holbrook was contacted concerning her property located on Huffaker Road. Mrs. Holbrook confirmed the presence of a water supply well (see WELLS WITHIN RADII).

WELLS WITHIN RADII

A total of six private water supply wells were identified within a ½ mile radius. These wells were not listed in the USGS or EPD databases, but were identified during field reconnaissance. The wells are designated by Map ID's shown on Figure 3 and Table 1. No public wells were identified within a two mile radius.

- Boral Bricks (Map ID: 1&2): 2131 Huffaker Road
  Mr. Terry Bandy, Manager, confirmed the locations of two unused water supply wells at the property adjacent to the entrance drive. One well is located in front of the house and the second well is located in the woods adjacent to the trailer. Mr. Bandy had the second well's water tested in the 1980's when he lived in the trailer. At that time, the fecal matter count was too high for the well to be used as the main domestic water supply. Mr. Bandy believes the well in the woods is 18 to 20 feet deep. He is not familiar with the construction of the other well.

- Mr. John Hardin (Map ID: 3): 2114 Huffaker Road
  The water supply well at this property is currently not in use, but Mr. Hardin had used the well for irrigation until the pump broke earlier this year. The well is less than 100 feet deep.

- Ms. Selena Diane Hammond (Map ID: 4): 2114 Huffaker Road
  Mr. Hardin indicated that an unused water supply well is located on this property. Mr. Hardin also indicated that this property is owned by one of his relatives.

- Mrs. Nora Holbrook (Map ID:5): 1881 Huffaker Road
  A water supply well is visible from Huffaker Road. Mrs. Holbrook indicated that the well water had a high count of fecal matter and is muddy, clogging the spigot at the front of the house. The well is 95 feet deep. Mrs. Holbrook stated that the water supply well is no longer used and her water is supplied by Floyd County.

- Mr. Buddy Smith (Map ID:6): 1872 Huffaker Road
  Mr. Smith uses the water supply well on this property to irrigate landscaping and wash automobiles. He recently installed a new pump in the 75 foot well. Due to rising water bills, he is considering using the well water as his main supply. Mr. Smith currently obtains drinking water from Floyd County.

WELLS OUTSIDE RADII

KEMRON identified several water supply wells and surface intakes that are located outside the applicable radii. The City of Rome Water Department obtains water from surface water intakes along the Etowah and Oostanaula Rivers. Both intakes are located outside of the applicable two mile radius. The Floyd County Water Department purchases water from both Cave Spring (20 miles south) and the City of Rome; however, the County also maintains two water supply wells that are located outside of the two mile radius.

As mentioned previously, the 15 water supply wells listed in the USGS database for the two mile radius were determined to be private wells located outside the applicable ½ mile radius of the subject site. The database printout in Exhibit I shows that ten of the wells are permitted for domestic use and two are unused. The uses of the other three wells are designated as either commercial, withdrawal or not listed. KEMRON investigated these three wells, as described below:

- USGS Well Owner - Hardin and Holden: A commercial well is located at 3850 Highway 20 within the two mile radius, but outside the ½ mile radius. Mr. Clark Puckett operates an auto shop on the property, which he leases from Mr. Mike Bryson of Atlanta, Georgia. Mr. Puckett has occupied the property for only three weeks and plans to get the city water connected within the next few weeks. A water meter is located at the entrance of the site.

- USGS Well Owner - Oliver Montague: A water supply well is located on Vann Road. The USGS database lists the well use as "withdrawal" only. Since both the property and the area are residential, KEMRON assumes the well is for domestic use. The well is outside the applicable ½ mile radius for private wells.

- USGS Well Owner - Berry Schools: A well is listed in the USGS database with an unspecified use. The well could not be found at the specified latitude and longitude, which located the well south of the Berry Reservoir. Mr. Ben Elkin of Berry College was contacted about the location and use of the well. Mr. Elkin stated the well is used to monitor changes in groundwater elevation which may be caused by pumping a nearby quarry.

SURFACE WATER

The USGS topographic map was investigated to determine the distance and direction to the nearest surface water body and the nearest downgradient surface water body. Several intermittent tributaries of Smith Creek are shown on the subject site. None of the tributaries were observed during field reconnaissance. The nearest off site downgradient surface water body is Smith Creek, which acts as the southern boundary line of the property.

SUMMARY

KEMRON searched all known sources of water supply information for the area, including the USGS and EPD databases, local health department, and local water departments. KEMRON inspected the site and surrounding area for water supply wells and interviewed several property owners in the vicinity. Six private wells were identified within a ½ mile radius of the subject site. A spring is believed to be located just outside the ½ mile radius, but is not believed to be used for water supply. No public water supply wells or surface water intakes were identified within a two mile radius of the subject site. Regarding surface water locations, there are intermittent streams located on the subject site that drain to Smith Creek, which is the nearest downgradient surface water and the southern boundary of the site. The locations of the six private wells, the spring, and Smith Creek are shown on Figure 3.

This concludes our water supply survey report for the Huffaker Road Monofill Site. If you have any questions, or if we can provide additional information, please contact the undersigned at (404) 636-0928.

Sincerely,
KEMRON Environmental Services, Inc.

