Capitol City Plume - Documents (2 of 4)

Stephen Smith to: gary.gengel@lw.com 07/26/2011 03:15 PM

Attached are discussed documents:

CC Plume - PA (Part 1).pdf CC Plume - PA (Part 2).pdf

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SITE: Capitol City Plume
BREAK: 1.8
OTHER: v. 1

PRELIMINARY ASSESSMENT
CAPITOL CITY PLUME
MONTGOMERY, MONTGOMERY COUNTY, ALABAMA
EPA ID No.: AL0001058056
CERCLIS SITE REF. No.: 6330

Prepared By
Jerremy Stamps
Alabama Department of Environmental Management
Special Projects

10469681

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Date: *February 1995*

Prepared by: *Jerremy Stamps (Site Investigator)*
Site Assessment Unit
ADEM - Special Projects

Site: *Capitol City Plume*
Montgomery, Montgomery County, Alabama 36110

EPA ID No.: *AL0001058056*

CERCLIS No.: *6330*

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1. INTRODUCTION

Under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) and a cooperative agreement between the U. S. Environmental Protection Agency and the Alabama Department of Environmental Management (ADEM), a Preliminary Assessment (PA) was conducted at the Capitol City Plume Site in Montgomery, Montgomery County, Alabama. The purpose of this investigation was to collect information concerning conditions at the site sufficient to assess the threat posed to human health and the environment and to determine the need for additional investigation under CERCLA/SARA or other action. The scopes of the investigation included a review of available file information, a comprehensive target survey, a site reconnaissance and a limited ground water, soil, and soil gas study.

2. SITE DESCRIPTION, SITE HISTORY, AND WASTE CHARACTERISTICS

2.1 Location

The "Capitol City Plume" Site is located in downtown Montgomery, Alabama (Figure 1). Tetrachloroethene (PCE) was initially discovered as soil and ground water contamination in a 30 foot deep excavation that was dug during the construction of the Retirement Systems of Alabama (RSA) Energy Plant located in the Southwest 1/4 of Section 7; Township 16 North; Range 18 East (Figure 1).

Montgomery has a humid subtropical climate with moderate precipitation throughout all seasons. Statistically, Montgomery County receives the most precipitation, 6.50 inches, during the month of March and the least precipitation, 2.36 inches, during the month of October. The normal annual total precipitation for Montgomery County is 53.66 inches. Runoff in the northwest portion of the county is less than 18 inches per year and the mean annual lake evaporation is approximately 43 inches. (Reference 3)

The mean annual temperature for Montgomery County is approximately 65.4° F. On a monthly average, January is the coldest and July is the warmest. January has an average temperature of 49.2° F and an absolute minimum temperature of 5° F. July has an average temperature of 81.2° F and an absolute maximum temperature of 107° F. (Reference 3)

2.2 Site Description

In an area of downtown Montgomery that is bound on the north by Pollard Street; on the east by Decatur Street; on the south by Dexter Avenue and on the west by Court Street, a soil gas survey was conducted by the Alabama Department of Environmental Management. The survey detected 6 tetrachloroethene (PCE) and 6 benzene, toluene, ethylbenzene, and xylene (BTEX) plumes (Figure 1; Appendix C).

Five (5) of the 12 contaminated ground water plumes identified by the soil gas survey extended beyond the study area. Therefore, for the purposes of this assessment, the Capitol City Plume Site has been estimated to consist of all properties within an 1/2 mile radius of the original location where PCE contamination was first discovered. The geographic coordinates where PCE contaminated soil and ground water were initially discovered are 32° 22' 44.90" North Latitude and 86° 18' 15.70" West Longitude (Reference 1; Reference 2).

2.3 Waste Characteristics and Site History

In September of 1993 the Special Projects branch of the Alabama Department of Environmental Management (ADEM) began investigating a report of PCE soil contamination at the RSA Energy Plant site at the corner of Monroe Street and McDonough Street (Appendix A). After 17 months of investigative work, ADEM came to the conclusion that there are a minimum of 12 ground water plumes contaminated with either PCE or BTEX within a 30 city block area of downtown Montgomery (Appendix B; Appendix C).

The substances benzene, toluene, ethylbenzene, and xylene (BTEX) are constituents found in automobile fuel as well as many other petroleum derived fuels and solvents. Due to the common use of these substances, the possible sources of all the ground water plumes contaminated with BTEX in the study area were not extensively researched, but the sources of at least two of the BTEX plumes are thought to be leaking underground storage tanks.

Tetrachloroethene (PCE) is a man made substance mainly used for dry cleaning fabrics and textiles. Some other uses for the chlorinated hydrocarbon solvent are as a metal cleaning agent, as an additive in printing inks, adhesives, glues, sealant and polishes, and as a chemical intermediate in the process of other man made chemicals. Other names that may be used for tetrachloroethene include PCE, tetrachloroethylene, perchloroethylene, perc, perclene, and perchlor. At normal temperatures tetrachloroethene is a liquid, but some of the liquid can be expected to evaporate into the air producing an ether-like odor.

Since the major use for PCE is as a dry cleaning agent, research using city directories ranging in age from 1905 to 1985 were used to determine approximately how many possible sources from that one type of industry has existed within the study area of the Capitol City Plume Site. The following table contains the names and addresses of all the cleaners that were found to exist within the study area:

Year of Directory	Address	Name
1905	105 Monroe	Kruger George
1905	110-112 N Perry	Montgomery Steam Laundry
1907	1-2 Monroe	Jackson G. W.
1913	24 N Perry	Bachelor Tailoring & French Dry Cleaning
1913	201-203 Dexter	Montgomery French Dry Cleaning Co.
1913	4 Dexter	Paris Dry Cleaning Co.
1915	213 Dexter	Paris Dry Cleaning Co.
1915	507 N Decatur	Crim Clifford
1915	126 N Perry	H. B. Pressing Club
1915	607 Pollard	Jordan Lewis
1915	121 Dexter	Solomon Piha
1915	N Court	Williams Frank
1916	310 Dexter	Burke D. T.
1916	705 N Decatur	Harris
1916	421 Dexter	Home Industrial Cleaners
1916	18 N Perry	Howard G. C.

1937	400 Madison	Madison Avenue Dry Cleaners
1941	118 N Perry	Imperial Dry Cleaners
1941	403-405 Dexter	Strait Cleaners & Dyers
1946	217-237 Dexter	Loo Sing Laundry
1946	10 Lawerence	City Cleaners
1949	110 N Court	Caffey Dry Cleaners
1949	320 Madison	Madison Avenue Dry Cleaners
1949	317 Dexter	Paramount Cleaners
1949	525 Decatur	Wright Cleaners
1951	629-637 Madison	Jim Massey Cleaners
1955	124 N Court	Caffey Dry Cleaners
1955	330 Madison	Madison Avenue Dry Cleaners
1955	213 Madison	Parkers Snow White Laundry
1955	110 N Perry	Right Way Cleaners
1955	527 N Decatur	Wright Cleaners
1955	341 Dexter	Paramount Cleaners
1970	527 N Decatur	Sun-Moon Cleaners & Launders
1980	330 Madison	Davis One Hour Cleaners & Laundry
1980	14 Perry Ct	Kelly's Cleaners
1985	432 Madison	Davis One Hour Cleaners

3. GROUND WATER PATHWAY

3.1 Hydrogeologic Setting

The Capitol City Plume Site is located within the Red, High Stream Terraces physiographic subdivision of the Alluvial-Deltaic Plain District of the East Gulf Coastal Plain physiographic section. The prominent features of the Alluvial-Deltaic Plain District are broad, well developed, flat flood plains and terraces. These flood plains and terrace consist of gravel, sand, silt and clay sediments that have been deposited by the meandering Alabama River, Tallapoosa River and their large ancestral streams. The alluvial deposits are as much as 80 feet thick, but are usually only 30 to 50 feet thick. The parent material of these Quaternary alluvial deposits are residuum soils that have been washed in from as far away as the Piedmont physiographic district of Alabama. (Reference 3; Reference 5)

In the flood plains of the Alabama, Coosa and Tallapoosa Rivers, the alluvial deposits are a potential source for large public water supplies. A few municipal wells in the Montgomery North Well Field utilize the alluvial aquifer, but most are screened within the underlying Eutaw Formation. The Eutaw Formation consists of marine sand separated by a zone of clay. Because the Eutaw aquifer is hydraulically connected with the highly permeable alluvial sand and gravel deposits, it as well as the alluvial aquifer is susceptible to surface contamination. (Reference 3; Reference 4)

3.2 Ground Water Targets

Twenty-eight (28) of the 49 public water wells in the Montgomery North and West Well Fields are within the four-mile target radius. Montgomery Water Works (MWW) gets 34 percent of its total water supply from these equally contributing wells. The remaining 66 percent of their water supply comes from an intake located on the Tallapoosa River. The water from the 49 wells and the surface water intake make up a blended system that directly supplies 220,002 people. Pintlala Water and Fire Protection Authority serve a population of 3,819 and purchases 40 percent of its drinking water from MWW. Hunter Walk Manufactured Home Community serves a population of 597 and purchases 75 percent of its drinking water from MWW. (Reference 4; Reference 5)

3.3 Ground Water Conclusions

The installation of 4 monitoring wells on the Capitol City Plume Site has verified the presence of PCE in ground water (Appendix A; Appendix B). The soil gas survey conducted at the site suggest that PCE and BTEX contamination are widespread and may pose a serious threat to much of Montgomery's North Well Field. In the North Well Field municipal well number 9W has already had to be taken out of commission due to the presence of PCE contamination.

4. SURFACE WATER PATHWAY

4.1 Geomorphologic Setting

The maximum high elevation for the Capitol City Plume Site is approximately 288 feet above mean sea level in the southern part of the site, and the minimum low elevation for the site is approximately 160 feet above mean sea level, along the northwest border of the site near the Alabama River (Figure 1). Most of the Capitol City Plume Site lies outside of the 500 year flood plain of the Alabama Basin, but the northwest portion of the site that lies below approximately 170 feet above mean sea level lies within the 100 year flood plain (Reference 6). The portion of the site that lies below approximately 175 feet above mean sea level is also within the 500 year flood plain (Reference 6).

Overland drainage from the site flows into the city's storm water sewers and is discharged into the Alabama River. The city of Montgomery's storm water sewers system is believed to have been installed prior to the Civil War. No records are available that show the flow paths of the system, but according to the Montgomery Water Works and Sanitary Sewer Board, the system is know to discharge all collected storm water at various points along the Alabama River.

Once the overland drainage from the Capitol City Plume Site enters into the Alabama River it will travel southwestward down the Alabama River for the entire targeted 15-mile downstream surface water pathway. In the 15-mile surface water pathway, the Alabama River has a 7-day average flow of 3,710 cubic feet per second (cfs). The lowest flow to which the Alabama River will decline during 7 consecutive days on an average of once every 2 years of normal flow (7-day Q2) is estimated to be 6980 cfs. (Reference 11)

4.2 Surface Water Targets

The 15-mile downstream surface water pathway (SWP) begins and end on the Alabama River (Plate 1). There are no known drinking water intakes located within the targeted SWP (Reference 5). Along the entire targeted overland drainage and surface water pathway there is approximately 0.76 linear miles of wetlands that could come in contact with water from the Capitol City Plume Site. The land along the banks of the Alabama River and its intermittent tributaries might be critical to the support of many threatened and endangered species (see list of species in Section 5.2).

4.3 Surface Water Conclusion

Within the 15-mile downstream surface water pathway, the Alabama River is classified as a fish and wildlife area, and a water contact sport area (Reference 12). There are no drinking water intakes, no listed endangered or threatened aquatic wildlife and only a few small stretches of wetland that come in direct contact with the banks of the river. No information was discovered that would indicate that contaminants know to exist in the soils and ground waters at the Capitol City Plume Site have migrated into the surface water pathway.

5. SOIL EXPOSURE AND AIR PATHWAY

5.1 Physical Conditions

The USDA Soil Survey, indicates that the site is underlain by Sandy Alluvial Land soils of the Amite and Cahaba Soil Series. These soils consist of mixed alluvium that has been washed in from the Coastal Plain Upland. The soils of this land type are well drained, and have a moderate to moderately rapid permeability in the subsoil. Runoff over this land type is moderately rapid. (Reference 3)

5.2 Soil and Air Targets

There are several thousand workers that work on the Capitol City Plume Site and approximately 955 people living on the site. There are two schools, St. Mary of Loretta School and Baldwin School, located on the site (Figure 1; Reference 7). In the area of Montgomery that makes up the Capitol City Plume Site, no daycare facilities were listed in the South Central Bell 1994-95 Montgomery, Alabama Phone Book and none were seen during the site reconnaissance.

According to the Alabama 1990 census records (Reference 8), the average number of people living in homes located in Montgomery County is 2.61 residents per household. In the following table, the total population within the target area has been broken down into sub-populations that live within each specified distance radius from the site:

DISTANCE FROM SITE	*POPULATION*
ONSITE	954.6
0 TO 1/4 MILE	1,193.3
>1/4 TO 1/2 MILE	1,670.6
>1/2 TO 1 MILE	4,773.1
>1 TO 2 MILES	15,274.0
>2 TO 3 MILES	22,910.9
>3 TO 4 MILES	30,547.9
TOTAL POPULATION	77,324.4

None of the Capitol City Plume Site or the area within the 4-mile target area is considered to be a wetland environment. Within the 15-mile surface water pathway are a few small patches of wetland areas. The nearest wetland is approximately 5 miles northwest of the site or 6.2 miles downstream from the probable point of entry (PPE) for contaminants coming from the site via the surface water migration pathway (Reference 1).

It is not know if the Capitol City Plume Site is a critical habitat for federally designated endangered or threatened species. The table below is a list of the native species that may utilize the land and surface waters located within the 4-mile radius and 15-mile target areas:

Common Name	***Listing***	***Distribution in Alabama***
Red Wolf	Endangered	Statewide
Backman's Warbler	Endangered	Statewide
Eskimo Curlew	Endangered	Statewide
American Peregrine Falcon	Endangered	Statewide
American Burying Beetle	Endangered	Statewide
Florida Panther	Endangered	Statewide
Ivory-billed Woodpecker	Endangered	South, West-central
Red-cockaded woodpecker	Endangered	Statewide
Wood Stork	Endangered	Statewide
Bald Eagle	Endangered	Statewide
Arctic Peregrine Falcon	Threatened	Statewide
Alabama Canebrake Pitcher-plant	Endangered	Central

(Reference 9; Reference 10)

5.3 Soil Exposure and Air Pathway Conclusion

The air and soil exposure pathways do not appear to pose more than a minimal threat to human health and the environment. In all the soil and air studies done on the Capitol City Plume Site, none of the surficial soil or ambient air samples showed PCE contamination in any detectable quantity. The only documented exposure to the contaminants found at the Capital City Plume site by direct contact with contaminated soil or air took place during construction work in a 30 foot deep excavation at the Retirement Systems of Alabama Energy Plant.

6. SUMMARY AND CONCLUSIONS

In September of 1993 the Special Projects branch of the Alabama Department of Environmental Management (ADEM) began investigating a report of PCE soil contamination at the RSA Energy Plant site at the corner of Monroe Street and McDonough Street. After 17 months of investigative work, ADEM has discovered 6 ground water plumes contaminated with PCE and 6 other plumes of ground water contaminated with BTEX within a 30 city block area of downtown Montgomery. The installation of 4 monitoring wells on the Capitol City Plume Site combined with a soil gas survey suggest that PCE and BTEX contamination are widespread and may pose a serious threat to much of Montgomery's North Well Field. In the North Well Field municipal well number 9W has already had to be taken out of commission due to the presence of PCE contamination.

Because of the presence of PCE and BTEX contaminated ground water plumes near the Montgomery North and West Well Fields, and the large drawdown which is caused by the pumping of these well fields, there is a possibility that many of the drinking water supply wells screened in the Eutaw and the alluvial aquifers could become contaminated. Since these two well fields are responsible for 34 percent of Montgomery's water supply, ADEM recommends that this site be further evaluated under the authority of CERCLA and SARA.

7. REFERENCES

1. U.S.G.S. 7.5 Minute Series Topographic Quadrangle Maps of Alabama: Montgomery North 1981; Montgomery South 1981; Willow Springs 1987; Barachias 1987; Prattville 1987. Scale 1:24,000.

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

3. Burgess, Leland H., et al., United States Department of Agriculture Soil Conservation Service and Forest Service in cooperation with Alabama Department of Agriculture and Industries and Alabama Agricultural Experiment Station, 1960, Soil Survey of Montgomery County, Alabama.

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

5. Scott, John C., Cobb, Riley H. and Castleberry, Rick D., 1987, Geohydrology and Susceptibility of Major Aquifers to Surface Contamination in Alabama; Area 8: U.S. Geological Survey Water-Resources Investigations Report 86-4360.

6. Federal Emergency Management Agency, Flood Insurance Rate Maps, Montgomery County; Montgomery, Alabama. Panel Numbers 01101C0000 and 01101C0065 F.

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

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

9. Teem, David H., et al., Alabama Agricultural Experiment Station, 1986, Vertebrate Animals of Alabama in Need of Special Attention.

10. Department of Conservation and Natural Resources, 1991 Federally Listed Endangered/Threatened Species.

REFERENCES CONTINUED

11. Hayes, Eugene C., United States Geological Survey in cooperation with the Geological Survey of Alabama, 1978, 7-Day Low Flows and Flow Duration of Alabama Streams Through 1973.

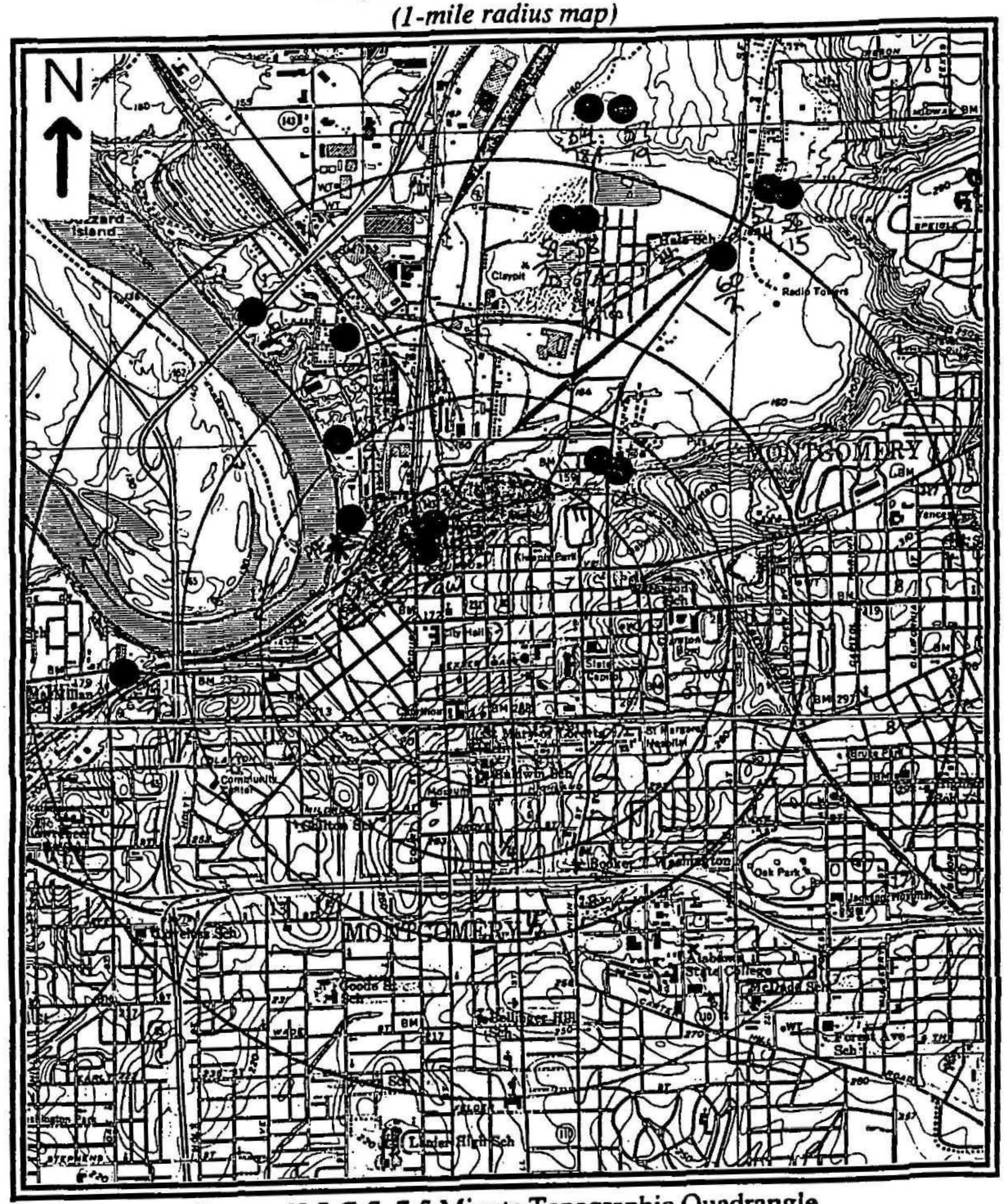
12. Alabama Department of Environmental Management; Water Division - Water Quality Program, 1993, Water Use Classification for Interstate and Intrastate Waters, Chapter 335-6-11.

FIGURES

FIGURE 1

FIGURE 1
CAPITOL CITY PLUME SITE

(1-mile radius map)



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

REFERENCES

REFERENCE 1

REFERENCE 1

(4-mile Radius and 15-mile Downstream Map)

see Plate 1

REFERENCE 2

LATITUDE AND LONGITUDE CALCULATION WORKSHEET #2
LI USING ENGINEER'S SCALE (1/60)

SITE NAME: Capitol City Plame CERCLIS #:

AKA: RSA Towers SSID:

ADDRESS:

CITY: Montgomery STATE: AL ZIP CODE:

SITE REFERENCE POINT: Chiller Plant

USGS QUAD MAP NAME: Montgomery North TOWNSHIP: 16 [✓ N]/S RANGE: 18 [✓ E]/W

SCALE: 1:24,000 ✓ MAP DATE: 1958 SECTION: 7 [redacted] W½ [redacted] ___ [redacted]

MAP DATUM: [✓ 1927] 1983 (CIRCLE ONE) MERIDIAN:

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP (attach photocopy):

LONGITUDE: 86° 15' 00" LATITUDE: 32° 22' 30"

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5' GRID CELL:

LONGITUDE: 86° 17' 30" LATITUDE: 32° 22' 30"

CALCULATIONS: LATITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM LATITUDE GRID LINE TO SITE REF POINT: 45

B) MULTIPLY (A) BY ~~0.3304~~ 0.3311 TO CONVERT TO SECONDS:

A x ~~0.3304~~ 0.3311 = 14.90"

C) EXPRESS IN MINUTES AND SECONDS (1'= 60"): 0' 14.90"

D) ADD TO STARTING LATITUDE: 32° 22' 30.00" + 0' 14.90 =

SITE LATITUDE: 32° 22' 44.90"

CALCULATIONS: LONGITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM RIGHT LONGITUDE LINE TO SITE REF POINT: 117

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

A x 0.~~3304~~ 0.3906 = 45.70"

C) EXPRESS IN MINUTES AND SECONDS (1'= 60"): 0' 45.70"

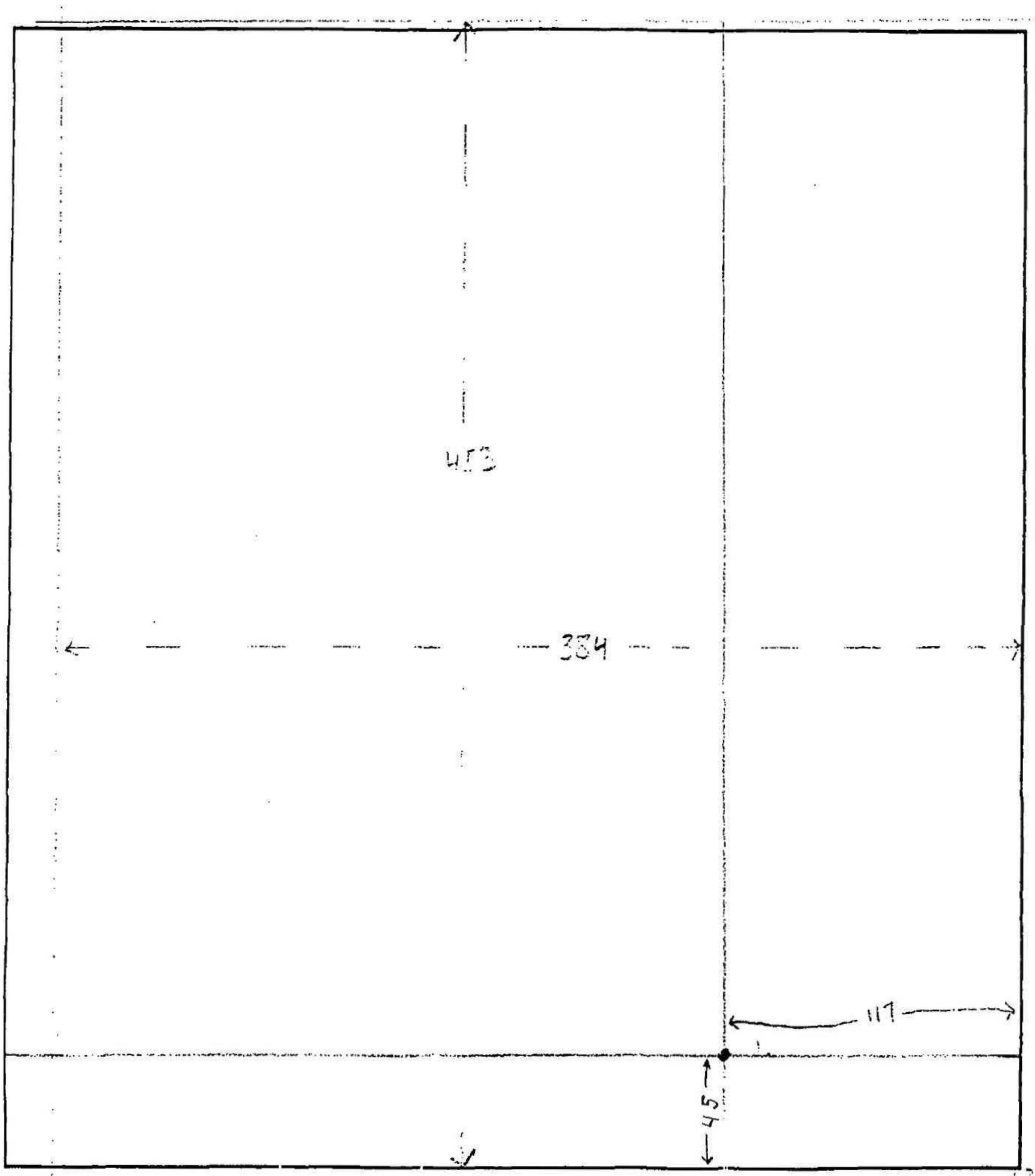
D) ADD TO STARTING LONGITUDE: 86° 17' 30.00" + 0' 45.70 =

SITE LONGITUDE: 86° 18' 15.70"

INVESTIGATOR: DATE: 1-17-95

150/453units = 0.3311

150/384units = 0.3906 117 × 0.3906 = 45.7002



SITE NAME: RSA **NUMBER:**

MAP NAME: Montgomery North **SCALE:** 1:24000 **DATUM:** 1927

COORDINATES OF LOWER RIGHT HAND CORNER OF 2.5 MINUTE GRID

LATITUDE 32 ° 22 ' 30 " **LONGITUDE** 86 ° 15 ' 00 "

T16N R18E Sec 7

REFERENCE 3

eries 1957, No. 7

Issued September 1960

SOIL SURVEY

Montgomery County Alabama

OUR SOIL ★ OUR STRENGTH

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES
and
ALABAMA AGRICULTURAL EXPERIMENT STATION

SOIL SURVEY OF MONTGOMERY COUNTY, ALABAMA

BY LELAND H. BURGESS, C. S. WILSON, E. H. McBRIDE, J. L. ANDERSON, AND K. E. DAHMS, SOIL CONSERVATION SERVICE

CORRELATION BY I. L. MARTIN, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE IN COOPERATION WITH THE ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES AND THE ALABAMA AGRICULTURAL EXPERIMENT STATION

MONTGOMERY COUNTY is in the south-central part of Alabama in the northern part of the Coastal Plain (fig. 1). The county is about 37 miles from north to south and about 33 miles from east to west. Its total area is 790 square miles, or 505,600 acres. Montgomery, the county seat, is in the northern part of the county. Although agriculture is important, the cultivated acreage in the county has decreased in recent years. This decrease in acreage is most apparent in the smaller acreage planted to cotton and corn. The acreage in pasture has increased. Industrial and other employment in the city of Montgomery has greatly increased in recent years.

General Nature of the Area

This section was prepared for those not familiar with Montgomery County. Discussed are history, physiography, climate, and other subjects of general interest.

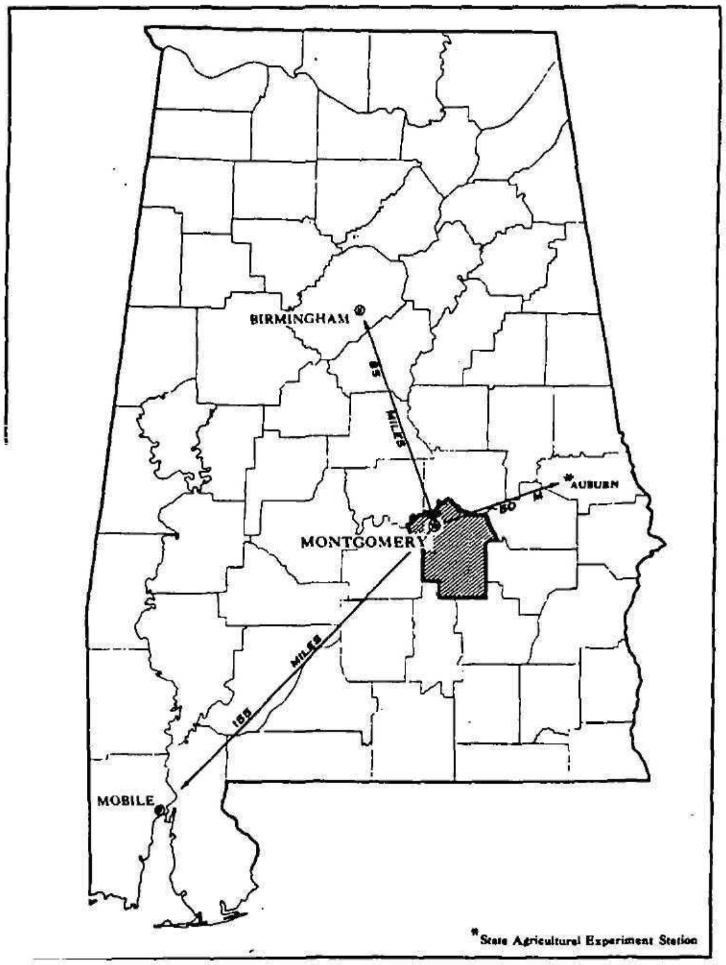


Figure 1.—Location of Montgomery County in Alabama.

Early History, Development, and Population

Montgomery County was created in 1816 by an act of the legislature of the Mississippi Territory. Its size was greatly reduced after Alabama became a State and parts of Elmore, Bullock, and Crenshaw Counties were formed from the original area of Montgomery County.

Before Montgomery County was organized, white settlers came to the site of the city of Montgomery, where they set up a trading post. The surrounding area was fertile and accessible by the Alabama River. Development of the county was fairly rapid. By 1821, Montgomery had about 45,000 people, and by 1835 it was the largest city in Alabama. It became the capital of the State in 1846.

The surrounding area developed along with the city of Montgomery. In 1930, the population of Montgomery County was 98,671, and that of Montgomery City was 66,079. Between 1930 and 1950, the population of the county increased to 138,965—a gain of about 40 percent. In the same period, the population of Montgomery City increased to 106,525—a gain of about 60 percent.

Physiography, Relief, and Drainage

Montgomery County is in the northern part of the Coastal Plain. It has five physiographic subdivisions that range from the flood plains along the large streams in the northern part of the county to the rough, hilly land in the southern part. These subdivisions are shown in figure 2.

The flood plains and low stream terraces occur north of Montgomery along the Alabama and Tallapoosa Rivers and south and southwest of Montgomery along Catoma Creek and its tributaries. The relief of this area is mainly level to very gently sloping.

The red, high stream terraces are in a belt that extends eastward from a point about 4 miles west of Montgomery almost to Macon County. The relief of this belt is somewhat broken in the vicinity of Montgomery, but it is more nearly level farther east.

The prairie land, or black belt, is a wide belt that crosses the county from east to west (fig. 3). Its northern boundary is just south of Montgomery, and its southern boundary extends through Le Grand and Downing. This belt is as much as 15 miles wide in places; but it is much narrower in the central part, where the flood plains and low terraces along Catoma Creek extend southward. The northern part of the prairie land is very gently sloping to sloping and contains most of the acreage in calcareous soils in the county. The southern part is somewhat higher and more rolling than the northern part. It is called red prairie land or post-oak prairie land.

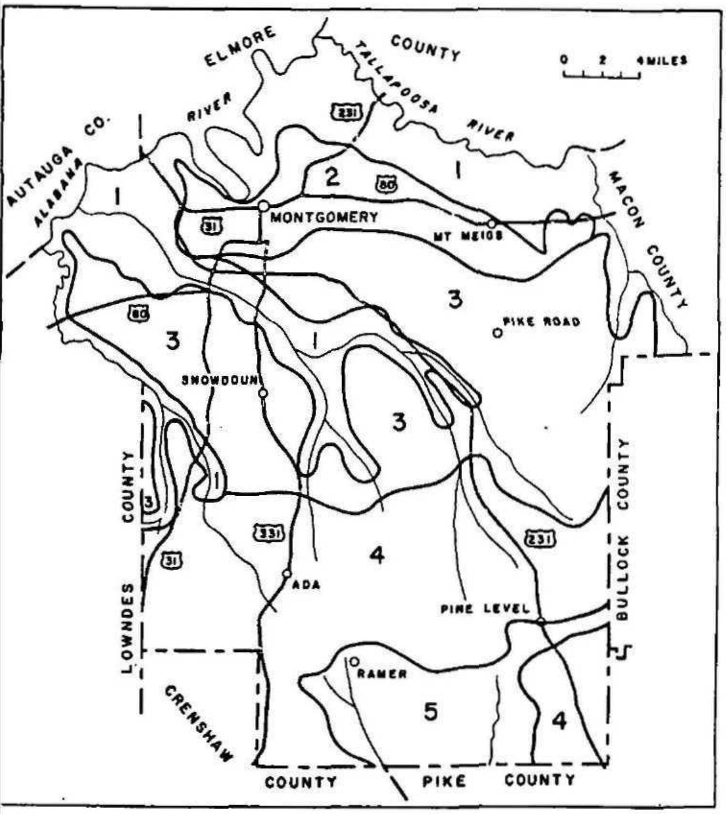


Figure 2.—**Physiographic subdivisions in Montgomery County: (1) Flood plains and low stream terraces; (2) red, high stream terraces; (3) prairie land or black belt; (4) rough, hilly land; and (5) gray sandy land.**

The fourth subdivision consists of rough, hilly land and is sometimes called strata ridge. This ridge is a continuation of Chunnenuggee Ridge in Bullock County. It has sharp breaks in slopes and many gullies. The ridge borders the prairie land and separates the heads of streams that flow northward from those that flow southward. The streams flowing northward have cut farther into the ridge than those flowing southward. They have dissected the ridge enough to cause local differences in elevations that range from 75 to 150 feet.

The fifth subdivision is made up of the gray, sandy and in the south-central part of the county. This subdivision is less hilly than the rough, hilly land to the north. Part of it is gently sloping. Most of the cultivated part of the Coastal Plain that lies south of the prairie section is in this subdivision.

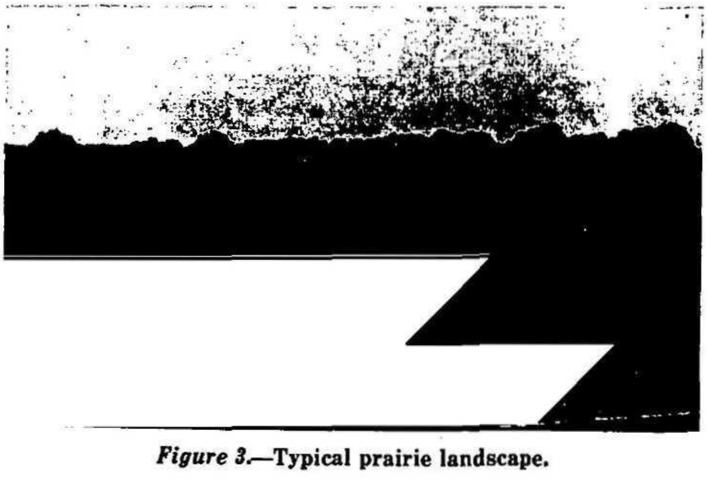


Figure 3.—**Typical prairie landscape.**

Climate

Montgomery County, which is about 140 miles from the Gulf of Mexico, has a climate that is almost subtropical. Table 1 gives the average monthly, seasonal, and annual temperature and precipitation as recorded at the United States Weather Bureau Station at Montgomery, Ala.

The county is gently rolling, and topographic features do not cause many local variations. From June through September, the temperature and humidity are about the same and do not change much from day to day. December, January, and February are the coldest months and have frequent changes in temperature and humidity. These changes are from weather dominated by mild air that had been moistened and warmed by the sea to weather dominated by dry, cool continental air. Hard freezes are infrequent, and normally wild pasture grasses and weeds grow throughout the winter.

TABLE 1.—*Temperature and precipitation at Montgomery, Montgomery County, Alabama*

[Elevation, 195 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1954)	Wettest year (1929)	Average snowfall
	° F.	° F.	° F.	*Inches*	*Inches*	*Inches*	*Inches*
December	49.4	83	8	4.54	4.03	3.32	0.2
January	49.2	83	5	4.60	.72	4.30	.2
February	51.6	84	−5	4.73	3.40	10.34	.2
Winter	50.1	84	−5	13.87	8.15	17.96	.6
March	57.1	90	20	6.50	4.67	15.38	(3)
April	64.7	92	30	4.81	2.06	7.56	(3)
May	72.5	99	43	3.46	1.48	7.27	0
Spring	64.8	99	20	14.77	8.21	30.21	(3)
June	79.6	106	48	4.69	1.55	4.68	0
July	81.2	107	61	5.76	3.38	3.94	0
August	80.9	104	58	4.75	1.68	.82	0
Summer	80.6	107	48	15.20	6.61	9.44	0
September	77.1	106	45	3.51	.44	5.42	0
October	66.4	100	26	2.36	1.56	3.21	0
November	55.2	86	13	3.95	1.85	12.01	(3)
Fall	66.2	106	13	9.82	3.85	20.64	(3)
Year	65.4	107	−5	53.66	26.82	78.25	.6

[1] Average temperature based on an 83-year record, through 1955; highest and lowest temperatures on an 86-year record, through 1958.

[2] Average precipitation based on an 83-year record, through 1955; wettest and driest years based on an 86-year record, in the period 1873–1958; snowfall based on an 86-year record, through 1958.

[3] Trace.

The average growing season, compiled for an 83-year riod, is 250 days. March 8 is the average date of the t freezing temperature in winter, and November 13 the average date of the earliest freezing temperature fall.

Most rain that falls from late in April to early in June in showers or thunderstorms that occur in advance of proaching cool waves. These cool waves become eaker and less frequent as summer approaches. roughts occur in spring, late in summer, and early in ll.

Several years without snow may pass in Montgomery ounty. The heaviest snowfall recorded in a 24-hour riod was on December 5, 1886, when there was 7.1 ches. The following day, 3.9 inches fell, and the 2-day tal was 11 inches.

Crops grow best in Montgomery County when there is out 1 inch of rainfall per week during the growing ason. Although the average rainfall is about 1 inch r week in the county, occasionally 2 or 3 weeks pass ithout an important rain. Droughts are not uncomon in May and June, but they usually occur late in mmer and in fall. Although temperatures are favorble well into fall for the growth of plants, many crops nnot be grown without irrigation. At Montgomery, e longest period without measurable rain on record was e 55 days in 1904, from September 8 to November 2. n 1891, there was less than 0.1 inch from September 14 November 8. Since evaporation is not rapid at low mperatures, the soil is seldom too dry in winter to suply the moisture that winter crops need. Droughts are ost frequent in October and are next most frequent May.

From late in June to the middle of August, nearly all recipitation is from local, mostly afternoon, thunderowers. The amount of rainfall in different parts of e Montgomery area, is likely to vary considerably from ay to day. From June 1 to June 29, in 1941, it rained very day at the weather station. In this period, 7.99 ches of rainfall was recorded.

Late in summer, the local heat thundershowers give ay to thundershowers that occur ahead of slight drops temperature. The general rains that occasionally ccur late in summer are related to the storms on the ulf of Mexico.

The rains in October are nearly always showers or hundershowers preceding drops in temperature, which ecomes more pronounced as winter approaches. From ecember through March or until early in April, the ins may be heavy or light, but the average precipitaon is high. In this period, rivers overflow most requently.

Winds are usually light. Strong winds generally last nly a short time, and dangerous winds are rare. The nly serious damage caused by a tornado in the city of ontgomery was on February 12, 1945.

Vater Supply

In Montgomery County, wells furnish nearly all water r municipal and domestic use. Deep artesian wells upply the city of Montgomery. In the prairie region ater is obtained from deep wells that have been rilled in the Selma Chalk. In the sandy areas, wells 20 to 50 feet deep usually supply water of good quality.

Montgomery County has many creeks and rivers that furnish water for industry, irrigation, livestock, or recreation. Large rivers have a total length of 62 miles and make up 951 acres; small rivers and large creeks have a total length of 64 miles and make up 156 acres. A report from the State Conservation Department, dated October 1, 1957, lists 1,627 fish ponds in the county. These ponds have a total area of 5,223 acres. There are also many small ponds that are used to water livestock.

In Montgomery County, ground water occurs under both unconfined (water table) and confined (artesian) conditions. The unconfined water is in alluvium and terrace deposits. It supplies many domestic wells and a few large municipal wells. The water-bearing sand, gravel, and porous limestone that underlie the soils in the county are sources of water that supply many of the municipal and industrial users as well as many private users.[1]

During the early development of the city, groundwater supplies around Montgomery were believed to be inexhaustible. The water level was lowered, however, and the flow from some wells ceased when more wells were drilled to supply the growing city. Some of the closely spaced wells had to be abandoned. By 1942, the water levels in some wells in the well field in the northern part of the city had fallen more than 100 feet below the land surface.

In 1943, a new well field was developed in the western part of Montgomery to ease the critical problem of water supply. By 1949, additional supplies were needed. Then the United States Geological Survey was requested to investigate the occurrence and availability of ground water. The tests made by that agency indicate that, with proper construction and spacing, many more wells having a capacity of 500 gallons per minute or more could be established in a westward extension of the west field. Several more wells have been established in recent years.

According to figures from pumping stations in Montgomery the average daily pumping is 11.8 million gallons in February and 19.1 million gallons per day in August. The water in the wells is usually at its lowest depth below land surface late in summer and early in fall.

Transportation and Industry

Montgomery County is well served by railroads, highways, and air lines. The county has six main railroads, five Federal highways, many state and county roads, and two air lines.

The six main railroads are the Gulf, Mobile and Ohio; Western Railway of Alabama; Louisville and Nashville; Seaboard Air Line; Central of Georgia; and the Atlantic Coast Line. All railroads enter the city of Montgomery. The Atlantic Coast Line runs southward through Snowdoun, Sprague, Ramer, and Grady, and the rest of the railroads serve the northern half of the county. All farms in the northern half of the county are within 5 miles of a railroad, and most farms in the

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[1] POWELL, W. J., READE, H. L., AND SCOTT, J. C. INTERIM REPORT ON THE GEOLOGY AND GROUND-WATER RESOURCES OF MONTGOMERY, ALA., AND VICINITY. Geol. Survey Ala., Inf. ser. 3. U.S. Geol. Survey, 108 pp., illus. 1957. University, Ala.

B_3 20 to 27 inches, yellowish-brown (10YR 5/8) silty clay loam with a few, medium, distinct mottles of yellowish red (5YR 4/8); moderate, medium, subangular blocky structure; firm when moist and very hard when dry; strongly acid; gradual, wavy boundary.