Amy Callaway
Project Geologist

Carole A. Phelan, P.E.
Project Manager

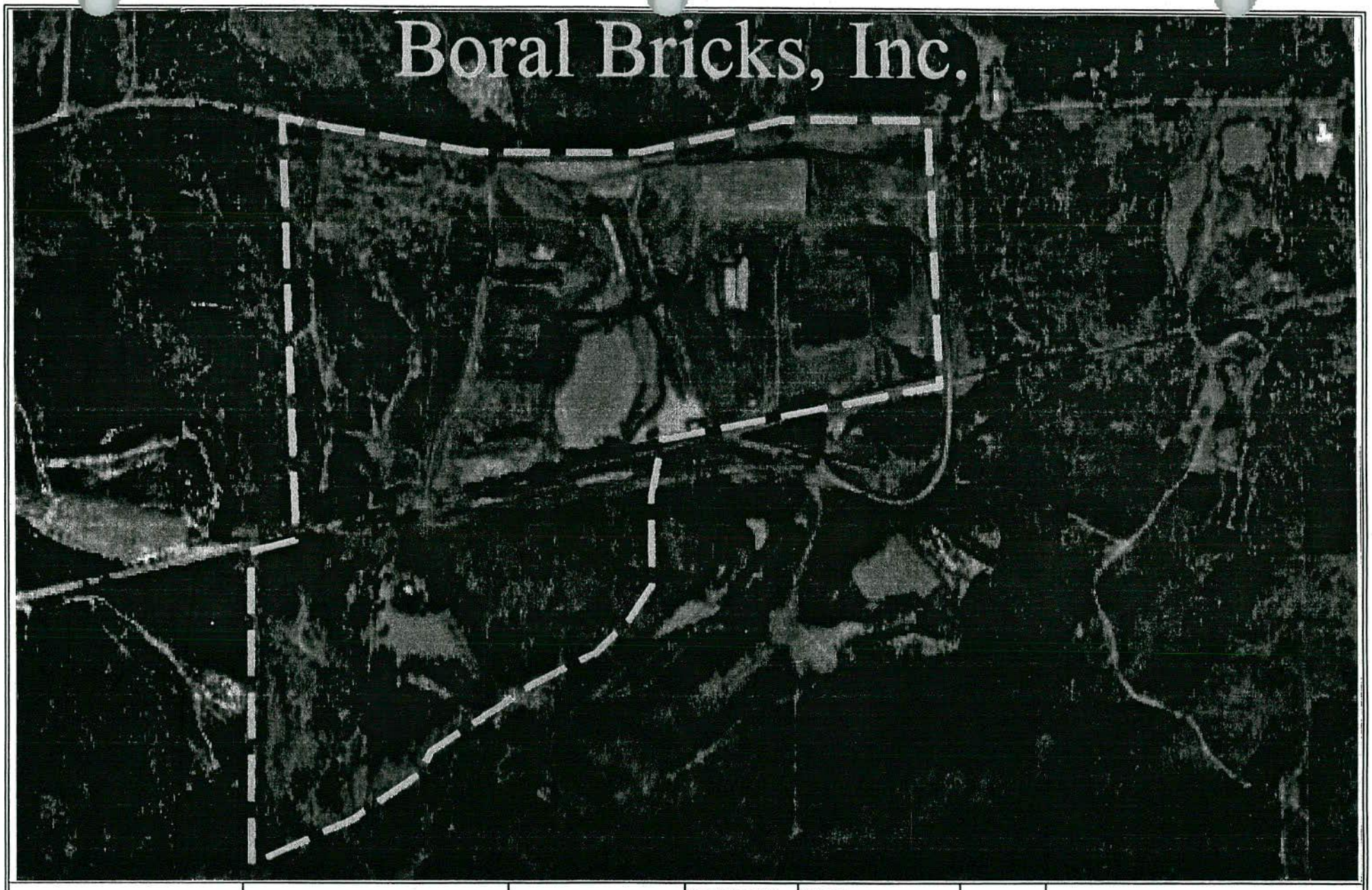
Table 1

Private Wells Within 1/2 Mile Radius

Huffaker Road Monofill Site, Floyd County, Georgia

Rome, Floyd County, GA

Well Number (Map ID)	Owner Information
1 and 2	Boral Bricks Inc. 2131 Huffaker Road Rome, GA 30165
3	John W. Hardin 2114 Huffaker Road Rome, GA 30165
4	Selena Diane Hammond 2114 Huffaker Road Rome, GA 30165
5	H.A. and Nora Holbrook 1881 Huffaker Road Rome, GA 30165
6	Buddy and Wydean Smith 1872 Huffaker Road Rome, GA 30165



	KEMRON ENVIRONMENTAL SERVICES	SCALE UNKNOWN	DRAWN BY: KG	DATE: 05 OCTOBER 2001	FIGURE 1	SITE LOCATION MAP HUFFAKER ROAD MONOFILL SITE ROME, FLOYD COUNTY, GEORGIA
			REVIEWED:	PROJECT NO. 6950/017		
			APPROVED:	DWG. NO. SITE FG 1		

Huffaker Road Monofill Site, Floyd County, Georgia
USGS Database Search: 2 mile radius of site boundary

	Owner	Latitude	Longitude	Elev	Depth	Casing	Well Information	USGS Well Use	Within 1/2 Mile Radius
1	JACK AKRIDGE	341522	851845	670	65	N/A	11.7WH1955 371CNSG	Domestic	No
2	C.W. AKRIDGE	341533	851847	635	359	N/A	WH1945 331FLYD	Domestic	No
3	C.H. JOHNSON	341539	851939	600	96	35	WH1959 331FLYD	Domestic	No
4	C.W. AKRIDGE	341545	851950	590	89	7	5WH1941 331FLYD	Domestic	No
5	HARDIN AND HOLDEN	341551	851708	638	65	20	WC1956 331FLYD	Commercial	No
6	GEORGE BENTON	341556	851752	630	80	21	13.3WU1959 331FLYD	Unused	No
7	OLIVER MONTAGUE	341556	851759	635	150	21	13.3W 1959 331FLYD	Withdrawal	No
8	ROY MYERS	341641	851640	640	75	50	WU1955 331FLYD	Unused	No
9	W.F. RILEY	341646	851745	680	71	29	WH1957 331FLYD	Domestic	No
10	CLAUDE H. HAIRE	341708	851942	620	121	35	9.WH1960 331FLYD	Domestic	No
11	E.T. COALSON	341723	851538	645	110	80	8.3WH1954 331FLYD	Domestic	No
12	W.H. WOOD	341723	851638	695	79	40	WH1957 331FLYD	Domestic	No
13	O.S. UNDERWOOD	341735	852006	655	68.5	N/A	5.8WH1951 331FLYD	Domestic	No
14	OCONEE CLAY PRODUCTS CO.	341759	851700	670	74	21	9.0WH1954 331FLYD	Domestic	No
15	BERRY SCHOOLS	341908	851619	920	N/A	N/A	N/A	N/A	No

N/A - Not available from the database.

Huffaker Road Monofill Site, Floyd County, Georgia
EPD Database Search: Floyd County

System Name	EPD Well ID	Location Verified	Contact	Within 2 Mile Radius
Rome	Oostanaula River	Riverside Rd	Steve Hulsey	No
Rome	Etowah River	Spider Web Rd	Steve Hulsey	No
Berry College	Possum Trot Lake	N/A	Ben Elkin	No
Galey & Lord-Brighton Plant	Woodward Creek	Shannon	Randall Moore	No
Misty Mtn. Girl Scout Camp 1	Well 1	Armchuee	Gaetana De Angelo	No
Misty Mtn. Girl Scout Camp 2	Well 2	Armchuee	Gaetana De Angelo	No
Camp Sidney Dew	Well 1	Armchuee	Gaetana De Angelo	No
USFS - Pocket Area	Well 1	Lafayette	Alan Polk	No
Callier Spring Country Club	Well 1	Callier Spring Heights	Arthur Miller	No
Floyd County	Old Mill Spring	Cave Spring, GA	John Boyd	No
Floyd County	Kingston Rd Well	Kingston Rd/GA Loop 1	John Boyd	No
Floyd County	Fulton Rd Well	Fulton Rd	John Boyd	No

N/A - Not available from the database.

Tax Map Information
Huffaker Road Monofill Site, Floyd County, Georgia
Rome, Floyd County, GA

Parcel Number	Owner Information
4,5,21,23,24,25 26,29,30,31,32 33,34,35,36,37,40	Boral Bricks Inc. 2131 Huffaker Road Rome, GA 30165
6	Selena Diane Hammond 2114 Huffaker Road Rome, GA 30165
7	John W. Hardin 2114 Huffaker Road Rome, GA 30165
8, 39	Sikes Corporation PO Box 447 Lakeland, FL 33802

REAL ESTATE

	New Map	H	OWNER'S NAME	NC	PROPERTY ADDRESS
01	F12 - 021 -		BORAL BRICKS INC	NIA	HUFFAKER RD
02	F12 - 023 -		BORAL BRICKS INC	NIA	HUFFAKER RD
03	F12 - 024 -		BORAL BRICKS INC	NIA	OFF LAVENDER RD
04	F12 - 025 -		BORAL BRICKS INC	NIA	OFF HUFFAKER RD
05	F12 - 026 -		BORAL BRICKS INC	NIA	OFF HUFFAKER RD
06	F12 - 027 -		BORAL BRICKS INC	NIA	OFF AVERY RD
07	F12 - 028 -		DIDRICK JOE & ELOISE D	NAA	AVERY RD ÷ 524N Rom
08	F12 - 029 -		BORAL BRICKS INC	NIA	OFF HUFFAKER RD
09	F12 - 030 -		BORAL BRICKS INC	NIA	OFF HUFFAKER RD
10	F12 - 031 -		BORAL BRICKS INC	NIA	OFF HUFFAKER RD
11	F12 - 032 -		BORAL BRICKS INC	NIA	OFF HUFFAKER RD
12	F12 - 033 -		BORAL BRICKS INC	NIA	OFF HUFFAKER RD
13	F12 - 034 -		BORAL BRICKS INC	NIA	LAVENDER RD
14	F12 - 035 -		BORAL BRICKS INC	NIA	LAVENDER RD
15	F12 - 037 -		BORAL BRICKS INC	NIA	LAVENDER RD
16	F12 - 039 -		SIKES CORPORATION	NIA	
17	F12 - 040 -		BORAL BRICKS INC	HIA	HUFFACKER RD
18	F13W - 001 -		SISSON GEORGE & GLADYS	NRO	574 WOODS RD NW
19	F13W - 002 -	H1	BROWNLOW MARY ELAINE	NAA	WOODS RD NW 569
20	F13W - 003 -		DOBBS LILAH S & HARRIE	NRO	

Inquire to one of above accounts ? (Y/N/F1/E)_

KEMRON
ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Linda Walston, Floyd County Health Dept.

Contact Phone: (706) 295.6123

Contact Fax:

Date: 10.2

Project or Subject: County Files

Ms. Walston stated the Environmental Health Dept does not have a listing of private wells in the county. They do have a list of the wells that have been voluntarily tested.

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TELEPHONE CALL RECORD

Contact: John Boyd, Utilities Superviosor, Floyd County Water

Contact Phone: (706) 291-5174

Contact Fax: (706) 233-0006

Date: 9/28/01

Project or Subject: County Water Lines

Water lines run from beginning to end of Woods Rd. On Huffaker Rd, lines end about where last fire hydrants are located ~ about a 2 mile gap in line.

KEMRON
ENVIRONMENTAL SERVICES

~~TELEPHONE CALL RECORD~~

Contact: Randy McCullough, City of Rome

Contact Phone:

Contact Fax:

Date: 9.28.01

Project or Subject: City of Rome water supply

City has no wells, they have only surface water intakes along the Etowah & Oostanaulla Rivers. Mr. M'Cullough makes the intake locations on a map for me. Mr. McCullough shows me map of water lines, city water lines run from beginning Huffaker Rd (from Hwy 20) up to Rollingwood Dr., although he believes the extend up to Williamsburg Dr. (Not 100% sure)

KEMRON
ENVIRONMENTAL SERVICES

Interview
~~TELEPHONE CALL RECORD~~

Contact: Terry Bandy, Boral Bricks

Contact Phone: (706) 234-6047

Contact Fax: (706) 234-6047

Date: 10·3·01

Project or Subject: Boral Bricks, water wells onsite

Mr. Bandy confirmed 2 water supply wells are onsite. One well is in front of the house, the second well is in the woods next to the trailer. Water well in the woods is 18-20' deep (he thinks). Ask Mr. Bandy if he has any contacts at Chatt. Brick Co. - tells me they are known as General Shale contact RichardLand. Also ask if he knows anything about Sikes Co (both are adjacent property owners). Sikes Co. is also known as Fla. Tile - does not know anyone there. Mr. Bandy also confirms that the county water goes about 1000 ft past fire hydrant to the entrance drive of Boral Bricks.

KEMRON
ENVIRONMENTAL SERVICES

Interview
~~TELEPHONE CALL RECORD~~

Contact: John Hardin, adjacent property owner

Contact Phone: -

Contact Fax: -

Date: 10-3-01

Project or Subject: water supply well

Original spoke with Mr. Hardin 9/28/01 about water supply well. Stopped back by to check about depth of well and adjacent property. He is not sure about depth of well, believes it is less than 100 ft deep. Property next to his belongs to his cousin, they have a well on site, but it is not in use, as no one lives at the residence.

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TELEPHONE CALL RECORD

Contact: Mary Wear, Fla. Tile

Contact Phone: (863) 687-7171

Contact Fax:

Date: 10-3

Project or Subject: Water Supply

Confirmed that Fla. Tile is a division of the Sikes Corporation. She is not the person to talk to, suggests I call Jeff Poge (706) 232-5181 at plant in Shannon, GA.

KEMRON
ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Tony Wehunt, Plant Controller, Fla. Tile

Contact Phone: (706) 232-5181

Contact Fax:

Date: 10-14

Project or Subject: Water Supply

Mr. Wehunt is not aware of any wells on properties.

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ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Harry Briscoe, GA Power

Contact Phone: (706) 235-1161 ext. 225

Contact Fax:

Date: 10.4

Project or Subject: Water Supply for Property

Harry Briscoe is not sure about any wells on the property - he tells me to call the Real Estate Division in Atlanta.

KEMRON
ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Harry Flower, GA Power

Contact Phone: (706) 236 · 1463

Contact Fax:

Date: 10/4

Project or Subject: Water Supply

Mr. Flower of GA power says he ~~he~~ is not ~~fam~~ilar with the property and suggests I call Rick Finch of Environmental Affairs.

KEMRON
ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Rick Finch, GA Power

Contact Phone: (404) 799-2104

Contact Fax:

Date: 10/4

Project or Subject: Water Supply

Mr. Finch is not aware of any water supply wells on the property. Also stated that the main power lines are not on property owned by GA Power.

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ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Joe Didrick, property owner within ½ mile

Contact Phone: (706) 234-7298

Contact Fax:

Date: 10/1

Project or Subject: Water Well on property

Owns 70 acres off Avery Rd. Has no well, but there is a spring along the NE corner of his property.

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TELEPHONE CALL RECORD

Contact: Tim West, Timber Inland Forest

Contact Phone: (706) 232-6425

Contact Fax:

Date: 10/3

Project or Subject: Water Supply

Timber Inland Forest is a Division of Inland Container Co. Mr. West questioned if I was working for state or county. I replied No and Mr. West refused to answer any further questions.