C 27 to 44 inches, distinctly mottled yellowish-brown (10YR 5/8), strong-brown (7.5YR 5/8), and pale-olive (5Y 6/4) silty clay loam; moderate, medium to coarse, subangular blocky structure; firm when moist and extremely hard when dry.

The solum ranges from 20 to 30 inches in thickness. The surface soil ranges from 5 to 12 inches in thickness and from brownish gray to olive brown in color. In some places sand and gravel occur at depths that range from 4 to 7 feet.

Included with this soil are small areas of Altavista silt loam and small areas of Augusta soils. Also included are small patches where most of the surface soil has been lost through erosion.

Altavista very fine sandy loam is low in organic matter and natural fertility. It has moderate infiltration and a moderately high capacity for holding available moisture. The permeability of the subsoil is moderately slow.

Use and management.—Practically all of this soil has been cleared and cropped. Some of this acreage is now in row crops, some is in pasture, and some has reverted to pine forest. This soil is suited to a fairly wide range of crops and responds well to good management, especially additions of fertilizer and organic matter. Capability unit B10–I–1.

Amite series

In this series are deep, well-drained, level to strongly sloping soils that developed mainly from old alluvium that was washed from the red soils on the Coastal Plain. The native vegetation is loblolly pine and mixed hardwoods. These soils are medium acid to strongly acid. Except in the severely eroded areas, they have a dusky-red or dark-brown to grayish-brown fine sandy loam surface soil and a red to dark-red sandy clay loam to sandy clay subsoil.

Amite soils are fairly extensive. They are mainly in one belt that extends from Montgomery eastward almost to the county line. In this county, they generally occur with the Cahaba soils. They are browner in the surface soil than the Cahaba soils and redder and denser in the subsoil.

In Montgomery County, the terraces on which Amite soils occur are at three different elevations. The highest terraces are the oldest. They occur in three separate areas. One high area is in and just east of Montgomery, another is near Merry in the eastern part of the county, and the third and smallest is just west of Antioch Church on sheet 16 of the soil map. These three high terrace areas are more strongly sloping and more highly dissected than the lower areas. The Amite soils on the high terraces are similar to the Greenville, Red Bay, Orangeburg, and other upland soils. Greenville, Red Bay, and Orangeburg soils are not mapped in Montgomery County.

All of the Amite soils are underlain by sand and gravel at depths that range from 3 to 10 feet. The depth to this sand and gravel is greater in the soils at the higher elevations. The soils on the intermediate and high terraces are somewhat finer in texture than those on the lower terraces.

Amite fine sandy loam, level phase (0 to 2 percen slopes) (AbA).—The following describes a profile in a mois cultivated field:

A_p 0 to 5 inches, dark reddish-brown (5YR 3/3) fine sandy loam; very weak, crumb structure; very friable when moist and nearly loose when dry; medium acid; clear smooth boundary.

A_3 5 to 9 inches, dark reddish-brown (2.5YR 3/4) fine sandy loam slightly compacted (plowpan) in upper part; structureless (massive); very friable; strongly acid; gradual smooth boundary.

B_{21} 9 to 25 inches, dark-red (10R 3/6) fine sandy clay loam; weak, fine, subangular blocky structure; friable when moist and slightly sticky when wet; strongly acid; gradual, smooth boundary.

B_{22} 25 to 48 inches, dark-red (10R 3/6) fine sandy clay; weak, medium, subangular blocky structure; friable when moist and sticky when wet; strongly acid; gradual, smooth boundary.

B_3 48 to 60 inches, red (2.5YR 4/8) sandy clay loam; contains a few quartz pebbles as much as a fourth of an inch in diameter; very weak, medium, subangular blocky structure; very friable; strongly acid; gradual, smooth boundary.

C 60 to 84 inches, red (2.5YR 4/8) sandy loam with pebbles like those in layer above; single grain (structureless); very friable when moist and loose when dry; strongly acid; clear, smooth boundary.

D 84 to 100 inches +, stratified beds of sand and gravel.

The surface soil ranges from dusky red to grayish brown in color. The B horizon ranges from sandy clay loam to sandy clay in texture. Included with this soil are small areas of Chattahoochee fine sandy loam. These areas have a lighter colored surface soil than the Amite soil and a brighter red subsoil. Chattahoochee soils are not mapped in this county.

This soil is moderately high in organic matter and in natural fertility. It has moderately rapid infiltration and a moderate capacity for holding moisture available. The tilth is good.

Use and management.—This is the most extensive Amite soil in Montgomery County. It is well suited to most crops grown in the area. Cotton, corn, and small grain are the main crops. If this soil is adequately fertilized and otherwise well managed, it has high yields. Capability unit A3–I–1.

Amite fine sandy loam, eroded very gently sloping phase (2 to 5 percent slopes) (AbB2).—This soil has a thinner and lighter colored surface soil than Amite fine sandy loam, level phase, but it is similar to the level phase in most other profile characteristics. It has greater runoff and a greater hazard of erosion than the level phase. In a few small areas most of the original surface soil has been washed away, and in some areas a few shallow gullies have formed. This soil responds well to fertilization and other good management.

This soil is suited to about the same kinds of crops as the level phase. Most of the acreage is in row crops, mainly cotton and corn. Small grain and pasture plants are also grown. Only limited conservation measures are needed. Capability unit A3–IIe–1.

Amite fine sandy loam, eroded gently sloping phase (5 to 8 percent slopes) (AbC2).—Because this soil is steeper than Amite fine sandy loam, level phase, it has more rapid runoff. It also has a lighter colored and thinner surface soil. In some places, a few shallow gullies have formed. Included with this soil are eroded areas in which the sandy clay loam subsoil is exposed.

This soil is suited to about the same kinds of crops as level phase, but it needs more exacting management ause it has slower infiltration. Capability unit -IIIe-1.

Amite fine sandy loam, eroded sloping phase (8 to 12 rcent slopes) (AbD2).—This soil has a lighter colored sur- e soil and subsoil than Amite fine sandy loam, level ase. It varies more in thickness of the surface soil n the level phase and is shallower to the underlying ostratum. It is low in organic matter and in natural tility. Because of the rapid runoff, erosion is a de- led hazard and intensive conservation measures are eded where this soil is cultivated. Capability unit -IVe-1.

Amite sandy clay loam, severely eroded gently slop- g phase (5 to 8 percent slopes) (AcC3).—This soil has lost ost of its surface soil through erosion. Consequently, plow layer—a reddish-brown sandy clay loam—is newhat similar to the subsoil of the uneroded Amite ls. The lower horizons of this soil are similar to ose of Amite fine sandy loam, level phase, but the pacity for holding available moisture is lower. This l is very susceptible to further erosion.

This soil is not suited to intensive use. If it is culti- ted, it needs exacting conservation to control runoff. e total acreage of this soil is small. Capability unit -IVe-1.

Amite sandy clay loam, severely eroded sloping ase (8 to 12 percent slopes) (AcD3).—Except for its eper slopes, this soil is similar to Amite sandy clay m, severely eroded gently sloping phase. Runoff is gher than on the severely eroded gently sloping phase, d conservation is more difficult. This soil is best suited perennial sod crops and should be cultivated only casionally. Capability unit A3–IVe–1.

Amite sandy clay loam, severely eroded strongly oping phase (12 to 20+ percent slopes) (AcE3).—This il varies more from place to place than any other mite soil. The surface soil ranges from grayish brown reddish brown. Slopes range from 12 to more than percent, but most of the acreage is within a slope nge of 12 to 15 percent. Included with this soil are me areas of fine sandy loam. Shallow and deep gullies ve formed in places. Runoff is rapid, and the soil is sceptible to further erosion if it is not protected by rennial sod vegetation.

This soil is not extensive. Much of it was once culti- ted, but most of it is now in trees. Capability unit -VIIe-1.

ugusta series

This series consists of somewhat poorly drained, nearly el soils on stream terraces. These soils developed on d alluvium that was washed mainly from soils on the edmont. In local areas this alluvium has an admix- re of material that was washed from the soils on the astal Plain. The native vegetation was oak, hickory, n, maple, holly, gum, and some pine.

These soils have a surface soil of light brownish-gray very dark grayish-brown silt loam or very fine sandy am. Their subsoil is light olive-brown silty clay or ty clay loam that is mottled with very dark brown d light brownish gray. These soils are strongly acid roughout the profile.

Augusta soils occur with the Wickham, Altavista, and Roanoke soils. They are more poorly drained than the Wickham and Altavista soils and are better drained than the Roanoke soils. They do not have color horizons that are so distinct as those of the Wickham and Altavista soils.

Only one unit in the Augusta series is mapped in Montgomery County. Most of this soil is on low stream terraces along the Alabama and Tallapoosa Rivers. The largest areas are near Hunter and Madison.

Augusta silt loam and fine sandy loam (0 to 2 percent slopes) (Ad).—The following describes a profile of Augusta silt loam in a moist wooded area:

A_1 0 to 5 inches, very dark grayish-brown (10YR 3/2) silt loam that is colored considerably by organic matter; weak, fine to medium, granular structure; very friable when moist and slightly hard when dry; strongly acid; gradual, smooth boundary.

A_3 5 to 9 inches, grayish-brown (2.5Y 5/2) silt loam with a few, fine, distinct mottles of very dark brown (10YR 2/2); weak, medium, granular structure; very friable when moist and slightly hard when dry; strongly acid; clear, smooth boundary.

B_2 9 to 25 inches, light olive-brown (2.5Y 5/6) silty clay to silty clay loam with common, fine, distinct mottles of light brownish gray (2.5Y 6/2) and very dark brown (10YR 2/2); firm when moist and hard when dry; very weak, fine, subangular blocky structure; strongly acid; gradual, smooth boundary.

B_3 25 to 34 inches, distinctly mottled olive-yellow (2.5Y 6/6), gray (2.5Y 6/0), and yellowish-brown (10YR 5/8) silty clay; weak, fine, subangular blocky structure to massive (structureless); firm when moist and hard when dry; contains a few small, brown concretions of iron or manganese; strongly acid; gradual, smooth boundary.

C 34 to 46 inches +, mottled olive-yellow (2.5Y 6/6), gray (2.5Y 6/0), and yellowish-brown (10YR 5/8) silty clay; contains hard, red (2.5YR 4/8) peds; massive (structureless); firm when moist and hard when dry; many concretions of iron or manganese; strongly acid.

In cultivated areas the color of the surface soil is gray. Mica flakes are common throughout the profile in those areas where most of the alluvium was washed from the Piedmont. The amount of manganese and iron concretions varies from place to place. About 15 percent of the acreage in this mapping unit is Augusta fine sandy loam.

Augusta silt loam and fine sandy loam have a high water table, especially during winter and spring. Runoff and internal drainage are moderate to slow. These soils are moderately low in organic matter and in fertility.

Use and management.—Most of the acreage has been cleared and used for crops. Much of it has reverted to forest, and some is used for pasture. These soils are suited to only a narrow range of crops. They are better suited to pasture and certain hay crops than they are to crops that require tillage. Row crops often fail completely. In some areas it is feasible to remove surface water by dead-furrow and shallow-ditch drainage. Pine trees grow very well on these soils. Capability unit A3–IIIw–2.

Bibb series

In this series are nearly level, somewhat poorly drained or poorly drained, strongly acid soils. These soils developed from material that sloughed or was washed from surrounding soils on the Coastal Plain. They are mainly along or at the head of narrow drainageways, but in a few places they are in sinkholes surrounded by better

A profile in a moist wooded area of Myatt soil that has a fine sandy loam surface soil is described as follows:

A_1 0 to 3 inches, dark grayish-brown (10 YR 4/2) fine sandy loam; weak, fine, crumb structure; very friable; strongly acid; clear, smooth boundary.

A_{2g} 3 to 18 inches, gray (10YR 5/1) sandy clay loam with a few, medium, faint mottles of yellowish brown (10YR 5/4); very weak, medium subangular blocky structure; friable when moist and slightly plastic when wet; strongly acid; gradual, smooth boundary.

B_{2g} 18 to 34 inches, gray (10YR 6/1) sandy clay loam to sandy clay with common, medium, faint mottles of pale brown (10YR 6/3) and light yellowish brown (2.5Y 6/4); weak, medium, subangular blocky structure to massive (structureless); firm when moist, plastic when wet, and hard when dry; strongly acid; gradual, smooth boundary.

C_g 34 to 46 inches, gray (2.5Y 5/0) sandy clay with common, medium, faint mottles of pale yellow (2.5Y 7/4) and light olive brown (2.5Y 5/4); massive (structureless); very firm when moist, very plastic when wet, and very hard when dry; strongly acid.

In slight depressions, this soil generally has a very dark gray surface soil. In some places a very weak fragipan has formed at depths ranging from 20 to 28 inches. Some areas have a sandy loam subsoil that extends to depths of more than 30 inches. Included are a few small areas that have a silt loam surface soil.

Byars and Myatt soils have moderate to moderately slow permeability in the upper part of the profile and slow permeability in the lower part. Runoff is slow, and some areas remain ponded for several days after heavy rains. These soils are low in natural fertility. Although the undisturbed surface layer contains a considerable amount of organic matter, this organic matter is quickly dissipated when the soils are cultivated.

Use and management.—Because of the poor drainage, the use of these soils is restricted. They are best suited to woodland and summer pasture, but some areas can produce good yields of sugarcane and sorghum. They are fairly well suited to summer truck crops. Capability unit A3–IVw–1.

Cahaba series

This series consists of deep, well-drained, strongly acid soils that are level to gently sloping. These soils developed from old alluvium that was washed mainly from light-colored, sandy soils on the uplands. They have a grayish-brown fine sandy loam surface soil and a yellowish-red sandy clay loam subsoil. In this county much of the acreage in Cahaba soils has a gravelly substratum at depths ranging from 3 to 8 feet. The native vegetation is mainly loblolly pine but includes a few oaks, blackgum, and sweetgum.

The Cahaba soils are moderately extensive. Most of the acreage is in the northern part of the county on stream terraces along the Alabama and Tallapoosa Rivers. These soils occur with the Amite, Independence, and Wickham soils. They are less brown in the surface soil than the Amite soils and are less red in the subsoil. Their profile does not contain so much sand as that of the Independence soils. They differ from the Wickham soils in not containing material that was washed from the Piedmont.

Cahaba soils that occur just west of Merry are 20 to 30 feet higher than the Cahaba soils in the rest of the county. These areas contain more fine sediments than do most areas of Cahaba soils and have a slightly higher capacity for holding available moisture. In a few small areas, they have a yellowish-brown subsoil. West of Merry, the Cahaba soils are similar to the Faceville soils on uplands; but in most places in the county, they are similar to the Ruston soils. Faceville soils are not mapped in this county.

Cahaba fine sandy loam, level phase (0 to 2 percent slopes) (CaA).—The following describes a profile in a moist cultivated field:

A_p 0 to 7 inches, dark grayish-brown (10YR 4/2) fine sandy loam; very weak, fine, crumb structure; very friable; medium acid; clear, smooth boundary.

B_1 7 to 14 inches, dark-brown (7.5YR 4/4) fine sandy loam; moderate, medium, crumb structure; very friable; strongly acid; gradual, smooth boundary.

B_2 14 to 32 inches, yellowish-red (5YR 4/6) sandy clay loam; weak, medium, subangular blocky structure; friable; strongly acid; gradual, smooth boundary.

B_3 32 to 42 inches, yellowish-red (5YR 4/8) light sandy clay loam; very weak, medium, subangular blocky structure; very friable; strongly acid; gradual, smooth boundary.

C 42 to 52 inches, strong-brown (7.5YR 5/6) sandy loam with a few medium, distinct mottles of yellowish brown (10YR 5/6); structureless; very friable; strongly acid.

The surface soil is gray or pale brown in places. It ranges from 6 to 16 inches in thickness. The subsoil ranges from reddish brown to strong brown. Where this soil occurs with the Independence soil, its subsoil may be a heavy fine sandy loam. The depth to the gravelly substratum ranges from 3 to 8 feet. Included with this soil are small areas of the Bienville soils. Bienville soils are not mapped separately in Montgomery County.

The soil is low in organic matter and in natural fertility. It has a moderately high infiltration rate and moderately high capacity for holding available moisture. The permeability of the subsoil is moderately rapid.

Use and management.—Practically all of this soil has been cleared and used for row crops. Most of this acreage is now in row crops, but some has been seeded to pasture. This soil has few limitations to use. It is well suited to crops generally grown in the county. If it is adequately fertilized and otherwise well managed, this soil has good yields. Capability unit A3–I–1.

Cahaba fine sandy loam, eroded very gently sloping phase (2 to 5 percent slopes) (CaB2).—This soil has a thinner and lighter colored surface soil than Cahaba fine sandy loam, level phase, but it is similar to the level phase in most other profile characteristics. Included with this soil are a few small areas of Bienville soils.

This soil is suited to about the same kinds of crops as the level phase but is not so productive. It needs somewhat more exacting management than the level phase. Capability unit A3–IIe–1.

Cahaba fine sandy loam, eroded gently sloping phase (5 to 8 percent slopes) (CaC2).—This sloping soil is in narrow strips between more nearly level areas on one side and drainageways on the other. It has a thinner and lighter colored surface soil than Cahaba fine sandy loam, eroded very gently sloping phase. In places the subsoil is strong brown instead of yellowish red. Runoff is more rapid than that on the other phases of Cahaba fine sandy loam. A few shallow gullies have formed in places.

This soil needs intensive management if it is to produce adequate yields. Yields are normally lower than they are on the other Cahaba soils. Many areas of this soil are well suited to permanent pasture. Capability unit A3–IIIe–1.

Catalpa series

In this series are deep, moderately well drained, calcareous soils that occur on the flood plains in the prairie section of the county. These soils have formed from alluvium that was washed mainly from the Sumter, Houston, and other upland soils on the prairie. Catalpa soils have a dark olive-gray clay surface soil and a very dark grayish-brown clay subsoil. The native vegetation is elm, hackberry, ash, oak, and gum.

Only one Catalpa soil is mapped in Montgomery County. This soil is adjacent to the calcareous Leeper, Tuscumbia, and West Point soils. In smaller areas it is adjacent to the slightly acid Kaufman soil. It is the best drained member of the Catalpa-Leeper-Tuscumbia catena. It contains less material that was washed from acid soils on the prairie than do the Leeper and Tuscumbia soils. The Catalpa is more likely to be flooded than the West Point soils, which are darker colored than the Catalpa.

Catalpa clay (0 to 2 percent slopes) (Cb).—The following describes a profile of this soil in a moist wooded area:

A_1 0 to 12 inches, dark olive-gray (5Y 3/2) clay; moderate, medium, granular structure; friable when moist, very plastic when wet, and hard when dry; medium alkaline; gradual, smooth boundary.

A_{12} 12 to 28 inches, very dark grayish-brown (2.5Y 3/2) clay with a few faint mottles of black (5Y 2/1) and olive gray (5Y 4/2); weak, medium, granular structure; firm when moist, very plastic when wet, and hard when dry; medium alkaline; gradual, smooth boundary.

C 28 to 40 inches +, olive-gray (5Y 4/2) clay with a few faint mottles of very dark grayish brown (2.5Y 3/2); massive (structureless); firm when moist, very plastic when wet, and hard when dry; medium alkaline.

The surface soil ranges from dark olive gray to very dark grayish brown. In places a few white nodules of lime occur throughout the profile. Included with this soil are some areas of silty clay.

Catalpa clay contains moderately large amounts of organic matter and of most plant nutrients. Most of this soil is likely to be flooded frequently. Runoff and internal drainage are moderately slow.

Use and management.—Most of the acreage has been cleared and is used for pasture or hay; some is planted to corn. Although this soil is susceptible to flooding, it is among the best soils in the county for growing hay and summer pasture. It is very well suited to whiteclover, dallisgrass, and johnsongrass. It responds very well to phosphate and potash fertilizers. Capability unit A6–IIw–1.

Chastain series

In this series are poorly drained, strongly acid, plastic soils on first bottoms along streams. These soils were formed mainly from fine sediments washed from the Boswell, Susquehanna, Cuthbert, and other nearby soils. They have a grayish-brown to very dark brown surface soil that varies in texture from place to place. Their subsoil is highly mottled sandy clay. The native v
tation is oak, hickory, gum, ash, elm, and some pine.

The Chastain soils in Montgomery County are map
in one unit. Most of this mapping unit, which is
extensive, is in the southern part of the county. I
similar to the Leaf soils on stream terraces. It is a
ciated primarily with soils in poorly drained sa
alluvium, but it is more uniform in color and tex
than these soils and is finer textured in the subsoil.

Chastain soils (0 to 2 percent slopes) (Cc).—Follow
is a profile of very fine sandy loam that is in a m
pasture:

A_1 0 to 2 inches, very dark brown (10YR 2/2) very
sandy clay loam containing a considerable amount
organic matter; moderate, medium, granular structu
friable when moist and sticky when wet; strongly ac
clear, smooth boundary.

A_{12} 2 to 7 inches, dark-brown (10YR 4/3) fine sandy c
with common, fine, faint mottles of gray (10YR 5/1) a
very dark brown (10YR 2/2); moderate, medium, gra
lar to weak, fine, subangular blocky structure; sti
when wet, friable when moist, and hard when d
strongly acid; gradual, smooth boundary.

C_{1g} 7 to 18 inches, intensely mottled olive-brown (2.5Y 4/
gray (2.5Y 5/0), and very dark grayish-brown (10
3/2) fine sandy clay with many, fine, distinct mottl
massive (structureless); very sticky when wet, ha
when dry, and firm when moist; strongly acid; diff
boundary.

C_{2g} 18 to 42 inches +, same characteristics as C_{1g} horiz
except soil material is more gray as depth increases.

This mapping unit has a surface soil that ranges fro
sandy loam to silty clay loam in texture and from gra
to very dark brown in color. It is moderately low
organic matter and in fertility and remains wet unt
late in spring. Small areas of Urbo soils are include
Urbo soils were not mapped separately in this county.

Use and management.—Almost one-half of this mapping unit has been cleared. The cleared acreage is use
chiefly for pasture, but some is in hay meadows and som
is in corn. Wherever practical, this soil should be protected from floodwaters and the water table lowere
These soils need additions of lime, phosphate, and potas
and respond well to these amendments. Capability uni
A3–IVw–1.

Chewacla series

In this series are deep, somewhat poorly drained t
moderately well drained, strongly acid soils on nearly level flood plains. These soils developed in materia
that was washed mainly from the soils on the Piedmon
and, in this county, partly from soils on the Coastal Plain. Their surface soil is brown silt loam, and their subsoil is gray to grayish-brown, mottled silty clay loam. The native vegetation is oak, elm, gum, and alder.

Only one Chewacla soil is mapped in Montgomery County. This soil occurs with the Congaree and Wehadkee soils. It is less well drained and more intensely mottled than the Congaree soils and is browner and less intensely mottled than the Wehadkee soil. Nearly all of the Chewacla soil is along the Alabama and Tallapoosa Rivers in the northern part of the county. About one-fourth the acreage has been cleared and is used mainly for pasture.

Chewacla silt loam (0 to 2 percent slopes) (Cd).—The following describes a profile of this soil in a moist pasture area:

It is along drainageways and in depressions, mostly on stream terraces in the northern part of the county. The surface layer of Swamp is dark gray in most places, but, in some places, the upper 2 or 3 inches is black. The texture of the surface layer is silt loam, fine sandy loam, or silty clay. The outer borders of the areas of Swamp are generally coarser textured than the inner parts. In most places the subsurface layer ranges from silt loam to silty clay or clay. The native vegetation is cypress, bay, gum, willow, water oak, and a few pines.

Use and management.—Swamp is best used for trees and wildlife. Most areas would be expensive and difficult to drain. If they are drained, however, these areas produce moderate yields of corn and hay. Capability unit A3-IVw-1.

Terrace escarpments

Terrace escarpments (Ta).—This land type is on sharp breaks in the landscape, generally between two stream terraces of different elevations or between a stream terrace and the flood plain. Dominant slopes range from 15 to 25 percent. The soil material is sandy and gravelly and only slightly developed. It is not fertile. Most of the acreage is moderately to severely eroded, and numerous shallow to deep gullies have formed in many places.

Use and management.—Only a small acreage of this mapping unit has been cleared, and most of this is idle or has reverted to pine trees. This land type is not suited to crops. It is best used for pine trees. Some areas supply gravel that is used in road building and other construction work. Capability unit A3-VIIe-1.

Tuscumbia series

In this series are moderately deep to deep, somewhat poorly drained to poorly drained, neutral to calcareous soils that are nearly level. These soils occur on stream flood plains on material that was washed from the prairie section of the county and from other parts of the Coastal Plain. They have a gray to dark-gray silty clay or sandy loam surface soil that overlies gray, mottled silty clay to clay. The native vegetation is ash, elm, hackberry, Osage-orange, shagbark hickory, cottonwood, and willow oak.

The Tuscumbia soils occur mainly with the Leeper and Catalpa soils, and, to some extent, with the Kaufman and Una soils and Mixed alluvial land. They are lighter in color, more mottled, and more poorly drained than the Catalpa and Leeper soils. They have about the same drainage as the Una soils, which are neutral to mildly acid. The Tuscumbia soils have more uniform color and texture than Mixed alluvial land.

These soils have a fairly large total acreage and are widely distributed throughout the prairie section of the county. About one-half of this acreage is used for pasture, and the rest is about equally used as cropland and woodland.

Tuscumbia silty clay (0 to 2 percent slopes) (Tc).—The following describes a profile of this soil in a moist pasture:

A_{11} 0 to 8 inches, dark gray to very dark gray (5Y 4/1 to 3/1) silty clay; weak to moderate, medium, granular structure; friable when moist, slightly hard when dry, and plastic when wet; mildly alkaline; gradual, smooth boundary.

A_{12} 8 to 20 inches, dark-gray (5Y 4/1) silty clay with common, faint, medium mottles of olive (5Y 5/6) and light olive brown (2.5Y 5/6); weak, medium, granular structure to massive (structureless); friable to firm when moist, hard when dry, and very plastic when wet, mildly alkaline; gradual, smooth boundary.

C_g 20 to 44 inches, gray (5Y 5/1) silty clay with many faint to distinct, medium mottles of olive (5Y 4/4), dark grayish brown (2.5Y 4/2), and brown (10YR 5/3); massive (structureless); firm when moist, hard when dry, and very plastic when wet; mildly alkaline.

The A horizon ranges from dark gray to gray in color. In some places, particularly along the larger streams, the C horizon is clay. Included with this soil are some areas having a clay subsoil.

Tuscumbia silty clay has moderately slow runoff and permeability and is likely to be flooded frequently. Its capacity for holding available moisture is moderately high to high. The natural fertility and content of organic matter are moderately high.

Use and management.—This soil is restricted in its use because of the frequent flooding. It is not suited to row crops but, under good management, produces good yields of summer pasture and hay. Capability unit A6-IIIw-2.

Tuscumbia fine sandy loam (0 to 2 percent slopes) (Tb).—This soil has a coarser textured surface soil and substratum than Tuscumbia silty clay but, in other respects, is similar to the silty clay in profile characteristics. It has better tilth than the silty clay. Included with this soil are a few small areas that have a sand surface soil. The sand is recent overwash. Tuscumbia fine sandy loam needs about the same management as the silty clay. Capability unit A6-IIIw-2.

Una series

This series contains moderately deep to deep, poorly drained, neutral to slightly acid soils that have a high water table part of the year. These soils are on nearly level stream flood plains. Their parent material was washed mostly from the acid soils on the prairie section and on other parts of the Coastal Plain, but the parent material contains an admixture from the calcareous soils on the prairie section. These soils have a grayish-brown clay to silty clay surface soil and a light-gray mottled clay subsoil. The native vegetation is elm, ash, hackberry, Osage-orange, shagbark hickory, and willow oak.

The Una soils occur primarily with the Kaufman soils and Mixed alluvial land and, to some extent, with the Tuscumbia and Leeper soils which are mildly alkaline. They are more poorly drained, more gray, and more intensely mottled than the Kaufman soils and are more poorly drained than the Leeper soils. They are more uniform in texture and in color throughout the profile than Mixed alluvial land.

Only one of the Una soils is mapped in Montgomery County. This soil is widely distributed throughout the prairie section of the county. About seven-tenths of the acreage is used for trees, and a large part of the rest is used for pasture. Only a few small areas are in row crops.

Una clay (0 to 2 percent slopes) (Ua).—The following describes a profile of this soil in a moist wooded area:

A_{11} 0 to 5 inches, grayish-brown (10YR 5/2) clay; weak medium, granular structure; friable when moist, slightly hard when dry, and very plastic when wet; slightly acid gradual, wavy boundary.

ural fertility and the content of organic matter are low. Tilth is poor.

Use and management.—This soil is not well suited to row crops. Under good management that includes adequate fertilization, moderately good to good pasture can be obtained. Capability unit A3–VIe–1.

Wilcox clay loam, eroded nearly level phase (1 to 3 percent slopes) (WfB2).—This soil has a thinner surface soil than Wilcox clay loam, level phase. In places where the subsoil material has been mixed into the plow layer by tillage, the plow layer has a reddish cast. In other respects, this soil is similar to the level phase in profile characteristics. Its erosion hazard, however, is more serious than that on the level phase because runoff is more rapid. Included with this soil are a few severely eroded areas and a few areas that have slopes steeper than 3 percent.

This soil has about the same range of uses as the level phase, but it has slightly lower yields. Capability unit A3–VIe–1.

Genesis, Morphology, and Classification of Soils

This section consists of three main parts. The first part discusses the five factors of soil formation and tells how these factors affect the formation of soils in Montgomery County. The second part is a general discussion of the morphology of the soils in the county. In the third part, the soils in the county are placed in the higher categories on the basis of their morphology.

Factors of Soil Formation

Soils are formed as the result of the interaction of climate, living organisms, parent material, topography, and time. These five factors of soil formation act as destructional forces, such as weathering, and as constructional biological forces. The relative importance of each factor differs from place to place, but the kind of soil that forms at any point depends on the effects of these five factors at that point. In extreme instances, one factor may dominate in the formation of soil and be responsible for most of the soil properties. This commonly occurs where the parent materials consist of sand. Quartz sand changes very little during the formation of soil, and only faint horizons develop. Distinct profiles, however, do form in quartz sand under some kinds of vegetation where the water table is high and the topography is low and flat.

Climate

The warm, temperate, almost subtropical climate of Montgomery County is an important factor in the development of soils. The effect of climate continues even after soil development is considerably advanced. Because it is fairly uniform throughout the county, however, climate has not caused differences among soils to the extent that the other factors have caused differences.

A large part of the acreage in the county consists of soils that are strongly weathered, leached, acid, and low in fertility. Very little of the quartz sand, silt, and gravel in the soil horizons is ever reduced to the colloidial state. The fine material is rapidly washed downward from the surface horizon as a result of the relatively high rainfall. Thus, a gray sandy loam surfac horizon has developed wherever erosion is not severe.

Compared with other soils developed in this climate most of the soils in the black belt are immature. Th Sumter and Houston clays, for example, are not norma soils for this climate. They contain large quantities o calcium carbonate. They would probably become normal soils if erosion were not continually removing residue from the chalk underlying material and exposin fresh chalk. After a long time, the soils would becom acid. Then they would take on some of the characteristics that are typical of mature soils developed in thi climate.

Living organisms

Living organisms are largely responsible for the constructional processes of soil development. Grasses an trees add organic matter to the soil material. The grasse generally take in calcium from the lower layers and return it to the surface soil; the amount of bases returne varies according to species of grass. The various specie of trees also return varying amounts of bases. For example, the organic remains under pine forests have much lower content of bases than do those under beech-maple forests.

Shallow-rooted plants, which have most of their root in the surface soil, tend to reduce leaching in the uppe part of the solum more than deep-rooted plants. Fo this reason, grasses generally lessen leaching more tha trees, because the grasses take in more water from th surface soil and leave less to percolate to the lowe horizons.

When the early settlers arrived, a dense forest covered the sandy uplands, the acid parts of the prairi section, the stream terraces, and the flood plains. Th alkaline parts of the prairie section were covered mainl by grasses and canebrakes. On the sandy uplands and acid prairie were shortleaf pine, loblolly pine, post oak blackjack oak, hickory, sweetgum, cypress, maple, beech water oak, cottonwood, ash, hackberry, and sycamore. The alkaline prairie was covered with cane, wild prairi grasses, and some cedar. Some of the differences i native vegetation were mainly the result of difference in drainage; others were mainly the result of difference in the soils.

Organisms that decompose organic matter in the soi influence soil genesis. Different products are the resul of different kinds of micro-organisms acting on organi matter and causing its decomposition. If the decomposition is complete, the end products are the same, eve though different kinds of micro-organisms acted on th organic material. But the products found in the soil a any one time are largely intermediate compounds. These compounds vary according to the kinds of organism that are responsible for their presence. The product that result from the growth of fungi are more solubl than those that result from the growth of bacteria Therefore, conditions that are less favorable for th growth of fungi than for the growth of bacteria ma lead to the formation of more organic matter in th soil. This is because the more insoluble products of bac ial growth tend to stay in the soil. Among the fac- rs that affect the kind and quantity of micro-organisms the soil are the kinds of crops, types of fertilization, d conditions of tilth.

As agriculture developed in Montgomery County, man s influenced the development of the soils. He has ared the forest, cultivated the soils, and drained the ıd. This activity has affected the development of soils d will continue to do so.

rent material

The parent materials of the soils in Montgomery unty were derived from four geologic formations— e Tuscaloosa, Eutaw, Selma chalk, and the Ripley. In e northern part of the county, the Tuscaloosa and taw formations are overlain by transported materials at form the flood plains and stream terraces. Out- ops of these formations occur only in small isolated eas.

South of the Eutaw formation is the Selma chalk. his formation extends east and west across the entire unty in a belt 10 to 12 miles wide. It consists of alky limestone with small quantities of chalky clay and nd impurities. The formation probably originated om a chalky, more or less muddy ooze that gradually cumulated on the bottom of a clear and only moderely deep sea. Because it has been weathered more adily and uniformly than the sandy Tuscaloosa, Eutaw, Ripley formations, the Selma chalk lies lower than ese formations. A capping of clays forms a mantle of riable thickness on many areas of the formation. This pping is probably a deposit of marine sediments that re transported as alluvium to the sea from the eroded ils to the north.

South of the Selma chalk is the Ripley formation, hich underlies about 40 percent of the county. This rmation consists of gray to greenish-gray sand and ıy that are calcareous and glauconitic in some layers d indurated beds. There are many gradations of ndy clay and clayey sand in the formation.

From east to west the beds of sand and clay of the ipley formation merge into chalk. Most of the area derlain by the Ripley formation is hilly, and some rts are decidedly rough. Some areas underlain by ick beds of clay are gently sloping. A gently sloping ip of this kind lies along the southern boundary of Selma chalk formation. Here the underlying strata e chiefly calcareous.

Rather extensive areas of stream terraces occur along Alabama and Tallapoosa Rivers and the larger eks. The soils on these terraces have developed from l alluvium. This alluvium has been washed from soils the Piedmont as well as from soils in Montgomery unty. Derived from these materials are soils that fer considerably in their chemical composition and in e consistence and texture of the B horizon.

Along most of the streams are strips of first bottoms at have been flooded from time to time. These first ttoms consist of alluvium that has a mixed lithology ause it originated in several areas consisting of dif- ent soils. The alluvium has a wide range in texture l in chemical and mineralogical composition as well. Through the years, the Alabama and Tallapoosa Riv- and other large streams in the county have meandered considerably. The textural pattern that now occurs is the result of the way in which sediments were deposited on flood plains and on areas that are now stream terraces. Normally when the streams flooded, the floodwaters deposited sediments in a regular pattern. Sand and other coarse materials were deposited first, near the stream channel. In many places this coarse material formed natural levees that caused slack-water areas beyond the levees. Finer textured sediments were deposited in these areas beyond the levees. Sometimes during floods, a stream channel changed its course and a slack-water area was formed adjacent to a sandy natural levee. In these areas the texture changes abruptly from silty clay or clay to sand. In some places subsequent floodwaters deposited fine-textured sediments on the sand and caused abrupt vertical changes in the profile.

The parent materials of the soils in Montgomery County may be placed in two broad groups: (1) Transported materials that have been laid down as alluvial deposits of unconsolidated sand, silt, or clay; and (2) residual material that has been weathered from unconsolidated coastal plain material. The transported materials are directly related to the materials from which they were washed. For this reason, some soils on stream terraces and flood plains are similar to soils on the Piedmont. The residual materials are directly related to the underlying material. Since the underlying material varies from place to place, soils formed from it have a wide range in texture, structure, consistence, and color.

Parent material may be exceedingly resistant to change or may be rapidly altered. The heavy, waxy clays are very resistant to the soil-forming processes and retain the characteristics of the parent material for long periods. The sandy parent materials, however, are changed into sandy soils rapidly.

Over a long period, the general effect of the soil-forming processes is to obliterate the differentiating influence of parent material. In time many different soil series may be formed from the same kind of parent material. One may dig 2 or 3 feet in the soils of many different series without finding anything that indicates the kind of parent material from which the soils were formed. The differentiating characteristics of these soils are the result of the effects of living organisms, topography, climate, and time. The effects of parent materials are more important on young and imperfectly drained soils than they are on old ones.

Topography

The topography of Montgomery County ranges from the almost level flood plains and stream terraces in the northern part of the county to the steep hills in the southern part. These steep hills make up Chunnenuggee Ridge, which is a strata ridge. This ridge is highly dissected and has local differences in elevation that range from 75 to 150 feet. Just south of this strata ridge, along the southern boundary of the county, is another strip that is somewhat more hilly than the prairie belt but is less hilly than the strata ridge.

In the central part of the county, or the prairie belt, the topography is almost level to strongly sloping. This prairie belt is divided into the gray prairie in the northern part and the red prairie in the southern part. The gray prairie is lower in elevation than the red prairie and is more gently sloping.

The highest point in the county, approximately 590 feet above sea level, is in the southwestern corner. The lowest point is about 166 feet above sea level and is just west of Montgomery. The general elevation of the strata ridge is 500 to 600 feet, that of the prairie section around 300 feet; and that of the river flood plains from 100 to 200 feet. The elevation of Montgomery ranges from about 178 to 200 feet. Mount Meigs is 179 feet above sea level, Snowdoun is 291 feet, and Pine Level is 506 feet.

Topography influenced soil formation through its effect on drainage, runoff, and erosion. But along with topography, the parent material was important. For example, most mature, or normal, soil profiles were developed on nearly level to gently sloping topography that had permeable underlying material, whereas soils with heavy textured parent materials on the same relief developed claypans or hardpans.

Soils on steep slopes generally have weak horizon development. This is because of accelerated erosion, reduced percolation of water through the soil, and lack of water that is needed for the vigorous growth of plants that affect soil formation. Steep slopes normally have soils with a very thin solum.

The direction of slope affects local climate. Soils on the south or southwestern slopes warm up faster than those on northern slopes. The northern slopes, however, may retain moisture longer because they are not exposed to the sun so long as are the southern slopes. These differences are only slight in Montgomery County and are of minor importance in the development of soils.

Time

Although time is important in the formation of soils, the effect of time depends on the effect of the parent material, vegetation, climate, and other factors. Some idea of the age of a soil can be obtained by observing the degree of horizon development, or horizonation. It is necessary, however, to evaluate simultaneously the effects of all factors of soil formation to determine the direct effect of any one.

Geologically, most of the soils in Montgomery County are comparatively young. The youngest are the alluvial soils along the streams. These soils are still frequently receiving deposits of sediments and are going through what is called the cumulative soil-forming process. In most places these young soils have very faint development of horizons.

The second youngest soils in the county are on the stream terraces and were developed from old alluvium. Many of these soils show a fairly strong degree of horizon development. Others, which have been influenced strongly by drainage, show weak horizonation except for differences in the A and B horizons.

The upland soils in the prairie section and the sandy soils south of them seem to have developed on geological formations that are about the same age. The soils on the prairie, however, generally have more weakly developed horizons than the acid sandy soils. There are two reasons for this: (1) Limy soils need a longer period for development than acid soils that contain an abundance of quartz sand, and (2) fine-textured parent materials are developed into soils more slowly than coarse-textured materials.

The degree of horizon development of some of the steeper acid sandy soils indicates that these soils are very young, but on these steep soils erosion has kept pace with soil development and a normal profile rarely develops. This lack of horizon development emphasizes the importance of topography in the formation of soils.

Morphology

The soils of Montgomery County vary widely in degree of horizonation. Marked differences in texture occur between the A and B horizons in some profiles and between the B and C horizons in a few profiles. Table 8 shows some of the differences in texture for a few soils in Montgomery County.

Many of the poorly drained soils in the county have weak horizonation. Most of them have had a reduction and transfer of iron. The gray colors in the deeper horizons indicate the reduction of iron oxides. Mottles of yellowish brown, strong brown, or yellowish red occur where the iron has not been completely reduced or removed from the profile. The weak horizons are more common among the younger soils of the stream terraces and first bottoms than among older soils.

The climate for Montgomery County, which is characterized by long warm summers, short mild winters, and a relatively high rainfall, is conducive to rapid chemical reactions and rather intense leaching of the soluble materials. The climate is also conducive to the translocation of less soluble material and colloidal material downward into the B horizon. Because the temperature is moderate to warm and rainfall is heavy, little organic matter accumulates in the soil. The soils in the prairie section that have been in continuous grasses and hay meadows for a number of years, have some organic accumulation in the top 2 or 3 inches.

In some of the forested areas, a thin covering of leaf mold or forest debris is on the surface. In these areas the top 2 or 3 inches of the A horizon contains enough organic matter to impart a dark-gray or brownish-gray color. But in the soils of the county as a whole, the accumulation of organic matter has been of little importance in the forming of different horizons.

Classification by Higher Categories

Soils are placed in broad classes so that the soils on large areas, such as continents, can be studied and compared. In the United States, the soils are placed in six categories in a comprehensive system of classification. The highest category is called a soil order. A soil order is divided in suborders, great soil groups, families, series, and types.[3]

Three soil orders—zonal, intrazonal, and azonal—make up the highest category. Many soil types are in the lower categories. The suborders and families have not been completely worked out and are not used in Montgomery County.

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[3] THORP, J., AND SMITH, GUY D. HIGHER CATEGORIES OF SOIL CLASSIFICATION: ORDER, SUBORDER, AND GREAT SOIL GROUPS. Soil Sci. 67: 117-126. 1949.

SOIL SERIES OF MONTGOMERY COUNTY, ALABA

Soil series [1]	Color		Texture		Structure	Consistency of subsoil [2]			Nature parent materia
	Surface soil [3]	Subsoil	Surface soil	Subsoil [2]	Subsoil [2]	Dry	Moist	Wet	
Altavista	Light brownish gray to light olive brown.	Yellowish brown to light yellowish brown.	Very fine sandy loam.	Silty clay loam to fine sandy clay loam.	Moderate, fine to medium, subangular blocky.	Hard	Friable	Slightly sticky.	Old alluvi from gra ite, gnei and schi on Piedmont.
Amite	Dark brown to dark reddish brown.	Dark red to red.	Fine sandy loam and sandy clay loam.	Sandy clay loam and sandy clay.	Weak, fine to medium, subangular blocky.	Slightly hard.	Friable to to very friable.	Sticky	Old alluviu from aci sandy so
Augusta	Very dark grayish brown.	Light olive brown, mottled.	Silt loam or fine sandy loam.	Silty clay or silty clay loam.	Very weak to weak, fine subangular blocky.	Hard	Firm	Slightly sticky.	Old alluviu from Pie mont wi some Coastal Plain ma rial.
Bibb	Dark gray.	Gray, mottled.	Fine sandy loam to silt loam.	Sandy clay loam to silty clay loam.	Very weak, medium, subangular blocky.	Slightly hard.	Very friable.	Slightly sticky.	Local alluvi from Coastal Plain soil
Boswell	Grayish brown to dark brown.	Red to dark red.	Fine sandy loam and clay loam.	Fine sandy clay to clay.	Moderate, fine, subangular blocky.	Hard	Firm	Sticky	Beds of clay and sand clays.
Bowie	Grayish brown.	Yellowish brown.	Fine sandy loam.	Sandy clay loam.	Weak, fine, subangular blocky.	Slightly hard.	Friable	Slightly sticky.	Unconsolidated san and sand clays.
Bowie (thin solum).	Grayish brown.	Brownish yellow.	Fine sandy loam.	Fine sandy clay loam.	Very weak, medium, subangular blocky.	Hard in lower part.	Friable	Slightly sticky.	Unconsolidated san and sandy clays.
Byars and Myatt.	Very dark gray to dark grayish brown.	Gray, mottled.	Fine sandy loam.	Sandy clay loam to fine sandy clay.	Weak, medium, subangular blocky to massive.	Hard	Firm	Plastic	Old alluviun
Cahaba	Dark grayish brown to pale brown.	Dark brown to yellowish red.	Fine sandy loam.	Sandy clay loam.	Weak, medium, subangular blocky.	Friable	Friable	Nonsticky	Old alluvium from acid sandy soils
Catalpa	Dark olive gray.	Very dark grayish brown.	Clay	Clay	Weak, medium granular.	Hard	Firm	Very plastic.	Alluvium—mostly fro alkaline soils.
Chastain	Very dark brown.	Intensely mottled olive brown, gray, and very dark grayish brown.	Very fine sandy clay loam.	Fine sandy clay.	Massive	Hard	Firm	Very sticky.	Old alluvium from acid soils of the Coastal Plain.

See footnotes at end of table.

UMMARY OF IMPORTANT CHARACTERISTICS

Soil depth	Dominant slope range	Internal drainage	Runoff	Permeability of subsoil	Erosion hazard	Moisture relations [4]	Natural fertility	Reaction	Physiographic position	Principal uses [5]
Deep	*Percent* 0–2	Moderately good.	Moderate	Moderately slow.	Low to moderate.	Good	Low	Strongly acid.	Stream terrace.	Corn, cotton, hay, pasture, and oats.
Deep	2–5	Good	Moderately rapid.	Moderate to moderately rapid.	Moderate to high.	Good	Moderately high to medium.	Medium acid to strongly acid.	Stream terrace.	Cotton, corn, hay, pasture, and small grain.
Moderately deep.	0–2	Somewhat poor.	Moderate to slow.	Moderately slow to slow.	Low	Poor	Moderately low.	Strongly acid.	Stream terrace.	Pasture, trees, and hay.
Deep	0–2	Somewhat poor to poor.	Very slow	Slow	None	Fair to poor.	Low to medium.	Strongly acid.	On local alluvium in upland.	Pasture, truck crops, and corn.
Deep	2–10	Moderately good.	Moderately slow.	Slow	High	Fair to good.	Low	Strongly acid.	Upland	Pasture, trees, corn, hay crops, and cotton.
Moderately deep.	1–8	Moderately good.	Rapid	Moderately rapid.	Moderately high.	Good	Low	Strongly acid.	Upland	Cotton, corn, peanuts, hay crops, oats, and pasture.
Shallow	2–5	Moderately good.	Rapid	Moderately rapid to 20 inches, very slow below 20 inches.	Moderately high.	Fair	Low	Strongly acid.	Upland	Cotton, corn, pasture, hay crops, oats, and peanuts.
Moderately deep to deep.	0–1	Poor	Very slow	Moderately slow to slow.	None	Poor	Low	Strongly acid.	Stream terrace.	Trees, pasture, and sugarcane.
Deep	1–5	Good	Moderately rapid.	Moderately rapid.	Low	Very good.	Low	Strongly acid.	Stream terrace.	Cotton, corn, small grain, and hay crops.
Deep	0–1	Moderately good.	Moderately slow.	Moderately slow.	None (overflows).	Good	Moderately high.	Medium alkaline.	Flood plains in Prairie section.	Pasture, hay, and corn.
Deep	0–1	Poor	Very slow	Moderately slow.	None (overflows).	Fair	Moderately low.	Strongly acid.	First bottoms along streams.	Pasture, hay, and corn.

SOIL SERIES OF MONTGOMERY COUNTY, ALABA

Soil series [1]	Color		Texture		Structure	Consistency of Subsoil [2]			Nature of parent material
	Surface soil [3]	Subsoil	Surface soil	Subsoil [2]	Subsoil [2]	Dry	Moist	Wet	
Swamp	Dark gray.	Gray, mottled.	Variable	Silt loam to clay.	Massive	Friable	Friable	Sticky	Silt, silty cl or clays.
Terrace escarpments (sand and gravel).	Variable	Variable	Sand to sandy loam.	Sands and gravel.	None	Variable	Variable	Variable	Old Coasta Plain all vium.
Tuscumbia	Dark gray to very dark gray.	Gray, mottled.	Silty clay	Silty clay	Massive	Hard	Friable to firm.	Very plastic.	Recent all vium fro mixed Prairie a Coastal Plain m terial.
Una	Grayish brown.	Gray, mottled.	Clay	Clay	Massive	Hard	Firm	Very plastic.	Recent all vium fro mixed Prairie a Coastal Plain m terial.
Vaiden	Dark grayish brown to very dark grayish brown.	Yellowish brown.	Fine sandy loam or silty clay.	Fine sandy clay or clay.	Weak, medium subangular blocky.	Hard	Friable to firm.	Plastic to very plastic.	Thin acid clays ov Selma chalk.
Waugh	Grayish brown to light brownish gray.	Yellowish brown.	Fine sandy loam.	Silty clay loam.	Weak fine to medium, subangular blocky.	Slightly hard.	Friable	Sticky	Old alluviu from Coastal Plain an Piedmon
Wehadkee	Dark gray.	Gray, mottled.	Silt loam	Silty clay loam.	Very weak, coarse, granular.	Slightly hard.	Firm to friable.	Slightly sticky.	Alluvium, mostly fr Piedmon material.
West Point	Black to very dark gray.	Dark olive gray.	Clay	Clay	Moderate, medium, subangular blocky.	Very hard	Firm to friable.	Very plastic.	Sediments washed from Su ter, Hou ton, and similar soils.
Wickham	Dark grayish brown to dark yellowish brown.	Brown and red to yellowish red.	Fine sandy loam and silt loam.	Fine sandy clay and silty clay.	Weak to moderate, fine subangular blocky.	Hard	Firm	Slightly sticky to sticky.	Old alluviu sediment washed mostly fr Piedmon soils.
Wilcox	Dark grayish brown.	Mottled yellowish red and strong brown.	Clay loam.	Clay to fine sandy clay.	Massive	Hard	Firm	Plastic	Gray clay shales in places, indurate

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[1] Dominant soil type listed for soil series that have more than one type.

[2] Characteristics of subsoil are usually those of the B_2 horizon.

[3] The color of surface soil for soil with slight or no erosion.

[4] Ratings based on optimum moisture for crop product Some well-drained soils have very good moisture relations; s wet soils have poor moisture relations.

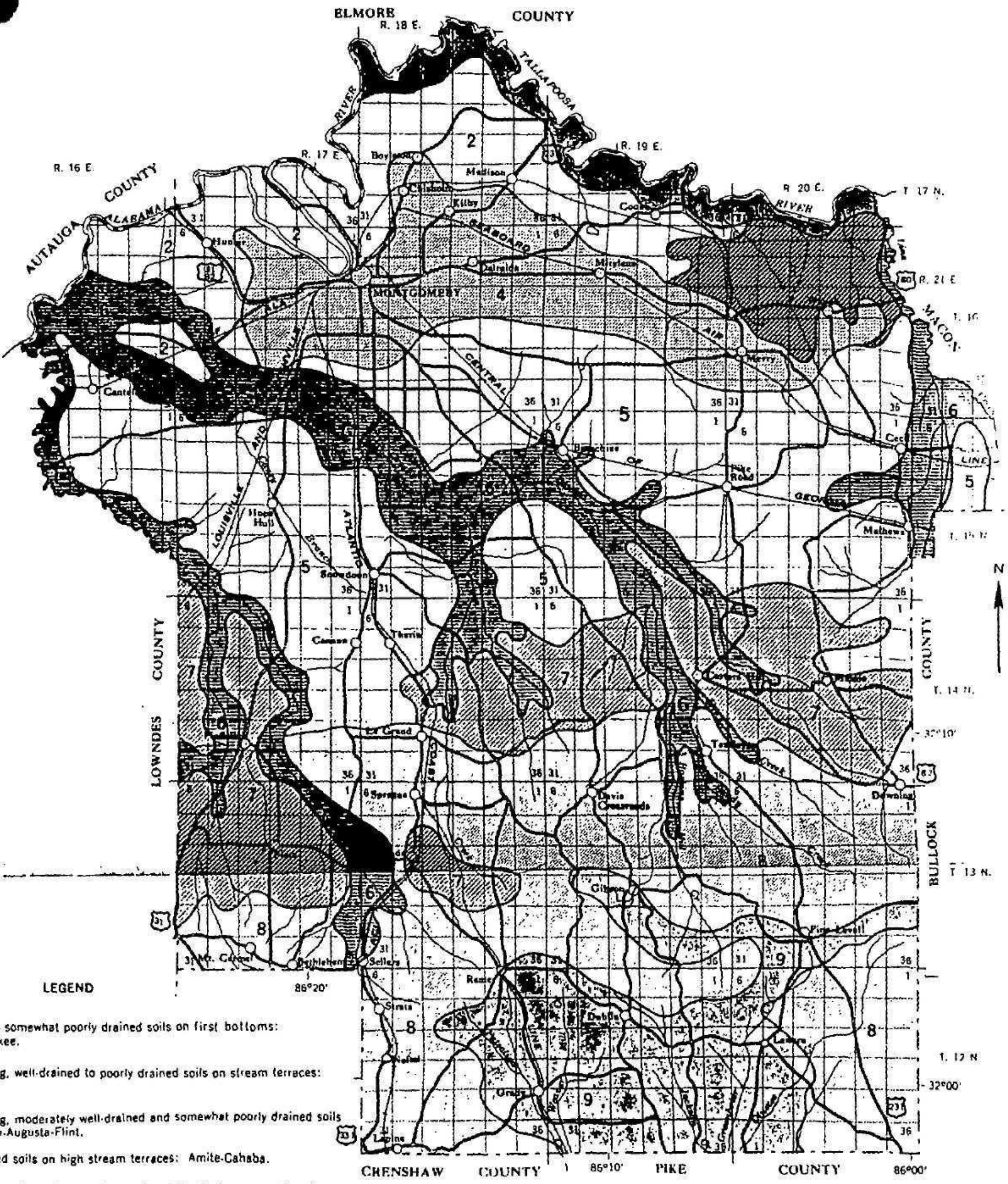
[5] Listed in order of suitability of crops listed.

[6] Runoff is high after the soil becomes saturated.

MARY OF IMPORTANT CHARACTERISTICS—Continued

l depth	Dominant slope range	Internal drainage	Runoff	Permeability of subsoil	Erosion hazard	Moisture relations [4]	Natural fertility	Reaction	Physiographic position	Principal uses [5]
ep	*Percent* 0–1	Very poor	Very slow	Slow	None	Water stands most of year.	High	Strongly acid.	------------	Trees.
ery shallow.	15–25	Excessive	Rapid	Very rapid	Moderate to high.	Poor	Low	Strongly acid.	------------	Trees and pasture.
oderately deep to deep.	0–1	Somewhat poor to poor.	Slow	Moderately slow.	None (overflows).	Fair	Moderately high.	Neutral to calcareous.	Flood plain in Prairie section.	Pasture and hay.
Moderately deep to deep.	0–1	Poor	Slow	Slow	None (overflows).	Fair	Moderately high.	Slightly acid.	Flood plain in Prairie section.	Pasture and hay.
Deep	1–8	Somewhat poor to moderately good.	Moderate	Moderate to slow.	Moderately high.	Good	Moderate to moderately low.	Strongly acid.	Upland	Pasture and hay.
Moderately deep.	0–3	Moderately good.	Moderate	Moderate through B_2 horizon.	Moderate	Good	Low	Strongly acid.	Stream terrace.	Cotton, truck crops, corn, and pasture.
Deep	0–1	Poor	Very slow	Moderately slow.	None (overflows).	Too wet.	Moderately high.	Strongly acid.	Flood plains.	Trees and pasture.
Deep	0–2	Moderately good to good.	Slow	Moderately slow to slow.	Low	Good	High	Medium alkaline.	Local alluvium in upland.	Pasture, hay, and corn.
Moderately deep to deep.	0–4	Good	Moderate to slow.	Moderately slow.	Low to moderate.	Good	Moderately low to low.	Strongly acid.	Stream terrace.	Cotton, corn, oats, pasture, and hay.
Moderately deep to deep.	0–3	Moderately good to somewhat poor.	Moderate	Slow to very slow.	Moderate	Good	Low	Strongly acid.	Upland	Pasture and trees.

GENERAL SOIL MAP
MONTGOMERY COUNTY, ALABAMA



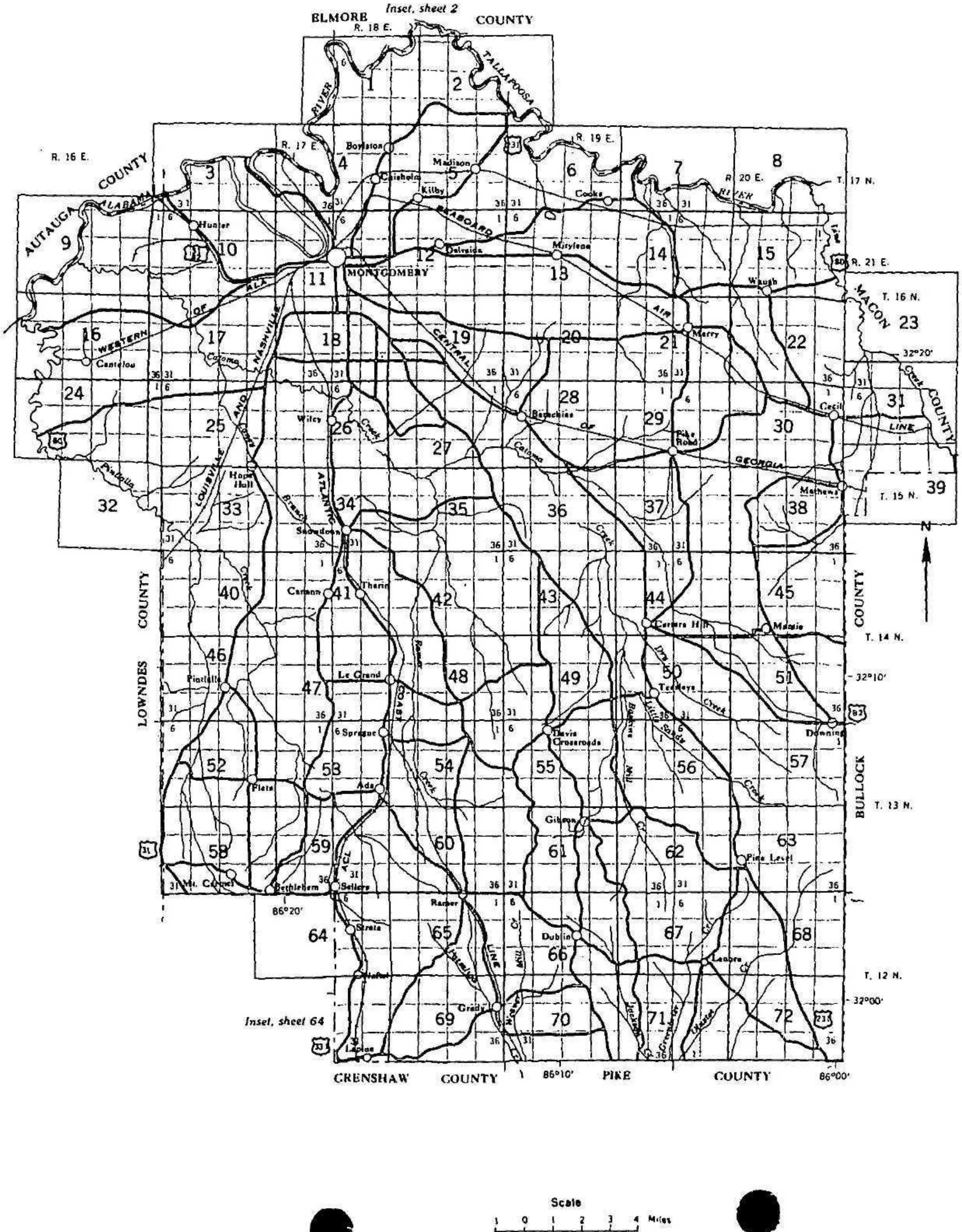
LEGEND

1	Nearly level, well-drained to somewhat poorly drained soils on first bottoms: Congaree-Chewacla-Wehadkee.
2	Level and very gently sloping, well-drained to poorly drained soils on stream terraces: Cahaba-Wickham-Roanoke.
3	Level and very gently sloping, moderately well-drained and somewhat poorly drained soils on stream terraces: Waugh-Augusta-Flint.
4	Level to sloping, well drained soils on high stream terraces: Amite-Cahaba.
5	Nearly level to sloping soils on the upland and associated first bottoms and local alluvium of the prairie section; underlain by soft limestone or chalk: Sumter-Oktibbeha-Leeper.
6	Nearly level, moderately welldrained to somewhat poorly drained soils on low stream terraces and first bottoms: Izagora-Geiger-Una.
7	Gently sloping to strongly sloping soils, in the prairie section, underlain by soft limestone or chalk: Oktibbeha-Sumter.
8	Sloping to steep soils of variable texture underlain on uplands underlain by sands and clays: Cuthbert-Lakeland-Boswell.
9	Very gently sloping to sloping, moderately well drained to well-drained soils of the upland underlain by sands and clays: Bowie-Shubuta-Ruston.

Scale
1 0 1 2 3 4 Miles

INDEX TO MAP SHEETS

MONTGOMERY COUNTY, ALABAMA



SOIL CONSERVATION SERVICE

MONTGOMERY COUNTY, ALABAMA

ALABAMA AGRICULTURAL EXPERI
ALABAMA DEPARTMENT OF AGRIC

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter A, B, C, D, or E shows the slope. Symbols without a slope letter are those of nearly level soils, or of land types, such as Terrace escarpments, that have a range of slope. Soils that are named as eroded have a final number, 2 or 3 in their symbol.

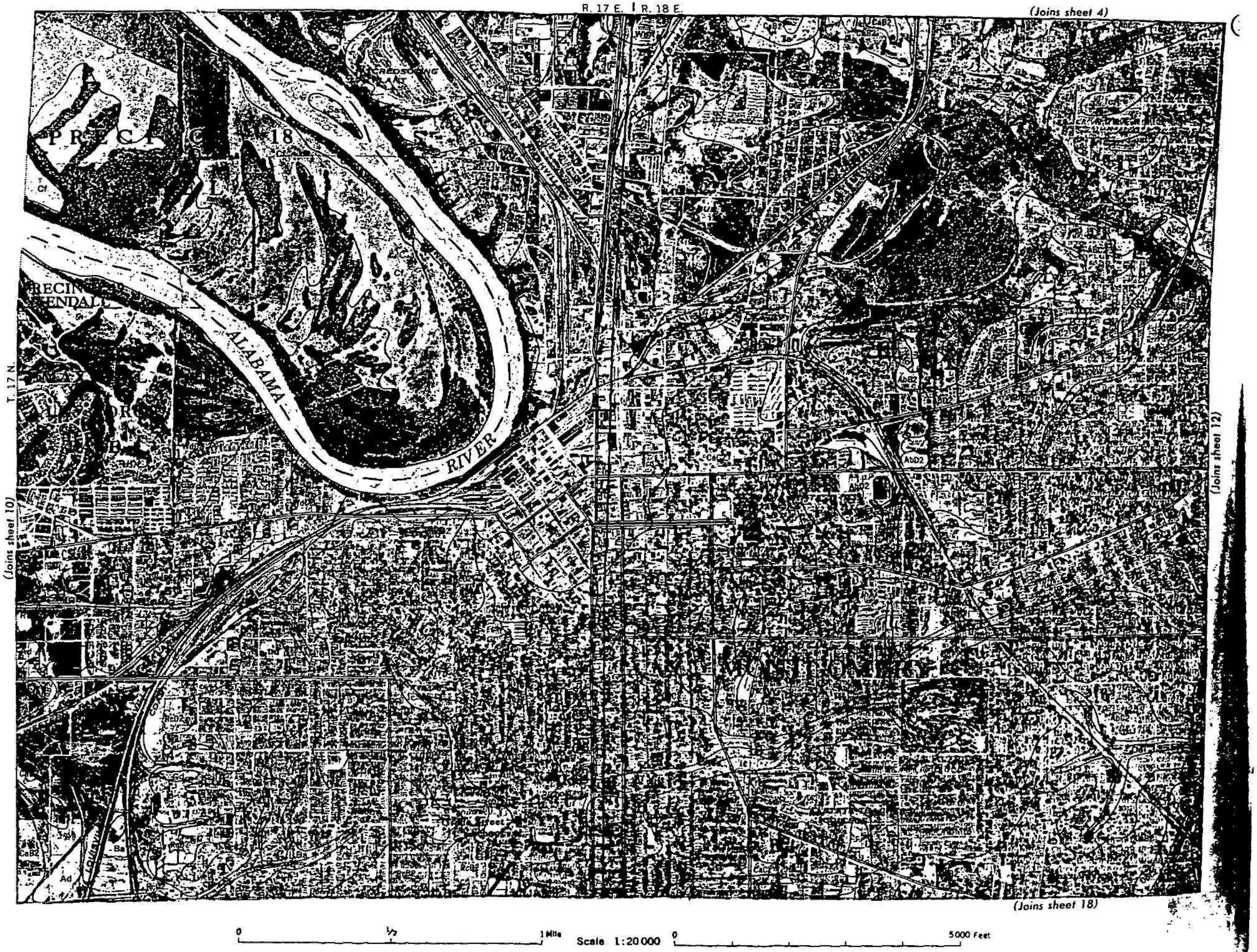
SYMBOL	NAME
Aa	Altavista very fine sandy loam
AbA	Amite fine sandy loam, level phase
AbB2	Amite fine sandy loam, eroded very gently sloping phase
AbC2	Amite fine sandy loam, eroded gently sloping phase
AbD2	Amite fine sandy loam, eroded sloping phase
AcC3	Amite sandy clay loam, severely eroded gently sloping phase
AcD3	Amite sandy clay loam, severely eroded sloping phase
AcE3	Amite sandy clay loam, severely eroded strongly sloping phase
Ad	Augusta silt loam and fine sandy loam
Ba	Bibb soils, local alluvium phases
BbB3	Boswell clay loam, severely eroded nearly level phase
BbC3	Boswell clay loam, severely eroded very gently sloping phase
BbD3	Boswell clay loam, severely eroded gently sloping phase
BbE3	Boswell clay loam, severely eroded, 8-20 percent slopes
BcB2	Boswell fine sandy loam, eroded nearly level phase
BcC2	Boswell fine sandy loam, eroded very gently sloping phase
BcD2	Boswell fine sandy loam, eroded gently sloping phase
BdA	Bowie fine sandy loam, level phase
BdB	Bowie fine sandy loam, very gently sloping phase
BdB2	Bowie fine sandy loam, eroded very gently sloping phase
BdC2	Bowie fine sandy loam, eroded gently sloping phase
BeB2	Bowie fine sandy loam, eroded very gently sloping thin solum phase
BeC2	Bowie fine sandy loam, eroded gently sloping thin solum phase
Bf	Byars and Myatt soils
CaA	Cahaba fine sandy loam, level phase
CaB2	Cahaba fine sandy loam, eroded very gently sloping phase
CaC2	Cahaba fine sandy loam, eroded gently sloping phase
Cb	Cataloa clay
Cc	Chastain soils
Cd	Chewacla silt loam
Ce	Congaree fine sandy loam
Cf	Congaree silt loam
CgC2	Cuthbert fine sandy loam, eroded gently sloping phase
ChE3	Cuthbert soils, severely eroded, 8-30 percent slopes
CkD2	Cuthbert, Lakeland, and Boswell soils, eroded, 2-12 percent slopes
CkE	Cuthbert, Lakeland, and Boswell soils, 12-30 percent slopes
CkE2	Cuthbert, Lakeland, and Boswell soils, eroded, 12-30 percent slopes
CkE3	Cuthbert, Lakeland, and Boswell soils, severely eroded, 12-30 percent slopes
Ea	Eutaw clay
Eb	Eutaw fine sandy loam
FaA	Flint fine sandy loam, level phase
FaB2	Flint fine sandy loam, eroded very gently sloping phase
FaC2	Flint fine sandy loam, eroded gently sloping phase
Ga	Geiger silty clay
Gb	Geiger silty clay, overwash variant
Gc	Geiger very fine sandy loam
Gd	Gullied land, acid materials
Ge	Gullied land, calcareous materials
HaB2	Houston clay, eroded nearly level phase
HbB	Huckabee loamy sand, 0-5 percent slopes
IaB	Independence loamy sand, 0-5 percent slopes
Ib	Iuka soils
Ic	Iuka soils, local alluvium phases
IdA	Izagora fine sandy loam, level phase
IdB	Izagora fine sandy loam, very gently sloping phase
IdC2	Izagora fine sandy loam, eroded gently sloping phase
Ka	Kaufman clay loam
Kb	Kipling silty clay
KcA	Kipling very fine sandy loam, level phase
KcB2	Kipling very fine sandy loam, eroded nearly level phase
KdB	Klej loamy fine sand, compact substratum, 0-5 percent slopes
KdC	Klej loamy fine sand, compact substratum, 5-12 percent slopes
LaB	Lakeland loamy fine sand, 0-5 percent slopes
LaC	Lakeland loamy fine sand, 5-12 percent slopes
LaE	Lakeland loamy fine sand, 12-20 percent slopes
Lb	Leaf fine sandy loam
Lc	Leeper silty clay
Ma	Mantachie soils
Mb	Mixed alluvial land
Mc	Mixed local alluvial land
Oa	Ochlockonee silt loam
ObB2	Oktibbeha clay, eroded nearly level phase
ObC2	Oktibbeha clay, eroded very gently sloping phase
ObC3	Oktibbeha clay, severely eroded very gently sloping phase
ObD2	Oktibbeha clay, eroded gently sloping phase
ObD3	Oktibbeha clay, severely eroded gently sloping phase
ObE3	Oktibbeha clay, severely eroded, 8-20 percent slopes
OcB2	Oktibbeha fine sandy loam, eroded nearly level phase
OcC2	Oktibbeha fine sandy loam, eroded very gently sloping phase
OcD2	Oktibbeha fine sandy loam, eroded gently sloping phase
OcE2	Oktibbeha fine sandy loam, eroded sloping phase
Pa	Pheba very fine sandy loam
PbA	Prentiss very fine sandy loam, level phase
PbB2	Prentiss very fine sandy loam, eroded very gently sloping phase
Ra	Rains fine sandy loam
Rb	Roanoke silt loam
RcB2	Ruston fine sandy loam, eroded very gently sloping phase
RcC2	Ruston fine sandy loam, eroded gently sloping phase
RcD2	Ruston fine sandy loam, eroded sloping phase
Sa	Sandy alluvial land, somewhat poorly drained
SbB	Sawyer fine sandy loam, very gently sloping phase
SbB2	Sawyer fine sandy loam, eroded very gently sloping phase
SbC2	Sawyer fine sandy loam, eroded gently sloping phase
SbD2	Sawyer fine sandy loam, eroded sloping phase
ScC3	Sawyer sandy clay loam, severely eroded gently sloping phase
ScD3	Sawyer sandy clay loam, severely eroded sloping phase
SdC3	Shubuta sandy clay loam, severely eroded gently sloping phase
SdD3	Shubuta sandy clay loam, severely eroded sloping phase
SeB	Shubuta very fine sandy loam, very gently sloping phase
SeB2	Shubuta very fine sandy loam, eroded very gently sloping phase
SeC2	Shubuta very fine sandy loam, eroded gently sloping phase
SeD2	Shubuta very fine sandy loam, eroded sloping phase
SfE	Shubuta-Cuthbert complex, eroded, 12-30 percent slopes
SgB2	Shubuta-Cuthbert fine sandy loams, eroded very gently sloping p
SgC2	Shubuta-Cuthbert fine sandy loams, eroded gently sloping phases
SgD2	Shubuta-Cuthbert fine sandy loams, eroded sloping phases
ShC3	Shubuta-Cuthbert sandy clay loams, severely eroded gently slopin
ShD3	Shubuta-Cuthbert sandy clay loams, severely eroded sloping phas
Sk	Slough fine sandy loam
SmB2	Sumter clay, eroded nearly level phase
SmB3	Sumter clay, severely eroded nearly level phase
SmC2	Sumter clay, eroded very gently sloping phase
SmC3	Sumter clay, severely eroded very gently sloping phase
SmD2	Sumter clay, eroded gently sloping phase
SmD3	Sumter clay, severely eroded gently sloping phase
SnB2	Sumter-Oktibbeha-Vaiden clays, eroded nearly level phases
SnC2	Sumter-Oktibbeha-Vaiden clays, eroded very gently sloping phases
SnC3	Sumter-Oktibbeha-Vaiden clays, severely eroded very gently sloping
SnD2	Sumter-Oktibbeha-Vaiden clays, eroded gently sloping phases
SnD3	Sumter-Oktibbeha-Vaiden clays, severely eroded gently sloping phas
SnE3	Sumter-Oktibbeha-Vaiden clays, severely eroded sloping phases
SoB2	Susquehanna fine sandy loam, eroded nearly level phase
SoC2	Susquehanna fine sandy loam, eroded very gently sloping phase
SoD2	Susquehanna fine sandy loam, eroded, 5-12 percent slopes
Sp	Swamp
Ta	Terrace escarpments
Tb	Tuscumbia fine sandy loam
Tc	Tuscumbia silty clay
Ua	Una clay
VaA	Vaiden fine sandy loam, level phase
VaB	Vaiden fine sandy loam, nearly level phase
VaB2	Vaiden fine sandy loam, eroded nearly level phase
VaC2	Vaiden fine sandy loam, eroded very gently sloping phase
VaD2	Vaiden fine sandy loam, eroded gently sloping phase
VaE2	Vaiden fine sandy loam, eroded sloping phase
VbA	Vaiden silty clay, level phase
VbB	Vaiden silty clay, nearly level phase
VbB2	Vaiden silty clay, eroded nearly level phase
VbC2	Vaiden silty clay, eroded very gently sloping phase
VbC3	Vaiden silty clay, severely eroded very gently sloping phase
VbD2	Vaiden silty clay, eroded gently sloping phase
VbD3	Vaiden silty clay, severely eroded gently sloping phase
WaA	Waugh fine sandy loam, level phase
WaB2	Waugh fine sandy loam, eroded very gently sloping phase
Wb	Wehadkee silt loam
WcA	West Point clay, level phase
WcB	West Point clay, nearly level phase
WdA	Wickham fine sandy loam, level phase
WdB2	Wickham fine sandy loam, eroded very gently sloping phase
WdC2	Wickham fine sandy loam, eroded gently sloping phase
We	Wickham silt loam
WfA	Wilcox clay loam, level phase
WfB2	Wilcox clay loam, eroded nearly level phase

surveyed 1939-57 by Leland H. Burgess, C. S. Wilson, E. H. [illegible], J. L. Anderson, and K. E. Dahms, Soil Conservation Service. [illegible] by I. L. Martin, Soil Conservation Service.

Soil map constructed 1959 by Car
Soil Conservation Service, USDA,
photographs. Controlled mosaic ba
plane coordinate system, east zone,
Mercator projection, 1927 North An

[redacted]

MONTGOMERY COUNTY, ALABAMA - SHEET NUMBER 11



REFERENCE 4


Montgomery KOA
1098 pop 645
100% Ground
P
Well
32°15'19"
86°21'29"
Teasley Mills Water System
1080 pop 51
100% Ground
P
Well
32°08'10"
86°06'16"
Sellers Station Water System
1077 pop 1,500
100% Ground
P
Well-1
32°02'56"
86°18'05"
Other
Well 2
?
Emergency
Quint-Mar
?
Oak Hills Water System
1076 pop 210
100% Ground
P
Well
32°14'40"
86°10'41"
Partridge Pine, Inc.
1075 pop 32
100% Ground
P
Well
?
Ramer Water Company, Inc
1074 Pop 1,467
34% Ground
66% Pur ground (?)
P
Well
32°02'34"
86°13'26"
Pilgrim-Providence Water & F.P. Authority
(fire Protection?)
1072 pop 480
100% Ground
P
Well
32°08'32"
86°08'14"
Snowdoun Water System, Inc
1078 Pop 1,710
100% Ground (?)
Well
32°13'43"
86°17'39"
Emer
See Bonnie for well info
4155 Old Pike Rd
7,080
East Montgomery Water & Fire Authority
~~1056~~ 1064 pop 5,826
50% Ground
50% Pur Surface
P SG
Well 1/Horse Farm Road Well
32°22'42"
86°05'12"
575
Wrecking Trim... Rd
SW (?)
P
314 persons (100-120)
P
P SG
Well 3
Kilby Well
32°22'35"
86°05'02"
Sprott Rd
Not in service at Kilby CF
400 ft
P SG
Well 4
Youth Services Well
32°23'08"
86°05'50"
depth ?
SP
25-30 houses = 79 persons
P (50%)
Simetko
1065 pop 150
100% Ground
other
Well #2
?
other
Well #1
?
P
Well #3
32°23'17"
86°04'26"
P
Well #4
?
Eastwood Villa
1060 pop 312
100% Ground
P
Well 1
32°22'00"
86°03'27"
222 ft
Part of City of Montgomery = may be separate well though
Kilby Correction Facility
1066 pop 475
100% Ground
P
Well 1
32°22'42"
86°05'12"
575 ft
Pine Level Water & Fire Protection Authority
1071 Pop 2,328
100% Ground
P
Well 1
32°03'30"
86°03'34"
P
Well 2
31°57'45"
86°00'01"
Hunters Walk Manufactured Home Community
1756 pop 597
25% Pur Surface
75% Pur Ground
P
100% ?
Vital Living Products, Inc
1729 pop 100
100% Pur Surface
P
100%
Montgomery North Water & Fire Authority
1435 pop 1,686
100% Pur surface
P
100%
Montgomery Water Works
1070 pop 220,002
66% Surface
34% Ground
66%
Tallapoosa River
32°27'00"
86°11'44"
34%
North Well field
West Well field
P
SP
40%
Well 1
Federal Rd
32°15'23"
86°20'58"
P SG
Well 2
Katie Lane
32°14'23"
86°20'54"
P SG
Pintlala Water & Fire Protection Authority
1073 pop 3,819
20% Ground
40% Pur Surface
40% Pur Ground
Country Estates Trailer Court
1059 pop 90
100% Ground
Well
32°20'11"
86°07'20"
240

The Water Works and Sanitary Sewer Board
of the City of Montgomery
P.O. BOX 1631
MONTGOMERY, ALABAMA 36102-1631

THOMAS R. MORGAN
GENERAL MANAGER
JAMES P. HENRY, III
GENERAL MANAGER, OPERATIONS
ROY D. HOLMBERG
ASSISTANT GENERAL MANAGER
PHONE (205) 240-1607
FAX (205) 240-1616

FAX TRANSMISSION

DATE: 8/20/93

TIME: 3:45 pm

SENT TO: Bonnie Temple

COMPANY: ADEM

FAX NUMBER: 260-2795

SENT FROM: Engineering Department

PHONE NUMBER: 240-1626

RETURN FAX NUMBER: 205/261-3448

This is page 1 of 3 pages.

SENT BY: Barry Dees

[illegible]
Well water [illegible]
[illegible]

Tallapoosa River (Surface Water) = 66%

WEST WELL FIELD
WELLS CURRENTLY IN OPERATION

Well Number	Plat Sheet	Map Legend Reference	Motor Horsepower	Well Depth (ft)	Year Drilled	Year Reworked	Aquifer	Reported Capacity (gpm) Original	1962	1970	1983	1989
21	24	I-10	40	165	1941	1980	E	467	467	488	393	659
22	25	I-10	40	181	1953	1980	E	350	495	495	517	329
23	22	I-10	40	184	1941		E	349	438	439	465	536
26	33-A	I-9	50	1010	1985		E,G,C	500	—	—	—	556
27	33-B	J-8	50	676	1953	1990	G,C	383	393	448	361	363
28	33-B	J-8	50	620	1984		E,G,C	500	—	—	—	404
29	33-B	J-8	50	755	1953		G,C	541	503	465	560	545
30	26-D	J-8	50	615	1949	1992	G,C	650	566	598	560	373
31	26-D	J-8	60	622	1949	1978	G,C	503	510	503	644	485
32	26-D	J-8	50	636	1949	1992	E,G,C	580	518	584	503	305
33	64	J-7	50	621	1949		E,G,C	524	526	620	572	431
34	64	J-7	50	618	1949		E,G,C	517	495	580	361	305
36	64-A	J-7	50	629	1950		E,G,C	530	578	503	644	431
38	64-C	J-7	75	618	1985		E,G,C	750	—	—	—	687
39	64-B	J-7	75	688	1952		E,G,C	703	703	430	658	590
40	64-B	K-6	60	275	1952		E	457	548	524	596	431
41	60	K-6	50	296	1953	1988	E	460	430	393	247	384
*42	—	K-6	50	462	1953		E,G	372	328	372	*	*
43	91-W	K-5	75	704	1953	1987	E,G,C	572	524	548	448	474
*44	91-D	K-5	50	740	1953		E,G,C	439	402	328	383	**
45	91-D	K-5	50	786	1953	1988	E,G	700	503	465	488	670
46	91-G	K-4	60	700	1955	1983	E,G,C	1,000	596	560	632	670
47	91-T	K-4	75	702	1955	1989	E,G,C	1,000	863	810	777	556
48	91-T	K-4	60	700	1955	1978	E,G,C	1,012	560	305	WEST	384
49	91-S	K-4	60	704	1955		E,G,C	1,000	737	WE	692	543
50	91-S	L-3	75	716	1955		E,G,C	1,000	908	880	874	777
54	31-D	K-6	60	605	1985		G,C	450	—	—	—	440
55	32-H	L-7	75	1015	1985		G,C	700	—	—	—	550
56	67-B	L-7	75	695	1985		E,G,C	700	—	—	—	687
57	91-X	K-5	75	720	1985		E,G,C	700	—	—	—	528
58	91-W	K-5	75	750	1985		E,G,C	700	—	—	—	528
TOTAL CAPACITY (gpm)								19,100	12,582	11,948	12,150	14,520
(mgd)								(27.5)	(18.1)	(17.2)	(17.5)	(21.0)

---

* Removed from service.

** Flow not measurable

— Information not available. Assume capacity is the same as previous test.

T Terrace

E Eutaw

G Gordo

C Coker

29 well(s) in operation = 21%

NORTH WELL FIELD
WELLS CURRENTLY IN OPERATION

Well Number	Plat Sheet	Map Legend Reference	Motor Horsepower	Well Depth (ft)	Year Drilled	Year Reworked	Aquifer	Reported Capacity (gpm) Original	1962	1969	1976	1983	1989
2	118	G-12	20	70	1957		T	524	503	389	517	457	354
5A	6	H-11	60	699	1957		G,C	596	597	795	554	---	772
7	118	G-12	50	645	1957		G,C	416	416	465	837	630	472
8	102	H-11	50	695	1957		G,C	620	620	743	---	810	777
9E	102	H-11	25	74	1962		T	---	---	---	658	644	816
9W	102	H-11	25	79	1962		T	---	---	---	720	732	731
11	117	H-12	40	270	1959		G	600	600	457	568	820	621
13	117	H-12	60	765	1959		C	600	600	795	915	372	797
14	122	G-13	50	844	1937		G	316	316	480	530	383	357
15	122	G-13	25	73	1957	1986	E	407	405	316	200	320	216
18	118	G-12	20	72	1957	1988	T	407	361	372	430	---	341
19	118	G-12	50	610	1937		C	271	271	280	316	350	221
20	118	G-12	20	74	1957		T	473	473	430	503	---	415
51	6	H-11	50	600	1958		G,C	510	429	548	656	896	521
52	4	G-11	50	600	1956		G,C	557	335	536	620	608	557
53	4	G-11	50	600	1958		G,C	588	437	572	524	180	543
		TOTAL CAPACITY (gpm)						8,238	7,738	8,504	8,287	8,289	8,211
		(mgd)						(11.9)	(11.1)	(12.2)	(13.4)	(11.9)	(11.8)

---

* Removed from service.

** Flow not measurable

--- Information not available. Assume capacity is the same as previous test.

T Terrace

E Eutaw

G Gordo

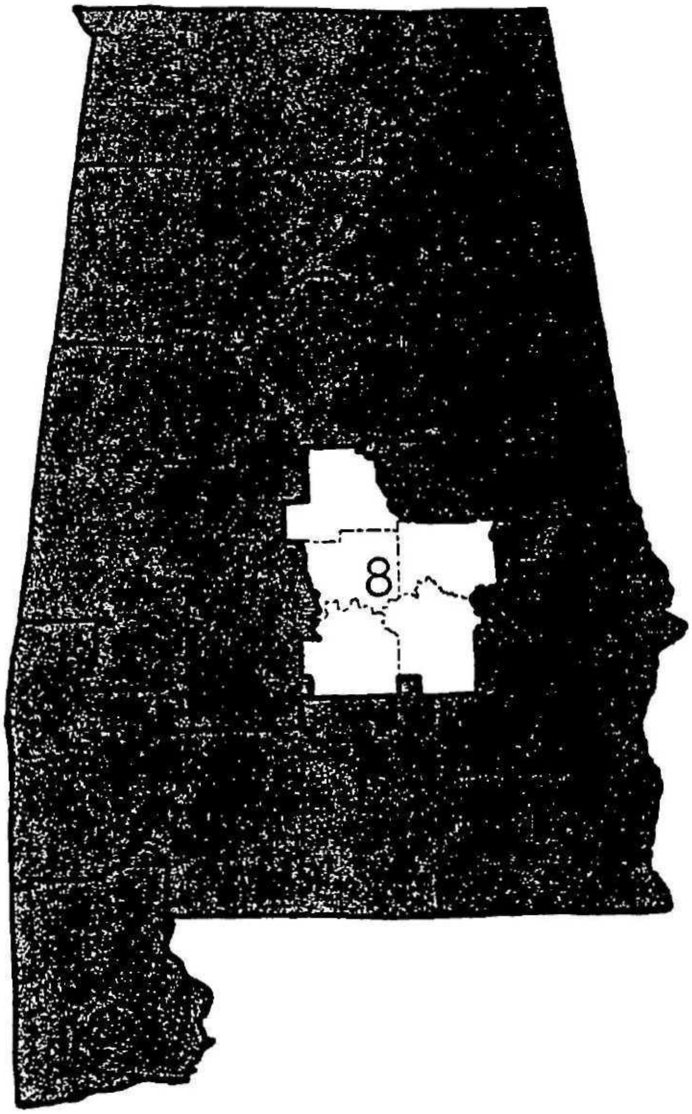
C Coker

16 wells in operation [illegible]

REFERENCE 5

WATER-RESOURCES I[illegible]ESTIGATIONS REPORT 86-4360

GEOHYDROLOGY AND SUSCEPTIBILITY OF MAJOR AQUIFERS TO SURFACE CONTAMINATION IN ALABAMA; AREA 8



Prepared by
U.S. GEOLOGICAL SURVEY
in cooperation with the
ALABAMA DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

GEOHYDROLOGY AND SUSCEPTIBILITY OF MAJOR AQUIFERS TO SURFACE CONTAMINATION IN ALABAMA; AREA 8

By John C. Scott, Riley H. Cobb, and Rick D. Castleberry

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 86-4360

Prepared in cooperation with the

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

U.S. DEPARTMENT OF THE INTERIOR

March 3, 1849

Montgomery, Alabama

1987

INTRODUCTION

The Alabama Department of Environmental Management (ADEM) is developing a comprehensive program to protect aquifers in Alabama from surface contamination that are defined by the U.S. Environmental Protection Agency (EPA) as "Class I" and "Class II" aquifers (U.S. Environmental Protection Agency, 1984). The U.S. Geological Survey (USGS), in cooperation with ADEM, is conducting a series of geohydrologic studies to delineate the major aquifers in Alabama, their recharge areas, and areas susceptible to contamination. This report summarizes these factors for major aquifers in Area 8--Autauga, Chilton, Elmore Lowndes, and Montgomery Counties (see plate 1).

Purpose and Scope

The purpose of this report is to describe the geohydrology of the major aquifers and their susceptibility to contamination from the surface. Geologic and hydrologic data compiled as part of previous investigations provided about 75 percent of the data used to evaluate the major aquifers in the area. All wells used for municipal and rural public water supplies were inventoried, and water levels were measured in these wells where possible. Data on water use were compiled during the well inventory. Water-level data were used to compile generalized potentiometric maps of the aquifers. Areas susceptible to contamination from the surface were delineated partly from topographic maps and other available data, and partly from field investigation.