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TELEPHONE CALL RECORD

Contact: Mr. Buddy Smith, property owner within 1/2 mile radius

Contact Phone: (706) 234-6007

Contact Fax:

Date: 10.3

Project or Subject: Water Supply

Mr. Smith just had his well repaired, got a new pump installed. Mr. Smith uses his well to water his flowers and lawn and to wash his cars. Asks about having his well tested, he is thinking about converting his main supply to the well, due to the rising costs of his County water bill.

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ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Mr. John Gilreath, property owner within 1/2 mile radius

Contact Phone: (706) 235-9403

Contact Fax:

Date: 10/3

Project or Subject: Water Supply

Mr. Gilreath is on county water, has no water wells on his property. Confirmed the same info for his brother John Michael.

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TELEPHONE CALL RECORD

Contact: Richard Land, General Shale

Contact Phone: (404) 275. 1195
cell (404) 275. 1560
Contact Fax:

Date: 10/3

Project or Subject: Water Supply

Mr. Land confirmed that General Shale and Chatt. Brick Co. are the same. Mr. Land is not aware of any wells on their properties. He does remember one well at a property on Turner Bend next to an old house, but they are not using it.

KEMRON
ENVIRONMENTAL SERVICES

Interview
~~TELEPHONE CALL RECORD~~

Contact: Mrs. Nora Holbrook, ~~ac~~property owner within ½ mile

Contact Phone:

Contact Fax:

Date: 9/28/01

Project or Subject: water well

Mrs. Holbrook's well is visible from Huffaker Rd. Her well had a high count of fecal matter and she does not use it at all. The water was very muddy and the sediment clogged up her spigot at the front of the house. Mrs. Holbrook fought with the county to get water supply out in her area. Believes they got county water around 1991. Water lines go 11 miles down Huffaker. Her well is 95' deep.

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ENVIRONMENTAL SERVICES

Interview
~~TELEPHONE CALL RECORD~~

Contact: Clark Puckett, USGS commercial well within 2mile radius

Contact Phone:

Contact Fax:

Date: 10/3/01

Project or Subject: Commercial well on USGS database

Mr. Puckett runs an auto shop at the location. The well is visible from the street. Mr. Puckett rents the property from Mr. Mike Bryson of atlanta. Property located 3850 Hwy 20, corner of Hwy 20 & Morningside. Mr. Puckett has occupied the property for 3 weeks and has not had the water cut on yet. Mr. Puckett pointed out water meter at entrance to site. He'll have county or city water when he gets it cut on.

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ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Sarah Jackson, Berry College

Contact Phone: (706) 236-2231

Contact Fax:

Date: 10/1

Project or Subject: Surface Water Intake

Possum Trot Lake is on Mtn. campus on Hwy 27 North of Rome

kemron
ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Ben Elkin, Berry College

Contact Phone: (706) 236.2231

Contact Fax:

Date: 10/8

Project or Subject: Water Well on Lavendar Mtn.

The well is on Berry college campus. They have 22 monitoring wells on campus, the one on Lavendar Mtn. was specifically used to monitor groundwater elevation. The well is located South of Berry Reservior - which used to be a quarry. The quarry was pumping water and this was what Berry College was monitoring for.

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ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Randall Moore / receptionist, Galey & Lord-Brighton Plant

Contact Phone: (706) 236-0238

Contact Fax:

Date: 10-1

Project or Subject: Water Supply

Mr. Moore questioned if I was working for the state or county. After I replied No he refused to answer any further questions. I called back and spoke with the receptionist and asked for the location of the plant - located in Shannon, GA - 9 miles N Rome.

KEMRON
ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Gaelana De Angelo, Misty Mtn. Girl Scout Camp

Contact Phone: (404) 527. 7537

Contact Fax:

Date: 10.1

Project or Subject: Water Supply

Misty Mtn. Girl Scout Camp is located in Armuchee, NW of Rome, out of 2 mile radius. Ms. De. Angelo also confirmed that Camp Sidney Dew (Boy Scout Camp) is also located in Armuchee.

KEMRON
ENVIRONMENTAL SERVICES

TELEPHONE CALL RECORD

Contact: Alan Polk, USFS

Contact Phone: (706) 695.6736

Contact Fax:

Date: 10.1

Project or Subject: Water Well

USFS - Pocket ~~of~~ Rec. area is located in Lafayette, GA, out of 2 mile radius.

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2. SITE ACCEPTABILITY REPORT – ADDENDUM 1

Stantec

Stantec Consulting Services Inc.
1110 Market Street, Suite 214A Chattanooga, TN 37402
Phone (423) 800-5350, Fax (423) 800-5351

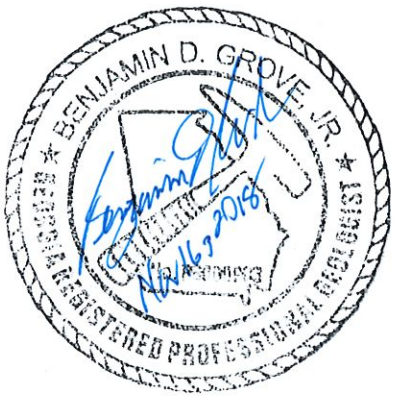
SITE ACCEPTABILITY REPORT – ADDENDUM 1

HUFFAKER ROAD LANDFILL
PLANT HAMMOND
FLOYD COUNTY, GEORGIA

FOR

Georgia Power

NOVEMBER 2018





Stantec

Stantec Consulting Services Inc.
1110 Market Street, Suite 214A Chattanooga, TN 37402,
(423) 800-5350, (423) 800-5351 (fax)

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Stantec

Stantec Consulting Services Inc.
1110 Market Street, Suite 214A Chattanooga, TN 37402
Phone (423) 800-5350, Fax (423) 800-5351

1. INTRODUCTION

A Site Acceptability Report (SAR) for the Huffaker Road Landfill Parcels A, B, C, D, and E, dated December 2002 (ESEE-SCS, 2002), was submitted to the Georgia Environmental Protection Division (EPD). In a letter dated May 26, 2006, from the EPD to Georgia Power Company (GPC), the EPD approved permit number 057-022D(LI) for storage of industrial waste at all five of the planned parcels at the Huffaker Road Landfill.