Location and Extent of the Area

The study area is in south-central Alabama and comprises an area of about 3,430 square miles. The area includes Montgomery, Prattville, Wetumpka, Tallassee, Hayneville, Fort Deposit, Clanton, Maplesville, and numerous other small towns and communities (plate 1). The total population of the five-county area was 316,552 in 1980. The area is partly urban, partly suburban, and partly rural. A large part of the population is dependent on ground water.

Physical Features

The study area includes parts of several physiographic districts (fig. 1). The northern part of Chilton County is in the Cahaba Valley and Coosa Valley districts of the Alabama Valley and Ridge physiographic section (Sapp and Emplaincourt, 1975). This area consists mainly of northeastward-trending ridges and valleys. The altitudes[1] of valley floors are generally about 400 feet above National Geodetic Vertical Datum of 1929 (NGVD of 1929), and ridge tops generally range from 600 to 700 feet above NGVD of 1929. Drainage in the area is westward to the Cahaba River and northeastward to the Coosa River.

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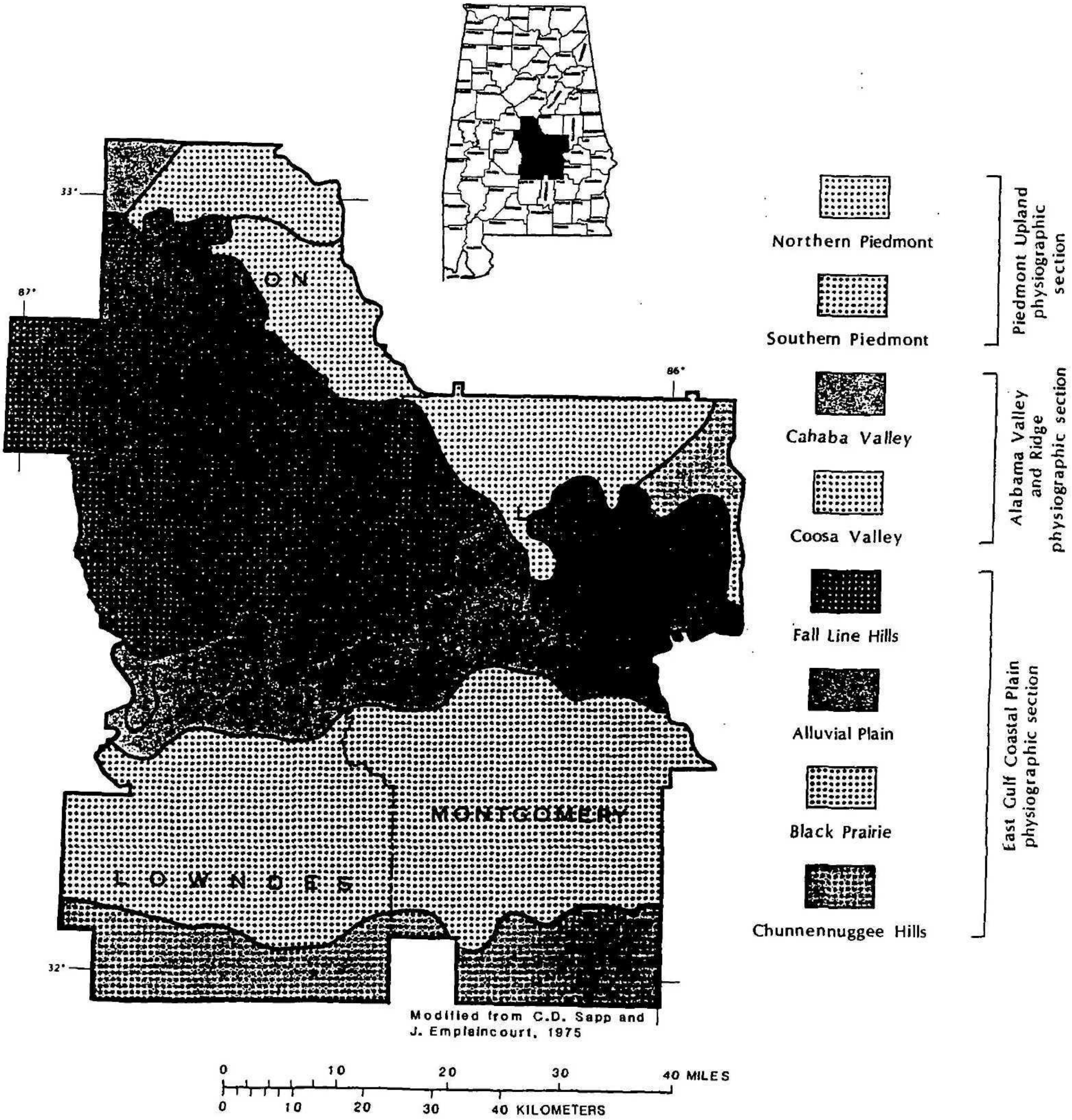
[1] *Altitudes, as used in this report, refer to the distance above the NGVD of 1929.*



Modified from C.D. Sapp and J. Emplaincourt, 1975

Figure 1.--Physiographic map of the study area.

The eastern part of Chilton County and the northern part of Elmore County are in the Northern and Southern Piedmont Upland districts of the Piedmont Upland physiographic section. The terrain in these areas is rolling to hilly, and some streams are deeply entrenched. Drainage in the Piedmont area of Chilton County is generally eastward to the Coosa River. Drainage in the Piedmont area of Elmore County is southward and westward to the Coosa River and eastward to the Tallapoosa River.

The western and southern parts of Chilton County, the southern part of Elmore County, and all except the southernmost part of Autauga County are in the Fall-Line Hills district of the East Gulf Coastal Plain physiographic section. These areas consist mainly of flat to moderately-rolling sandy, uplands dissected by deeply-entrenched southward-flowing streams. The land surface ranges in altitude from about 160 feet above NGVD of 1929 at the town of Wetumpka to about 850 feet in eastern Chilton County.

The southernmost parts of Autauga and Elmore Counties and the northernmost parts of Lowndes and Montgomery Counties are in the Alluvial-Deltaic Plain district of the East Gulf Coastal Plain physiographic section (fig. 1). This area is characterized by broad, flat flood plains and terraces. Much of the area is periodically inundated by floods on the Coosa, Tallapoosa, and Alabama Rivers. The land surface ranges in altitude from about 130 feet above NGVD of 1929 at the town of Benton in northwestern Lowndes County to about 200 feet on the flood plain of the Tallapoosa River south of the city of Tallassee.

The central parts of Lowndes and Montgomery Counties are in the Black Prairie district of the East Gulf Coastal Plain physiographic section. The Black Prairie, named for black soil that is common in the area, is a gently- to moderately-rolling prairie that is characterized by extensive grasslands, but very few trees. The land surface in the area ranges from about 150 to 420 feet above NGVD of 1929. Drainage in the Black Prairie is generally northward and northwestward to the Alabama and Tallapoosa Rivers.

The southern parts of Lowndes and Montgomery Counties are in the Chunnenuggee Hills district of the East Gulf Coastal Plain physiographic section. This area is characterized by sandy cuestas that have fairly steep northward-facing escarpments and gently- to moderately-rolling backslopes. The land surface in the area ranges from about 450 to 600 feet above NGVD of 1929. Drainage in the area is northward along the escarpments of the cuestas, but is southward along the backslopes.

Previous Investigations

Numerous reports that describe the geology and ground-water resources of the study area have been published. Information on the geology of the area was published as early as 1858 in the second biennial report of the Geological Survey of Alabama by Michael Toumey, the first State Geologist (Toumey, 1858). A detailed description of the geology of Alabama and a revised geologic map were published by the Geological Survey of Alabama in 1926 (Adams and others, 1926).

The first report on ground water in the area was published in 1907 (Smith, 1907). Other reports that contain information on the geology and ground-water resources of the area are "Notes on Deposits of Selma and Ripley Age in Alabama" (Monroe, 1941), "The Cretaceous of East-Central Alabama (Eargle, 1948), "Geologic Map of the Selma Group in Eastern Alabama" (Eargle, 1950), "Geology and Ground Water of the Piedmont Area of Alabama" (Baker, 1957), "Geology and Ground-Water Resources of Montgomery County, Alabama" (Knowles and others, 1963), "Ground-Water Resources of Lowndes County, Alabama" (Scott, 1957), "Ground-Water Resources of Autauga County, Alabama" (Scott, 1960), "Water Availability, Elmore County, Alabama" (Lines, 1975), and "Water Availability in Chilton County, Alabama" (Ellard and Willmon, 1980).

Acknowledgments

The authors wish to thank the many persons who have contributed information and assistance during the field investigation and during the preparation of this report. Special appreciation is extended to the waterworks managers of the ground-water systems in the study area who have helped locate public-supply wells and furnished information on well construction and water use. Appreciation also is extended to personnel of General Electric Corporation for supplying information on test wells at the General Electric Plant near Burkville in Lowndes County.

GEOHYDROLOGY OF THE STUDY AREA

Geologic formations that crop out in and underlie the study area range in age from Cambrian to Quaternary (fig. 2). Metamorphic and igneous rocks crop out in eastern Chilton and northern Elmore Counties and underlie all of the study area except the northwestern corner of Chilton County. Sedimentary rocks of Paleozoic age crop out in the northwestern corner of Chilton County. These rocks range in age from Cambrian to Mississippian. Unconsolidated sedimentary deposits of Late Cretaceous age crop out in central and southern Chilton County, western and southern Elmore County, all of Autauga County, and in all but southernmost parts of Lowndes and Montgomery Counties. Sedimentary deposits of Tertiary age crop out in the southernmost part of Lowndes County. Alluvial and terrace deposits overlie older rocks in and adjacent to the flood plains of the Alabama, Coosa, and Tallapoosa Rivers and larger streams in the study area. Generalized subsurface sections of formations that underlie the study area are shown in figures 3 and 4. The approximate locations of these sections are shown in figure 2. A summary of the thickness, lithology, and water-bearing properties of each geologic unit underlying the study area is given in table 1.

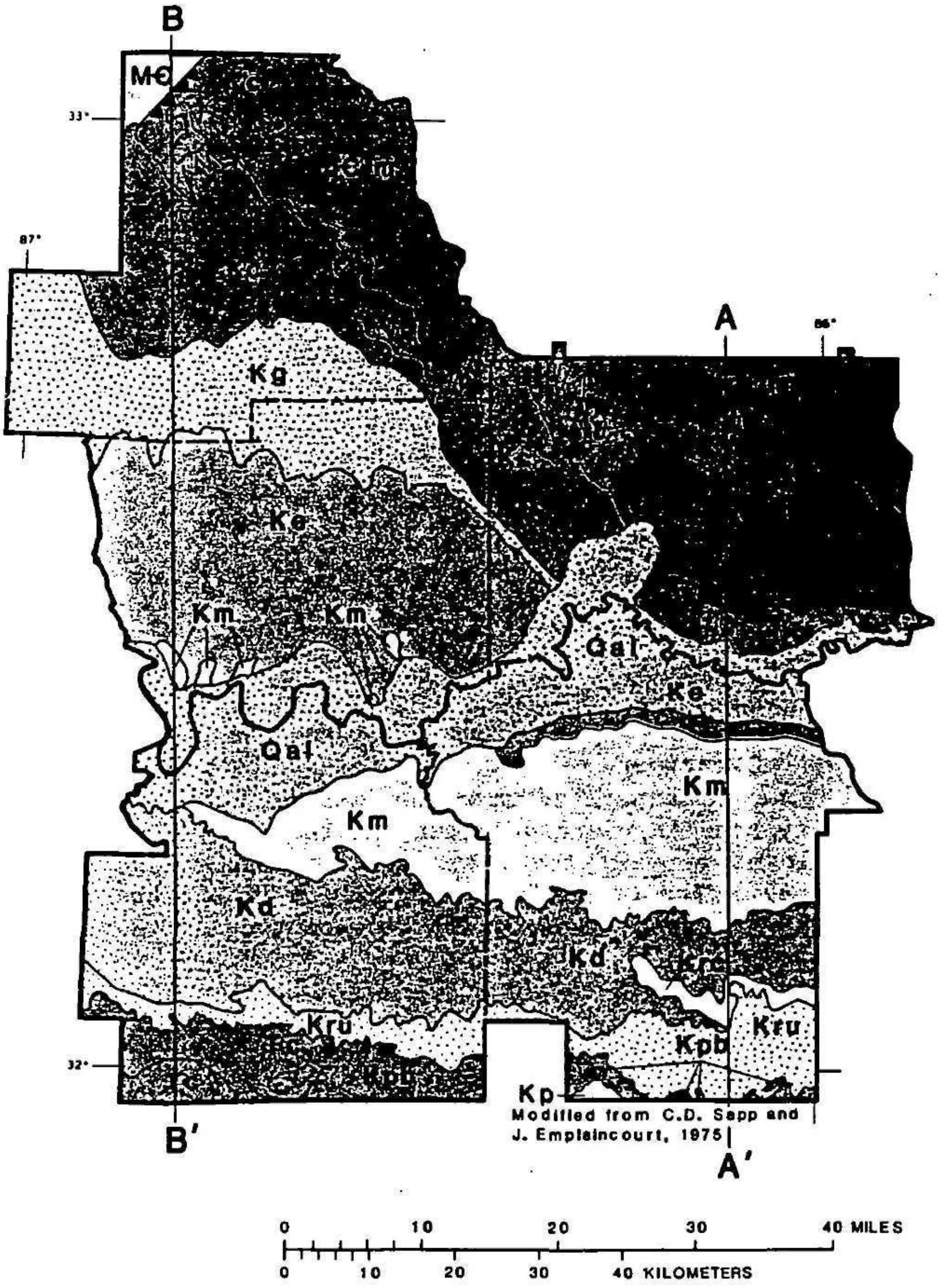
Igneous and Metamorphic Rocks

The igneous and metamorphic rocks exposed in the study area range in age from Precambrian to Pennsylvanian (Adams and others, 1926), and consist mainly of schist, gneiss, marble, quartzite, and granite. These rocks crop out in Chilton and Elmore Counties (see fig. 2) and underlie most of the study area. The rocks generally trend northeastward except in northeastern Chilton County where thrust faults and intrusive igneous rocks have resulted in an east-southeastward trend. Foliation planes in the metamorphic rocks generally dip southeastward, but dip northward and northwestward in some places.

The metamorphic rocks, except for marble and metamorphosed dolomite, are relatively impermeable, and do not comprise a major aquifer in the study area. Wells developed in schist or gneiss generally produce less than 20 gal/min (gallons per minute); however, wells developed in marble or dolomite may produce 100 gal/min or more at some places.

Paleozoic Rocks

Sedimentary rocks ranging in age from Cambrian to Mississippian crop out in the northwestern corner of Chilton County (fig. 2). Geologic units, from oldest to youngest, include the Brierfield, Ketona, and Bibb Dolomites of Cambrian age; part of the Knox Dolomite of Cambrian and Ordovician age; the Longview, Newala, and Little Oak Limestones of Ordovician age; and the Fort Payne Chert and Floyd Shale of Mississippian age (Adams and others, 1926). These rocks, which crop out in an area of about 50 square miles in northwestern Chilton County, are complexly folded and faulted and, except for the Floyd Shale, are deeply weathered. The rocks strike northeastward and generally dip southeastward. No large-capacity wells have been drilled in this part of Chilton County, but the limestones and dolomites are potential sources of large water supplies. For example, a municipal spring discharging



Modified from C.D. Sapp and J. Emplaincourt, 1975

Figure 2.--Generalized geologic map of the study area.

from the Brierfield Dolomite at the city of Montevallo in adjacent Shelby County flowed at a rate of more than 1,000 gal/min in 1968; and a well developed in the Brierfield Dolomite at the University of Montevallo had a drawdown in water level of only 32 feet when pumped at 340 gal/min in 1962.

Cretaceous Formations

Sedimentary deposits of Late Cretaceous age overlie the metamorphic and igneous rocks or Paleozoic rocks throughout most of the study area (fig. 2). These deposits include, from oldest to youngest, the Coker and Gordo Formations of the Tuscaloosa Group (Drennen, 1953); the Eutaw Formation; and the Mooreville and Demopolis Chalks, the Ripley Formation, the Prairie Bluff Chalk, and the Providence Sand of the Selma Group (Drennen, 1953; Eargle, 1950). These formations strike generally eastward and dip southward 30 to 40 feet per mile (figs. 3 and 4).

Coker Formation

The Coker Formation crops out in western and southern parts of Chilton County and the central part of Elmore County (fig. 2). The Coker underlies all of the study area south of its area of outcrop, and is one of the major aquifers in the study area.

The Coker Formation consists of a basal zone of nonmarine gravel, sand, and clay and an upper zone of marine sand and clay beds. In most parts of the study area the basal zone is separated from the marine sand beds by 50 feet or more of clay. A clay zone is usually present at the top of the Coker. This clay is a confining layer between the Coker aquifer and the overlying Gordo aquifer (figs. 3 and 4). The Coker Formation ranges in thickness from less than 100 feet where only the basal beds remain to more than 1,000 feet in southernmost parts of the study area.

The basal gravelly zone in the Coker is developed for public water supplies for the towns of Jemison, Maplesville, and Thorsby, and the Chilton County Water Authority in Chilton County, and for the town of Billingsley in Autauga County. This zone is also tapped by municipal wells as far downdip as the city of Montgomery.

The marine sand beds in the Coker are tapped by numerous wells in the study area. Wells that supply the towns of Elmore, Holtville, Marbury, and Deatsville are developed in this zone. The Coker is tapped in conjunction with the Eutaw and Gordo aquifers at the cities of Montgomery, Prattville, and Millbrook. For this report, the upper and lower permeable zones in the Coker Formation comprise the Coker aquifer.

The Coker aquifer has not been developed as a source of water supply south of the Montgomery West Well Field. Available data indicate that the Coker is a source of potable water in central and southeastern parts of Montgomery County, but the water in southwestern Montgomery County and southern Lowndes County may contain more than 1,000 mg/L (milligrams per

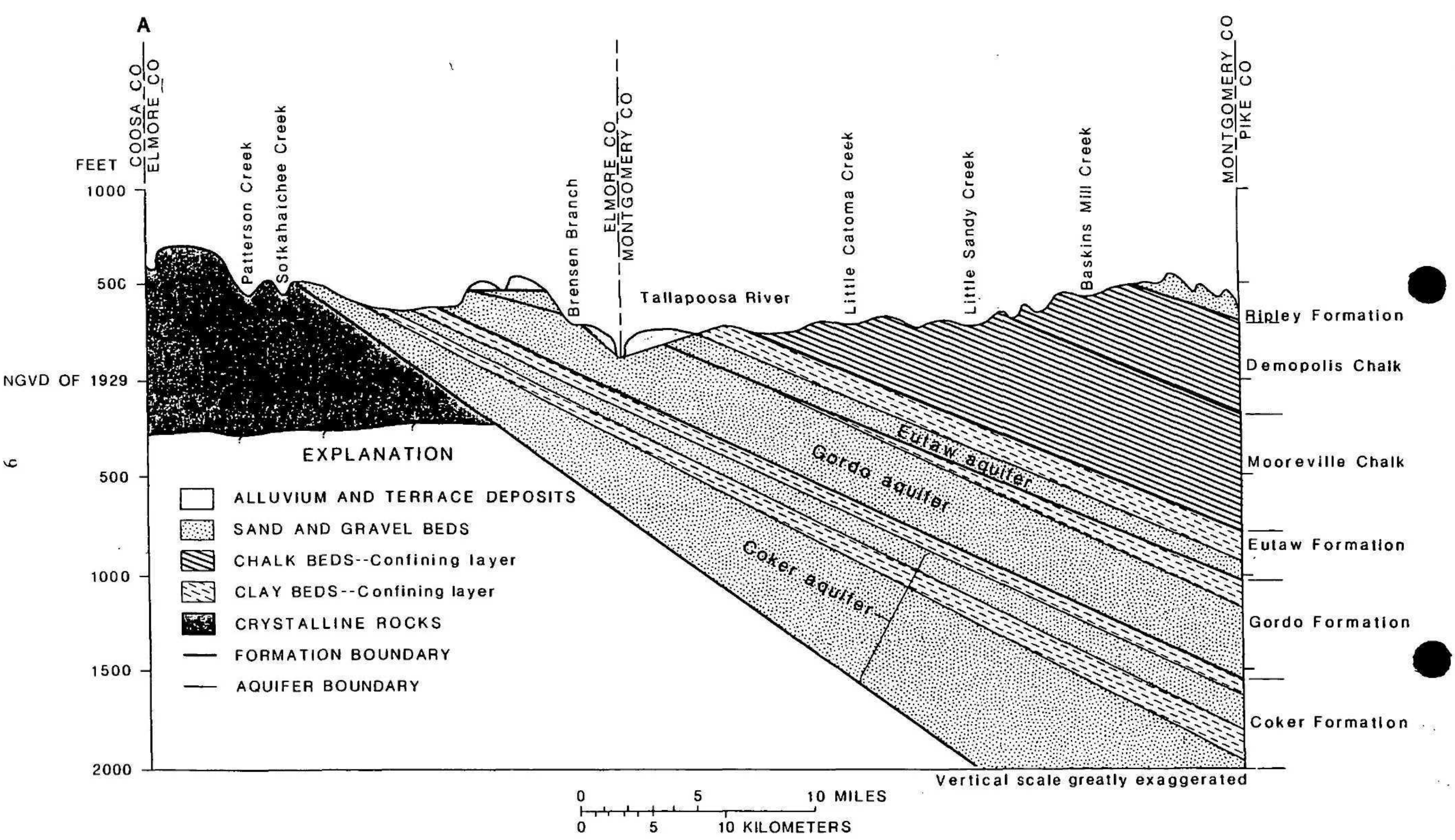


Figure 3.--Generalized subsurface section of the major aquifers in the eastern part of the study area (line of section shown on figure 2).

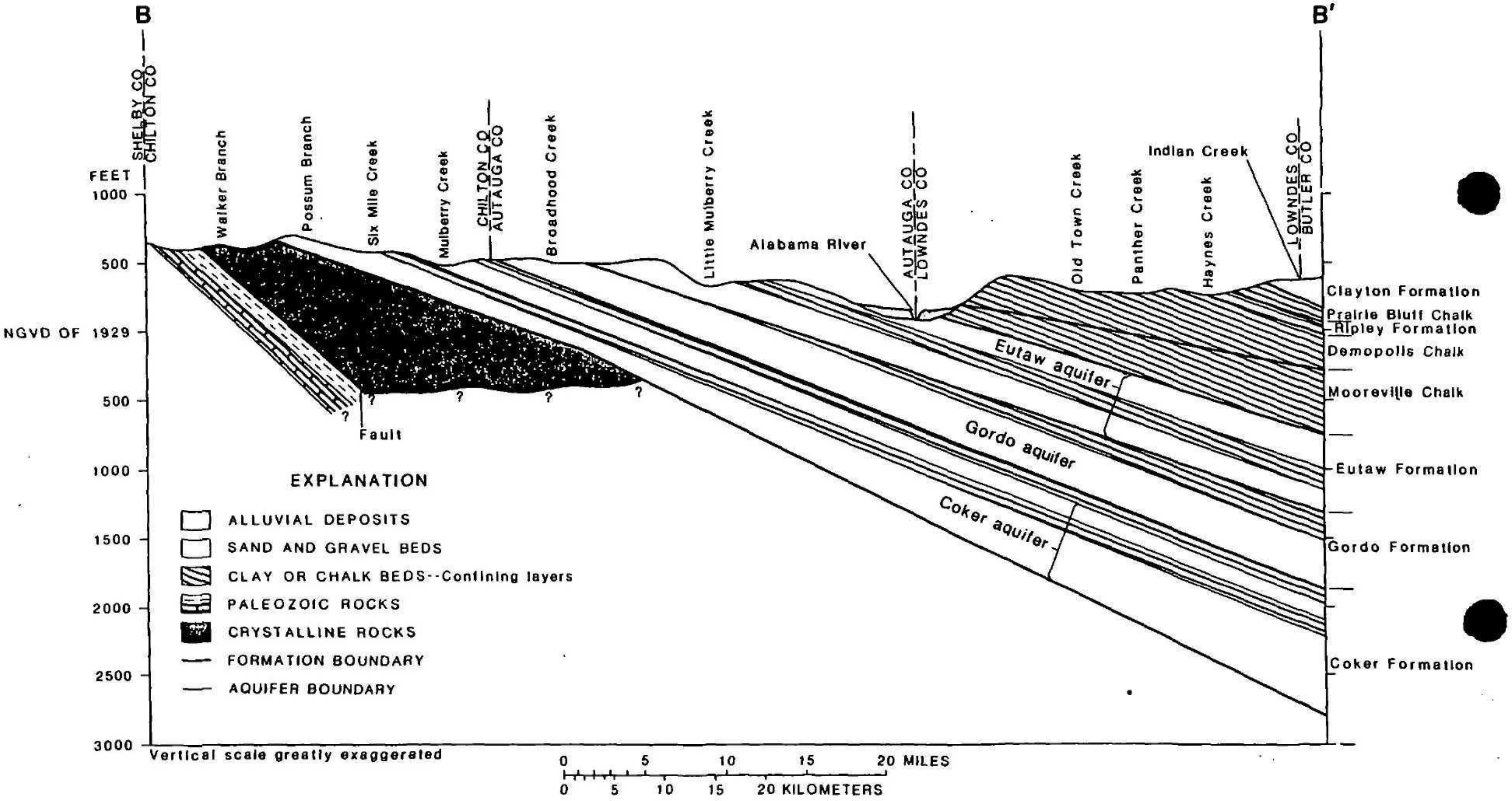


Figure 4.--Generalized subsurface section of the major aquifers in the western part of the study area. (trace of section shown on figure 2.)

liter) chloride. Wells developed solely in the Coker produce 500 gal/min or more at some places. Wells developed in the Coker in conjunction with the Gordo and Eutaw aquifers produce as much as 1,000 gal/min in the Montgomery West Well Field.

Gordo Formation

The Gordo Formation overlies the Coker Formation and crops out in the southern part of Chilton County, the western and southern parts of Elmore County, and the northern part of Autauga County (fig. 2). The Gordo consists of a basal zone of gravelly sand overlain by alternating lenticular beds of sand and varicolored mottled clay. The Gordo ranges in thickness from about 100 feet at outcrops to more than 300 feet in the subsurface in the southern part of the study area.

The Gordo Formation is one of the major aquifers in the study area. It is the principal source of water for the city of Prattville, a major source for the city of Montgomery, and is the sole source for the town of Autaugaville, Autauga Hills, and the Autauga County Water System. The Gordo is the source of all public water supplies in Lowndes County except the town of Fort Deposit. The Gordo is not a major aquifer in Chilton and Elmore Counties because of its proximity to the land surface.

Wells developed solely in the Gordo aquifer produce from 200 to 500 gal/min. Wells developed in the Gordo in conjunction with the Eutaw and Coker produce as much as 1,000 gal/min. Water in the Gordo aquifer in southern Lowndes County contains more than 1,000 mg/L chloride. Limited water-quality data for the Gordo aquifer in southern Montgomery County indicate that the water is potable in the vicinity of the town of Ramer. The water is probably potable in the southeastern part of the county.

Eutaw Formation

The Eutaw Formation overlies the Gordo Formation, and crops out over a large part of Autauga County, western and southern parts of Elmore County, and in the northern part of Montgomery County (fig. 2). The Eutaw consists of upper and lower zones of marine sand separated by a zone of clay. The Eutaw Formation ranges in thickness from about 200 to 400 feet where the entire formation is present. The lower part of the formation consists of 30 to 50 feet of glauconitic sand interbedded with sandy clay. The middle part consists of 50 to 150 feet of calcareous clay and sandy clay. The upper part consists of as much as 150 feet of massive glauconitic sand interbedded with calcareous sandstone and sandy limestone. The formation thins from 400 feet in the vicinity of Montgomery to about 250 feet in eastern Montgomery County, and the upper zone of sand is generally absent in this area.

The Eutaw Formation is a major aquifer in the vicinity of Montgomery, and is a potential aquifer throughout Montgomery County. For this report, the upper and lower permeable zones in the Eutaw Formation comprise the Eutaw aquifer. The upper sand zone in the Eutaw is a major aquifer for most public water systems in the county except the city of Montgomery.

The Eutaw Formation is not a major aquifer in Chilton and Elmore Counties because of its limited areal extent and thinness; is not in Autauga County because in most of this area water in the formation contains excessive concentrations of iron; and is not in Lowndes County because chloride concentrations in the water are more than 1,000 mg/L in most parts of the county.

Wells developed in the lower part of the Eutaw in the Montgomery area produce as much as 450 gal/min; wells developed in the upper part of the Eutaw reportedly produce as much as 500 gal/min. Wells developed in both the upper and lower parts of the Eutaw in central and southern parts of the county may have the capacity to produce 700 gal/min or more.

Mooreville Chalk

The Mooreville Chalk overlies the Eutaw Formation, and crops out in southern Autauga County, northern Lowndes County, and central Montgomery County (fig. 2). The Mooreville consists of about 400 to 500 feet of chalk, calcareous clay, sandy clay and limestone. The Arcola Limestone Member of the Mooreville, at the top of the unit (not shown in fig. 2), consists of two to four thin beds of limestone separated by clay and sandy clay. The Mooreville Chalk is relatively impermeable and is not a source of water in the study area. The chalk is an upper confining layer for the upper Eutaw aquifer.

Demopolis Chalk

The Demopolis Chalk overlies the Mooreville Chalk, and crops out in central Lowndes County and southern Montgomery County (fig. 2). The Demopolis consists of about 400 to 450 feet of chalk, calcareous clay, and sandy clay. The Demopolis merges laterally with the Cusseta Sand Member of the Ripley Formation in southeastern Montgomery County.

In a small area between the towns of Pine Level and Ramer the Demopolis underlies and overlies an eastward-trending tongue of the Cusseta Sand Member. Eastward from Pine Level the Demopolis thins and grades from chalk to calcareous sandy clay as the Cusseta thickens. The Demopolis is relatively impermeable and is not an aquifer in the study area.

Ripley Formation

The Ripley Formation overlies the Demopolis Chalk and crops out in southern Lowndes and Montgomery Counties (fig. 2). In Montgomery County the Ripley is divided into a lower Cusseta Sand Member and an upper unnamed member. The Cusseta Sand Member merges into the upper part of the Demopolis Chalk in southeastern Montgomery County, and is not present from U.S. Highway 331 westward. The Cusseta Sand Member consists of 100 to 120 feet of fossiliferous sand, calcareous sandstone and sandy chalk. The upper unnamed member of the Ripley overlies the Cusseta Sand Member in southeastern Montgomery County, and overlies the Demopolis Chalk in southwestern Montgomery County and southern Lowndes County. The upper member consists of sand, sandy clay, silty fossiliferous clay, and calcareous sandstone beds. The Ripley ranges in thickness from about 200 feet in southwestern Lowndes County to 300 feet in southeastern Montgomery County.

The Ripley Formation is not a major aquifer in the study area, but is a major aquifer south of the study area. The town of Fort Deposit in the southern part of Lowndes County uses the Ripley aquifer, but the town's wells are located downdip in Butler County. Fort Deposit formerly pumped water from the Ripley using wells located in the town, but relocated their wells in Butler County to take advantage of the higher well production and less-mineralized water.

Prairie Bluff Chalk

The Prairie Bluff Chalk overlies the Ripley Formation and crops out in southern Lowndes and Montgomery Counties (fig. 2). The Prairie Bluff consists of fossiliferous sandy chalk and calcareous sandy clay. The Prairie Bluff is about 100 feet thick in south central Montgomery County, but thins eastward to about 40 feet in southeastern Montgomery County where it merges with the Perote Member of the Providence Sand. The Prairie Bluff also thins westward from south central Montgomery County, and is only about 60 feet thick in southwestern Lowndes County. The Prairie Bluff is relatively impermeable, and is not an aquifer in the study area.

Providence Sand

The Providence Sand overlies the Prairie Bluff Chalk, and crops out in southern Montgomery and southeastern Lowndes Counties (fig. 2). The Providence is divided into a lower Perote Member and an upper unnamed member. The Perote Member consists of laminated carbonaceous fossiliferous silty sand and silty clay. The Perote generally ranges in thickness from 60 to 100 feet in southern Montgomery County. The upper unnamed member consists of about 100 feet of coarse poorly sorted cross-bedded sand interbedded with thick beds of silty clay. Both members thin westward in Montgomery County, and are not present west of the town of Fort Deposit in Lowndes County.

The Providence Sand is not a major aquifer in the study area. The Perote Member is relatively impermeable, and is not considered to be a major aquifer in Alabama. The upper unnamed member is a major aquifer in southeast Alabama, especially in Coffee, Dale, Henry, and Houston Counties.

Tertiary Formations

Tertiary deposits in the study area are limited to the Clayton Formation of Paleocene age. The Clayton Formation overlies the Providence Sand in Montgomery County and the southeastern corner of Lowndes County, and overlies the Prairie Bluff Chalk westward from the town of Fort Deposit in Lowndes County. Only weathered basal beds of the Clayton are present in Montgomery County and are not shown in figure 2. These beds consist of deeply weathered sand and residual sandy clay and chert fragments and boulders. In Lowndes County the Clayton consists of calcareous fossiliferous silty clay, chalk, and sandy limestone and siltstone. The Clayton is as much as 150 feet thick in southwestern Lowndes County (fig. 2).

The Clayton is not a major aquifer in the study area, but is a major aquifer in southeastern Alabama. The Clayton in southwestern Lowndes County is relatively impermeable and is not an aquifer. The unit grades eastward from silt, silty clay, and silty limestone to sand and relatively-pure limestone south and southeast of Montgomery County.

Quaternary Deposits

Quaternary alluvial deposits overlie older formations throughout a large part of the study area (fig. 2). These deposits, which underlie flood plains of present and ancestrial large streams, consist mainly of gravel, sand, silt, and clay. Alluvial deposits along the flood plains of the Alabama, Coosa, and Tallapoosa Rivers are shown on the geologic map (fig. 2). Remnants of older alluvial deposits (usually mapped as high terrace deposits) are not shown on the geologic map, but form relatively flat uplands in several parts of the study area. The alluvial deposits generally range in thickness from 30 to 50 feet, but are as much as 80 feet thick in some places.

The alluvial deposits are a potential source of large water supplies in the flood plains of the Alabama, Coosa, and Tallapoosa Rivers, but generally are not developed for public water supplies. A few municipal wells in Montgomery North Well Field are screened in the alluvium and the underlying basal part of the Eutaw Formation, which is hydraulically connected with the alluvium.

HYDROLOGY OF THE MAJOR AQUIFERS

The major aquifers in the study area are sand and gravel beds in the Eutaw, Gordo, and Coker Formations (figs. 3 and 4). These aquifers crop out in Autauga, Chilton, Elmore, and Montgomery Counties, and underlie most of the study area. Water in these aquifers occurs under artesian conditions in most parts of the study area. Recharge areas for the major aquifers and areas susceptible to surface contamination are shown on plate 1. Also shown on plate 1 are locations of public water-supply wells and areas of major withdrawals as indicated by depressions in the potentiometric surface, as near Montgomery and Prattville. Construction of wells, water levels, and other pertinent well data are given in table 2.

Recharge and Movement of Ground Water

The source of recharge to the major aquifers is rainfall. Average annual rainfall is about 50 inches per year, but a large part runs off during and directly after rainstorms. Most of the remainder is returned to the atmosphere by evaporation and transpiration of trees and other plants; a small part infiltrates to the water table to recharge aquifers. Knowles and others (1963) estimated that, based on the low flow of streams, recharge to the Coker, Gordo, and Eutaw aquifers in the Montgomery area is at least 4 to 5 inches per year. The recharge areas for the Eutaw and Gordo aquifers are in Autauga, Chilton, Elmore, and Montgomery Counties (plate 1). The recharge area for the Coker aquifer is mainly in Chilton and Elmore Counties (plate 1). These recharge areas consist largely of rolling sand hills, part of which are wooded and part cultivated. In Autauga and Elmore Counties remnants of high terrace deposits overlie significant parts of the recharge areas for the aquifers. These terrace remnants form relatively flat, permeable landscapes that enhance infiltration and increase recharge to the aquifers. Alluvial deposits overlie the major aquifers along the flood plains in the Alabama, Coosa, and Tallapoosa Rivers. These permeable deposits provide recharge to the aquifers, especially in areas where the potentiometric surface of the water in the aquifers is lowered by large withdrawals of ground water. Water moves downdip from areas of recharge to areas of natural discharge or areas of ground-water withdrawals, generally perpendicular to the potentiometric contour lines shown on plate 1.

Natural Discharge and Ground-Water Withdrawals

A large part of the recharge discharges through seeps and springs to provide the base (dry weather) flow of streams. This natural discharge is especially notable in Autauga County where southward-flowing streams have cut deeply into the recharge areas of the aquifers. A significant part of the recharge is also discharged to the rivers that are entrenched into the aquifers.

Most of the remainder of the recharge is discharged through wells, mainly at large pumping centers. The largest pumping center in the study area is the city of Montgomery. The combined capacity of Montgomery's North and West Well Fields (see figs. 5 and 6) is more than 30 Mgal/d. The average pumpage from the well fields in 1985 was about 11 Mgal/d; however, the well fields were pumped near capacity on peak-demand days during the year. Pumpage from the well fields will likely increase during the next 5 to 10 years because Montgomery's surface water plant, which has a capacity of about 20 Mgal/d, presently runs at capacity most of the time. The peak demand on the municipal system was about 50 Mgal/d in 1986.

Other large pumping centers and their estimated capacities are Prattville, 4 Mgal/d; Millbrook, 1 Mgal/d; Elmore, 1 Mgal/d; Chilton County Water Authority, 2 Mgal/d; Union Camp Corporation, 4 Mgal/d; General Electric Corporation, 4 Mgal/d; rural water systems in Montgomery County, 4 Mgal/d; public water systems in Lowndes County (exclusive of the town of Fort Deposit), 4 Mgal/d; and rural water systems in Autauga County, 4 Mgal/d. The town of Fort Deposit withdraws water from an aquifer that is outside the study area.

Water is also discharged by wells used for domestic stock, industrial, and irrigation purposes. The amount of water used for these purposes is estimated to be 5 to 10 Mgal/d. A significant amount of water is wasted through flowing wells. For example, about 1 Mgal/d was discharging through flowing wells in Autauga County in 1959 (Scott, 1960). Smaller amounts are discharged through flowing wells in Chilton, Elmore, Lowndes, and Montgomery Counties.

Total maximum withdrawals of ground water for all uses in the study area in 1986 are estimated to be about 65 Mgal/d. Converted to inches per year for the total recharge areas for the three major aquifers (estimated to be about 950,000 acres), these withdrawals are equal to about 0.9 inch of recharge per year.

Effects of Withdrawals from the Aquifers

Large long-term withdrawals of water from the major aquifers have resulted in formation of depressions on the potentiometric surface of the aquifers. Extensive depressions have formed in the Gordo aquifer in the vicinities of Montgomery's West Well Field and Prattville (see fig. 7). Less-extensive depressions have formed in the Eutaw and Coker aquifers in the Montgomery area (figs. 8 and 9) and a depression is forming in the Coker aquifer in the vicinity of the town of Elmore (fig. 9).

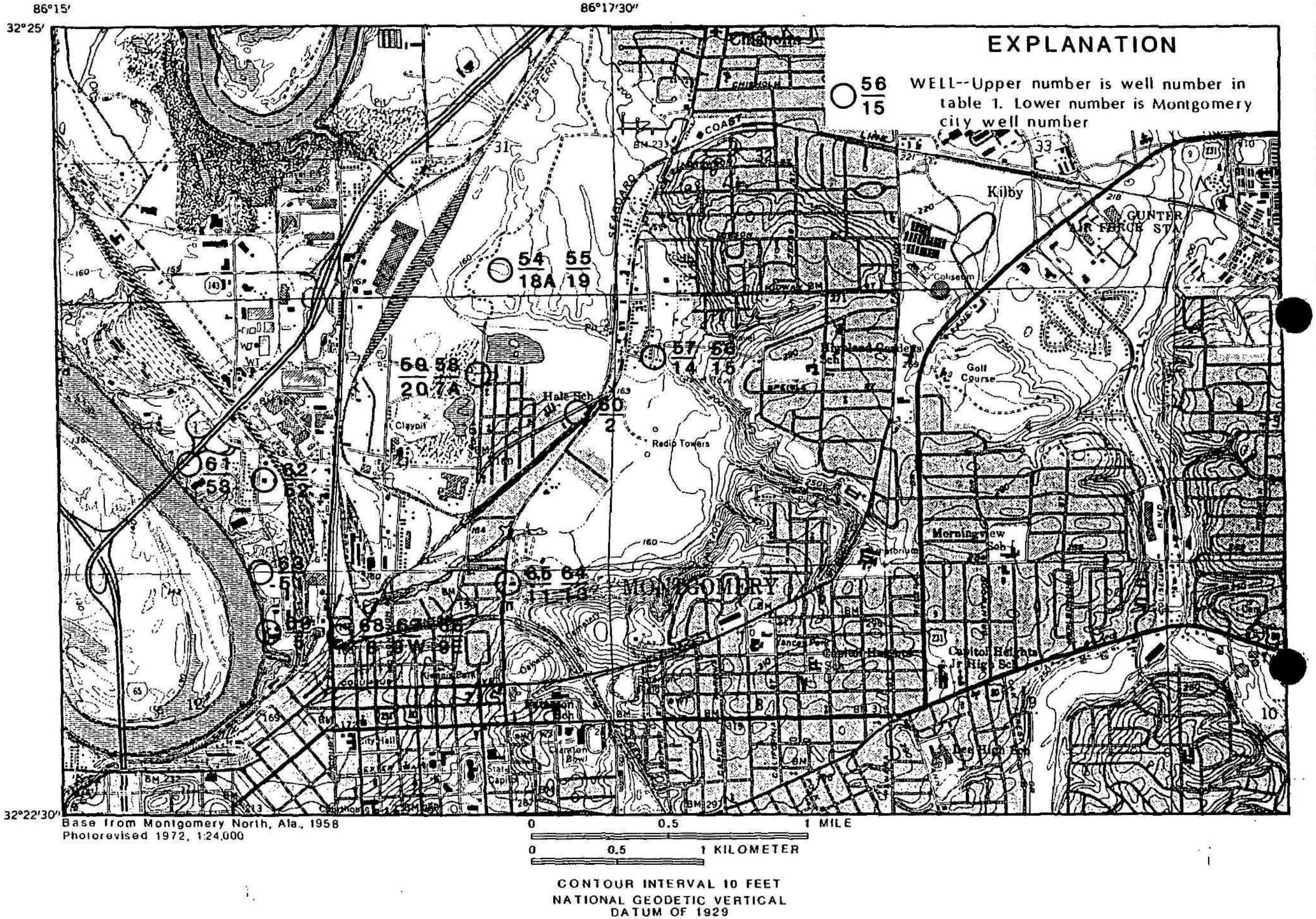
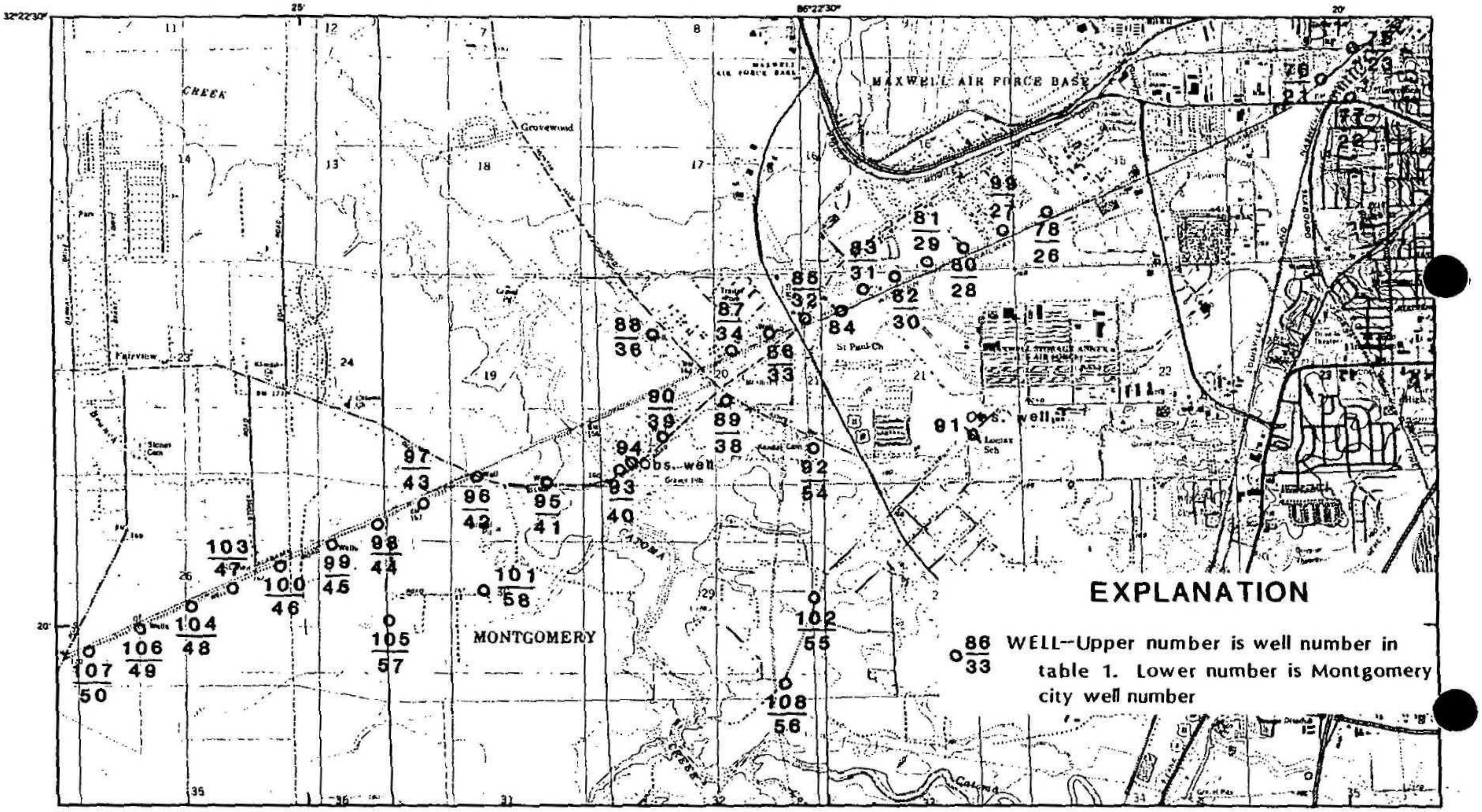


Figure 5.--Locations of wells in the Montgomery north well field.



Base from Cantalous, Ala., 1981; and Montgomery South, Ala., 1958 Photorevised 1981. 1:24,000

0 0.5 1 MILE

0 0.5 1 KILOMETER

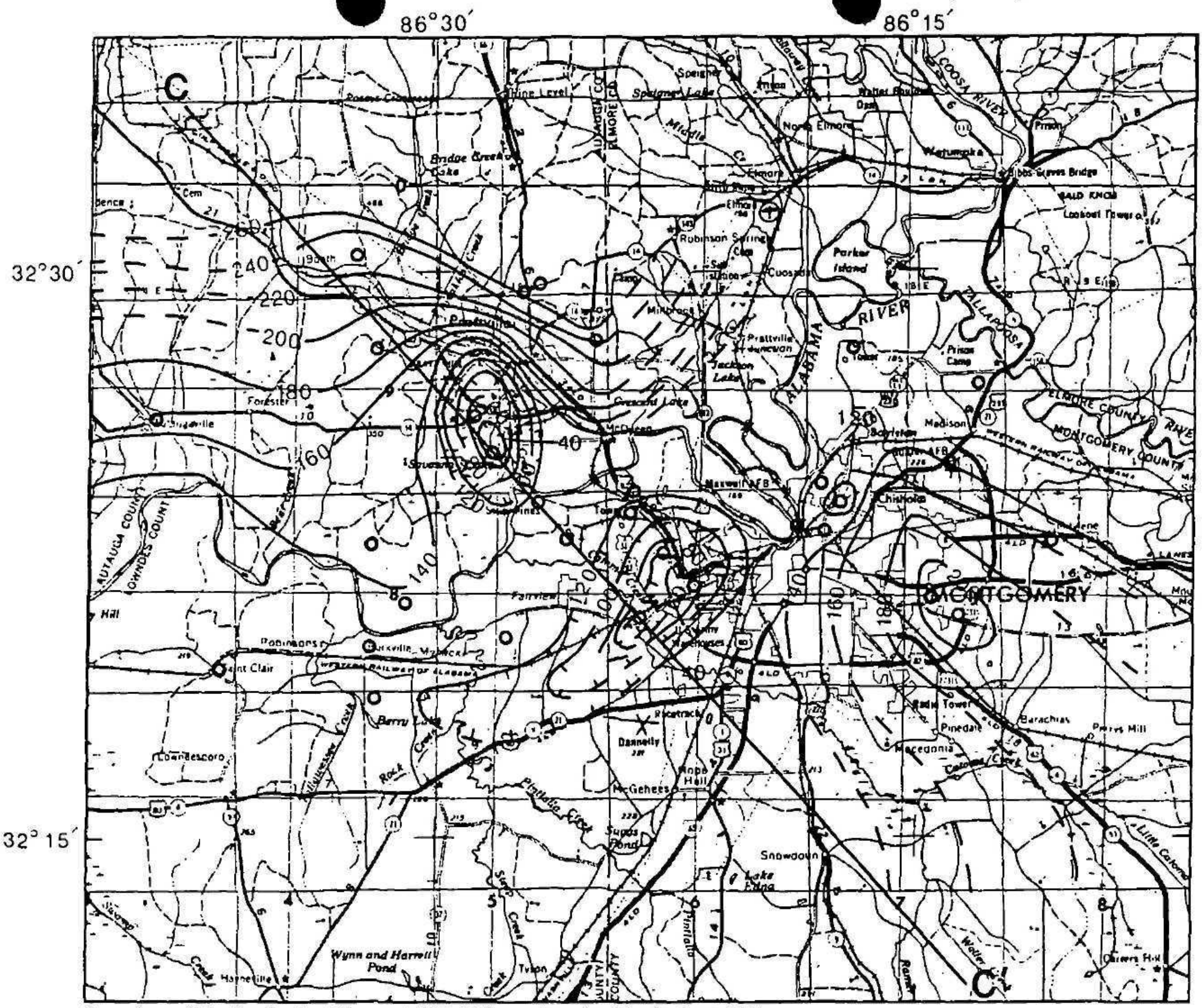
CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

Figure 6.--Locations of wells in the Montgomery west well field.

The Alabama River and its flood plain appear to be a hydrologic boundary for the Gordo aquifer (fig. 7). The potentiometric map for the Gordo aquifer indicates that either a reduction in natural discharge from the aquifer to the river, vertical leakage from the river and the alluvium to the aquifer, or a combination of the two, is preventing convergence of the cones of depression that have developed in the Montgomery and Prattville areas. If the Gordo aquifer is being recharged from the river and the flood plain, the Eutaw aquifer is also being recharged in the Montgomery area where the potentiometric surface in the Eutaw has been lowered by pumpage (fig. 10). The Coker aquifer also may be affected by recharge entering the aquifer system from the river and the flood plain in the Montgomery area where the potentiometric surface has been lowered by pumpage.

Outside the Montgomery and Prattville areas the potentiometric surfaces of the Gordo and Coker aquifers are similar, and potentiometric contour lines show the combined potentiometric surface of the Gordo and Coker aquifers (see plate 1).



Base from U.S. Geological Survey 1:250,000 quadrangles Birmingham 1962, revised 1969; Atlanta 1956; Montgomery 1955, revised 1969; Phenix City 1966, revised 1972; Andalusia 1954, revised 1970; and Dothan 1954, revised 1965

0 5 10 MILES

0 5 10 KILOMETERS

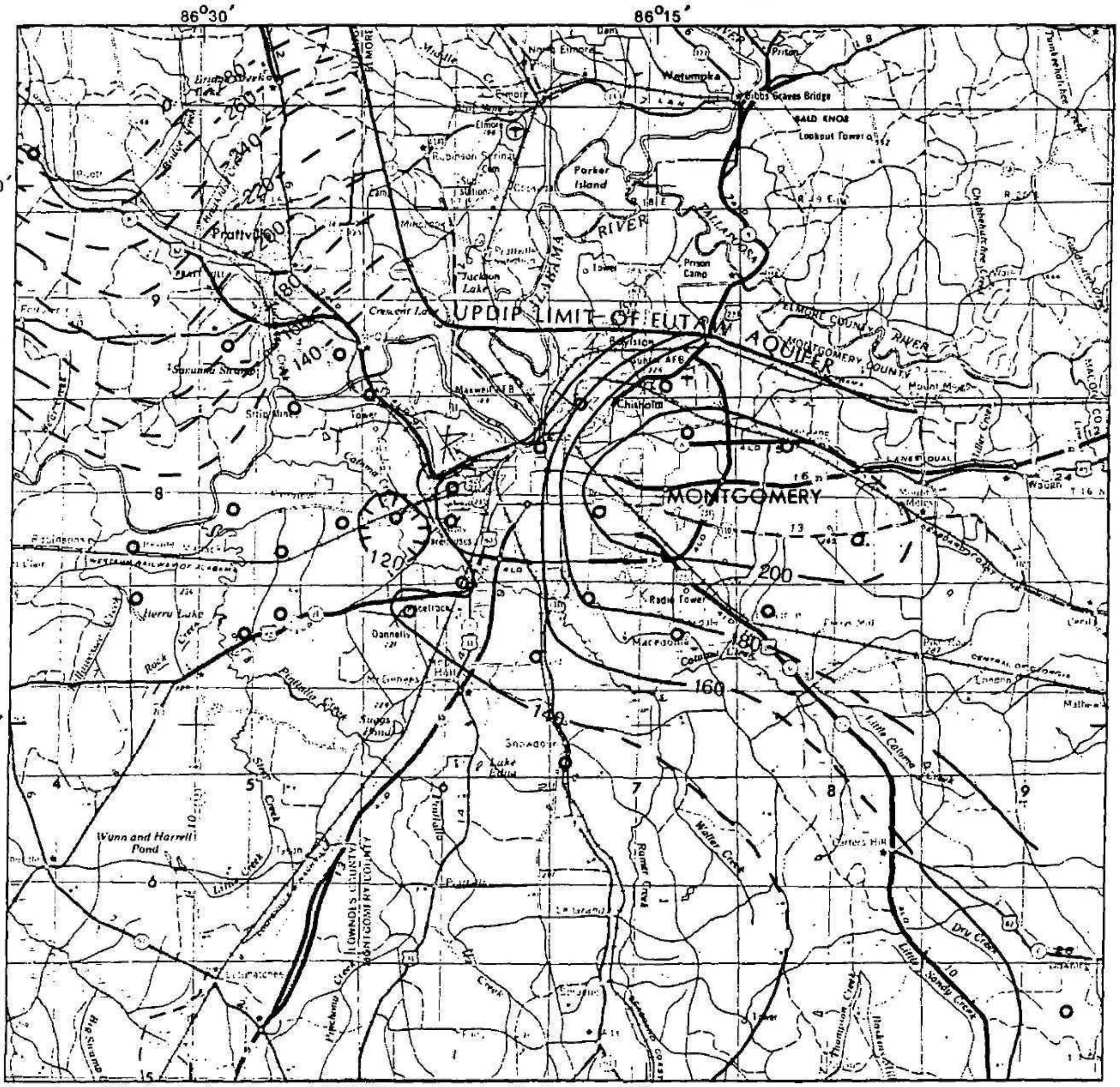
EXPLANATION

——120— — POTENTIOMETRIC CONTOUR--Shows altitude of the potentiometric surface for the Gordo aquifer. Dashed where inferred. Hachures indicate depression. Contour interval 20 feet. National Geodetic Vertical Datum of 1929

o Well in which water level was measured in 1985

C——C′ TRACE OF GENERALIZED SUBSURFACE SECTION SHOWN ON FIGURE 10

Figure 7.--Configuration of the potentiometric surface in the Gordo aquifer in the vicinities of Montgomery and Prattville in 1985.



Base from U.S. Geological Survey 1:250,000 quadrangles Birmingham 1962, revised 1969; Atlanta 1956; Montgomery 1955, revised 1969; Phenix City 1966, revised 1972; Andalusia 1954, revised 1970; and Dothan 1954, revised 1965

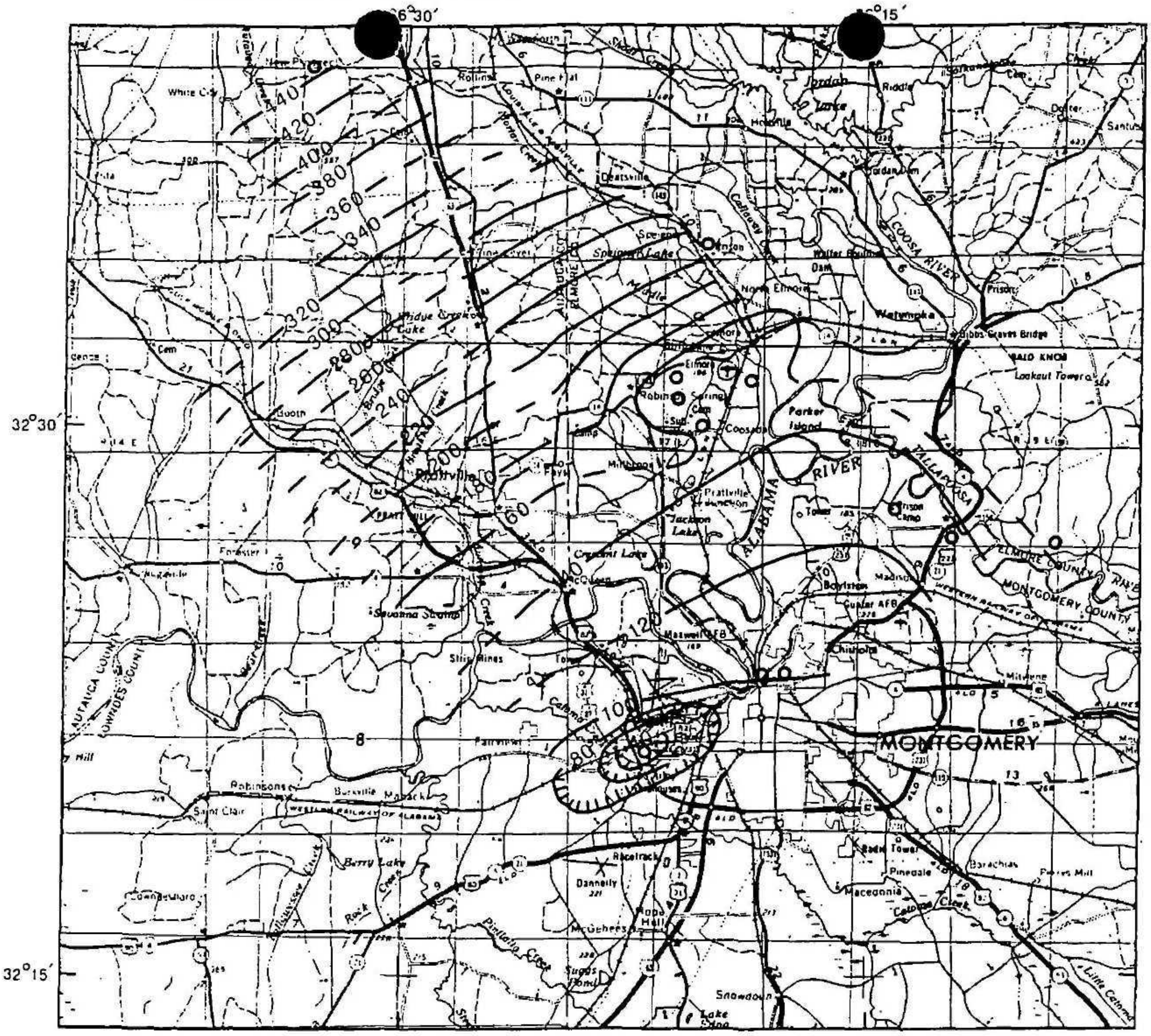
0 5 10 MILES

0 5 10 KILOMETERS

EXPLANATION

——120— —	POTENTIOMETRIC CONTOUR--Shows altitude of the potentiometric surface for the Eutaw aquifer. Dashed where inferred. Hachures indicate depression. Contour interval 20 feet. National Geodetic Vertical Datum of 1929
o	Well in which water level was measured in 1985

Figure 8.--Configuration of the potentiometric surface in the Eutaw aquifer in the vicinity of Montgomery in 1985.



Base from U.S. Geological Survey 1:250,000 quadrangles Birmingham 1962, revised 1969; Atlanta 1956; Montgomery 1955, revised 1969; Phenix City 1966, revised 1972; Andalusia 1954, revised 1970; and Dothan 1954, revised 1965

0 5 10 MILES

0 5 10 KILOMETERS

EXPLANATION

—— 120 — — POTENTIOMETRIC CONTOUR--Shows altitude of the potentiometric surface for the Coker aquifer. Dashed where inferred. Hachures indicate depression. Contour interval 20 feet. National Geodetic Vertical Datum of 1929

o Well in which water level was measured in 1985

Figure 9.--Configuration of the potentiometric surface in the Coker aquifer in the vicinity of Montgomery in 1985.

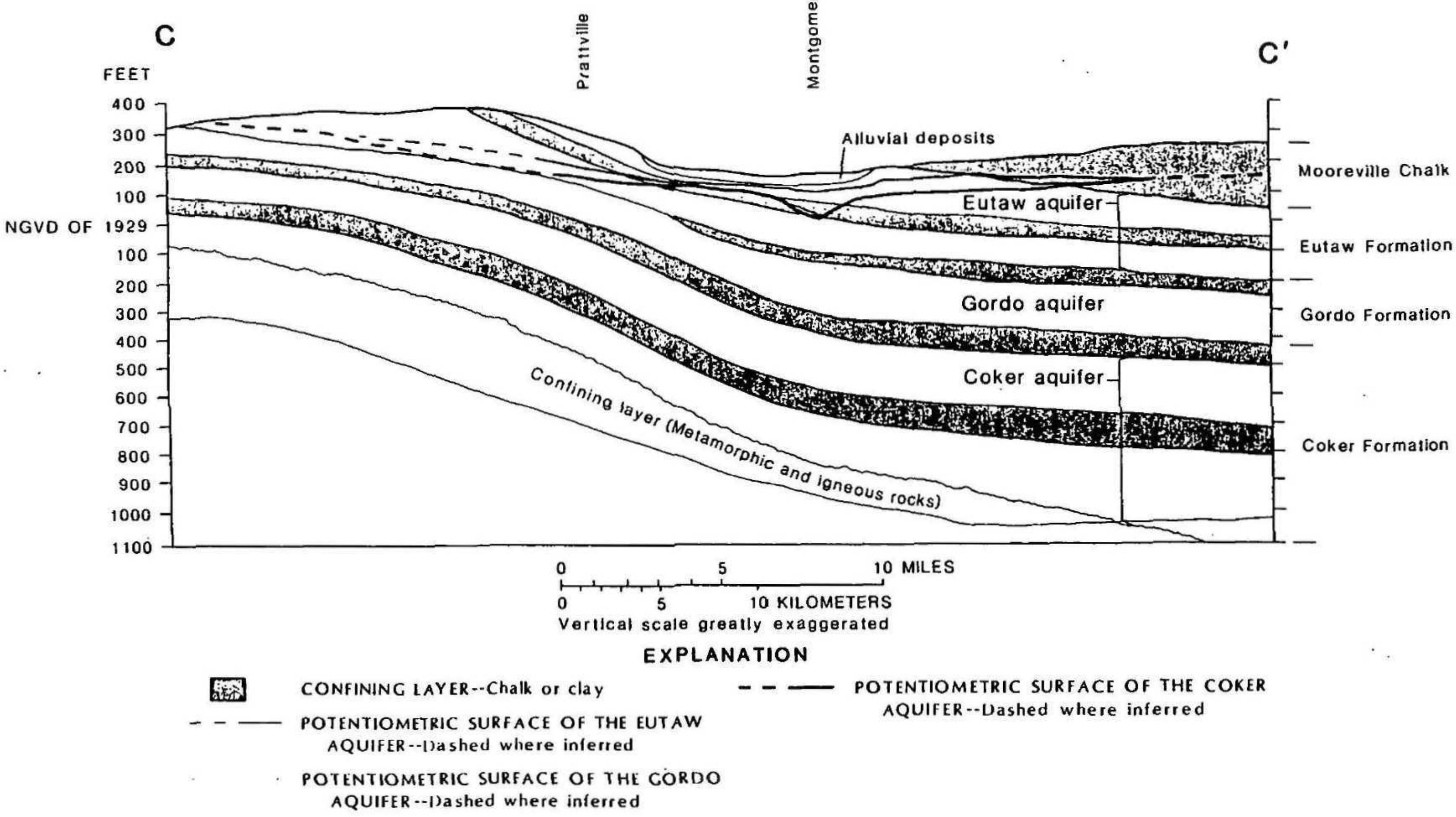


Figure 10.--Generalized subsurface section through the Montgomery-Prattville area showing configurations of the potentiometric surfaces of the major aquifers (line of section shown on figure 7).

SUSCEPTIBILITY OF THE AQUIFERS TO SURFACE CONTAMINATION

All of the areas of recharge for the major aquifers in the study area are susceptible to surface contamination (plate 1). However, throughout a large part of the study area, the recharge areas are in rural terrains that are used for timberlands, farms, or pastures. These recharge areas are several miles from areas where withdrawals are being made, and consist of sand hills and intermediate streams except where high terrace deposits have resulted in relatively-flat landscapes.

The areas highly susceptible to contamination from the surface are 1) the area from Jemison southeastward to Clanton, and 2) the flood plains of the Alabama, Coosa, and Tallapoosa Rivers (see plate 1). The Jemison-Clanton area is a relatively flat terrain that is underlain by the basal part of the Coker aquifer. Public water-supply wells in Jemison and Thorsby are screened in this aquifer less than 100 feet below land surface (see table 2). Some beds of clay are present between the surface and the top of the aquifer. However, depressions on the water surface in the aquifer caused by pumpage could induce vertical leakage from the surface to the aquifer.

The flood plains of the Alabama, Coosa, and Tallapoosa Rivers are low, flat terrains that are underlain by alluvial gravel, sand, and clay. The Eutaw, Gordo, and Coker aquifers underlie the alluvial deposits in the area between Wetumpka and Montgomery, and along the flood plain of the Tallapoosa River (plate 1). The Eutaw aquifer underlies the alluvial deposits along the flood plain of the Alabama River from Montgomery westward to Benton. The major aquifers are overlain by, and are in hydraulic contact with the highly-permeable alluvial sand and gravel. The alluvial sediments permit water to move downward from the land surface to the aquifers, especially in areas where the potentiometric surfaces in the aquifers have been lowered by pumpage.

Depressions have formed on the potentiometric surfaces of all three major aquifers in the Montgomery area. Several municipal wells less than 100 feet deep and screened in river alluvium and the Eutaw aquifer are pumped in the Montgomery North Well Field, and several wells in the Montgomery West Well Field are screened in the Eutaw aquifer at depths of 150 to 200 feet. Some of the public water-supply wells in the vicinities of Millbrook and Elmore are screened at depths just below 100 feet.

Pumpage along the flood plain of the Alabama River west of Montgomery and along the flood plain of the Tallapoosa River is presently minimal. However, future pumpage in these areas could result in the formation of depressions in the potentiometric surfaces of the major aquifers. Therefore, these areas are assumed to be especially highly susceptible to contamination from the surface.

SUMMARY AND CONCLUSIONS

The major aquifers in Area 8 in south-central Alabama are the Eutaw, Gordo, and Coker aquifers. The recharge areas for these aquifers are in Chilton, Autauga, Elmore, and Montgomery Counties. The aquifers underlie most of the study area. The aquifers consist of sand and gravel beds, and water in the aquifers occurs under artesian conditions in most parts of the area.

The Eutaw aquifer is a major source of public water supplies in Montgomery County. The aquifer is a partial source of water for the city of Montgomery, and the exclusive source of water for rural public water supplies in central and southern parts of the county.

The Gordo aquifer is a major source of public water supplies in Autauga and Montgomery Counties, and is the exclusive source of public water supplies in Lowndes County. The Gordo is pumped extensively at the cities of Montgomery and Prattville, and is the sole source of water for the Autaugaville, Autauga Hills, and Autauga County water systems.

The Coker aquifer is pumped extensively in conjunction with the Eutaw and Gordo aquifers at Montgomery and Prattville. It is used exclusively by the Billingsley, Jemison, Maplesville, and Thorsby water systems, and by the Chilton County water system. The Coker is also the source of water for the towns of Elmore, Holtville, Marbury, and several other water systems in Elmore County.

The largest pumping centers in the study area are Montgomery and Prattville. Maximum ground-water pumpage at Montgomery is more than 30 Mgal/d. Maximum pumpage in the Prattville area is more than 8 Mgal/d. Maximum ground-water withdrawals for all uses in the study area was estimated to be about 65 Mgal/d in 1985.

Extensive depressions have developed in the potentiometric surface of the Gordo aquifer in the vicinities of Montgomery and Prattville. Vertical leakage from the Alabama River and alluvial deposits on the flood plain of the river has apparently prevented convergence of these depressions. Less-extensive depressions have developed in the Eutaw and Coker aquifers in the Montgomery area.

All the recharge areas for the major aquifers are susceptible to surface contamination. Throughout a large part of the study area, however, the recharge areas are in rural terrains that are used for timberlands, farms, and pastures, and are several miles from pumping centers. The areas highly susceptible to contamination are 1) from Jemison to Clanton in Chilton County where the Coker aquifer is generally less than 100 feet below land surface, and 2) the flood plains of the Alabama, Coosa, and Tallapoosa Rivers which are underlain by alluvial sediments that are in hydraulic contact with the major aquifers. Within the highly susceptible areas, the areas that are especially susceptible to contamination are the flood plain of the Alabama River in the Montgomery area and the flood plain of the Tallapoosa River. In this area pumpage from the major aquifers has significantly lowered the potentiometric surface in the aquifers. The lowering of the potentiometric surface in the major aquifers has resulted in vertical leakage from the river and the alluvial deposits to the major aquifers.

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Table 1.--Generalized section of geologic formations in the study area and their water-bearing properties

System	Series	Stratigraphic unit			Thickness (feet)	Lithology	Water-bearing properties
Quaternary	Holocene	Alluvium			30-80±	Gravel, sand, silt, and clay	Potential source of large water supply in the flood plains of the Alabama, Tallapoosa, and Coosa Rivers, but generally is not developed for public water supply.
Tertiary	Paleocene	Midway Group	Clayton Formation		150	Deeply weathered sand and residual sandy clay and chert fragments and boulders in basal beds; calcareous fossiliferous silty clay, chalk, and sandy limestone and siltstone in south Lowndes County.	Not a major aquifer in the study area, but is a major aquifer in southeastern Alabama.
Cretaceous	Upper Cretaceous	Selma Group	Providence Sand	Upper Member	100±	Coarse, poorly sorted cross-bedded sand interbedded with thick beds of silty clay.	Not a major aquifer in the study area, but is a major aquifer in southeastern Alabama.
				Perote Member	60-100	Laminated carbonaceous fossiliferous silty sand and silty clay.	Relatively impermeable; not a source of ground water.
			Prairie Bluff Chalk		60	Fossiliferous sandy chalk and calcareous sandy clay.	Relatively impermeable; not a source of ground water.
			Ripley	Upper Member	200-300	Sand, sandy clay, silty fossiliferous clay, and calcareous sandstone beds.	Not a major aquifer in the study area because of low well production and highly-mineralized water; downdip from the study area the Ripley is a major aquifer.
				Cusseta Sand Member	100-120	Fossiliferous sand, calcareous sandstone, and sandy chalk.	Not a major aquifer in the study area because of low well production and highly-mineralized water; downdip from the study area the Ripley is a major aquifer.
			Demopolis Chalk		400-450	Chalk, calcareous clay and sandy clay.	Relatively impermeable; not a source of ground water.
			Mooreville Chalk	Arcola Limestone Member	5-10	Thin beds of limestone separated by clay and sandy clay.	Relatively impermeable; not a source of ground water.
				Lower Member	400-500	Chalk, calcareous clay, sandy clay, and limestone.	Relatively impermeable; not a source of ground water.

		Eutaw Formation		200-400	Upper and lower zones of marine sand separated by a zone of clay; lower part consists of glauconitic sand interbedded with sandy clay; middle part consists of calcareous clay and sandy clay; upper part consists of massive glauconitic sand interbedded with calcareous sandstone and sandy limestone.	Source of large water supplies in Montgomery County; may produce as much as 700 gal/min. Not a major aquifer in Chilton and Elmore Counties because of limited areal extent and thinness. Water in Autauga County contains excessive concentrations of iron. Water in most of Lowndes County contains more than 1,000 mg/L chloride.
		Tuscaloosa Group	Gordo Formation	100-300±	Basal zone of gravelly sand overlain by alternating lenticular beds of sand and varicolored mottled clay.	Wells produce 200 to 500 gal/min. Not a major aquifer in Chilton or Elmore Counties because of proximity to land surface. Water in southern Lowndes County contains more than 1,000 mg/L chloride.
			Coker Formation	100-1000±	Basal zone of non-marine gravelly sand and clay; upper zone of marine sand and clay beds.	Wells produce 500 gal/min or more at some places. Water in southwestern Montgomery County and southern Lowndes County may contain more than 1,000 mg/L chloride.
Mississippian to Cambrian		Floyd Shale, Fort Payne Chert, Little Oak Limestone, Longview Limestone, Newala Limestone, Knox Dolomite (part), Bibb Dolomite, Ketona Dolomite, and Brierfield Dolomite		1,000+	Dolomite, limestone, chert, and shale.	Potential source of large water supplies from limestones and dolomites; no large-capacity wells have been drilled in the study area.
Paleozoic and Precambrian		Igneous and metamorphic rocks		1,000+	Schist, gneiss, marble, dolomites, quartzite, and granite.	Relatively impermeable; wells drilled in schist or gneiss generally produce less than 20 gal/min; however, wells drilled in marble or dolomite may produce 100 gal/min or more at some places.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
51	322724086281301	Prattville Water Works	Layne Central Drilling Co., Inc. 1954	355	16 8	Kg	178	7 68.8 72.4 71.7	06/00/84 10/11/82 11/12/85 04/08/86	T	P	Well 2: Casing: 16 in. from surface to 306 ft; 8 in. from 266 to 310 ft; 8 in. screen from 310 to 355 ft.
52	322612086381001	Town of Autaugaville	Alton Powell Drilling Co., Inc. 1973	342	8 4	Kg	155	-16.6 - 9.5 -9.5	11/19/73 07/23/82 11/14/85	T	P	Well 1: Casing: 8 in. from surface to 280 ft; 4 in. from 240 to 284 ft; 304 to 322 ft; and 342 to 346 ft; 4 in. screen from 284 to 304 ft; and 322 to 342 ft.
53	322616086282601	Prattville Water Works	Layne Central Drilling Co., Inc. 1972	310	20 12 8	Kg	210	85 142.5 154.7 126.9 150.3 170.7	08/03/72 07/21/82 11/01/84 04/24/85 10/24/85 04/08/86	T	P	Well 8: Casing: 20 in. from surface to 245 ft; 12 in. from 195 to 250 ft; and 8 in. from 310 to 320 ft; 8 in. screen from 250 to 310 ft.
54	322413086175501	Montgomery Water Works	Layne Central Drilling Co., Inc. 1957	72	24 18 16	Qt	175	32.5 24.7	02/12/57 08/15/84	T	P	Well 18A: Casing: 24 in. from surface to 47 ft; 18 in. from surface to 52 ft; 16 in. from 72 to 82 ft; 16 in. screen from 52 to 72 ft.
55	322414086175201	Montgomery Water Works	W. Horace Williams 1937	610	14 12 10	Kc	164.9			T	P	Well 19E: Casing: 14 in. from surface to 190 ft; 12 in. from 145 to 257 ft; 10 in. from 257 to 539 ft; and 610 to 620 ft; 10 in. screen from 539 to 610 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
56	322358086171801	Montgomery Water Works	Layne Central Drilling Co., Inc. 1957	73	24 16	Ke	169.7	16 9.6	1957 08/15/84	T	P	Well 15: Casing: 24 in. from surface to 43 ft; 18 in. from surface to 53 ft; 16 in. from 73 to 83 ft; 16 in. screen from 53 to 73 ft.
57	322357086171901	Montgomery Water Works	W. Horace Williams 1937	644	14 8	Kg	167.8	64.4	08/13/84	T	P	Well 14E: Casing: 14 in. from surface to 313 ft; 12 in. from surface to 313 ft; 8 in. from 320 to 461 ft; 493 to 588 ft; and 644 to 650 ft; 8 in. screen from 313 to 320 ft; 461 to 493 ft; and 588 to 644 ft.
58	322352086180001	Montgomery Water Works	Layne Central Drilling Co., Inc. 1957	645	24 16 10	Kg Kc	160	148 62.3	09/10/57 08/14/84	T	P	Well 7A: Casing: 24 in. from surface to 332 ft; 16 in. from 272 to 337 ft; 10 in. from 347 to 378 ft; 386 to 411 ft; 431 to 465 ft; 485 to 499 ft; 504 to 543 ft; 553 to 564 ft; 569 to 585 ft; 595 to 625 ft; and 645 to 655 ft; 10 in. screen from 337 to 347 ft; 378 to 388 ft; 411 to 431 ft; 465 to 485 ft; 499 to 504 ft; 543 to 553 ft; 564 to 569 ft; 585 to 595 ft; and 625 to 645 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
59	322353086180002	Montgomery Water Works	Layne Central Drilling Co., Inc. 1957	74	24 18 16	Qt	160	30 20.2	09/19/57 08/14/84	T	P	Well 20A: Casing: 24 in. from surface to 48 ft; 18 in. from surface to 54 ft; 16 in. from 74 to 84 ft; 16 in. screen from 54 to 74 ft.
60	322347086173701	Montgomery Water Works	Layne Central Drilling Co., Inc. 1957	70	24 18 16	Qt	160	16.7 7.6	10/30/57 08/13/84	T	P	Well 2A: Casing: 24 in. from surface to 45 ft; 18 in. from surface to 50 ft; 16 in. from 70 to 80 ft; 16 in. screen from 50 to 70 ft.
61	322337086190401	Montgomery Water Works	Layne Central Drilling Co., Inc. 1956	600	24 16 10	Kg Kc	155	117 80.2	03/20/56 08/31/84	T	P	Well 53: Casing: 24 in. from surface to 365 ft; 16 in. from 305 to 370 ft; 410 to 430 ft; 460 to 570 ft; and 600 to 610 ft; 10 in. screen from 370 to 410 ft; 430 to 460 ft; and 570 to 600 ft.
62	322334086184501	Montgomery Water Works	Layne Central Drilling Co., Inc. 1956	600	24 16 10	Kg Kc	155	113 76.7	02/22/56 08/15/84	T	P	Well 52: Casing: 24 in. from surface to 360 ft; 16 in. from 300 to 365 ft; 10 in. from 385 to 405 ft; 485 to 560 ft; and 600 to 610 ft; 10 in. screen from 365 to 385 ft; 405 to 485 ft; and 560 to 600 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measure-ment	Method of lift	Use of well	Remarks
63	322317086184801	Montgomery Water Works	Layne Central Drilling Co., Inc. 1956	600	24 16 10	Kg Kc	160	116 70.4	01/06/56 08/15/84	T	P	Well 51: Casing: 24 in. from surface to 380 ft; 16 in. from 320 to 385 ft; 10 in. from 485 to 570 ft; and 600 to 610 ft; 10 in. screen from 385 to 485 ft; and 570 to 600 ft.
64	322315086175302	Montgomery Water Works	Layne Central Drilling Co., Inc. 1958	755	24 16 10	Kc	160	117 69.1 74.8 70.4 64.4 54.8	07/17/58 08/15/84 10/17/84 04/12/85 11/07/85 04/01/86	T	P	Well 13: Casing: 24 in. from surface to 300 ft; 16 in. from 240 to 475 ft; 10 in. from 485 to 534 ft; 549 to 558 ft; 598 to 630 ft; 645 to 740 ft; and 755 to 765 ft; 10 in. screen from 475 to 485 ft; 534 to 549 ft; 558 to 598 ft; 630 to 645 ft; and 740 to 755 ft.
65	322313086175202	Montgomery Water Works	Layne Central Drilling Co., Inc. 1959	270	30 16	Kg	160	50 32.4 33.4 35.4 33.3 25.2	06/12/59 08/15/84 10/17/84 04/12/85 11/07/85 04/01/86	T	P	Well 11: Casing: 30 in. from surface to 100 ft; 16 in. from surface to 180 ft; 200 to 250 ft; and 270 to 280 ft; 16 in. screen from 180 to 200 ft; and 250 to 270 ft.
66	322305086183002	Montgomery Water Works	Layne Central Drilling Co., Inc. 1962	74	24 18 16	Qt	160	49.9 28.2 30.4 30.2	06/22/62 08/14/84 10/16/84 04/05/85	T	P	Well 9E: Casing: 24 in. from surface to 37 ft; 18 in. from surface to 63 ft; 16 in. from 74 to 84 ft; 16 in. screen from 64 to 74 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
67	322305086183201	Montgomery Water Works	Layne Central Drilling Co., Inc. 1962	79	24 18 16	Qt	160	39	06/12/62	T	P	Well 9W: Casing: 24 in. from surface to 40 ft; 18 in. from surface to 68 ft; 16 in. from 79 to 89 ft; 16 in. screen from 69 to 79 ft.
68	322305086183001	Montgomery Water Works	Layne Central Drilling Co., Inc. 1957	695	24 16 10	Kg Kc	160	146 87.6	03/14/57 08/14/84	T	P	Well 8: Casing: 24 in. from surface to 379 ft; 16 in. from 319 to 384 ft; 10 in. from 404 to 414 ft; 474 to 523 ft; 533 to 595 ft; and 695 to 705 ft; 10 in. screen from 384 to 404 ft; 414 to 474 ft; 523 to 533 ft; and 595 to 695 ft.
69	322307086184701	Montgomery Water Works	Layne Central Drilling Co., Inc. 1957	699	24 16 10	Kg Kc	160	147 92.2	06/07/57 08/13/84	T	P	Well 5: Casing: 24 in. from surface to 383 ft; 16 in. from 323 to 387 ft; 10 in. from 397 to 425 ft; 435 to 451 ft; 486 to 509 ft; 514 to 524 ft; 529 to 599 ft; 619 to 643 ft; 663 to 679 ft; and 699 to 710 ft; 10 in. screen from 387 to 397 ft; 425 to 435 ft; 451 to 486 ft; 509 to 514 ft; 524 to 529 ft; 599 to 619 ft; 643 to 663 ft; and 679 to 699 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
70	322248086050701	State of Alabama Kilby Correction Facility	Layne Central Drilling Co., Inc. 1968	575	16 8	Kc	190	30	06/11/68	T	P	Well 1: Casing: 16 in. from surface to 385 ft; 8 in. from 335 to 390 ft; 400 to 412 ft; 422 to 469 ft; 479 to 515 ft; 525 to 530 ft; 540 to 555 ft; and 575 to 583 ft; 8 in. screen from 390 to 400 ft; 412 to 422 ft; 469 to 479 ft; 515 to 525 ft; 530 to 540 ft; and 555 to 575 ft.
71	322255086051701	State of Alabama Kilby Correction Facility	Layne Central Drilling Co., Inc. 1968	400	16 8	Kc	190	46 70.1 71.0 59.4	04/26/68 04/02/85 11/04/85 04/03/86	T	P	Well 2: Casing: 16 in. from surface to 325 ft; 8 in. from 340 to 360 ft; 8 in. screen from 325 to 340 ft; and 360 to 400 ft.
72	322220086033301	Alabama Water Co.	Acme Drilling Co., Inc. 1965	198	8 4	Ke	200	22	02/23/65	S	P	Casing: 8 in. from surface to 165 ft; 4 in. from 147 to 168 ft; 4 in. screen from 168 to 198 ft.
73	322225086033001	Alabama Water Co.	Acme Drilling Co., Inc. 1964	222	4	Ke	200	25	09/08/64	S	P	Casing: 4 in. from surface to 180 ft; open hole below.
74	322156086030401		Acme Drilling Co., Inc. 1965	242	6 4	Ke	220	43	03/1965	N	U	Casing: 6 in. from surface to 179 ft; 4 in. from 161 to 182 ft; 4 in. screen from 182 to 242 ft; discontinued public water supply well; Knollwood Water System.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
75	322223086195601	Montgomery Water Works	Layne Central Drilling Co., Inc. 1942	164	18 12 10	Ke	182	52 45	06/12/42 1976	T	P	Well 23: Casing: 18 in. from surface to 100 ft; 12 in. from surface to 134 ft; 10 in. screen from 134 to 164 ft.
76	322215086200501	Montgomery Water Works	Layne Central Drilling Co., Inc. 1951	155	18 12	Ke	179.8	52	09/11/81	T	P	Well 21: Casing: 18 in. from surface to 115 ft; 12 in. from surface to 115 ft; and 155 to 160 ft; 12 in. screen from 115 to 155 ft.
77	322212086195601	Montgomery Water Works	Layne Central Drilling Co., Inc. 1953	181	18 12 10	Ke	195.2	68.0 65 66.9	02/02/53 05/05/53 07/02/57	T	P	Well 22: Casing: 18 in. from surface to 100 ft; 12 in. from surface to 141 ft; and 10 in. from 181 to 191 ft; 10 in. screen from 141 to 181 ft.
78	322114086212402	Montgmery Water Works	Rowe Drilling Co., Inc. 1985	1010	24 16 10	Ke Kg Kc	170	87.8	01/17/85	T	P	Well 26: Casing: 24 in. from surface to 250 ft; 16 in. from 200 to 250 ft; 10 in. from 250 to 257 ft; 272 to 360 ft; 370 to 505 ft; 515 to 574 ft; 579 to 640 ft; 670 to 752 ft; 762 to 800 ft; 960 to 995 ft; and 1010 to 1020 ft; 10 in. screen from 257 to 272 ft; 360 to 370 ft; 505 to 515 ft; 574 to 579 ft; 640 to 670 ft; 752 to 762 ft; 800 to 960 ft; and 995 to 1010 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
79	322137086213703	Montgomery Water Works	Acme Drilling Co., Inc. 1953	676	18 12 10	Kg Kc	171.1	120 107.6	07/20/53 08/07/84	T	P	Well 27: (offset) Casing: 18 in. from surface to 264 ft; 12 in. from 223 to 264 ft; 10 in. from 291 to 485 ft; 492 to 502 ft; 516 to 534 ft; 546 to 560 ft; 608 to 641 ft; and 676 to 686 ft; 10 in. screen from 264 to 291 ft; 485 to 492 ft; 502 to 516 ft; 534 to 546 ft; 560 to 608 ft; and 641 to 676 ft.
80	322132086214802	Montgmery Water Works	Rowe Drilling Co., Inc. 1984	620	24 16 10	Ke Kg Kc	170	119	10/23/84	T	P	Well 28: Casing: 24 in. from surface to 225 ft; 16 in. from 175 to 225 ft; 10 in. from 245 to 280 ft; 295 to 315 ft; 325 to 385 ft; 405 to 430 ft; 440 to 470 ft; 490 to 515 ft; 520 to 555 ft; 560 to 575 ft; 585 to 610 ft; and 620 TO 630 ft; 10 in. screen from 230 to 245 ft; 280 to 295 ft; 315 to 325 ft; 385 to 405 ft; 430 to 440 ft; 470 to 490 ft; 515 to 520 ft; 555 to 560 ft; 575 to 585 ft; and 610 to 620 ft.