During the timeframe from EPD issuance of the landfill permit to November 2018, GPC performed limited development of the Huffaker Road property that consisted of:

- Construction of Parcels A, B, and E in accordance with the Permit Drawings. Parcels C and D have not been constructed
- Placement of Coal Combustion Residuals (CCR) in Parcels A, B, and E
- Retrofit of constructed Parcels A and B with a bottom liner system and leachate collection system
- Monitoring of the groundwater monitoring well network for Parcels A, B, and E

The Georgia EPD adopted a new Solid Waste Regulation entitled “Rule 391-3-4-.10 Coal Combustion Residuals” (State CCR Rule). This rule, effective November 22, 2016, applies to owners and operators of new and existing coal combustion residuals (CCR) disposal facilities that dispose or otherwise engage in solid waste management of CCR generated from the combustion of coal at electric utilities and independent power producers. The State CCR Rule incorporates by reference the provisions contained in the United States Environmental Protection Agency (USEPA) Title 40 of the Code of Federal Regulations (CFR) §257 (40 CFR §257) (Federal CCR Rule). Pursuant to these requirements, GPC must submit a CCR permit application for each individual CCR unit. Given the amount of time that has passed since preparation and submittal of the December 2002 SAR, GPC elected to update temporal information and data in the SAR and present that updated information in this Addendum.

Additionally, per Rule 391-3-4-.10(3), compliance information for the applicable location restriction demonstrations required by the United States Environmental Protection Agency’s “Disposal of Coal Combustion Residuals from Electric Utilities” Final Rule (40 C.F.R. Parts 257 & Part 261) (Federal CCR Rule) published in the Federal Register on April 17, 2015, are to be submitted with the Permit Application. This addendum addresses these requirements.

2. 2002 SITE ACCEPTABILITY REPORT UPDATE

A. GENERAL

The 2002 SAR was prepared following guidance criteria specified in "Criteria for Performing Site Acceptability Studies for Solid Waste Landfills in Georgia", Circular 14, Appendix A by a qualified groundwater scientist. Due to the passage of time, select sections of the document are updated with current information and are presented in this addendum.

B. PROXIMITY TO FLOODPLAIN

Based on the Flood Insurance Rate Maps, Floyd County, Georgia, Panel 170 of 425, Map Number 13115C0170E, dated September 25, 2009, the site is not located in the 100-year or 500-year floodplain. The updated 2009 map is provided in the Permit Drawings.

C. PROXIMITY TO STREAMS AND WETLANDS

The original wetland delineation survey of Parcels A, B, C, D, and E was performed by GPC in conjunction with personnel from the North Area Section, Savannah District, United States Army Corps of Engineers and was presented in the Site Acceptability Report (ESE-SCS, 2002). The survey identified a total of 12.97 acres of wetlands at the landfill, of which 5.59 acres were considered to be jurisdictional wetlands by the Corps of Engineers.

An updated wetlands survey was performed in the vicinity of Parcels C and D in 2017 by GPC. The new delineation map is provided in Appendix A. The survey identified a total of 1.483 acres of wetlands, of which 0.713 acres were anticipated to be jurisdictional wetlands within the previously-permitted limits of the landfill. At the time of this addendum, regulatory agencies have not performed a wetlands determination to verify the 2017 GPC assessment.

D. PROXIMITY TO PUBLIC AND DOMESTIC WATER SUPPLIES AND WELLHEAD PROTECTION AREAS

An updated survey of nearby water supplies performed in June 2018 consisted of:

- Review of the Rome-Floyd County web page to verify raw water sources
- Polling the USGS National Water Information System (NWIS) web interface for wells, springs, or other stations located within five miles of the Huffaker Road Landfill

The June 2018 review of the Rome-Floyd County web page revealed that the Rome-Floyd County raw water intakes, which are the nearest municipal water intakes to the Huffaker Road Landfill, are located more than seven miles east, or up-gradient, of the Huffaker Road Landfill on the Etowah and Oostanaula Rivers. There are no municipal surface water intakes within two miles of the Huffaker Road Landfill.

The June 2018 polling of the USGS NWIS web interface used geographic coordinates (latitude and longitude) to define a search area. A summary of search results is provided on Figure 1 and in Table 1 in Appendix B. Table 1 lists all wells located within the search area by station name, station type, station latitude and longitude, and distance and direction from the Huffaker Road Landfill to each station.

Station locations relative to the Huffaker Road Landfill are shown on Figure 1. The six private wells identified by the October 2001 survey are also included on Table 1 and Figure 1.

Based on the October 2001 and June 2018 well search results, there are presently no wells, springs or other points of groundwater withdrawal for public or municipal water supply located within two miles of the Huffaker Road Landfill. The six private wells located within one-half mile of the Huffaker Road Landfill are cross to up-gradient of the site and are either unused or used for irrigation purposes.

E. ZONING

A Zoning Letter for Huffaker Road Landfill is provided in Part A of this Permit Application.

3. LOCATION RESTRICTIONS – PARCELS A, B, AND E

The 2002 SAR concluded that the site for Parcels A, B, and E was favorable for construction of the landfill parcels. Parcels A, B, and E are classified as Existing CCR Landfills under the State CCR Rule and are subject to Rule 391-3-4-.10(9)(c)3.(i) that requires the compliance information for the Unstable Areas location restriction demonstration. The required information is provided in the following section.

A. UNSTABLE AREAS

The Federal CCR Rule identifies the following factors to be considered when determining whether an area is unstable (1) on-site or local soil conditions that may result in significant differential settling; (2) on-site or local geologic or geomorphologic features; and (3) on-site or local human-made features or events (both surface and subsurface).

The 2002 SAR describes a detailed geotechnical exploration performed and the materials encountered. The site generally consists of sandy clayey silt to silty clay with occasional rock fragments. This material classified as CL-ML, SC-SM, and SM based on the Unified Soil Classification System. There is no known history of significant differential settlement during the operation of these parcels.

The underlying bedrock consists entirely of Floyd Shale unit which is described as highly carbonaceous, silty, and micaceous. Shale bedrock units are generally not susceptible to development of karst features. There is no known history of karst features at the site (ESEE-SCS 2002). Based on review of the Rock Mountain, Georgia topographic map (USGS, 2017) there are no apparent karst features expressed at ground surface within two miles of the site.

The site was previously a surface clay mine where most of the residual soil was removed for use in making bricks. A compacted clay layer was constructed beneath each parcel based on the original permit drawings. Additionally, for Parcels A and B, a Construction Certification Report dated January 2016 provides quality control testing records which indicate that the structural fill and the compacted clay layer placed below the landfill parcels met the compaction criteria in the project specifications.

Based on a review of available information, Huffaker Road Landfill Parcels A, B and E are not located in an unstable area that could result in significant differential settlement or mass movement damaging the facility.

4. LOCATION RESTRICTIONS – PARCELS C AND D

The 2002 SAR concluded that the site for Parcels C and D was favorable for construction of the landfill cells with the exception of jurisdictional wetland areas. Parcels C and D are classified as Lateral Expansions under the State CCR Rule and are subject to Rule 391-3-4-.10(9)(c)1.(i) that requires compliance information for the Placement above the Uppermost Aquifer, Wetlands, Fault Areas, Seismic Impact Zones, and Unstable Areas location restrictions demonstrations. The required information is provided in the following sections.

A. PLACEMENT ABOVE THE UPPERMOST AQUIFER

The Federal CCR Rule states that the CCR unit must be constructed with a base that is located no less than 1.52 meters (five feet) above the upper limit of the uppermost aquifer or must demonstrate that there will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR unit and the uppermost aquifer due to normal fluctuations in groundwater elevations (including the seasonal high groundwater table).