Table 2.—Records of public water-supply wells in the study area—Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
81	322130086215403	Montgomery Water Works	Layne Central Drilling Co., Inc. 1954	755	24 16 10	Kg Kc	172	117 110.4 94.3	03/24/54 08/15/84 11/07/85	T	P	Well 29AA: Casing: 24 in. from surface to 300 ft; 18 in. from 240 to 475 ft; 10 in. from 490 to 534 ft; 549 to 558 ft; 598 to 630 ft; 645 to 740 ft; and 755 to 768 ft; 10 in. screen from 475 to 490 ft; 534 to 549 ft; 558 to 598 ft; 630 to 645 ft; and 740 to 755 ft.
82	322125086220801	Montgomery Water Works	Layne Central Drilling Co., Inc. 1949	615	18 10	Kg Kc	172.4	57.3 115.6	04/01/49 08/07/84	T	P	Well 30: Casing: 18 in. from surface to 285 ft; 10 in. from 235 to 290 ft; 300 to 365 ft; 395 to 478 ft; 498 to 575 ft; and 615 to 627 ft; 10 in. screen from 290 to 300 ft; 365 to 395 ft; 478 to 498 ft; and 575 to 615 ft.
83	322120086222301	Montgomery Water Works	Layne Central Drilling Co., Inc. 1949	622	18 10	Kg Kc	170.1	71 117.7	1949 08/15/84	T	P	Well 31: Casing: 18 in. from surface to 296 ft; 10 in. from 246 to 301 ft; 311 to 368 ft; 398 to 482 ft; 502 to 582 ft; and 627 to 634 ft; 10 in. screen from 301 to 311 ft; 368 to 398 ft; 482 to 502 ft; and 582 to 622 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
84	322115086222701	U.S. Geological Survey	Black-belt Drilling Co., Inc. 1967	595	4 2	Kc	168.7	84.8 85.3 76.8 128.8 136.6 93.1 134.3 108.0 88.6	01/13/67 03/10/67 04/29/68 08/07/68 09/25/70 08/15/84 10/02/84 04/11/85 11/06/85	N	O	Observation well 7: Casing: 4 in. from surface to 285 ft; 2 in. from 279 to 590 ft; and 595 to 600 ft; 2 in. screen from 590 to 595 ft.
85	322116086223501	Montgmery Water Works	Layne Central Drilling Co., Inc. 1949	635	18 12 10	Ke Kg Kc	168	63.8 86.1	03/24/49 08/15/84	T	P	Well 32: Casing: 18 in. from surface to 200 ft; 12 in. from 152 to 205 ft; 10 in. from 225 to 302 ft; 322 to 387 ft; 417 to 570 ft; 580 to 590 ft; 610 to 625 ft; and 635 to 647 ft; 10 in. screen from 205 to 225 ft; 302 to 322 ft; 387 to 417 ft; 570 to 580 ft; 590 to 610 ft; and 625 to 635 ft.
86	322113086224501	Montgomery Water Works	Layne Central Drilling Co., Inc. 1949	621	18 12 10	Ke Kg Kc	170	59.4 81.6	10/06/49 08/07/84	T	P	Well 33: Casing: 18 in. from surface to 208 ft; 12 in. from 158 to 214 ft; 10 in. from 219 to 246 ft; 266 to 306 ft; 316 to 397 ft; 427 to 581 ft; and 621 to 632 ft; 10 in. screen from 214 to 219 ft; 246 to 266 ft; 306 to 316 ft; 397 to 427 ft; and 581 to 621 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
87	322108086225501	Montgomery Water Works	Layne Central Drilling Co., Inc. 1949	618	18 12 10	Ke Kg Kc	165	51 69.7	11/23/49 08/07/84	T	P	Well 34: Casing: 18 in. from surface to 185 ft; 12 in. from 137 to 185 ft; 10 in. from 185 to 193 ft; 208 to 235 ft; 260 to 318 ft; 338 to 415 ft; 435 to 598 ft; and 618 to 627 ft; 10 in. screen from 193 to 208 ft; 235 to 260 ft; 318 to 338 ft; 415 to 435 ft; and 598 to 618 ft.
88	322112086231801	Montgomery Water Works	Layne Central Drilling Co., Inc. 1950	629	18 12 10	Ke Kg Kc	161	64 58.6	09/02/50 08/07/84	T	P	Well 36: Casing: 18 in. from surface to 201 ft; 12 in. from 121 to 206 ft; 10 in. from 246 to 400 ft; and 430 to 596 ft; 10 in. screen from 206 to 246 ft; 400 to 430 ft; and 596 to 629 ft.
89	322056086225702	Montgomery Water Works	Rowe Drilling Co., Inc. 1985	618	24 16 10	Ke Kg Kc	157.5	103	07/03/85	T	P	Well 38: Casing 24 in. from surface to 220 ft; 16 in. from 170 to 220 ft; 10 in. from 235 to 250 ft; 265 to 332 ft; 342 to 353 ft; 363 to 391 ft; 396 to 415 ft; 430 to 580 FT; 590 to 608 ft; and 618 to 628 ft; 10 in. screen from 225 to 235 ft; 250 to 265 ft; 332 to 342 ft; 353 to 363 ft; 391 to 396 ft; 415 to 430 ft; 580 to 590 ft; and 608 to 618 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
90	322047086231601	Montgomery Water Works	Layne Central Drilling Co., Inc. 1952	688	18 12 10	Ke Kg Kc	153.4	80 70.7	1952 08/07/84	T	P	Well 39: Casing: 18 in. from surface to 190 ft; 12 in. from 130 to 195 ft; 10 in. from 215 to 243 ft; 273 to 326 ft; 336 to 415 ft; 440 to 458 ft; 473 to 580 ft; 600 to 614 ft; 634 to 678 ft; and 688 to 698 ft; 10 in. screen from 195 to 214 ft; 243 to 273 ft; 326 to 336 ft; 415 to 440 ft; 458 to 473 ft; 580 to 600 ft; 614 to 634 ft; and 678 to 688 ft.
91	322047086214301	U.S. Geological Survey	Layne Central Drilling Co., Inc. 1952	271	6 4	Ke	167.2			N	O	Observation well 3: Casing: 6 in. from surface to 210 ft; 4 in. from 195 to 210 ft; 215 to 220 ft; 225 to 265 ft; and 265 to 271 ft; screen from 210 to 215 ft; 220 to 225 ft; and 265 to 270 ft; water level recorded at this site from August 1952 to current year.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
92	322044086223201	Montgomery Water Works	Rowe Drilling Co., Inc. 1985	605	24 16 10	Kg Kc	165	124.0	07/11/85	T	P	Well 54: Casing: 24 in. from surface to 265 ft; 16 in. from 215 to 265 ft; 10 in. from 265 to 325 ft; 335 to 365 ft; 385 to 420 ft; 450 to 525 ft; and 540 to 595 ft; 10 in. screen from 325 to 335 ft; 365 to 385 ft; 420 to 450 ft; 525 to 540 ft; and 595 to 695 ft.
93	322040086232601	Montgomery Water Works	Layne Central Drilling Co., Inc. 1952	275	18 12 10	Ke	152.8	44 45.0 37.6	10/13/52 08/10/84 11/06/85	T	P	Well 40: Casing: 18 in. from surface to 190 ft; 12 in. from 140 to 195 ft; 10 in. from 275 to 285 ft; 10 in. screen from 195 to 275 ft.
94	322040086232501	U.S. Geological Survey	Layne Central Drilling Co., Inc. 1953	446	6 4	Kg	152.7	52.6 63.5 73.0 51.6 75.7	03/02/53 03/23/57 11/02/84 04/11/85 11/06/85	N	O	Observation well 4: Casing: 6 in. from surface to 404 ft; 4 in. from 394 to 408 ft; 413 to 424 FT; 429 to 441 ft; and 446 to 451 ft; screen from 408 to 413 ft; 424 to 429 ft; and 441 to 446 ft; water level recorded at this site from march 1953 to current year.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
95	322035086234801	Montgomery Water Works	Acme Drilling Co., Inc. 1953	296	18 12 10	Ke	157.1	36.5 46.7 25.4 41.9 29.8 37.3	07/02/53 07/03/57 08/08/84 11/02/84 04/11/85 04/04/86	T	P	Well 41: Casing: 18 in. from surface to 103 ft; 12 in. from 53 to 104 ft; 121 to 124 ft; and 141 to 144 ft; 10 in. from 161 to 239 ft; 246 to 249 ft; 271 to 274 ft; and 296 to 300 ft; 12 in. screen from 104 to 121 ft; 124 to 141 ft; and 144 to 161 ft; 10 in. screen from 239 to 246 ft; 249 to 271 ft; and 274 to 296 ft.
96	322038086240801	Montgomery Water Works	Acme Drilling Co., Inc. 1953	462	18 12 10	Ke Kg	156.9	67.3 68.0	08/25/53 08/10/84	T	P	Well 42: Casing: 18 in. from surface to 235 ft; 12 in. from 189 to 235 ft; 10 in. from 324 to 386 ft; 424 to 429 ft; and 462 to 465 ft; 10 in. screen from 235 to 324 ft; 386 to 424 ft; and 429 to 462 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
97	322031086242401	Montgomery Water Works	Acme Drilling Co., Inc. 1953	704	18 12 10	Ke Kg Kc	165.3	42 77.2	11/12/53 08/10/84	T	P	Well 43: Casing: 18 in. from surface to 270 ft; 12 in. from 228 to 272 ft; 10 in. from 296 to 299 ft; 311 to 326 ft; 337 to 340 ft; 361 to 441 ft; 454 to 650 ft; 670 to 673 ft; and 690 to 693 ft; 10 in. screen from 272 to 296 ft; 299 to 311 ft; 326 to 337 ft; 340 to 361 ft; 441 to 454 ft; 650 to 670 ft; 673 to 690 ft; and 693 to 704 ft.
98	322025086243801	Montgomery Water Works	Acme Drilling Co., Inc. 1954	740	18 12 10	Ke Kg Kc	162.6	42 72.7	01/05/54 08/10/84	T	P	Well 44: Casing: 18 in. from surface to 286 ft; 12 in. from 245 to 289 ft; 10 in. from 286 to 289 ft; 311 to 331 ft; 336 to 405 ft; 415 to 424 ft; 434 to 441 ft; 450 to 453 ft; 462 to 465 ft; 485 to 560 ft; 565 to 693 ft; 713 to 725 ft; and 740 to 742 ft; 10 in. screen from 289 to 311 ft; 331 to 336 ft; 405 to 415 ft; 424 to 434 ft; 441 to 450 ft; 453 to 462 ft; 465 to 485 ft; 560 to 565 ft; 693 to 713 ft; and 725 to 740 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
99	322021086245001	Montgomery Water Works	Acme Drilling Co., Inc. 1954	486	18 12 10	Ke Kg	165.1	25.5 44.0	02/05/54 08/13/84	T	P	Well 45: Casing: 18 in. from surface to 100 ft; 12 in. from 51 to 100 ft; 116 to 119 ft; 128 to 132 ft; 136 to 139 ft; 156 to 161 ft; 171 to 181 ft; 192 to 240 ft; 240 to 309 ft; 315 to 320 ft; 332 to 389 ft; 395 to 423 ft; 437 to 474 ft; and 486 to 490 ft; 12 in. screen from 100 to 116 ft; 119 to 128 ft; 132 to 136 ft; 139 to 156 ft; 161 to 171 ft; and 181 to 192 ft; 10 in. screen from 309 to 315 ft; 320 to 332 ft; 389 to 395 ft; 423 to 437 ft; and 474 to 486 ft.
100	322016086250501	Montgomery Water Works	Layne Central Drilling Co., Inc. 1955	700	24 16 10	Ke Kg Kc	164	64 75.7	07/20/65 08/14/84	T	P	Well 46: Casing: 24 in. from surface to 257 ft; 16 in. from 197 to 262 ft; 10 in. from 262 to 267 ft; 292 to 392 ft; 402 to 424 ft; 434 to 450 ft; 460 to 486 ft; 496 to 605 ft; 615 to 662 ft; 672 TO 690 FT; and 700 TO 710 FT; 10 in. screen from 267 to 292 ft; 392 to 402 ft; 424 to 434 ft; 450 to 460 ft; 486 to 496 ft; 605 To 615 ft; 662 to 672 ft; and 690 to 700 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
101	322008086240801	Montgomery Water Works	Rowe Drilling Co., Inc. 1985	750	24 16 10	Ke Kg Kc	165	67.6	05/02/85	T	P	Well 58: Casing: 24 in. from surface to 250 ft; 16 in. from 200 to 250 ft; 10 in. from 250 to 305 ft; 325 to 460 ft; 480 to 560 ft; 570 to 620 ft; 645 to 685 ft; 695 to 740 ft; and 750 to 755 ft; 10 in. screen from 305 to 325 ft; 460 to 480 ft; 560 to 570 ft; 620 to 645 ft; 685 to 695 ft; and 740 to 750 ft.
102	322007086223301	Montgmery Water Works	Rowe Drilling Co., Inc. 1985	1015	24 16 10	Kg Kc	155	78.7	02/04/85	T	P	Well 55: Casing: 24 in. from surface to 292 ft; 16 in. from 252 to 292 ft; 10 in. from 292 to 420 ft; 440 to 450 ft; 460 to 485 ft; 495 to 600 ft; 620 to 640 ft; 650 to 660 ft; 670 to 905 ft; 925 to 955 ft; 975 to 995 ft; and 1015 to 1020 ft; 10 in. screen from 420 to 440 ft; 450 to 460 ft; 485 to 495 ft; 600 to 620 ft; 640 to 650 ft; 660 to 670 ft; 905 to 925 ft; 955 to 975 ft; and 995 to 1015 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
103	322011086251901	Montgomery Water Works	Layne Central Drilling Co., Inc. 1955	702	24 16 10	Ke Kg Kc	163	55 65.0	08/10/55 08/14/84	T	P	Well 47: Casing: 24 in. from surface to 243 ft; 16 in. from 183 to 248 ft; 10 in. from 268 to 278 ft; 288 to 328 ft; 338 to 366 ft; 376 to 440 ft; 450 to 468 ft; 478 to 500 ft; 510 to 612 ft; 622 to 690 ft; and 700 to 710 ft; 10 in. screen from 248 to 268 ft; 278 to 288 ft; 328 to 338 ft; 366 to 376 ft; 440 to 450 ft; 468 to 478 ft; 500 to 510 ft; 612 to 622 ft; and 690 to 700 ft.
104	322006086253201	Montgomery Water Works	Layne Central Drilling Co., Inc. 1955	700	24 16 10	Ke Kg Kc	164.2	50 80.6	09/16/55 08/13/84	T	P	Well 48: Casing: 24 in. from surface to 283 ft; 16 in. from 225 to 288 ft; 10 in. from 303 to 357 ft; 372 to 397 ft; 402 to 445 ft; 455 to 496 ft; 506 to 616 ft; 636 to 675 ft; and 700 to 710 ft; 10 in. screen from 288 to 303 ft; 357 to 372 ft; 397 to 402 ft; 445 to 455 ft; 496 to 506 ft; 616 to 636 ft; and 675 to 700 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
105	322002086243601	Montgomery Water Works	Rowe Drilling Co., Inc. 1985	720	24 16 10	Ke Kg Kc	165	61.3	03/19/85	T	P	Well 57: Casing: 24 in. from surface to 250 ft; 16 in. from 200 to 250 ft; 10 in. from 250 to 310 ft; 350 to 445 ft; 455 to 485 ft; 505 to 615 ft; 625 to 690 ft; and 720 to 730 ft; 10 in. screen from 310 to 350 ft; 445 to 455 ft; 485 to 505 ft; 615 to 625 ft; and 690 to 720 ft.
106	322000086254701	Montgomery Water Works	Layne Central Drilling Co., Inc. 1955	704	24 16 10	Ke Kg Kc	165	46 58.2	1955 08/14/84	T	P	Well 49: Casing: 24 in. from surface to 268 ft; 16 in. from 208 to 272 ft; 10 in. from 282 to 298 ft; 308 to 360 ft; 380 to 454 ft; 464 to 475 ft; 485 to 495 ft; 515 to 684 ft; and 704 to 714 ft; 10 in. screen from 272 to 282 ft; 298 to 308 ft; 360 to 380 ft; 454 to 464 ft; 475 to 485 ft; 495 to 515 ft; and 684 to 704 ft.

Table 2.--Records of public water-supply wells in the study area--Continued

Well number	Geographic coordinate number	Well owner	Drilled by	Well depth (feet)	Well diam. (inches)	Water bearing unit	Altitude of land surface	Water level above (-) or below Land Surface Datum	Date of measurement	Method of lift	Use of well	Remarks
107	321954086260201	Montgomery Water Works	Layne Central Drilling Co., Inc. 1955	716	24 16 10	Ke Kg Kc	164	42 62.0	1955 08/14/84	T	P	Well 50: Casing: 24 in. from surface to 236 ft; 16 in. from 176 to 240 ft; 10 in. from 250 to 276 ft; 286 to 302 ft; 312 to 368 ft; 388 to 440 ft; 450 to 460 ft; 480 to 510 ft; 520 to 586 ft; 596 to 642 ft; 652 to 706 ft; and 716 to 726 ft; 10 in. screen from 240 to 250 ft; 276 to 286 ft; 302 to 312 ft; 368 to 388 ft; 440 to 450 ft; 460 to 480 ft; 510 to 520 ft; 586 to 596 ft; 642 to 652 ft; and 706 to 716 ft.
108	321946086224301	Montgomery Water Works	Rowe Drilling Co., Inc. 1985	695	24 16 10	Ke Kg Kc	165	34.7	04/10/85	T	P	Well 56: Casing: 24 in. from surface to 262 ft; 16 in. from 212 to 262 ft; 10 in. from 262 to 270 ft; 280 to 290 ft; 300 to 405 ft; 410 to 430 ft; 435 to 445 ft; 455 to 470 ft; 475 to 552 ft; 557 to 600 ft; 630 to 670 ft; and 675 to 685 ft; 10 in. screen from 270 to 280 ft; 290 to 300 ft; 405 to 410 ft; 430 to 435 ft; 445 to 455 ft; 470 to 475 ft; 552 to 557 ft; 600 to 630 ft; 670 to 675 ft; and 685 to 695 ft.

REFERENCE 6

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY,
ALABAMA AND
INCORPORATED AREAS

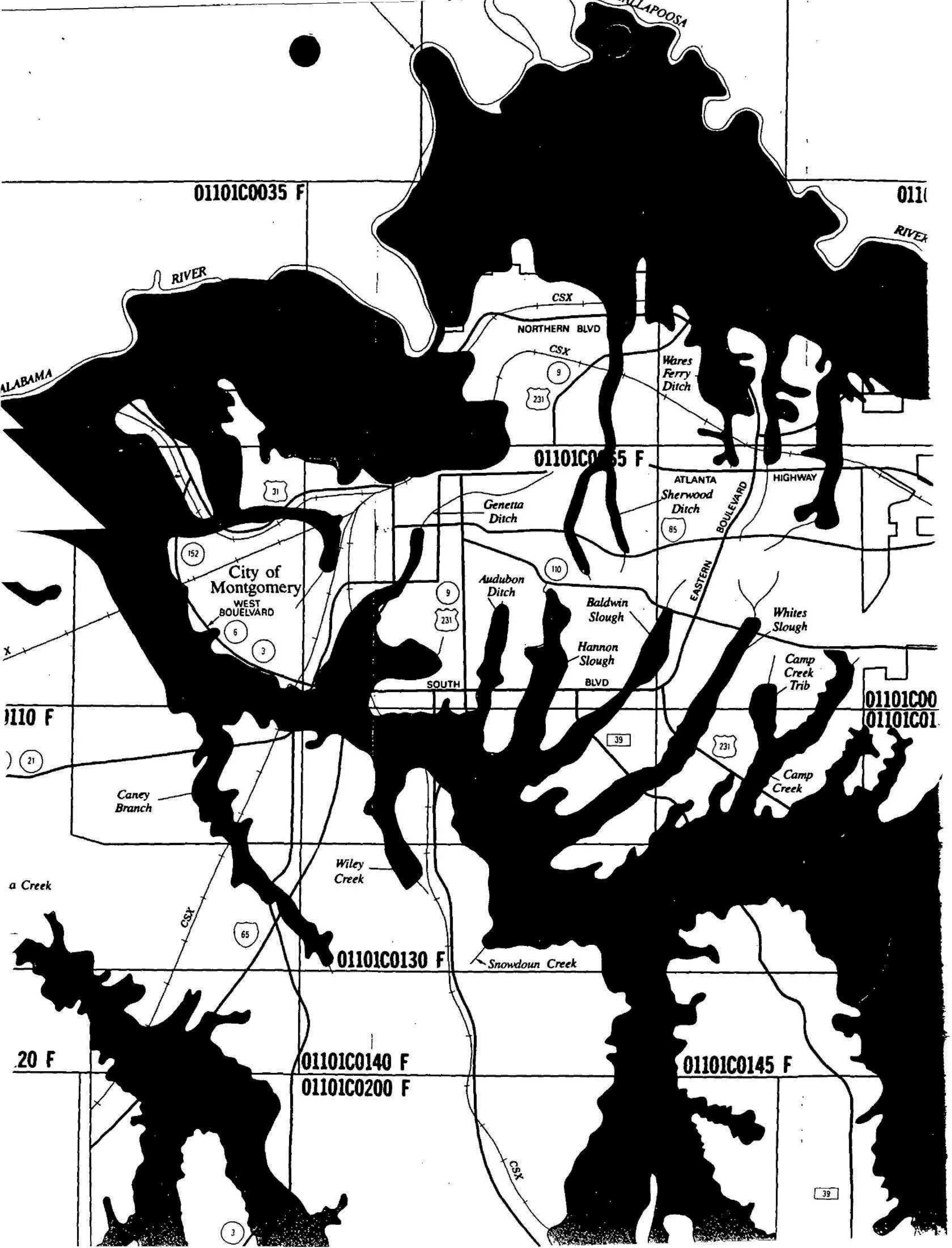
MAP INDEX

PANELS PRINTED: 20, 35, 40, 45, 55,
60, 65, 70, 90, 95, 105, 110, 120, 130,
135, 140, 145, 155, 165, 175, 200,
225, 250, 275

MAP NUMBER:
01101C0000

EFFECTIVE DATE:
JANUARY 2, 1992

Federal Emergency Management Agency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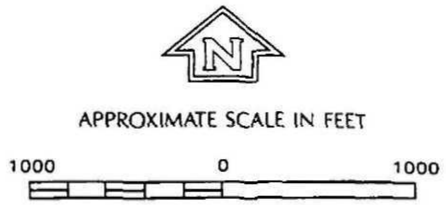
ne if flood insurance is available, contact an insurance agent or call
l Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

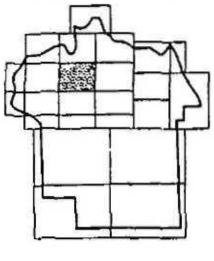
MONTGOMERY COUNTY, ALABAMA AND INCORPORATED AREAS

PANEL 65 OF 275

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MONTGOMERY, CITY OF	010174	0065	F
UNINCORPORATED AREAS	010278	0065	F

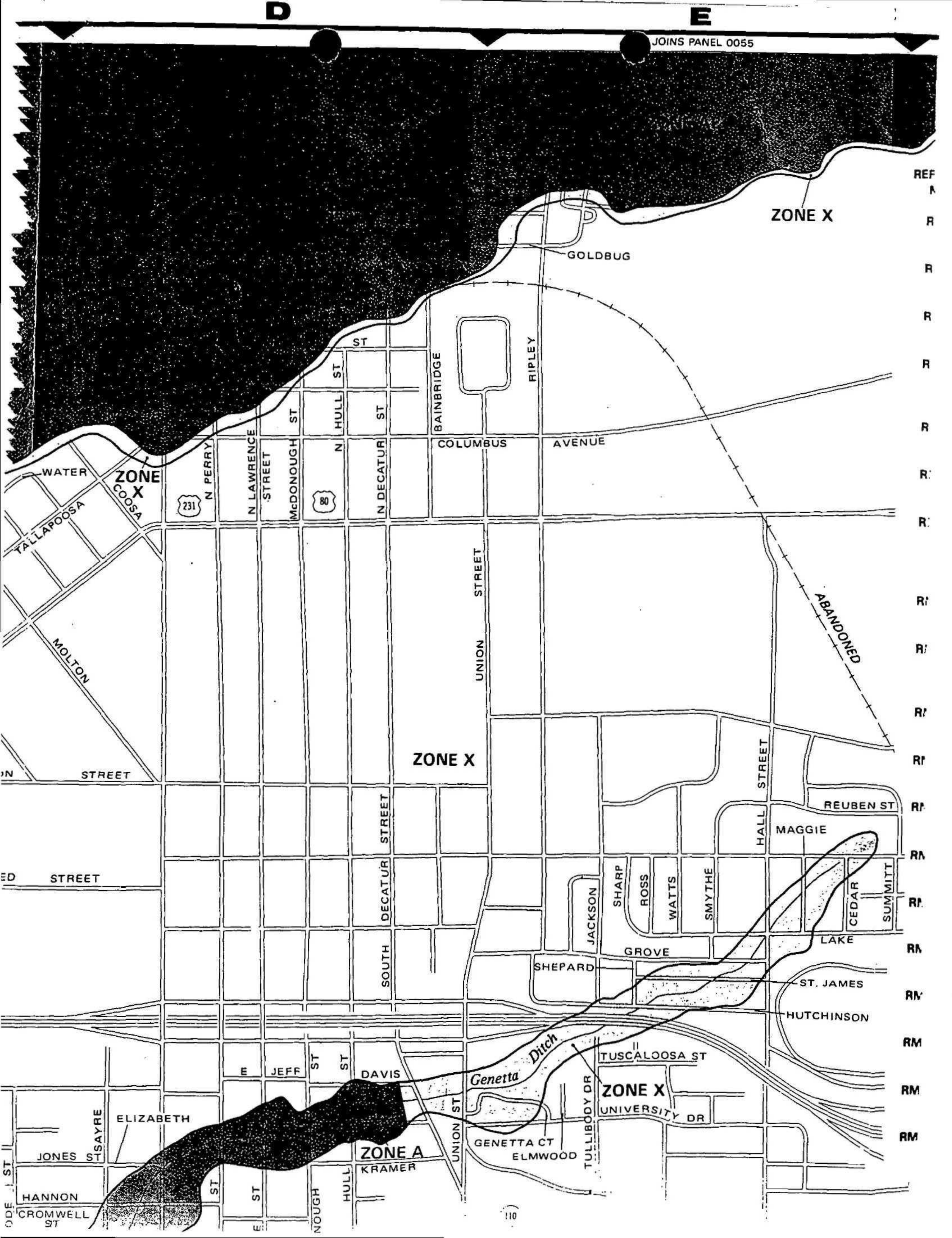
PANEL LOCATION



MAP NUMBER:
01101C0065 F

EFFECTIVE DATE:
JANUARY 2, 1992

Federal Emergency Management Agency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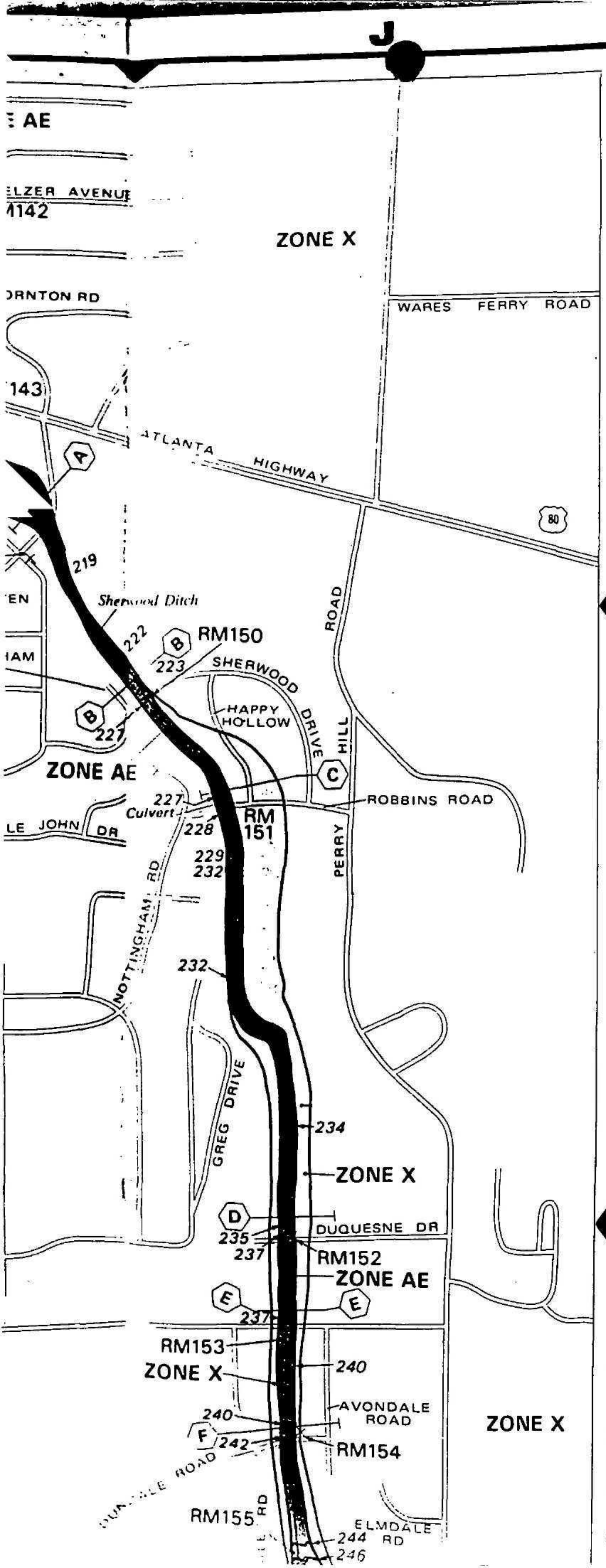


LEGEND

▨ 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 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 flood plain.
ZONE D	Areas in which flood hazards are undetermined.

▧ UNDEVELOPED COASTAL BARRIERS

———	Flood 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 Zone.
~~567~~~	Base Flood Elevation Line; Elevation in Feet*
(A)———(A)	Cross Section Line
(EL 19)	Base Flood Elevation in Feet Where Uniform Within Zone*
RM5 ×	Elevation Reference Mark
M3.0 •	Mile Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all planimetric features outside Special Flood Hazard Area or all areas subject to flooding, particularly from local drainage sources of small size.

Areas of Special Flood Hazard (100–year flood) include zones, A, AE, A1–A30, AH, AO, A99, V, VE and V1–V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at 1/20 inch.

Coastal base flood elevations apply only landward of the shoreline.

This map incorporates approximate boundaries of coastal barriers established under the Coastal Barrier Resources Act (PL 97–348).

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

For community panel revision history prior to countywide mapping, refer to Community Map History in the Flood Insurance Study Report.

For adjoining panels, see separately printed Map Index

REFERENCE 7

Alabama School Populations
1992

to get total school populations add:

$\underbrace{\text{total faculty + total enrollment}}_{A} + \underbrace{\text{total staff}}_{B}$

STATE OF ALABAMA - DEPARTMENT OF EDUCATION
LEA PERSONNEL SYSTEM (EDLPT471)

TOTAL NUMBER OF PUPILS AND FACULTY BY SCHOOL BY COUNTY

COUNTY	SCHOOL	TOTAL FACULTY	TOTAL ENROLLMENT
AUTAUGA COUNTY	AUTAUGA COUNTY ALT SCHOOL	1	
AUTAUGA COUNTY	AUTAUGAVILLE ELEMENTARY SCH	23	337
AUTAUGA COUNTY	AUTAUGAVILLE HIGH SCHOOL	22	288
AUTAUGA COUNTY	BILLINGSLEY HIGH SCHOOL	38	652
AUTAUGA COUNTY	MARBURY SCHOOL	36	649
AUTAUGA COUNTY	PRATTVILLE ELEMENTARY SCH	40	841
AUTAUGA COUNTY	PRATTVILLE INTERMEDIATE SCH	41	897
AUTAUGA COUNTY	PRATTVILLE JUNIOR HIGH SCH	43	846
AUTAUGA COUNTY	PRATTVILLE KINDERGARTEN SCH	32	483
AUTAUGA COUNTY	PRATTVILLE HIGH SCHOOL	71	1,343
AUTAUGA COUNTY	PRATTVILLE PRIMARY SCHOOL	52	839
BALDWIN COUNTY	BALDWIN COUNTY HIGH SCHOOL	71	1,326
BALDWIN COUNTY	BALDWIN CO REG DETENT CTR	2	11
BALDWIN COUNTY	BAY MINETTE MIDDLE SCHOOL	55	876
BALDWIN COUNTY	BAY MINETTE INTERMEDIATE	30	458
BALDWIN COUNTY	BAY MINETTE ELEMENTARY	47	723
BALDWIN COUNTY	NORTH BALDWIN ALT SCHOOL	3	
BALDWIN COUNTY	DAPHNE HIGH SCHOOL	51	1,010
BALDWIN COUNTY	DAPHNE MIDDLE SCHOOL	31	536
BALDWIN COUNTY	DAPHNE INTERMEDIATE SCHOOL	16	353
BALDWIN COUNTY	DAPHNE ELEMENTARY SCHOOL	42	705
BALDWIN COUNTY	DELTA ELEMENTARY SCHOOL	19	273
BALDWIN COUNTY	ELBERTA ELEMENTARY SCHOOL	37	605
BALDWIN COUNTY	ELSANOR SCHOOL	14	209
BALDWIN COUNTY	FAIRHOPE MIDDLE SCH	56	913
BALDWIN COUNTY	FAIRHOPE INTERMEDIATE SCH	38	727
BALDWIN COUNTY	FAIRHOPE RESOURCE CENTER	27	452
BALDWIN COUNTY	FAIRHOPE ELEMENTARY	65	952
BALDWIN COUNTY	FOLEY ELEMENTARY	55	768
BALDWIN COUNTY	FOLEY MIDDLE SCHOOL	34	594
BALDWIN COUNTY	FOLEY HIGH SCHOOL	70	1,256
BALDWIN COUNTY	FOLEY INTERMEDIATE	22	353
BALDWIN COUNTY	GULF SHORES MIDDLE SCHOOL	19	343
BALDWIN COUNTY	GULF SHORES ELEMENTARY SCH	27	457
BALDWIN COUNTY	LOXLEY ELEMENTARY	24	317
BALDWIN COUNTY	LOXLEY MIDDLE SCHOOL	7	125
BALDWIN COUNTY	PERDIDO ELEMENTARY SCHOOL	23	402
BALDWIN COUNTY	PINE GROVE ELEMENTARY SCH	24	312
BALDWIN COUNTY	ROBERTSDALE ELEMENTARY SCH	60	891
BALDWIN COUNTY	ROBERTSDALE HIGH SCHOOL	45	306
BALDWIN COUNTY	ROSINTON SCHOOL	6	121
BALDWIN COUNTY	SILVERHILL SCHOOL	24	405
BALDWIN COUNTY	SPANISH FORT SCHOOL	40	716
BALDWIN COUNTY	STAPLETON SCHOOL	9	107
BALDWIN COUNTY	SUMMERDALE ELEMENTARY SCH	26	390
BALDWIN COUNTY	SWIFT CONSOLIDATED ELEM SCH	7	132
BALDWIN COUNTY	VAUGHN SCHOOL	4	
BARBOUR COUNTY	BAKER HILL SCHOOL	17	247

LEA PERSONNEL SYSTEM (EDLPT471)

TOTAL NUMBER OF [illegible]PILS AND FACULTY BY SCHO[illegible] BY COUNTY

COUNTY	SCHOOL	TOTAL FACULTY	TOTAL ENROLLMENT
MOBILE COUNTY	PAULINE O'ROURKE ELEM SCH	42	760
MOBILE COUNTY	SARALAND ELEMENTARY SCHOOL	31	548
MOBILE COUNTY	SATSUMA HIGH SCHOOL	57	1,152
MOBILE COUNTY	C L SCARBOROUGH MIDDLE SCH	42	797
MOBILE COUNTY	SEMMES ELEMENTARY SCHOOL	62	1,091
MOBILE COUNTY	SEMMES MIDDLE SCHOOL	50	1,087
MOBILE COUNTY	JOHN S SHAW HIGH SCHOOL	60	1,045
MOBILE COUNTY	ST ELMO ELEMENTARY SCHOOL	37	599
MOBILE COUNTY	A W HOLLOWAY ELEM	39	664
MOBILE COUNTY	TANNER WILLIAMS ELEM SCHOOL	29	449
MOBILE COUNTY	THEODORE HIGH SCHOOL	95	1,828
MOBILE COUNTY	THEODORE MIDDLE SCHOOL	53	1,051
MOBILE COUNTY	LE FLORE HIGH SCHOOL	83	1,583
MOBILE COUNTY	JUST 4 & 5 DVL LABORATORY	25	142
MOBILE COUNTY	ELIZABETH S CHASTANG MIDSCH	51	968
MOBILE COUNTY	C F VIGOR HIGH SCHOOL	85	1,610
MOBILE COUNTY	W D ROBBINS ELEMENTARY SCH	35	520
MOBILE COUNTY	WESTLAWN ELEMENTARY SCHOOL	38	657
MOBILE COUNTY	WHISTLER ELEMENTARY SCHOOL	24	330
MOBILE COUNTY	WHITLEY ELEMENTARY SCHOOL	29	388
MOBILE COUNTY	LILLIE B WILLIAMSON HS	55	968
MOBILE COUNTY	WILMER ELEMENTARY SCHOOL	34	604
MOBILE COUNTY	WOODCOCK ELEMENTARY SCHOOL	32	481
MONROE COUNTY	BEATRICE ELEMENTARY SCHOOL	26	408
MONROE COUNTY	EXCEL HIGH SCHOOL	52	892
MONROE COUNTY	FRISCO CITY HIGH SCHOOL	17	209
MONROE COUNTY	FRISCO CITY ELEMENTARY SCH	19	273
MONROE COUNTY	J F SHIELDS HIGH SCHOOL	22	346
MONROE COUNTY	J U BLACKSHER SCHOOL	30	466
MONROE COUNTY	MONROE COUNTY HIGH SCHOOL	35	682
MONROE COUNTY	MONROE SENIOR HIGH SCHOOL	15	162
MONROE COUNTY	MONROEVILLE ELEMENTARY SCH	49	779
MONROE COUNTY	MONROEVILLE JR HIGH SCH	36	620
MONROE COUNTY	MONROEVILLE MIDDLE SCHOOL	23	440
MONTGOMERY COUN	BALDWIN JUNIOR HIGH SCHOOL	40	580
MONTGOMERY COUN	BEAR ELEMENTARY SCHOOL	26	463
MONTGOMERY COUN	BELLINGER HILL CENTER	56	
MONTGOMERY COUN	BELLINGRATH JUNIOR HIGH SCH	48	775
MONTGOMERY COUN	BREWBAKER INTERMEDIATE SCH	41	772
MONTGOMERY COUN	BREWBAKER JUNIOR HIGH SCH	63	1,012
MONTGOMERY COUN	BREWBAKER PRIMARY SCHOOL	55	904
MONTGOMERY COUN	CAPITOL HEIGHTS JR HIGH SCH	61	1,160
MONTGOMERY COUN	CARVER ELEMENTARY SCHOOL	48	695
MONTGOMERY COUN	CARVER JUNIOR HIGH SCHOOL	50	901
MONTGOMERY COUN	CARVER SENIOR HIGH SCHOOL	64	903
MONTGOMERY COUN	CATOMA ELEMENTARY SCHOOL	15	183
MONTGOMERY COUN	CHILDRENS CENTER	15	140
MONTGOMERY COUN	CHISHOLM ELEMENTARY SCHOOL	45	786

STATE OF ALABAMA

LEA PERSONNEL SYSTEM (EDLPT471)

TOTAL NUMBER OF PUPILS AND FACULTY BY SCHOOL BY COUNTY

COUNTY	SCHOOL	TOTAL FACULTY	TOTAL ENROLLMENT
ONTGOMERY COUN	CLOVERDALE JUNIOR HIGH SCH	48	854
ONTGOMERY COUN	DAISY LAWRENCE ELEM SCHOOL	24	268
ONTGOMERY COUN	DALRAIDA ELEMENTARY SCHOOL	43	737
ONTGOMERY COUN	DANNELLY ELEMENTARY SCHOOL	48	881
ONTGOMERY COUN	DAVIS ELEMENTARY SCHOOL	50	723
ONTGOMERY COUN	DAVIS LEARNING CENTER	5	30
ONTGOMERY COUN	DOZIER ELEMENTARY SCHOOL	39	702
ONTGOMERY COUN	DUNBAR ELEMENTARY SCHOOL	20	305
ONTGOMERY COUN	FEWS ELEMENTARY SCHOOL	36	447
ONTGOMERY COUN	FLOWERS ELEMENTARY SCHOOL	40	635
ONTGOMERY COUN	FLOYD JUNIOR HIGH SCHOOL	59	1,077
ONTGOMERY COUN	FOREST AVE ELEMENTARY SCH	47	767
ONTGOMERY COUN	GEORGIA WASHINGTON JR HIGH	38	709
ONTGOMERY COUN	GOODWYN JUNIOR HIGH SCHOOL	49	847
ONTGOMERY COUN	HARRISON ELEMENTARY SCHOOL	37	466
ONTGOMERY COUN	HAYNEVILLE RD ELEM SCHOOL	39	523
ONTGOMERY COUN	HEAD ELEMENTARY SCHOOL	43	801
ONTGOMERY COUN	HIGHLAND AVE ELEMENTARY SCH	27	392
ONTGOMERY COUN	HIGHLAND GARDENS ELEM SCH	51	863
ONTGOMERY COUN	HOUSTON HILL JR HIGH SCHOOL	28	379
ONTGOMERY COUN	JEFFERSON DAVIS HIGH SCHOOL	108	1,850
ONTGOMERY COUN	JOHNSON ELEMENTARY SCHOOL	40	655
ONTGOMERY COUN	LANIER SENIOR HIGH SCHOOL	94	1,414
ONTGOMERY COUN	LEE HIGH SCHOOL	97	1,776
ONTGOMERY COUN	LOVELESS ELEMENTARY SCHOOL	46	622
ONTGOMERY COUN	MACMILLAN ELEMENTARY SCHOOL	21	214
ONTGOMERY COUN	MADISON PARK HOPE CENTER	14	110
ONTGOMERY COUN	FITZPATRICK ELEMENTARY SCH	44	812
ONTGOMERY COUN	MCINTYRE JUNIOR HIGH SCHOOL	28	369
ONTGOMERY COUN	MCINNIS SCHOOL	1	11
ONTGOMERY COUN	MONTGOMERY COUNTY HIGH SCH	19	258
ONTGOMERY COUN	MORNINGVIEW ELEMENTARY SCH	41	733
ONTGOMERY COUN	PATERSON ELEMENTARY SCHOOL	36	484
ONTGOMERY COUN	PETERSON ELEMENTARY SCHOOL	30	365
ONTGOMERY COUN	CRUMP ELEMENTARY SCHOOL	56	956
ONTGOMERY COUN	PINTLALA ELEMENTARY SCHOOL	17	229
ONTGOMERY COUN	SOUTHLAWN ELEMENTARY SCHOOL	56	908
ONTGOMERY COUN	VAUGHN RD ELEMENTARY SCHOOL	38	566
ONTGOMERY COUN	WARES FERRY RD ELEM SCH	45	838
ONTGOMERY COUN	ALTERNATIVE SCHOOL	10	75
ONTGOMERY COUN	MONTGOMERY YOUTH FACILITY	4	37
ORGAN COUNTY	ALBERT P BREWER HIGH SCHOOL	78	1,144
ORGAN COUNTY	COTACO SCHOOL	47	632
ORGAN COUNTY	DANVILLE HIGH SCHOOL	60	945
ORGAN COUNTY	EVA SCHOOL	27	381
ORGAN COUNTY	FALKVILLE HIGH SCHOOL	65	1,017
ORGAN COUNTY	LACEYS SPRING ELEM SCHOOL	21	309
ORGAN COUNTY	NEEL ELEMENTARY SCHOOL	16	207

TOTAL NUMBER OF STAFF BY SCHOOL BY COUNTY

COUNTY	SCHOOL	TOTAL STAFF
MOBILE COUNTY	WESTLAWN ELEMENTARY SCHOOL	16
MOBILE COUNTY	WHISTLER ELEMENTARY SCHOOL	17
MOBILE COUNTY	WHITLEY ELEMENTARY SCHOOL	9
MOBILE COUNTY	LILLIE B WILLIAMSON HS	21
MOBILE COUNTY	WILMER ELEMENTARY SCHOOL	17
MOBILE COUNTY	WOODCOCK ELEMENTARY SCHOOL	15
MONROE COUNTY	BEATRICE ELEMENTARY SCHOOL	14
MONROE COUNTY	EXCEL HIGH SCHOOL	16
MONROE COUNTY	FRISCO CITY HIGH SCHOOL	7
MONROE COUNTY	FRISCO CITY ELEMENTARY SCH	9
MONROE COUNTY	J F SHIELDS HIGH SCHOOL	9
MONROE COUNTY	J U BLACKSHER SCHOOL	11
MONROE COUNTY	MONROE COUNTY HIGH SCHOOL	11
MONROE COUNTY	MONROE SENIOR HIGH SCHOOL	8
MONROE COUNTY	MONROEVILLE ELEMENTARY SCH	26
MONROE COUNTY	MONROEVILLE JR HIGH SCH	12
MONROE COUNTY	MONROEVILLE MIDDLE SCHOOL	11
MONTGOMERY COUN	BALDWIN JUNIOR HIGH SCHOOL	10
MONTGOMERY COUN	BEAR ELEMENTARY SCHOOL	13
MONTGOMERY COUN	BELLINGER HILL CENTER	13
MONTGOMERY COUN	BELLINGRATH JUNIOR HIGH SCH	23
MONTGOMERY COUN	BREWBAKER INTERMEDIATE SCH	20
MONTGOMERY COUN	BREWBAKER JUNIOR HIGH SCH	24
MONTGOMERY COUN	BREWBAKER PRIMARY SCHOOL	26
MONTGOMERY COUN	CAPITOL HEIGHTS JR HIGH SCH	23
MONTGOMERY COUN	CARVER ELEMENTARY SCHOOL	17
MONTGOMERY COUN	CARVER JUNIOR HIGH SCHOOL	9
MONTGOMERY COUN	CARVER SENIOR HIGH SCHOOL	43
MONTGOMERY COUN	CATOMA ELEMENTARY SCHOOL	4
MONTGOMERY COUN	CHILDRENS CENTER	20
MONTGOMERY COUN	CHISHOLM ELEMENTARY SCHOOL	21
MONTGOMERY COUN	CLOVERDALE JUNIOR HIGH SCH	19
MONTGOMERY COUN	DAISY LAWRENCE ELEM SCHOOL	11
MONTGOMERY COUN	DALRAIDA ELEMENTARY SCHOOL	19
MONTGOMERY COUN	DANNELLY ELEMENTARY SCHOOL	19
MONTGOMERY COUN	DAVIS ELEMENTARY SCHOOL	19
MONTGOMERY COUN	DAVIS LEARNING CENTER	17
MONTGOMERY COUN	DOZIER ELEMENTARY SCHOOL	20
MONTGOMERY COUN	DUNBAR ELEMENTARY SCHOOL	10
MONTGOMERY COUN	FEWS ELEMENTARY SCHOOL	17
MONTGOMERY COUN	FLOWERS ELEMENTARY SCHOOL	16
MONTGOMERY COUN	FLOYD JUNIOR HIGH SCHOOL	27
MONTGOMERY COUN	FOREST AVE ELEMENTARY SCH	15
MONTGOMERY COUN	GEORGIA WASHINGTON JR HIGH	15
MONTGOMERY COUN	GOODWYN JUNIOR HIGH SCHOOL	21
MONTGOMERY COUN	HARRISON ELEMENTARY SCHOOL	15
MONTGOMERY COUN	HAYNEVILLE RD ELEM SCHOOL	15
MONTGOMERY COUN	HEAD ELEMENTARY SCHOOL	18

TOTAL NUMBER OF STAFF BY SCHOOL BY COUNTY

COUNTY	SCHOOL	TOTAL STAFF
MONTGOMERY COUN	HIGHLAND AVE ELEMENTARY SCH	13
MONTGOMERY COUN	HIGHLAND GARDENS ELEM SCH	23
MONTGOMERY COUN	HOUSTON HILL JR HIGH SCHOOL	12
MONTGOMERY COUN	JEFFERSON DAVIS HIGH SCHOOL	43
MONTGOMERY COUN	JOHNSON ELEMENTARY SCHOOL	15
MONTGOMERY COUN	LANIER SENIOR HIGH SCHOOL	29
MONTGOMERY COUN	LEE HIGH SCHOOL	40
MONTGOMERY COUN	LOVELESS ELEMENTARY SCHOOL	19
MONTGOMERY COUN	MACMILLAN ELEMENTARY SCHOOL	10
MONTGOMERY COUN	MADISON PARK HOPE CENTER	21
MONTGOMERY COUN	FITZPATRICK ELEMENTARY SCH	18
MONTGOMERY COUN	MCINTYRE JUNIOR HIGH SCHOOL	12
MONTGOMERY COUN	MCINNIS SCHOOL	4
MONTGOMERY COUN	MONTGOMERY COUNTY HIGH SCH	7
MONTGOMERY COUN	MORNINGVIEW ELEMENTARY SCH	15
MONTGOMERY COUN	PATERSON ELEMENTARY SCHOOL	15
MONTGOMERY COUN	PETERSON ELEMENTARY SCHOOL	9
MONTGOMERY COUN	CRUMP ELEMENTARY SCHOOL	24
MONTGOMERY COUN	PINTLALA ELEMENTARY SCHOOL	7
MONTGOMERY COUN	SOUTHLAWN ELEMENTARY SCHOOL	23
MONTGOMERY COUN	VAUGHN RD ELEMENTARY SCHOOL	20
MONTGOMERY COUN	WARES FERRY RD ELEM SCH	17
MORGAN COUNTY	ALBERT P BREWER HIGH SCHOOL	20
MORGAN COUNTY	COTACO SCHOOL	17
MORGAN COUNTY	DANVILLE HIGH SCHOOL	21
MORGAN COUNTY	EVA SCHOOL	10
MORGAN COUNTY	FALKVILLE HIGH SCHOOL	22
MORGAN COUNTY	LACEYS SPRING ELEM SCHOOL	9
MORGAN COUNTY	NEEL ELEMENTARY SCHOOL	6
MORGAN COUNTY	SPARKMAN ELEMENTARY SCHOOL	19
MORGAN COUNTY	PRICEVILLE SCHOOL	17
MORGAN COUNTY	RYAN SCHOOL	5
MORGAN COUNTY	UNION HILL SCHOOL	9
MORGAN COUNTY	WEST MORGAN HIGH SCHOOL	25
MORGAN COUNTY	CRESTLINE ELEMENTARY SCHOOL	20
MORGAN COUNTY	F E BURLESON ELEMENTARY SCH	22
MORGAN COUNTY	HARTSELLE JUNIOR HIGH SCH	23
MORGAN COUNTY	HARTSELLE HIGH SCHOOL	23
MORGAN COUNTY	AUSTIN HIGH SCHOOL	34
MORGAN COUNTY	AUSTINVILLE ELEMENTARY SCH	13
MORGAN COUNTY	BROOKHAVEN MIDDLE SCHOOL	25
MORGAN COUNTY	CEDAR RIDGE MIDDLE SCHOOL	20
MORGAN COUNTY	CHESTNUT GROVE ELEM SCHOOL	9
MORGAN COUNTY	DECATUR HIGH SCHOOL	44
MORGAN COUNTY	EASTWOOD ELEMENTARY SCHOOL	10
MORGAN COUNTY	FRANCES NUNGESTER ELEM SCH	19
MORGAN COUNTY	GORDON-BIBB ELEMENTARY SCH	11
MORGAN COUNTY	JULIAN HARRIS ELEM SCHOOL	14

REFERENCE 8

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

OFFICE OF THE DIRECTOR

FROM THE DIRECTOR
BUREAU OF THE CENSUS

The Secretary of Commerce has provided state population counts based on the 1990 Bicentennial Census to the President for the apportionment of the House of Representatives. Now that we have fulfilled that legal requirement, we are sending you the official population counts for all jurisdictions in your state.

Since these counts provide only totals for the state and local governmental units, they are not intended for use in redistricting. As required by Public Law 94-171, the Bureau of the Census will provide redistricting counts at the block level for all states and the District of Columbia. We have begun to release these counts on a state-by-state basis; data for all states will be released by April 1, 1991.

As required by the Stipulation and Order in the New York adjustment litigation, these population counts are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991. It cannot be determined at this time, what effect, if any, a statistical adjustment will have on the apportionment of Congress or state redistricting.

We thank you for your work and support of the 1990 census and look forward to maintaining a working relationship with you over the next decade.

Sincerely,

Barbara Everitt Bryant

Barbara Everitt Bryant
Director
Bureau of the Census

Enclosure

Table 1. Selected Population and Housing Characteristics: 1990
Montgomery County, Alabama

The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991. The user should note that there are limitations to many of these data. Please refer to the technical documentation provided with Summary Tape File 1A for a further explanation on the limitations of the data.

Total population	209,085
SEX	
Male	98,558
Female	110,527
AGE	
Under 5 years	16,119
5 to 17 years	41,265
18 to 20 years	11,232
21 to 24 years	12,442
25 to 44 years	66,911
45 to 54 years	20,018
55 to 59 years	8,622
60 to 64 years	8,202
65 to 74 years	13,983
75 to 84 years	7,854
85 years and over	2,437
Median age	31.6
Under 18 years	57,384
Percent of total population	27.4
65 years and over	24,274
Percent of total population	11.6
HOUSEHOLDS BY TYPE	
Total households	77,173
Family households (families)	53,573
Married-couple families	37,973
Percent of total households	49.2
Other family, male householder	2,346
Other family, female householder	13,254
Nonfamily households	23,600
Percent of total households	30.6
Householder living alone	20,578
Householder 65 years and over	7,609
Persons living in households	201,578
Persons per household	2.61
GROUP QUARTERS	
Persons living in group quarters	7,507
Institutionalized persons	4,276
Other persons in group quarters	3,231
RACE AND HISPANIC ORIGIN	
White	119,420
Black	87,312
Percent of total population	41.8
American Indian, Eskimo, or Aleut	414
Percent of total population	0.2
Asian or Pacific Islander	1,533
Percent of total population	0.7
Other race	406
Hispanic origin (of any race)	1,624
Percent of total population	0.8

Total housing units	84,525
OCCUPANCY AND TENURE	
Occupied housing units	77,173
Owner occupied	48,070
Percent owner occupied	62.3
Renter occupied	29,103
Vacant housing units	7,352
For seasonal, recreational, or occasional use	188
Homeowner vacancy rate (percent)	2.3
Rental vacancy rate (percent)	10.9
Persons per owner-occupied unit	2.69
Persons per renter-occupied unit	2.48
Units with over 1 person per room	3,522
UNITS IN STRUCTURE	
1-unit, detached	55,099
1-unit, attached	3,302
2 to 4 units	7,677
5 to 9 units	6,819
10 or more units	6,583
Mobile home, trailer, other	5,045
VALUE	
Specified owner-occupied units	40,851
Less than $50,000	13,971
$50,000 to $99,999	19,459
$100,000 to $149,999	4,572
$150,000 to $199,999	1,533
$200,000 to $299,999	924
$300,000 or more	392
Median (dollars)	62,600
CONTRACT RENT	
Specified renter-occupied units paying cash rent	26,843
Less than $250	10,474
$250 to $499	14,492
$500 to $749	1,519
$750 to $999	288
$1,000 or more	70
Median (dollars)	292
RACE AND HISPANIC ORIGIN OF HOUSEHOLDER	
Occupied housing units	77,173
White	48,431
Black	28,119
Percent of occupied units	36.4
American Indian, Eskimo, or Aleut	137
Percent of occupied units	0.2
Asian or Pacific Islander	369
Percent of occupied units	0.5
Other race	117
Hispanic origin (of any race)	489
Percent of occupied units	0.6

This table provides 1990 census population counts for states and governmental units. Since these counts provide only totals for the states and local governmental units, they are not suitable for redistricting. As required by Public Law 94-171, the Bureau of the Census will provide redistricting counts at the block level for all states and the District of Columbia. The counts will be released on a state-by-state basis beginning in early 1991 and ending by April 1, 1991.

The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

(010491)

GOVERNMENTAL UNIT		
CODE	NAME	Number of Persons
CO 01 051	Elmore County	49,210
CO 01 053	Escambia County	35,518
CO 01 055	Etowah County	99,840
CO 01 057	Fayette County	17,962
CO 01 059	Franklin County	27,814
CO 01 061	Geneva County	23,647
CO 01 063	Greene County	10,153
CO 01 065	Hale County	15,498
CO 01 067	Henry County	15,374
CO 01 069	Houston County	81,331
CO 01 071	Jackson County	47,796
CO 01 073	Jefferson County	651,525
CO 01 075	Lamar County	15,715
CO 01 077	Lauderdale County	79,661
CO 01 079	Lawrence County	31,513
CO 01 081	Lee County	87,146
CO 01 083	Limestone County	54,135
CO 01 085	Lowndes County	12,658
CO 01 087	Macon County	24,928
CO 01 089	Madison County	238,912
CO 01 091	Marengo County	23,084
CO 01 093	Marion County	29,830
CO 01 095	Marshall County	70,832
CO 01 097	Mobile County	378,643
CO 01 099	Monroe County	23,968
CO 01 101	Montgomery County	209,085
CO 01 103	Morgan County	100,043
CO 01 105	Perry County	12,759
CO 01 107	Pickens County	20,699
CO 01 109	Pike County	27,595

ALABAMA
1990 Population Totals

Bureau of the Census
Department of Commerce

This table provides 1990 census population counts for states and governmental units. Since these counts provide only totals for the states and local governmental units, they are not suitable for redistricting. As required by Public Law 94-171, the Bureau of the Census will provide redistricting counts at the block level for all states and the District of Columbia. The counts will be released on a state-by-state basis beginning in early 1991 and ending by April 1, 1991.

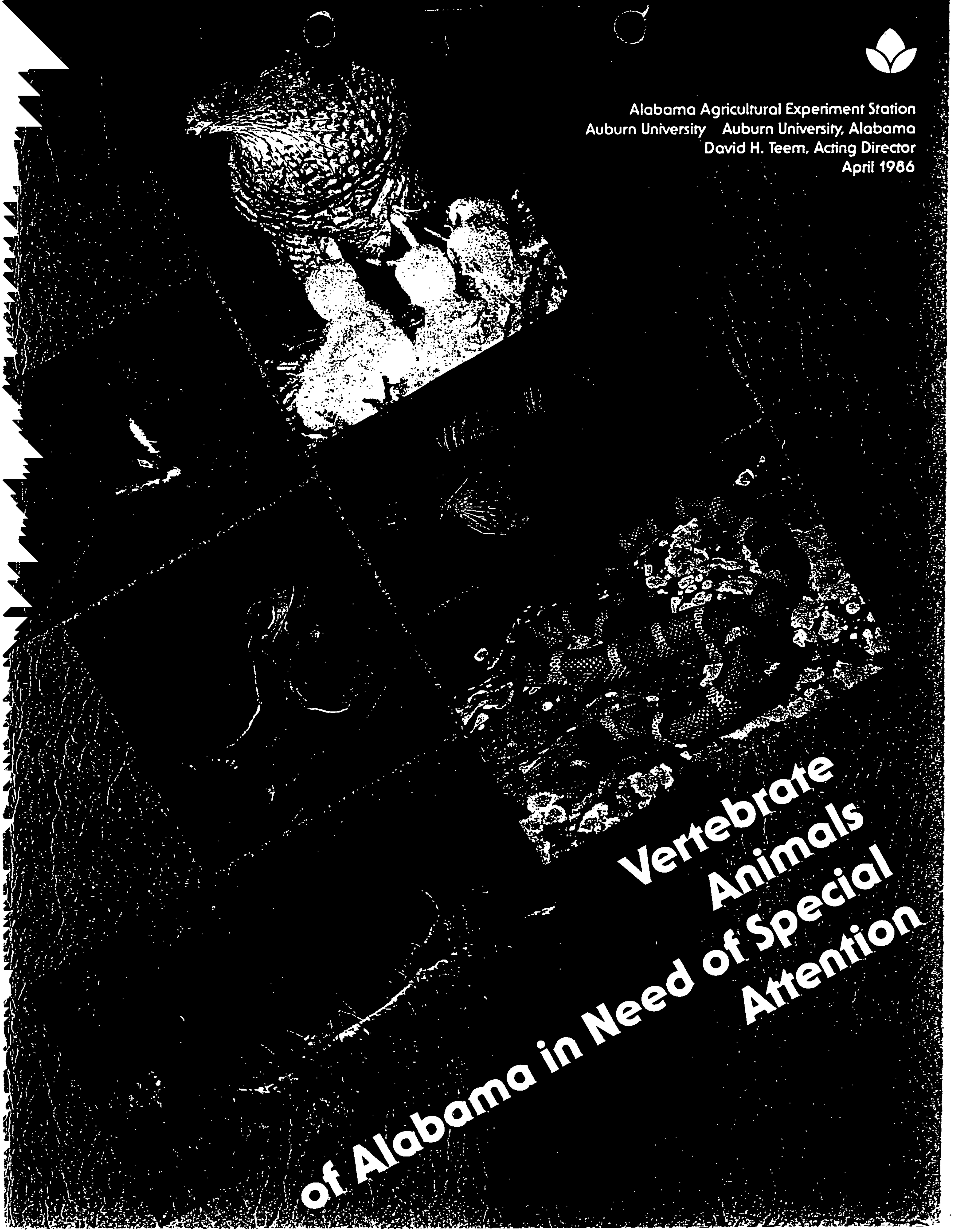
The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

(010491)

GOVERNMENTAL UNIT		
CODE	NAME	Number of Persons
PL 01 1115	Margaret town	616
PL 01 1120	Marion city	4,211
PL 01 1125	Maytown town	651
PL 01 1128	Memphis town	54
PL 01 1130	Mentone town	474
PL 01 1135	Midfield city	5,559
PL 01 1140	Midland City town	1,819
PL 01 1145	Midway town	455
PL 01 1152	Millbrook city	6,050
PL 01 1155	Millport town	1,203
PL 01 1160	Millry town	781
PL 01 1165	Mobile city	196,278
PL 01 1170	Monroeville city	6,993
PL 01 1175	Montevallo city	4,239
PL 01 1180	Montgomery city	187,106
PL 01 1183	Moody town	4,921
PL 01 1185	Mooresville town	54
PL 01 1190	Morris town	1,136
PL 01 1193	Mosses town	1,072
PL 01 1195	Moulton city	3,248
PL 01 1200	Moundville town	1,348
PL 01 1202	Mountainboro town	261
PL 01 1205	Mountain Brook city	19,810
PL 01 1215	Mount Vernon town	902
PL 01 1220	Mulga town	261
PL 01 1225	Muscle Shoals city	9,611
PL 01 1230	Myrtlewood town	197
PL 01 1232	Napier Field town	462
PL 01 1235	Nauvoo town	240
PL 01 1237	Nectar town	238

REFERENCE 9

Alabama Agricultural Experiment Station
Auburn University   Auburn University, Alabama
David H. Teem, Acting Director
April 1986



Vertebrate Animals of Alabama in Need of Special Attention

REFERENCE 10

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
64 NORTH UNION STREET
MONTGOMERY, ALABAMA 36130

GUY HUNT
GOVERNOR
JAMES D. MARTIN
COMMISSIONER
WM. C. "BILL" GOOLSBY
ASSISTANT COMMISSIONER

DIVISION OF GAME AND FISH
CHARLES D. KELLEY
DIRECTOR

SAM L. SPENCER
ASSISTANT DIRECTOR

March 19, 1992

M E M O R A N D U M

TO: District Supervisors

FROM: William C. Reeves William C Reeves
Assistant Chief of Fisheries

RE: Alabama Endangered Species List

The attached list was provided by Non-Game Coordinator Jim Woehr for your use and files.

WCR:ms

Attachment

cc: Fred Harders
Joe Addison
Danny Thompson
Stan Cook
Jon Hornsby ✓

ALABAMA

FEDERALLY LISTED ENDANGERED/THREATENED SPECIES

10/16/91

TAXA	PRIORITY	STATUS	COMMON/SCIENTIFIC NAMES	Distribution
Mammals (7)	6C	E	Florida panther (Felis concolor coryi)	Statewide
	8	E	Gray bat (Myotis grisescens)	Tennessee Valle to Conecuh Co.
	5	E	Red wolf (Canis rufus)	Statewide
	3C	ECH	Alabama beach mouse (Peromyscus polionotus ammobates)	Coastal,Baldwin
	8	ECH	Indiana bat (Myotis sodalis)	Extreme North
	3C	ECH	Perdido Key beach mouse (Peromyscus polionotus trissyllepsis)	Coastal,Baldwin
	5C	ECH	West Indian (Florida) Manatee (Trichechus manatus)	Coastal waters
Birds (9)	5	E	Bachman's warbler (Vermivora bachmanii)	Statewide
	5	E	Eskimo curlew (Numenius borealis)	Statewide
	5	E	Ivory-billed woodpecker (Campephilus principalis	South, west-cen
	8C	E	Red-cockaded woodpecker (Picoides borealis)	Statewide
	5C	E	Wood stork (Mycteria americana)	Statewide
	8C	E,T	Bald eagle (Haliaeetus leucocephalus)	Statewide
	5C	E,T	Piping plover (Charadrius melodus)	Coastal

ɪAXA	PRIORITY	STATUS	COMMON/SCIENTIFIC NAMES	DISTRIBUTION
	9	ECH	American peregrine falcon (Falco peregrinus anatum)	Statewide
	15	T	Arctic peregrine falcon (Falco peregrinus tundrius	Statewide
Reptiles (10)	2	E	Kemp's (Atlantic) ridley sea turtle (Lepidocheyls kempii)	Coastal waters
	2C	E,T	Green sea turtle (Chelonia mydas)	Coastal waters
	1C	ECH	Hawkbill sea turtle (=carey) (Eretmochelys imbricata)	Coastal waters
	13	ECH	Leatherback sea turtle (Dermochelys coriacea)	Coastal waters
	12	T	Eastern indigo snake (Drymarchon corais couperi)	Extreme South
	14	T	Flattened musk turtle (Sternotherus depressus)	Upper Black Warr River System
	8	T	Gopher tortoise (Gopherus polyphemus)	South
	7C	T	Loggerhead sea turtle (Caretta caretta)	Coastal waters
	14	T(S/A)	American alligator (Alligator mississippiensis)	Coastal plain
	2	E	Alabama red-bellied turtle (Pseudemys alabamensis)	Mobile-Tensaw Delta Region

TAXA	PRIORITY	STATUS	COMMON/SCIENTIFIC NAMES	DISTRIBUTION
	5	E	Stirrup shell (*Quadrula stapes*)	Tombigbee River Sipsey River
	5	E	Turgid-blossom pearly mussel (*Epioblasma*(=*Dysnomia*) *turgidula*)	Tennessee River
	5	E	White wartyback pearly mussel (*Plethobasus cicatricosus*)	Tennessee River
	6	E	Yellow-blossom pearly mussel (*Epioblasma(=Dysnomia)florentina florentina*	Tennessee River
	?	T	Inflated heelsplitter (*Potamilus inflatus*)	Black Warrior R to Mobile Bay
	?	E	Tulotoma snail (*Tulotoma magnifica*)	Coosa River Sys
Arthropods				
Crustacea (1)				
	5	E	Alabama cave shrimp (*Palaemonias alabamae*)	Shelta Cave, Madison County
Insecta (1)				
	?	E	American burying beetle (*Nicrophorus americanus*)	Statewide
Plants				
(14)	6	E	Alabama canebrake pitcher-plant (*Sarracenia rubra* ssp.*alabamensis*)	Central Alabama
	2	E	Alabama leather flower (*Clematis socialis*)	Northeast Alaba
	8	E	Green pitcher plant (*Sarracenia oreophila*)	Northeast Alaba

REFERENCE 11

Site Assessment Unit
Special Projects
11-5-91

[Current as of 1990]

7-DAY LOW FLOWS AND FLOW DURATION OF ALABAMA STREAMS THROUGH 1973

GEOLOGICAL SURVEY OF ALABAMA BULLETIN 113

GEOLOGICAL SURVEY OF ALABAMA

Thomas J. Joiner
State Geologist

DIVISION OF WATER RESOURCES

Henry C. Barksdale
Chief

BULLETIN 113

7-DAY LOW FLOWS AND FLOW DURATION OF ALABAMA STREAMS THROUGH 1973

By

Eugene C. Hayes

Prepared by
United States Geological Survey
in cooperation with
Geological Survey of Alabama

University, Alabama
1978

Table 2.—*7-day low flows at gaging stations*—Continued

Station no.	Stream and locality	Drainage area (sq mi)	Period of record (climatic years)	7-day average flow of period, in cfs, and year of occurrence	Estimated 10-year 7-day low flow in cfs and cfsm	Estimated 2-year 7-day low flow in cfs and cfsm	Location of gaging station
02416000	Tallapoosa River at Sturdivant, Ala.	2,460	1902-26	77.1 (1925)	250 .102	640 .260	In NE¼ sec. 8, T. 22 N., R. 22 E., 2,000 ft upstream from Central of Georgia Railway Bridge, and 1 mile west of Sturdivant, Tallapoosa County. Since 1926, site in backwater from Martin Dam.
02418500	Tallapoosa River below Tallassee, Ala.	3,320	1930-70	17.7 (1930)	136[1] .041	720[1] .217	In E½ sec. 30, T. 18 N., R. 22 E., 1½ miles downstream from State Highway 14 and Tallassee, Tallapoosa County, and 3½ miles upstream from *Uphapee Creek.*
02419000	Uphapee Creek near Tuskegee, Ala.	330	1941-71	1.3 (1954)	4.5 .014	16 .048	On east line of sec. 12, T. 17 N., R. 23 E., at State Highway 81, 1 mile upstream from Red Creek, and 4 miles north of Tuskegee, Macon County.
02419500	Tallapoosa River at Milstead, Ala.	3,750	1899-02	416 (1899)	—	—	In NW¼ sec. 19, T. 17 N., R. 22 E., at Birmingham & Southeastern Railroad Bridge at Milstead, Macon County, and 4 miles downstream from Uphapee Creek.
02420000	Alabama River near *Montgomery, Ala.*	15,100	1929-71	3,710 *(1970)*	5,120[1] *.339*	6,980[1] *.462*	In NW¼ sec. 31, T. 17 N., R. 17 E., at *U. S. Highway 31,* 4 miles upstream from Autauga Creek, and 6 miles northwest of Montgomery, Montgomery County.
			1929-60	4,480 (1941)	5,530[12] .366	7,270[12] .481	
			1962-71	3,710 (1970)	4,370[13] .289	6,220[13] .412	
02420500	Autauga Creek at Prattville, Ala.	109	1940-59	37.9 (1954)	47 .431	72 .661	In N½ sec. 17, T. 17 N., R. 16 E., at Bridge Street in Prattville, Autauga County, and 5 miles upstream from mouth.
02421000	Catoma Creek near Montgomery, Ala.	298	1953-73	0.0 (1952) (1954) (1955) (1962)	0.0	0.5 .002	In sec. 6, T. 15 N., R. 18 E., at U. S. Highway 331, 5 miles south of Montgomery, Montgomery County, and 12 miles upstream from mouth.
02421300	Ivy Creek at Mulberry, Ala.	10.5	1962-65	1.7 (1963)	0.7 .067	2.4 .229	On N¼ of line between sections 16 and 17, T. 17 N., R. 13 E., at State Highway 14 at Mulberry, Autauga County, and 6 miles upstream from mouth.
02421500	Big Swamp Creek near Hayneville, Ala.	123	1940-45	0.0[14]	0.0	0.0	In sec. 19, T. 14 N., R. 15 E., at State Highway 21, 1 mile downstream from Fort Deposit Creek, and 1½ miles southwest of Hayneville, Lowndes County.
02422000	Big Swamp Creek near Lowndesboro, Ala.	247	1942-71	0.0[15]	0.0	0.2 .001	In NE¼ sec. 19, T. 15 N., R. 14 E., at U. S. Highway 80, 1 mile downstream from Panther Creek, and 5 miles west of Lowndesboro, Lowndes County.
02422500	Mulberry Creek at Jones, Ala.	208	1940-71	28.9 (1954)	45 .216	64 .308	In E½ sec. 31, T. 19 N., R. 12 E., at County Highway Bridge, 0.4 mile west of Jones, Autauga County, and 6 miles upstream from Buck Creek.
02423000	Alabama River at Selma.	17 100	1901-13	3,300	5,230[1]	7,540[1]	In SE¼ sec. 36, T. 17 N., R. 10 E., at

Table 4.—*Duration of flow and average flow at gaging stations—Continued*

Alabama River near Montgomery, Ala., 1927-72

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
0	0.00	0	16071	100.0	9	3700.00	48	16054	99.9
1	940.00	0	16071	100.0	10	4400.00	158	16006	99.6
2	1100.00	0	16071	100.0	11	5200.00	394	15848	98.6
3	1300.00	0	16071	100.0	12	6200.00	839	15454	96.2
4	1600.00	0	16071	100.0	13	7400.00	1483	14615	90.9
5	1900.00	0	16071	100.0	14	8800.00	1343	13132	81.7
6	2200.00	1	16071	100.0	15	10000.00	1932	11789	73.4
7	2600.00	3	16070	100.0	16	12000.00	2063	9857	61.3
8	3100.00	13	16067	100.0	17	15000.00	975	7794	48.5

Average discharge, 23,290 cfs — **Station number 02420000[1]**

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
18	17000.0	1394	6819	42.4	27	82000	225	576	3.5
19	21000.0	1034	5425	33.8	28	97000	216	351	2.1
20	25000.0	792	4391	27.3	29	120000	82	135	.8
21	29000.0	838	3599	22.4	30	140000	27	53	.3
22	35000.0	511	2761	17.2	31	160000	12	26	.1
23	41000.0	502	2250	14.0	32	190000	8	14	.0
24	49000.0	402	1748	10.9	33	230000	4	6	.0
25	58000.0	403	1346	8.4	34	270000	2	2	.0
26	69000.0	367	943	5.9					

Alabama River near Montgomery, Ala., 1927-60

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
0	0.00	0	12054	100.0	9	3700.00	29	12040	99.9
1	940.00	0	12054	100.0	10	4400.00	120	12011	99.6
2	1100.00	0	12054	100.0	11	5200.00	286	11891	98.6
3	1300.00	0	12054	100.0	12	6200.00	594	11605	96.3
4	1600.00	0	12054	100.0	13	7400.00	1110	11011	91.3
5	1900.00	0	12054	100.0	14	8800.00	1017	9901	82.1
6	2200.00	1	12054	100.0	15	10000.00	1576	8884	73.7
7	2600.00	1	12053	100.0	16	12000.00	1583	7308	60.6
8	3100.00	12	12052	100.0	17	15000.00	722	5725	47.5

Average discharge, 22,671 cfs — **Station number 02420000[12]**

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
18	17000.0	1039	5003	41.5	27	82000	174	447	3.7
19	21000.0	778	3964	32.9	28	97000	172	273	2.2
20	25000.0	593	3186	26.4	29	120000	64	101	.8
21	29000.0	644	2593	21.5	30	140000	19	37	.3
22	35000.0	361	1949	16.2	31	160000	9	18	.1
23	41000.0	353	1588	13.2	32	190000	6	9	.0
24	49000.0	266	1235	10.2	33	230000	3	3	.0
25	58000.0	265	969	8.0	34	270000			
26	69000.0	257	704	5.8					

Alabama River near Montgomery, Ala., 1962-72

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
0	0.00	0	4017	100.0	9	3700.00	19	4014	99.9
1	940.00	0	4017	100.0	10	4400.00	38	3995	99.5
2	1100.00	0	4017	100.0	11	5200.00	108	3957	98.5
3	1300.00	0	4017	100.0	12	6200.00	245	3849	95.8
4	1600.00	0	4017	100.0	13	7400.00	373	3604	89.7
5	1900.00	0	4017	100.0	14	8800.00	326	3231	80.4
6	2200.00	0	4017	100.0	15	10000.00	356	2905	72.3
7	2600.00	2	4017	100.0	16	12000.00	480	2549	63.5
8	3100.00	1	4015	100.0	17	15000.00	253	2069	51.5

Average discharge, 24,070 cfs — **Station number 02420000[13]**

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
18	17000.0	355	1816	45.2	27	82000	51	129	3.2
19	21000.0	256	1461	36.4	28	97000	44	78	1.9
20	25000.0	199	1205	30.0	29	120000	18	34	.8
21	29000.0	194	1006	25.0	30	140000	8	16	.3
22	35000.0	150	812	20.2	31	160000	3	8	.1
23	41000.0	149	662	16.5	32	190000	2	5	.1
24	49000.0	136	513	12.8	33	230000	1	3	.0
25	58000.0	138	377	9.4	34	270000	2	2	.0
26	69000.0	110	239	5.9					

Autauga Creek at Prattville, Ala., 1939-59

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
0	0.00	0	7305	100.0	9	130.00	781	4155	56.9
1	33.00	14	7305	100.0	10	150.00	920	3374	46.2
2	39.00	52	7291	99.8	11	180.00	573	2454	33.6
3	46.00	118	7239	99.1	12	210.00	589	1881	25.7
4	55.00	246	7121	97.5	13	250.00	476	1292	17.7
5	65.00	344	6875	94.1	14	300.00	301	816	11.2
6	77.00	668	6531	89.4	15	360.00	190	515	7.0
7	92.00	834	5863	80.3	16	420.00	120	325	4.4
8	110.00	874	5029	68.8	17	500.00	71	205	2.8

Average discharge, 185 cfs — **Station number 02420500**

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
18	600.0	57	134	1.8	27	2800	1	1	0
19	710.0	24	77	1.1	28	3300			
20	840.0	15	53	0.7	29	3900			
21	990.0	14	38	0.5	30	4600			
22	1200.0	9	24	0.3	31	5500			
23	1400.0	7	15	0.2	32	6500			
24	1700.0	3	8	0.1	33	7700			
25	2000.0	2	5	0.1	34	9100			
26	2300.0	2	3	0.0					

Catoma Creek near Montgomery, Ala., 1952-73

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
0	0.00	201	7670	100.0	9	0.80	70	6995	91.2
1	0.03	2	7469	97.4	10	1.10	174	6925	90.3
2	0.04	6	7467	97.4	11	1.70	220	6751	88.0
3	0.06	5	7461	97.3	12	2.60	221	6531	85.1
4	0.09	1	7456	97.2	13	3.90	316	6310	82.3
5	0.10	142	7455	97.2	14	5.80	362	5994	78.1
6	0.20	104	7313	95.3	15	8.70	423	5632	73.4
7	0.30	122	7209	94.0	16	13.00	500	5209	67.9
8	0 50	92	7087	92.4	17	20.00	574	4709	61.4

Average discharge, 345 cfs — ***Station number 02421000***

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
18	30.0	579	4135	53.9	27	1200	210	582	7.5
19	45.0	426	3556	46.4	28	1800	134	372	4.8
20	67.0	612	3130	40.8	29	2700	113	238	3.1
21	100.0	495	2518	32.8	30	4000	63	125	1.6
22	150.0	429	2023	26.4	31	6000	34	62	.8
23	230.0	307	1594	20.8	32	9100	20	28	.3
24	350.0	251	1287	16.8	33	14000	7	8	.1
25	520.0	213	1036	13.5	34	21000	1	1	.0
26	780.0	241	823	10.7					

Ivy Creek at Mulberry, Ala., 1960-65

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
0	0.00	0	1826	100.0	9	6.80	122	790	43.3
1	1.50	7	1826	100.0	10	8.30	123	668	36.6
2	1.80	43	1819	99.6	11	10.00	81	545	29.8
3	2.20	84	1776	97.3	12	12.00	95	464	25.4
4	2.60	93	1692	92.7	13	15.00	69	369	20.2
5	3.20	205	1599	87.6	14	18.00	64	300	16.4
6	3.90	250	1394	76.3	15	21.00	69	236	12.9
7	4.70	227	1144	62.7	16	26.00	39	167	9.1
8	5.70	127	917	50.2	17	31.00	33	128	7.0

Average discharge, 13.4 cfs — **Station number 02421300**

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
18	38.0	25	95	5.2	27	210	4	10	.5
19	46.0	15	70	3.8	28	250	1	6	.3
20	55.0	14	55	3.0	29	300	1	5	.2
21	67.0	9	41	2.2	30	370	2	4	.2
22	80.0	9	32	1.8	31	440		2	.1
23	97.0	3	23	1.3	32	540		2	.1
24	120.0	5	20	1.1	33	650		2	.1
25	140.0	3	15	0.8	34	780	2	2	.1
26	170.0	2	12	0.7					

Big Swamp Creek near Hayneville, Ala., 1939-46

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
0	0.00	528	2557	100.0	9	2.50	46	1550	60.6
1	0.10	130	2029	79.4	10	3.50	54	1504	58.8
2	0.20	59	1899	74.3	11	5.00	73	1450	56.7
3	0.30	43	1840	72.0	12	7.10	75	1377	53.9
4	0 40	56	1797	70.3	13	10.00	91	1302	50.9
5	0.60	37	1741	68.1	14	15.00	97	1211	47.4
6	0.80	53	1704	66.6	15	21.00	134	1114	43.6
7	1.20	47	1651	64.6	16	30.00	148	980	38.3
8	1.70	54	1604	62.7	17	42.00	164	832	32.5

Average discharge, 169 cfs — **Station number 02421500**

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
18	60.0	118	668	26.1	27	1500	16	64	2.5
19	86.0	81	550	21.5	28	2100	22	48	1.8
20	120.0	93	469	18.3	29	3000	12	26	1.0
21	180.0	66	376	14.7	30	4300	9	14	.5
22	250.0	56	310	12.1	31	6200	2	5	.1
23	360.0	63	254	9.9	32	8800	2	3	.1
24	510.0	59	191	7.5	33	13000	1	1	.0
25	730.0	36	132	5.2	34				
26	1000.0	32	96	3.8					

Big Swamp Creek near Lowndesboro, Ala., 1940-72

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
0	0.00	433	11322	100.0	9	0.50	494	10105	89.3
1	0.01	3	10889	96.2	10	0.80	572	9611	84.9
2	0.02	1	10886	96.1	11	1.20	471	9039	79.8
3	0.03	3	10885	96.1	12	1.90	693	8568	75.7
4	0.05	5	10882	96.1	13	2.90	577	7875	69.6
5	0.08	3	10877	96.1	14	4.60	497	7298	64.5
6	0 10	211	10874	96 0	15	7.20	394	6801	60.1
7	0.20	[illegible]	10663	94.2	16	11.00	525	6407	56.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17	[illegible]	569	5882	52.0

Average discharge, 294 cfs — **Station number 02422000**

Class	Cfs	Total	Accum	Perct	Class	Cfs	Total	Accum	Perct
18	27.0	632	5313	46.9	27	1500	249	507	4.4
19	43.0	681	4681	41.3	28	2400	122	258	2.2
20	67.0	579	4000	35.3	29	3700	74	136	1.2
21	100.0	634	3421	30.2	30	5800	32	62	.5
22	160.0	479	2787	24.6	31	9000	19	30	.2
23	250.0	482	2308	20.4	32	14000	8	11	.0
24	400.0	477	1826	16.1	33	22000	3	3	0
25	620.0	472	1349	11.9	34				
26	970.0	370	877	7 7					

REFERENCE 12

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Water Division - Water Quality Program

Chapter 335-6-11
Water Use Classifications
For Interstate and Intrastate Waters

Table of Contents

335-6-11-.01 <u>The Use Classification System</u>

(1) Use classifications utilized by the State of Alabama are as follows:

Public Water Supply	PWS
Swimming and Other Whole Body Water-Contact Sports	S
Shellfish Harvesting	SH
Fish and Wildlife	F&W
Agricultural and Industrial Water Supply	A&I
Industrial Operations	I0
Navigation	N

(2) Use classifications apply water quality criteria adopted for particular uses based on existing utilization, uses reasonably expected in the future, and those uses not now possible because of correctable pollution but which could be made if the effects of pollution were controlled or eliminated. Of necessity, the assignment of use classifications must take into consideration the physical capability of waters to meet certain uses.

(3) Those use classifications presently included in the standards are reviewed informally by the Department's staff as the need arises, and the entire standards package, to include the use classifications, receives a formal review at least once each three years. Efforts currently underway through local 201 planning projects will provide additional technical data on certain streams in the State, information on treatment alternatives, and applicability of various management techniques, which, when available, will hopefully lead to new decisions regarding use classifications. Of particular interest are those segments which are currently classified for any usage which has an associated degree of quality criteria considered to be less than that applicable to a classification of "Fish and Wildlife." As rapidly as it can be demonstrated that new classifications are feasible on these segments from an economic and technological viewpoint, based on the information being generated pursuant to staff studies and the planning efforts previously outlined, such improvement will be sought.