Temporary piezometers were installed during the 2002 SAR field exploration across the site and were monitored to determine the seasonal high groundwater elevation. The piezometers were screened within the weathered to un-weathered shale zone encountered throughout the site. Groundwater potentiometric maps were prepared for the unconfined groundwater surface. These maps depicted the general groundwater flow is from north of Huffaker Road toward the south into Smith Creek and from the northwest to southeast toward Smith Creek. Groundwater flow is generally through the moderately to badly weathered shale zone and is recharged by infiltration of precipitation and stormwater.

The potentiometric map from the 2002 SAR was used to design the bottom liner system elevation. A minimum of 1.52 meters (five feet) above these recorded groundwater levels was the design criteria for determining the bottom elevation of the compacted clay layer that is the bottom layer of the liner system. In Part A of the Permit Application, the Groundwater Monitoring Plan provides the August 2018 potentiometric map for the landfill Parcels A, B and E and the Permit Drawings depict the elevation of the liner system and historic potentiometric maps of the Huffaker site.

Based on a review of available information, Huffaker Road Landfill Parcel C and D meets the separation distance above the upper limit of the uppermost aquifer.

B. WETLANDS

The Federal CCR Rule states that new landfills must not be located in wetlands unless appropriate and reasonable compensatory mitigation actions are completed to the extent required under Section 404 of the Clean Water Act or applicable state wetlands laws.

A wetland study was performed in 2017 of the Parcel C and D site by GPC. This study found that 0.713 acres of anticipated jurisdictional wetlands, as defined by the United States Corps of Engineers, will be impacted by construction of Parcels C and D. These wetlands have not received concurrence from appropriate regulatory agencies, although this will occur prior to parcel construction. The unavoidable

impacts to these wetlands will be minimized to the extent possible. GPC will mitigate the remaining unavoidable impacts based on guidance from the appropriate regulatory agencies.

C. FAULT AREAS

The Federal CCR Rule states that CCR units must not be located within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time.

Based on review of the USGS web page listing of earthquakes in Georgia, there are no active faults or fault zones in Floyd County, Georgia. The 2002 SAR cites no faults or fault zones, unstable areas, or shear zones encountered during the site geological exploration.

Based on a review of available information, Huffaker Road Landfill Parcels C and D are not located in a fault area that has had displacement in Holocene time.

D. SEISMIC IMPACT ZONES

The Federal CCR Rule states that CCR units must not be located in seismic impact zones unless the owner/operator demonstrates that the structural components including liners, leachate collection and removal systems, and surface water control systems are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

For the Federal CCR Rule, the definition of a seismic impact zone is a horizontal acceleration greater than 0.1g with a 2% chance of being exceeded in 50 years, which is a return period 2,475 years (slightly greater than that used in the original SAR). Based on current mapping available from the United States Geological Survey (USGS), the horizontal acceleration at Parcels C and D is 0.24g for a return period of 2,475 years.

Based on the 0.24g horizontal acceleration for a slightly lower return period than required for the Federal CCR rule, the unit is located in a Seismic Impact Zone. The structural components of the landfill are designed to resist this maximum horizontal acceleration. The calculations are presented in the Engineering Report in Part B of the Permit Application.

Based on a review of available information, Huffaker Road Landfill Parcels C and D are located in a seismic impact zone and the landfill has been designed to resist the maximum horizontal acceleration for the site.

E. UNSTABLE AREAS

The Federal CCR Rule identifies the following factors to be considered when determining whether an area is unstable (1) on-site or local soil conditions that may result in significant differential settling; (2) on-site or local geologic or geomorphologic features; and (3) on-site or local human-made features or events (both surface and subsurface).

The 2002 SAR describes a detailed geotechnical exploration performed and the materials encountered. The site generally consists of sandy clayey silt to silty clay with occasional rock fragments. This material was classified as CL-ML, SC-SM, and SM based on the Unified Soil Classification System. There is no known history of significant differential settlement at the site.

The underlying bedrock consists entirely of Floyd Shale unit which is described as highly carbonaceous, silty, and micaceous. Shale units of this type are generally not susceptible to karst features. There is no known history of karst features at the site (ESEE-SCS, 2002). Based on review of the Rock Mountain, Georgia topographic map (USGS, 2017) there are no apparent karst features expressed at ground surface within two miles of the site.

The site was previously a surface clay mine where most of the residual soil was removed for use in making bricks. Prior to construction of the landfill, the area should be reviewed, and potential unstable areas should be mitigated. Any fill placed to support the landfill should be placed in a controlled manner with appropriate quality control testing to verify compaction of the soils. At a minimum, the quality control testing should conform to the CQA Plan provided in Part A of the Permit Application.

Based on a review of available information, Huffaker Road Landfill Parcels C and D are not located in an unstable area that could result in significant differential settlement or mass movement damaging the facility.

5. REFERENCES

Earth Sciences Environmental Engineering, Southern Company Services, Inc. (ESEE-SCS), 2002, "Plant Hammond Proposed Huffaker Road Coal Combustion By-Products, Storage Facility, Site Acceptability Report", Birmingham, Alabama.

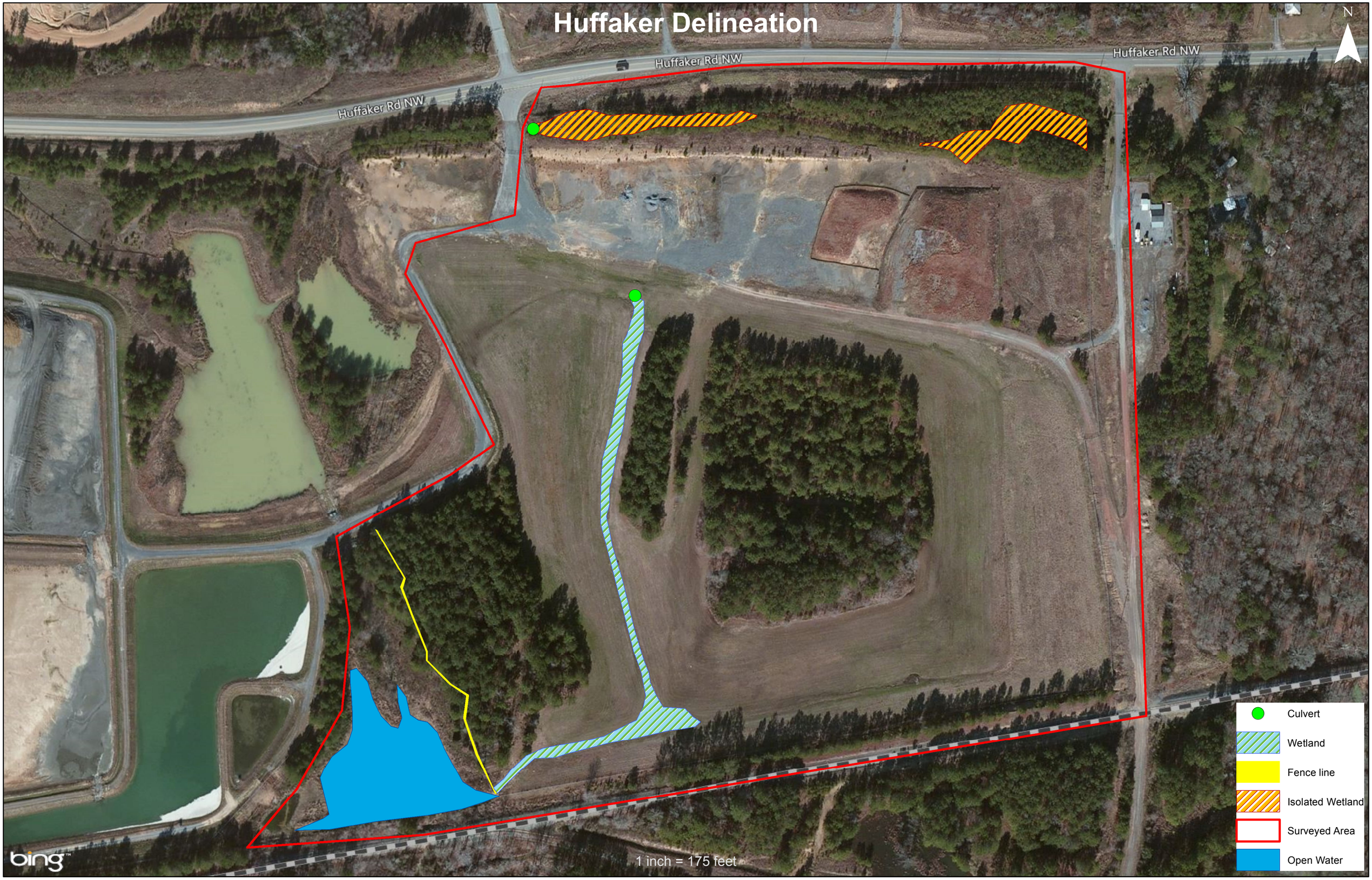
McLemore, William M., and Paul D. Perriello, 1997, "Criteria for Performing Site Acceptability Studies for Solid Waste landfills in Georgia, Circular 14"

APPENDICES

A. WETLAND SURVEY

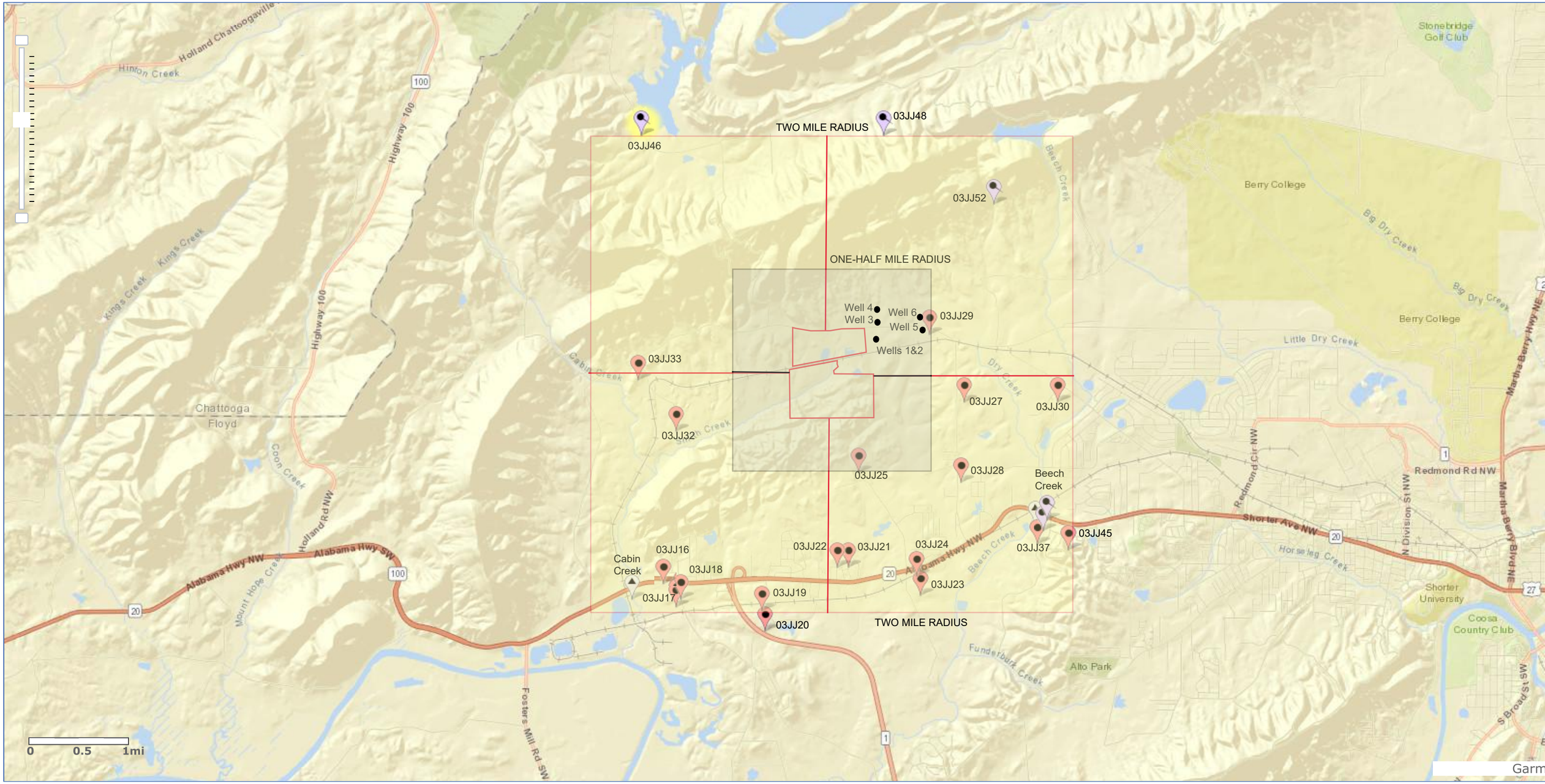
Stantec Consulting Services Inc.
1110 Market Street, Suite 214A Chattanooga, TN 37402,
(423) 800-5350, (423) 800-5351 (fax)

Huffaker Delineation



B. NEARBY WATER WELLS LOCATION

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1110 Market Street, Suite 214A Chattanooga, TN 37402
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NOTE:
Each symbol represents the relative location of a water supply well listed in Table 1.

FIGURE 1
NEARBY WATER WELL LOCATIONS
PLANT HAMMOND, PROPOSED HUFFAKER ROAD
COAL COMBUSTION BY-PRODUCTS STORAGE FACILITY

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TABLE 1
SUMMARY OF USGS WATER SUPPLY WELL SEARCH RESULTS
Plant Hammond - Huffaker Road Landfill Coal Combustion By-Products Storage Facility
Floyd County, Georgia

Hufffaker Road Site Geographic Coordinates:		34.293603	-85.305119							
USGS Station Name	**Station Type**	**Station Latitude**	**Station Longitude**	**Ground Elevation (feet)**	**North (feet)**	**East (feet)**	**Distance from Huffaker Road Site (feet)**	**(miles)**	**Relative Direction from Site (degrees)**	**(bearing)**
Well 3, John W. Hardin 2114 Huffaker Road, Private, Unused	GW	34.299808	-85.294417	683	2,262	3,901	2,397	0.45	60	NE
Wells 1&2 owned by Boral Bricks, Inc. 2131 Huffaker Road, Private, unused	GW	34.297419	-85.293331	684	1,391	4,297	2,405	0.46	72	NE
Well 4, Selena Hammond 2114 Huffaker Road, Private, Unused	GW	34.301097	-85.294303	688	2,732	3,943	2,685	0.51	55	NE
03JJ25	GW	34.279537	-85.295788	680	-5,127	3,401	4,040	0.77	146	SE
Well 5, H.A. & Nora Holbrook 1881 Huffaker Road, Private, Unused	GW	34.298942	-85.286853	689	1,946	6,658	4,825	0.91	74	NE
Well 6, Buddy & Wydean Smith 1872 Huffaker Road, Private Irrigation	GW	34.300375	-85.287258	709	2,468	6,510	4,850	0.92	69	NE
03JJ29	GW	34.299814	-85.283287	670	2,264	7,958	6,162	1.17	74	NE
03JJ32	GW	34.285648	-85.328289	620	-2,899	-8,445	6,817	1.29	251	SW
03JJ27	GW	34.289815	-85.277176	695	-1,381	10,185	8,166	1.55	98	E
03JJ22	GW	34.265649	-85.299677	635	-10,189	1,984	8,268	1.57	169	SE
03JJ21	GW	34.265649	-85.297732	630	-10,189	2,693	8,427	1.60	165	SE
03JJ33	GW	34.293148	-85.334956	655	-166	-10,875	8,764	1.66	269	SW
03JJ28	GW	34.278148	-85.277732	640	-5,633	9,983	9,351	1.77	119	E
03JJ19	GW	34.259260	-85.313010	635	-12,518	-2,876	10,732	2.03	193	S
03JJ24	GW	34.264260	-85.285510	638	-10,695	7,148	10,752	2.04	146	SE
03JJ23	GW	34.261482	-85.284954	640	-11,708	7,350	11,712	2.22	148	SE
03JJ48	SP	34.328980	-85.291343	960	12,895	5,021	11,726	2.22	21	N
03JJ20	GW	34.256204	-85.312455	670	-13,631	-2,674	11,779	2.23	191	S
03JJ18	GW	34.260927	-85.327455	600	-11,910	-8,141	12,315	2.33	214	S
03JJ16	GW	34.262593	-85.330511	590	-11,303	-9,255	12,497	2.37	219	S
03JJ17	GW	34.259815	-85.328289	605	-12,315	-8,445	12,820	2.43	214	S
03JJ52	SP	34.318980	-85.271898	920	9,250	12,109	13,126	2.49	53	NE
03JJ30	GW	34.289815	-85.260509	645	-1,381	16,260	14,207	2.69	95	E
CABIN CREEK AT GA 20, NEAR ROME, GA	ST	34.260926	-85.336066	M	-11,910	-11,280	14,292	2.71	223	S
03JJ46	SP	34.328980	-85.334400	745	12,895	-10,672	14,626	2.77	320	NW
BEACH CREEK AT GA 20, NEAR ROME, GA	ST	34.271760	-85.264398	8.31	-7,962	14,843	14,732	2.79	118	E
03JJ45	SP	34.272593	-85.262454	605	-7,658	15,551	15,222	2.88	116	E
03JJ37	GW	34.268982	-85.264120	625	-8,974	14,944	15,319	2.90	121	E
03JJ44	SP	34.270926	-85.263009	615	-8,265	15,349	15,321	2.90	118	E
03JJ15	GW	34.264260	-85.345789	640	-10,695	-14,824	16,167	3.06	234	SW
03JJ12	GW	34.259538	-85.343845	600	-12,416	-14,115	16,687	3.16	229	SW
Intake on BERRY RESERVOIR Near ROME, GA	FA-DV	34.326667	-85.263889	EST	12,051	15,028	17,151	3.25	51	NE
03JJ36	GW	34.268149	-85.258565	670	-9,278	16,969	17,228	3.26	119	E
03JJ10	GW	34.300370	-85.358012	710	2,466	-19,279	17,324	3.28	277	W
03JJ40	GW	34.255649	-85.343011	590	-13,834	-13,811	17,436	3.30	225	SW
03JJ13	GW	34.259260	-85.346345	625	-12,518	-15,026	17,445	3.30	230	SW
03JJ35	GW	34.255093	-85.344678	590	-14,036	-14,419	18,011	3.41	226	SW
03JJ14	GW	34.258427	-85.348845	595	-12,821	-15,937	18,342	3.47	231	SW
03JJ31	GW	34.256760	-85.347733	590	-13,429	-15,532	18,420	3.49	229	SW
03JJ26	GW	34.250649	-85.266898	650	-15,656	13,931	18,845	3.57	138	SE
Intake on COOSA RIVER BLW COOSA, GA 15823205	FA-DV	34.250000	-85.343611	EST	-15,893	-14,030	19,088	3.62	221	S
03JJ41	GW	34.254260	-85.348845	586	-14,340	-15,937	19,327	3.66	228	SW
Outfall on COOSA RIVER AT COOSA, GA	FA-OF	34.250278	-85.345278	EST	-15,791	-14,637	19,419	3.68	223	S
03JJS2	SP	34.253982	-85.351622	590	-14,441	-16,950	20,156	3.82	230	SW
03JJ49	SP	34.310092	-85.367456	860	6,010	-22,721	21,390	4.05	285	W
03JJ47	SP	34.253982	-85.360789	800	-14,441	-20,291	22,793	4.32	235	SW
03JJ34	GW	34.250649	-85.250509	670	-15,656	19,905	23,212	4.40	128	E
03JJ42	GW	34.288981	-85.374679	818	-1,685	-25,354	23,298	4.41	266	SW

NOTES:
Data obtained from USGS.org by providing lat-long box around the Huffaker Road Site
Station Type ST = Stream Site, GW = Well Site, SP = Spring Site, FA-DV = Facility Diversion Site, FA-OF = Facility Outfall Site
Station latitude, longitude, and ground elevation obtained from USGS database
Distances and direction from Huffaker Road Site to Stations are calculated based on geographic coordinates.
Locations of Stations in this table relative to Huffaker Road Site are shown on Figure 1