335-6-11-.02 Use Classifications

(1) THE ALABAMA RIVER BASIN

INTERSTATE WATERS

Stream	From	To	Classification(s)
ALABAMA RIVER	MOBILE RIVER	Claiborne Lock and Dam	F&W
ALABAMA RIVER	Claiborne Lock and Dam	Frisco Railroad Crossing	S/F&W
ALABAMA RIVER	Frisco Railroad Crossing	River Mile 131	F&W
ALABAMA RIVER	River Mile 131	Millers Ferry Lock and Dam	PWS
ALABAMA RIVER	Millers Ferry Lock and Dam	Blackwell Bend (Six Mile Creek)	S/F&W
ALABAMA RIVER	Blackwell Bend (Six Mile Creek)	Jones Bluff Lock and Dam	F&W
ALABAMA RIVER	Jones Bluff Lock and Dam	Pintlalla Creek	S/F&W
ALABAMA RIVER	Pintlalla Creek	Its source	F&W

INTRASTATE WATERS

Stream	From	To	Classification(s)
Little River	ALABAMA RIVER	Its source	S/F&W
Randons Creek	ALABAMA RIVER	Its source	F&W
Bear Creek	Randons Creek	Its source	F&W
Limestone Creek	ALABAMA RIVER	Its source	F&W
Double Bridges Creek	Limestone Creek	Its source	F&W
Hudson Branch	Limestone Creek	Its source	F&W
Big Flat Creek	ALABAMA RIVER	Its source	S/F&W
Pursley Creek	ALABAMA RIVER	Its source	F&W
Unnamed tributary south of Camden	Pursley Creek	Its source	F&W
Beaver Creek	ALABAMA RIVER	Its source	F&W
Cub Creek	Beaver Creek	Its source	A&I
Turkey Creek	Beaver Creek	Its source	F&W

Lindsey

THE ALABAMA RIVER BASIN

INTERSTATE WATERS

Stream	From	To	Classification(s
ALABAMA RIVER	MOBILE RIVER	Claiborne Lock and Dam	F&W
ALABAMA RIVER	Claiborne Lock and Dam	Frisco Railroad Crossing	S/F&W
ALABAMA RIVER	Frisco Railroad Crossing	River Mile 131	F&W
ALABAMA RIVER	River Mile 131	Millers Ferry Lock and Dam	PWS
ALABAMA RIVER	Millers Ferry Lock and Dam	Blackwell Bend (Six Mile Creek)	S/F&W
ALABAMA RIVER	Blackwell Bend (Six Mile Cr.)	Jones Bluff Lock and Dam	F&W
ALABAMA RIVER	Jones Bluff Lock and Dam	Pintlalla Creek	S/F&W
ALABAMA RIVER	Pintlalla Creek	its source	F&W

INTRASTATE WATERS

Stream	From	To	Classification(s
Little River	ALABAMA RIVER	its source	S/F&W
Randons Creek	ALABAMA RIVER	its source	F&W
Bear Creek	Randons Creek	its source	F&W
Limestone Creek	ALABAMA RIVER	its source	F&W
Double Bridges Cr.	Limestone Creek	its source	F&W
Hudson Branch	Limestone Creek	its source	F&W
Big Flat Creek	ALABAMA RIVER	its source	S/F&W
Pursley Creek	ALABAMA RIVER	its source	F&W
Unnamed tributary west of Camden	Rockwest Creek	its source	A&I
Unnamed tributary south of Camden	Pursley Creek	its source	A&I
Beaver Creek	ALABAMA RIVER	its source	F&W
Cub Creek	Beaver Creek	its source	A&I
Turkey Creek	Beaver Creek	its source	F&W
Rock West Creek	ALABAMA RIVER	its source	F&W

FROM:
ADEM
ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
1751 CONG. W. L. DICKINSON DRIVE • MONTGOMERY, AL 36130

PRELIMINARY ASSESSMENT
FOR
CAPITOL CITY PLUME
MONTGOMERY, MONTGOMERY COUNTY

EPA ID NO: AL0001058056
REFERENCE NO: 6330

PART 2 of 2

ADEM FORM 194 4/89

SITE: Capitol City Plume
BREAK: 1.8
OTHER: v. 2

APPENDICES

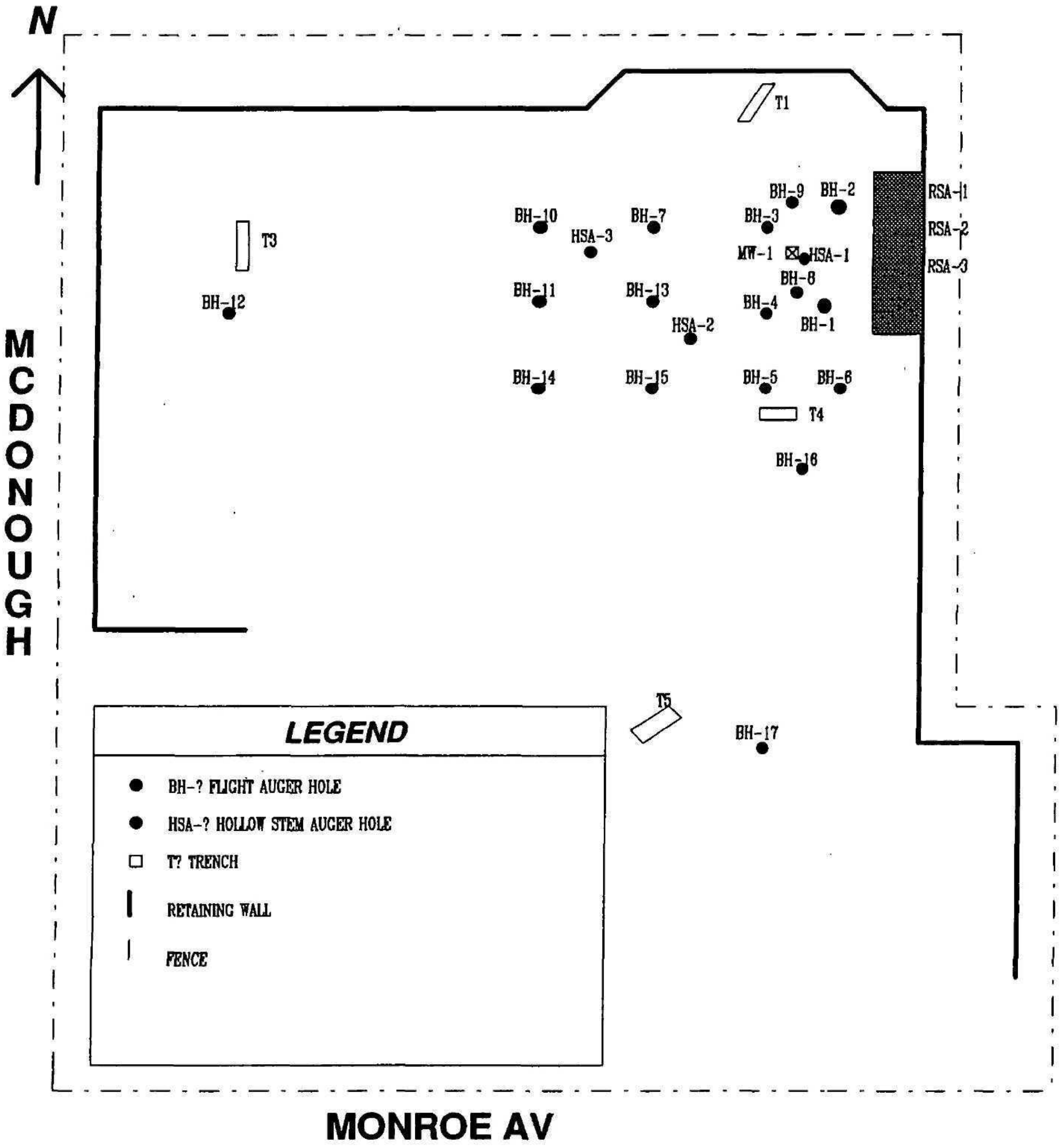
APPENDIX A

RSAPH1. DOC

RSA PHASE I
CHILLER PLANT SITE
SOIL AND WATER
SAMPLE RESULTS

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	SAMPLER	SAMPLE DEPTH	TEST RESULTS
RSA-1	HOT SPOT	9-14-93	MAURER	NA	3989 ppm
RSA-2	HOT SPOT	9-14-93	MAURER	NA	7268 ppm
RSA-3	HOT SPOT	9-14-93	MAURER	NA	7843 ppm
H-4A	HOLE 4X	10-7-93	STAMPS	1.5'-4'	BDL
H-1A	HOLE 1X	10-7-93	STAMPS	1.5'-4'	BDL
H-1B	HOLE 1X	10-7-93	STAMPS	4'-6.5'	BDL
RSA-1	BH-1	10-11-93	STAMPS	1.5'-4'	BDL
RSA-2	BH-1	10-11-93	STAMPS	4'-6.5'	BDL
TR-5	T4	10-15-93	STAMPS	0'-4'	0.06 ppm
TR-6	T4	10-15-93	STAMPS	0'-4'	0.13 ppm
HSA-1A	HSA-1	10-18-93	STAMPS	1.5'-4'	BDL
HSA-1B	HSA-1	10-18-93	STAMPS	4'-6.5'	0.09 ppm
HSA-2A	HSA-2	10-18-93	STAMPS	1.5'-4'	BDL
HSA-2B	HSA-2	10-18-93	STAMPS	4'-6.5'	BDL
SP-2C	HSA-2	10-18-93	STAMPS	6.5'-8'	BDL
HSA-3A	HSA-3	10-18-93	STAMPS	1.5'-4'	BDL
HSA-3B	HSA-3	10-18-93	STAMPS	4'-6.5'	BDL
AM	BH-15	10-22-93	STAMPS	BOH	0.02 ppm
AN	BH-1	10-22-93	STAMPS	BOH	0.01 ppm
AO	BH-5	10-22-93	STAMPS	BOH	0.02 ppm
WS-2	MW-1	10-15-93	STAMPS	G.WATER	536 ppb
WS-3	MW-1	10-15-93	STAMPS	G.WATER	607 ppb

RSA CHILLER PLANT SITE



SAMPLES CONTAINING SIGNIFICANT AMOUNTS OF TETRACHLORETHYLENE FROM RSA CHILLER PLANT SITE

SAMPLE ID	SAMPLE SOURCE & DATE	SOIL OR WATER	AMOUNT OF TETRACHLORETHYLENE
RSA-1	HOT SPOT 9-14-93	SOIL	3989 ppm
RSA-2	HOT SPOT 9-14-93	SOIL	7268 ppm
RSA-3	HOT SPOT 9-14-93	SOIL	7843 ppm
WS-2	MW-1 10-15-93	WATER	536 ppb
WS-3	MW-1 10-15-93	WATER	607 ppb

MCL for drinking water is 5 ppb

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
09/27/93

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

Attn:

Lab number : 3109978 Report Date: 09/21/93
Sample number : 421
Sample matrix : SOIL

COLLECTION INFORMATION
Date/Time/By: 09/14/93 8:41 MAURER
Location : RSA UTILITY BLDG. RSA-1

ADEM CENTRAL LABORATORY
- RESULTS REPORT - September 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
3109978	p-Chlorotoluene	<2.8	ug/g		09/16/93
	Chloromethane	<2.8	ug/g		09/16/93
	1,2-Dichloropropane	<2.8	ug/g		09/16/93
	1,3-Dichloropropane	<2.8	ug/g		09/16/93
	2,2-Dichloropropane	<2.8	ug/g		09/16/93
	o-Chlorotoluene	<2.8	ug/g		09/16/93
	Toluene	<2.8	ug/g		09/16/93
	m+p-Xylene	<2.8	ug/g		09/16/93
	o-Xylene	<2.8	ug/g		09/16/93
	Bromochloromethane	<2.8	ug/g		09/16/93
	n-Butylbenzene	<2.8	ug/g		09/16/93
	Dichlorofluoromethane	<2.8	ug/g		09/16/93
	Fluorotrichloromethane	<2.8	ug/g		09/16/93
	Hexachlorobutadiene	<2.8	ug/g		09/16/93
	Dibromomethane	<2.8	ug/g		09/16/93
	m-Dichlorobenzene	<2.8	ug/g		09/16/93
	o-Dichlorobenzene	<2.8	ug/g		09/16/93
	t-1,2-Dichloroethylene	<2.8	ug/g		09/16/93
	cis-1,2-Dichloroethylen	<2.8	ug/g		09/16/93
	Dichloromethane	<2.8	ug/g		09/16/93
	1,1-Dichloroethane	<2.8	ug/g		09/16/93
	1,1-Dichloropropene	<2.8	ug/g		09/16/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - September 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
3109978	1,3-Dichloropropene	<2.8	ug/g	09/16/93
	Trichloroethylene	<2.8	ug/g	09/16/93
	Carbon Tetrachloride	<2.8	ug/g	09/16/93
	1,2-Dicholoethane	<2.8	ug/g	09/16/93
	Ethylbenzene	<2.8	ug/g	09/16/93
	Styrene	<2.8	ug/g	09/16/93
	1,3,5-Trimethylbenzene	<2.8	ug/g	09/16/93
	1,1,2Trichloroethane	<2.8	ug/g	09/16/93
	1,1,1,2-Tetrachloroetha	<2.8	ug/g	09/16/93
	1,1,2,2-Tetrachloroetha	<2.8	ug/g	09/16/93
	Tetrachloroethylene	3989.0000	ug/g	09/16/93
	1,2,3-Trichloropropane	<2.8	ug/g	09/16/93
	Bromoform	<2.8	ug/g	09/16/93
	Bromomethane	<2.8	ug/g	09/16/93
	Chlorobenzene	<2.8	ug/g	09/16/93
	Chlorodibromomethane	<2.8	ug/g	09/16/93
	Chloroethane	<2.8	ug/g	09/16/93
	Chloroform	<2.8	ug/g	09/16/93
	Secbutylbenzene	<2.8	ug/g	09/16/93
	Tertbutylbenzene	<2.8	ug/g	09/16/93
	Benzene	<2.8	ug/g	09/16/93
	Isopropylbenzene	<2.8	ug/g	09/16/93
	p-Isopropyltoluene	<2.8	ug/g	09/16/93
	Naphthalene	<2.8	ug/g	09/16/93
	n-Propylbenzene	<2.8	ug/g	09/16/93
	Bromobenzene	<2.8	ug/g	09/16/93
	Bromodichloromethane	<2.8	ug/g	09/16/93
	1,2,3-Trichlorobenzene	<2.8	ug/g	09/16/93
	1,2,4-Trichlorobenzene	<2.8	ug/g	09/16/93
	1,2,4-Trimethylbenzene	<2.8	ug/g	09/16/93
	1,1,1-Trichloroethane	<2.8	ug/g	09/16/93
	Vinyl Chloride	<2.8	ug/g	09/16/93
	p-Dichlorobenzene	<2.8	ug/g	09/16/93
	1,1-Dichloroethylene	<2.8	ug/g	09/16/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
09/27/93

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

Attn:

Lab number : 3109979
Sample number : 421
Sample matrix : SOIL

Report Date: 09/21/93

COLLECTION INFORMATION

Date/Time/By: 09/14/93 8:44 MAURER
Location : RSA UTILITY BLDG, RSA-2

ADEM CENTRAL LABORATORY
- RESULTS REPORT -
September 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
3109979	Dibromomethane	<2375	ug/g		09/17/93
	o-Chlorotoluene	<2375	ug/g		09/17/93
	p-Chlorotoluene	<2375	ug/g		09/17/93
	1,3-Dichloropropane	<2375	ug/g		09/17/93
	2,2-Dichloropropane	<2375	ug/g		09/17/93
	Ethylbenzene	<2375	ug/g		09/17/93
	Styrene	<2375	ug/g		09/17/93
	m+p-Xylene	<2375	ug/g		09/17/93
	o-Xylene	<2375	ug/g		09/17/93
	Bromochloromethane	<2375	ug/g		09/17/93
	n-Butylbenzene	<2375	ug/g		09/17/93
	Dichlorofluoromethane	<2375	ug/g		09/17/93
	Fluorotrichloromethane	<2375	ug/g		09/17/93
	Hexachlorobutadiene	<2375	ug/g		09/17/93
	Isopropylbenzene	<2375	ug/g		09/17/93
	m-Dichlorobenzene	<2375	ug/g		09/17/93
	o-Dichlorobenzene	<2375	ug/g		09/17/93
	t-1,2-Dichloroethylene	<2375	ug/g		09/17/93
	cis-1,2-Dichloroethylen	<2375	ug/g		09/17/93
	Dichloromethane	<2375	ug/g		09/17/93
	1,1-Dichloroethane	<2375	ug/g		09/17/93
	1,1-Dichloropropene	<2375	ug/g		09/17/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - September 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
3109979	1,3-Dichloropropene	<2375	ug/g		09/17/93
	1,2-Dichloropropane	<2375	ug/g		09/17/93
	Trichloroethylene	<2375	ug/g		09/17/93
	Carbon Tetrachloride	<2375	ug/g		09/17/93
	1,2-Dicholoethane	<2375	ug/g		09/17/93
	Benzene	<2375	ug/g		09/17/93
	1,3,5-Trimethylbenzene	<2375	ug/g		09/17/93
	1,1,2Trichloroethane	<2375	ug/g		09/17/93
	1,1,1,2-Tetrachloroetha	<2375	ug/g		09/17/93
	1,1,2,2-Tetrachloroetha	<2375	ug/g		09/17/93
	Tetrachloroethylene	7268.0000	ug/g		09/17/93
	1,2,3-Trichloropropane	<2375	ug/g		09/17/93
	Toluene	<2375	ug/g		09/17/93
	Bromomethane	<2375	ug/g		09/17/93
	Chlorobenzene	<2375	ug/g		09/17/93
	Chlorodibromomethane	<2375	ug/g		09/17/93
	Chloroethane	<2375	ug/g		09/17/93
	Chloroform	<2375	ug/g		09/17/93
	Chloromethane	<2375	ug/g		09/17/93
	Tertbutylbenzene	<2375	ug/g		09/17/93
	1,2,3-Trichlorobenzene	<2375	ug/g		09/17/93
	p-Dichlorobenzene	<2375	ug/g		09/17/93
	p-Isopropyltoluene	<2375	ug/g		09/17/93
	Naphthalene	<2375	ug/g		09/17/93
	n-Propylbenzene	<2375	ug/g		09/17/93
	Secbutylbenzene	<2375	ug/g		09/17/93
	Bromodichloromethane	<2375	ug/g		09/17/93
	Bromoform	<2375	ug/g		09/17/93
	1,2,4-Trichlorobenzene	<2375	ug/g		09/17/93
	1,2,4-Trimethylbenzene	<2375	ug/g		09/17/93
	1,1,1-Trichloroethane	2375.0000	ug/g		09/17/93
	Vinyl Chloride	<2375	ug/g		09/17/93
	Bromobenzene	<2375	ug/g		09/17/93
	1,1-Dichloroethylene	<2375	ug/g		09/17/93

* U denotes results less than the instrument detection limit.

5

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
09/27/93

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

Attn:

Lab number : 3109980 Report Date: 09/21/93
Sample number : 421
Sample matrix : SOIL

COLLECTION INFORMATION
Date/Time/By: 09/14/93 8:46 MAURER
Location : RSA UTILITY BLDG, RSA-3

ADEM CENTRAL LABORATORY
- RESULTS REPORT - September 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
3109980	Dibromomethane	<2482	ug/g		09/17/93
	m-Dichlorobenzene	<2482	ug/g		09/17/93
	p-Chlorotoluene	<2482	ug/g		09/17/93
	1,3-Dichloropropane	<2482	ug/g		09/17/93
	2,2-Dichloropropane	<2482	ug/g		09/17/93
	Ethylbenzene	<2482	ug/g		09/17/93
	Styrene	<2482	ug/g		09/17/93
	1,3,5-Trimethylbenzene	<2482	ug/g		09/17/93
	o-Xylene	<2482	ug/g		09/17/93
	Bromochloromethane	<2482	ug/g		09/17/93
	n-Butylbenzene	<2482	ug/g		09/17/93
	Dichlorofluoromethane	<2482	ug/g		09/17/93
	Fluorotrichloromethane	<2482	ug/g		09/17/93
	Hexachlorobutadiene	<2482	ug/g		09/17/93
	Isopropylbenzene	<2482	ug/g		09/17/93
	p-Isopropyltoluene	<2482	ug/g		09/17/93
	o-Dichlorobenzene	<2482	ug/g		09/17/93
	t-1,2-Dichloroethylene	<2482	ug/g		09/17/93
	cis-1,2-Dichloroethylen	<2482	ug/g		09/17/93
	Dichloromethane	<2482	ug/g		09/17/93
	1,1-Dichloroethane	<2482	ug/g		09/17/93
	1,1-Dichloropropene	<2482	ug/g		09/17/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y

- SAMPLE ANALYSIS REPORT -
10/25/93

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

OCT 1993
RECEIVED
ADEM-FO
MONTGOMERY

Attn: Dan Cooper

Report Date: 10/25/93

Lab number : 4100248
Sample number : 348-0211-9074
Sample matrix : SOIL

COLLECTION INFORMATION
Date/Time/By: 10/11/93 2:30 STAMPS
Location : RSA UTILITY BLDG., RSA-1

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 25, 1993

Lab#	Test	Result	Units	DL*	Analdate
4100248	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	10/22/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	10/22/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	10/22/93
	1,1,2Trichloroethane	0.0500	ug/g	U	10/22/93
	1,1-Dichloroethane	0.0500	ug/g	U	10/22/93
	1,1-Dichloroethylene	0.0500	ug/g	U	10/22/93
	1,1-Dichloropropene	0.0500	ug/g	U	10/22/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	10/22/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	10/22/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	10/22/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	10/22/93
	1,2-Dicholoethane	0.0500	ug/g	U	10/22/93
	1,2-Dichloropropane	0.0500	ug/g	U	10/22/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	10/22/93
	1,3-Dichloropropane	0.0500	ug/g	U	10/22/93
	1,3-Dichloropropene	0.0500	ug/g	U	10/22/93
	2,2-Dichloropropane	0.0500	ug/g	U	10/22/93
	✓Tetrachloroethylene	0.0500	ug/g	U	10/22/93
	Bromobenzene	0.0500	ug/g	U	10/22/93
	Bromochloromethane	0.0500	ug/g	U	10/22/93
	Bromodichloromethane	0.0500	ug/g	U	10/22/93
	Benzene	0.0500	ug/g	U	10/22/93

* U denotes results less than the instrument detection limit.

APPENDIX B

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Leigh Pegues, Director

Jim Folsom
Governor

Mailing Address:
PO BOX 301463
MONTGOMERY AL
36130-1463

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

(205) 271-7700
FAX 271-7950
270-5612

Field Offices:

110 Vulcan Road
Birmingham, AL
35209-4702
) 942-6168
FAX 941-1603

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

2204 Perimeter Road
Mobile, AL
36615-1131
(205) 450-3400
FAX 479-2593

OCTOBER 28, 1993

MEMORANDUM

TO: Jymalyn E. Redmond, Chief
Site Assessment Unit
Special Projects

FROM: Jerremy H. Stamps
Site Assessment Unit
Special Projects

SUBJECT: RSA TOWERS DRAFT PHASE II STUDY PLAN
AHSCF SITE NUMBER 9074

INTRODUCTION

Perchlorethylene contaminated soil and groundwater has been found at the Retirement System of Alabama (RSA) Chiller Plant at the corner of Monroe Street and McDonough Street in Montgomery Alabama. The Alabama Department of Environmental Management (ADEM) conducted a study at this site and determined that contamination extended beyond the RSA Chiller Plant excavation.

OBJECTIVES

In order to determine the extent and possibly the source of contamination ADEM will hire an environmental testing firm to drill and sample five borings, two of which will be converted into groundwater monitoring wells. ADEM will collect 25 shelby tube soil samples and 8 groundwater samples for volatile compound analysis at ADEM's Montgomery Laboratory. The air column within each boring will be analyzed on two consecutive days using a mobile gas chromatograph.

SCOPE

In this phase of the assessment, the study area will be limited to a six city block area bound on the north by Jefferson Street, on the south by Dexter Avenue, on the west by McDonough Street, on the east by Decature Street (see boring location map).

METHODOLOGY

A) Test Hole Boring

Hollow stem augers shall be used when boring test holes in order to eliminate potential caving and cross contamination.

B) Soil Sampling

Split spoons with removable liners and/or shelby tubes shall be used for sampling devices. These samples will be taken from test holes every 5 feet,with the first sample starting at 5 feet below the surface, and the last sample starting at 25 feet (5 samples per test hole).

In order to limit exposure to the atmosphere, the ends of the liners or shelby tubes shall be covered with aluminum foil,duck tape and plastic caps prior to being preserved with ice.

C) Groundwater Sampling

Two of the test hole borings shall be converted into 2 inch diameter, 50 to 60 foot deep PVC monitoring wells. After installation, the two monitoring wells shall be developed to remove fines in the vicinity of the screen. Approximately 24 hours after the wells have been developed four water samples shall be collected from each well. Two of the samples will be taken prior to purging and two shall be removed after 5 well volumes have been purged.

D) Air Sampling

All test holes shall be covered with a steel plate and allowed to equilibrate for 24 hours. ADEM's Air Division will then analyze the air in the holes to determine the amount of vapor phase tetrachlorethylene escaping from the soil.

E) Sample Preservation

All soil and water samples ,while in custody of field personnel, shall be kept on ice. At the end of each work day all samples shall be relinquished to ADEM's Montgomery Laboratory.

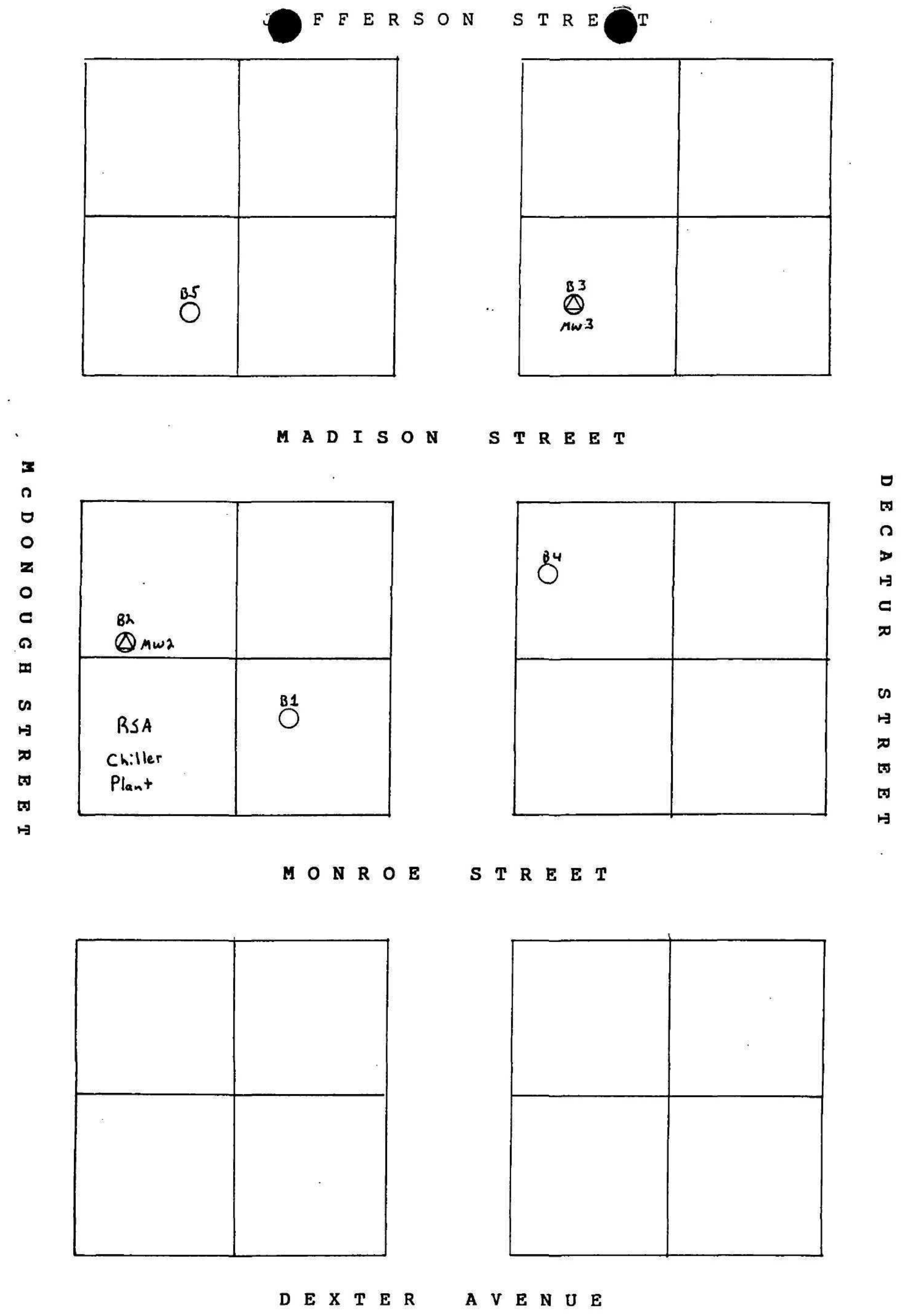
F) Generated Waste

All excess soil, water and other waste shall be contained in drums. The drummed waste will then be transported to ADEM's Montgomery Field Operations, where the material will be characterized and disposed of in the required manner following applicable state and federal guidelines.

CONCLUSION

Following all applicable guidelines from ADEM'S Standard Operation Procedures Manual, the RSA Towers Site Number 9074 Phase II Study will consist of soil, groundwater, and air sampling in a 4 to 6 city block area around a site found to be contaminated with tetrachlorethylene.

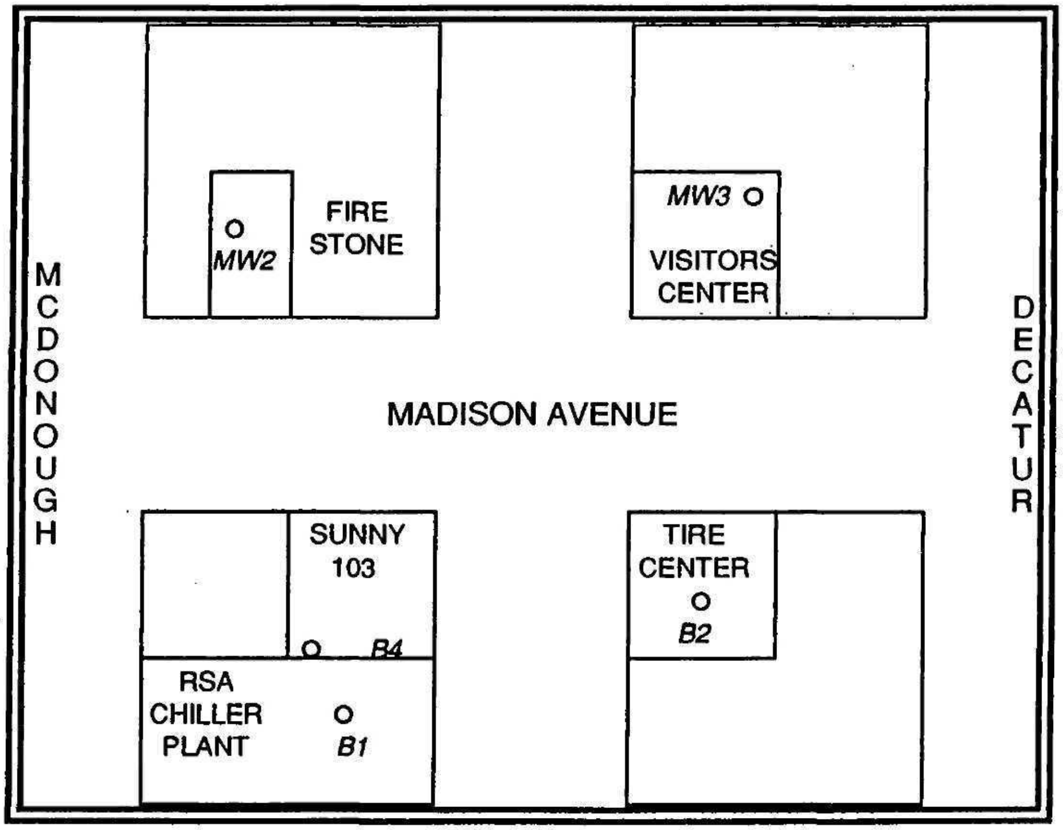
This phase of the study will give ADEM the information needed to determine how extensive the contamination is and what the source of contamination may be, so that a clean-up plan can be initiated.


J FFERSON STRE T
B5
B3
MW3
MADISON STREET
MCDONOUGH STREET
DECATUR STREET
B4
B2
MW2
B1
RSA
Chiller
Plant
MONROE STREET
DEXTER AVENUE

RSADRILL.Do

JERREMY STAMPS'
FIELD NOTES
FOR
RSA TOWER AHSOF #9074
PHASE II STUDY

Map 1. Doc



RSA PHASE II SITE MAP

SITE NAME: RSA TOWER
AHSCF NUMBER: 9074
DATE: 11-29-93

COMMENTS: DRILLING STARTED AT 9:05 A.M.

BORING #	SAMPLE I D	SAMPLE TIME	SAMPLE DEPTH	LOGGER	TYPE CONT.	TYPE PRESER VATIVE
MW2	MW2-1	0930	4'-6'	J. S.	SHELBY	ICE
MW2	MW2-2	0938	11'-13'	J. S.	SHELBY	ICE
MW2	MW2-3	0955	18'20'	J. S.	SHELBY	ICE
MW2	MW2-4	1005	25'-27'	J. S.	SHELBY	ICE
MW2	MW2-5	1012	32'-34'	J. S.	SHELBY	ICE

SITE NAME: RSA TOWERS
AHSCF NUMBER: 9074
DATE: 11-30-93

COMMENTS: GRAY CLAY SEAM AT 35' TO 40' DEEP
SAND AND GRAVEL AT 59' DEEP

BORING #	SAMPLE I D	SAMPLE TIME	SAMPLE DEPTH	LOGGER	TYPE CONT.	TYPE PRESER VATIVE
MW3	MW3-1	0840	4'-6'	J. S.	SHELBY	ICE
MW3	MW3-2	0846	11'-13'	J. S.	SHELBY	ICE
MW3	MW3-3	0850	18'-20'	J. S.	SHELBY	ICE
MW3	MW3-4	0910	25'-27'	J. S.	SHELBY	ICE
MW3	MW3-5	0930	32'-34'	J. S.	SHELBY	ICE

SITE NAME: RSA TOWER
AHSCF NUMBER: 9074
DATE: 11-30-93

COMMENTS: BORING ON RSA PROPERTY

BORING #	SAMPLE I D	SAMPLE TIME	SAMPLE DEPTH	LOGGER	TYPE CONT.	TYPE PRESER VATIVE
B1	B1-A	1350	4'-6'	J. S.	SHELBY	ICE
B1	B1-B	1354	11'-13'	J. S.	SHELBY	ICE
B1	B1-C	1357	18'-20'	J. S.	SHELBY	ICE
B1	B1-D	1405	25'-27'	J. S.	SHELBY	ICE
B1	B1-E	1415	32'-34'	J. S.	SHELBY	ICE

SITE NAME: RSA TOWER
AHSCF NUMBER: 9074
DATE: 12-1-93

COMMENTS: TIRE CENTER PROPERTY

BORING #	SAMPLE ID	SAMPLE TIME	SAMPLE DEPTH	LOGGER	TYPE CONT.	TYPE PRESERVATIVE
B2	B2-A	0900	4'-6'	J. S.	SHELBY	ICE
B2	B2-B	0907	11'-13'	J. S.	SHELBY	ICE
B2	B2-C	0914	18'-20'	J. S.	SHELBY	ICE
B2	B2-D	0921	25'-27'	J. S.	SHELBY	ICE
B2	B2-E	0936	32'-34'	J. S.	SHELBY	ICE

SITE NAME: RSA TOWER
AHSCF NUMBER: 9074
DATE: 12-1-93

COMMENTS: SUNNY 103 PARKING LOT
REPLACES PROPOSED BORING AT MADISON PARKING LOT

BORING NUMBER	SAMPLE I D	SAMPLE TIME	SAMPLE DEPTH	LOGGER	TYPE CONT.	TYPE PRESER VATIVE
B4	B4-A	1035	4'-6'	J. S.	SHELBY	ICE
B4	B4-B	1040	11'-13'	J. S.	SHELBY	ICE
B4	B4-C	1045	18'-20'	J. S.	SHELBY	ICE
B4	B4-D	1051	25'-27'	J. S.	SHELBY	ICE
B4	B4-E	1100	32'-34'	J. S.	SHELBY	ICE

Results. Doc

InterOffice Memo

To: Jymalyn Redmond

From: Jerremy Stamps

Date: December 29, 1993

Subject: Results of Drilling at RSA Tower Site on 11-29-93 to 12-1-93

Attached you will find a copy of the soil sample logs that list the sample I D, sample time, sample depth, location I D and results of each soil sample and groundwater sample taken during the second phase of study at the RSA Site in downtown Montgomery.

JHS

attachments

TABLE I: RSA PHASE II SOIL SAMPLES AND TEST RESULTS

BORING #	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	TETRACHLORETHYLENE RESULTS
MW2	MW2-1	4'-6'	11-29-93	0930	BDL
MW2	MW2-2	11'-13'	11-29-93	0938	BDL
MW2	MW2-3	18'-20'	11-29-93	0955	BDL
MW2	MW2-4	25'-27'	11-29-93	1005	BDL
MW2	MW2-5	32'-34'	11-29-93	1012	BDL
MW3	MW3-1	4'-6'	11-30-93	0840	BDL
MW3	MW3-2	11'-13'	11-30-93	0846	BDL
MW3	MW3-3	18'-20'	11-30-93	0850	BDL
MW3	MW3-4	25'-27'	11-30-93	0910	BDL
MW3	MW3-5	32'-34'	11-30-93	0930	BDL
B1	B1-A	4'-6'	11-30-93	1350	BDL
B1	B1-B	11'-13'	11-30-93	1354	BDL
B1	B1-C	18'-20'	11-30-93	1357	BDL
B1	B1-D	25'-27'	11-30-93	1405	BDL
B1	B1-E	32'-34'	11-30-93	1415	BDL
B2	B2-A	4'-6'	12-1-93	0900	BDL
B2	B2-B	11"-13'	12-1-93	0907	BDL
B2	B2-C	18'-20'	12-1-93	0914	BDL
B2	B2-D	25'-27'	12-1-93	0921	BDL
B2	B2-E	32'-34'	12-1-93	0936	BDL
B4	B4-A	4'-6'	12-1-93	1035	BDL
B4	B4-B	11'-13'	12-1-93	1040	BDL
B4	B4-C	18'-20'	12-1-93	1045	BDL
B4	B4-D	25'-27'	12-1-93	1051	BDL
B4	B4-E	32'-34'	12-1-93	1100	BDL

TABLE II: RSA PHASE II WATER SAMPLES AND TEST RESULTS

WELL #	SAMPLE ID	SAMPLE DATE	SAMPLE TIME	DEPTH TO WATER	DEPTH TO SCREEN	BOTTOM OF WELL	FEET OF WATER	TETRACHLORETHYLENE RESULTS
MW2	MW2-UPA	12-6-93	1240	38.78'	39.87'	59.87'	21.09'	61.7 ppb
MW3	MW3-UPA	12-6-93	1210	54.46'	39.32'	59.32'	4.86'	18.7 ppb

NOTES:

1. ALL MEASUREMENTS ARE TAKEN WITH RESPECT TO TOP OF WELL RISER
2. MCL FOR TETRACHLORETHYLENE IN DRINKING WATER IS ***5.0 ppb***
3. WATER SAMPLE WS-3 TAKEN FROM MW-1 AT THE RSA CHILLER PLANT SITE ON 10-15-93 CONTAINED 607.0 ppb TETRACHLORETHYLENE

RSA PHASE II STUDY CONCLUSIONS

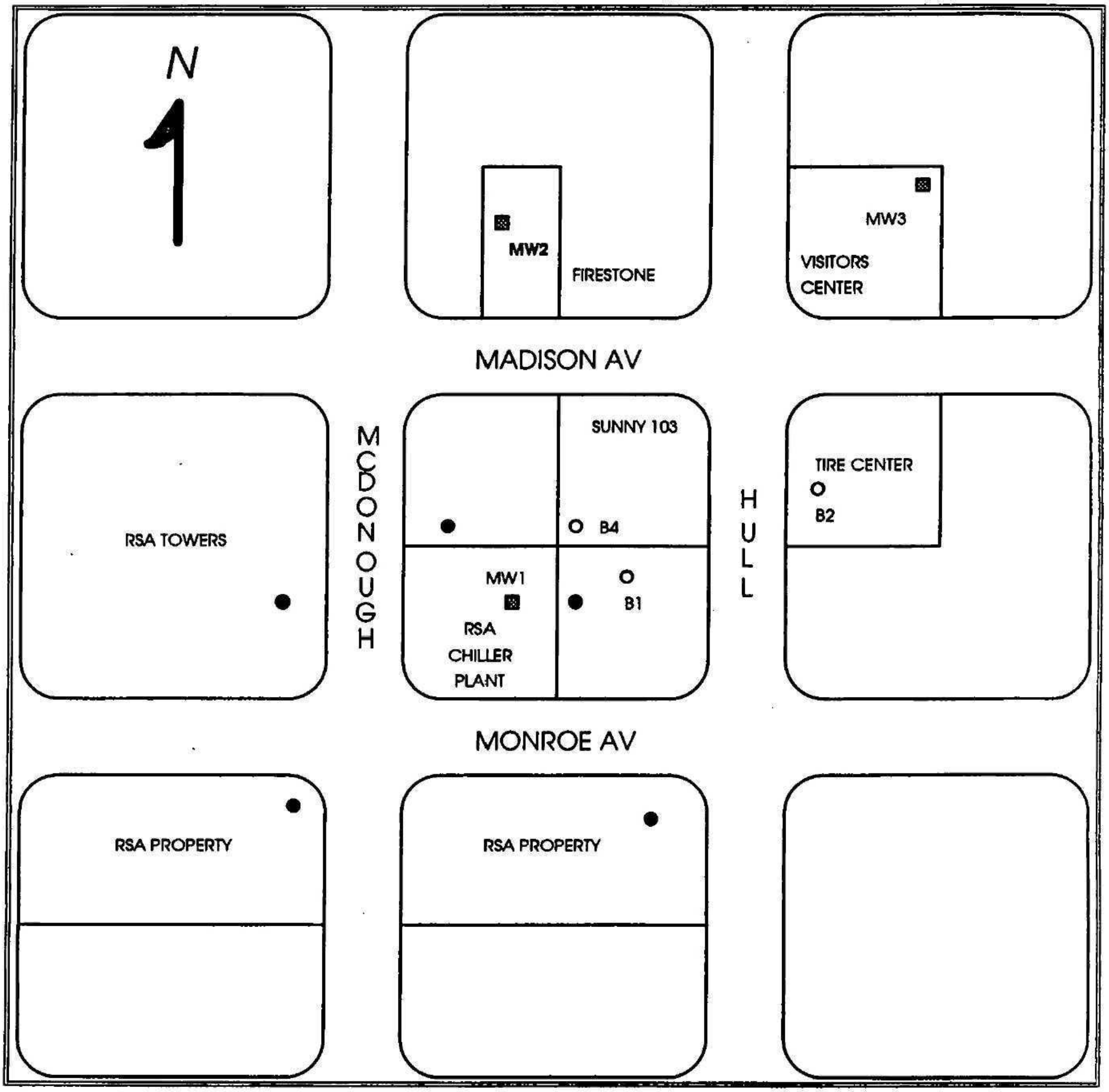
In the downtown area, 25 soil samples were taken from five different borings (see attached map for approximate location of each boring). Shelby tube soil samples were taken at five foot intervals with the first sample starting at four feet and the last sample ending at approximately 34 feet below surface level (see table I). The soil samples were then tested for the presence of tertachlorethylene and other volatile organic compounds. All 25 soil samples exhibited below detection limit results for all constituents analyzed (see attached laboratory analysis reports).

Two of the five borings were drilled to a depth of approximately 60 feet. Monitoring wells were then installed and completed. After the wells had been developed, water samples were collected and tested for the presence of volatile organic compounds. With the exception of tetrachlorethylene, both water sample results tested less than the instrument's detection limit for all other volatile organic compounds (see attached laboratory analysis reports). Groundwater sample MW2-UPA from well number MW2 contained 61.7 parts per billion tetrachlorethylene, and groundwater sample MW3-UPA from well number MW3 contained 18.7 parts per billion tetrachlorethylene (see table II).

During our study it was also discovered that Montgomery public water well number 9W had to be closed due to the presence of tetrachlorethylene. Montgomery public water well number 9W, located approximately 3/8 of a mile northwest of the RSA Chiller Plant site, contained 7.1 parts per billion Tetrachlorethylene on 04/04/91 and 21.0 parts per billion tetrachlorethylene on 05/14/92.

The data from this study combined with the data collected at the RSA Chiller Plant site indicates that the contamination has extensively spread from the source. Since the only soil samples found to contain tetrachlorethylene, and the highest groundwater contamination of 607.0 parts per billion tetrachlorethylene came from the RSA Chiller Plant site, all data collected as of 01/03/94 suggest that the source of contamination is coming from the RSA Chiller Plant site or possibly the adjacent property to the east.

RSA SITE MAP



NOT TO SCALE

LEGEND

☒ MONITORING WELL

○ TEST BORING

● FURTHER TESTING NEEDED

WELL INSTALLATION LOG
RSA TOWER
AHSCF 9074

	WELL # MW2	**WELL # MW3**
FEET OF SCREEN	20'	20'
FEET OF RISER	40'	40'
AMOUNT OF SAND	23' = 5 BAGS + CAVE IN	23' = 4 BAGS + CAVE IN
AMOUNT OF CLAY	2' = 1/2 BUCKET	2' = 1/2 BUCKET
AMOUNT OF CEMENT	27 BAGS = ~35'	27 BAGS =~35'
BAGS OF CONCRETE	1	1
FEET OF WATER	12'	4'

At completion the wells were secured with "J" plugs with locks and flush mount well covers.

TABLE I: RSA PHASE II SOIL SAMPLES AND TEST RESULTS

BORING #	SAMPLE I D	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TIME	TETRACHLORETHYLENE RESULTS
MW2	MW2-1	4'-6'	11-29-93	0930	BDL
MW2	MW2-2	11'-13'	11-29-93	0938	BDL
MW2	MW2-3	18'-20'	11-29-93	0955	BDL
MW2	MW2-4	25'-27'	11-29-93	1005	BDL
MW2	MW2-5	32'-34'	11-29-93	1012	BDL
MW3	MW3-1	4'-6'	11-30-93	0840	BDL
MW3	MW3-2	11'-13'	11-30-93	0846	BDL
MW3	MW3-3	18'-20'	11-30-93	0850	BDL
MW3	MW3-4	25'-27'	11-30-93	0910	BDL
MW3	MW3-5	32'-34'	11-30-93	0930	BDL
B1	B1-A	4'-6'	11-30-93	1350	BDL
B1	B1-B	11'-13'	11-30-93	1354	BDL
B1	B1-C	18'-20'	11-30-93	1357	BDL
B1	B1-D	25'-27'	11-30-93	1405	BDL
B1	B1-E	32'-34'	11-30-93	1415	BDL
B2	B2-A	4'-6'	12-1-93	0900	BDL
B2	B2-B	11"-13'	12-1-93	0907	BDL
B2	B2-C	18'-20'	12-1-93	0914	BDL
B2	B2-D	25'-27'	12-1-93	0921	BDL
B2	B2-E	32'-34'	12-1-93	0936	BDL
B4	B4-A	4'-6'	12-1-93	1035	BDL
B4	B4-B	11'-13'	12-1-93	1040	BDL
B4	B4-C	18'-20'	12-1-93	1045	BDL
B4	B4-D	25'-27'	12-1-93	1051	BDL
B4	B4-E	32'-34'	12-1-93	1100	BDL

BDL=BELOW DETECTION LIMITS

TABLE II: RSA PHASE II WATER SAMPLES AND TEST RESULTS

WELL #	SAMPLE ID	SAMPLE DATE	SAMPLE TIME	DEPTH TO WATER	DEPTH TO SCREEN	BOTTOM OF WELL	FEET OF WATER	TETRACHLORETHYLENE RESULTS
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MW3	MW3-UPA	12-6-93	1210	54.46'	39.32'	59.32'	4.86'	18.7 ppb

NOTES:

1. ALL MEASUREMENTS ARE TAKEN WITH RESPECT TO TOP OF WELL RISER
2. MCL FOR TETRACHLORETHYLENE IN DRINKING WATER IS ***5.0 ppb***
3. WATER SAMPLE WS-3 TAKEN FROM MW-1 AT THE RSA CHILLER PLANT SITE ON 10-15-93 CONTAINED 607.0 ppb TETRACHLORETHYLENE

ADEM CENTRAL LABORAT[illegible]Y

- SAMPLE ANALYSIS REPORT -
12/15/93

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

Attn: Dan Cooper

Lab number : 4102065
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION

Date/Time/By: 11/29/93 9:30 STAMPS
Location : RSA TOWERS, MW2-1

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102065	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATO[illegible]
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102065	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/15/93

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

Attn: Dan Cooper

Lab number : 4102064
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION
Date/Time/By: 11/29/93 9:38 STAMPS
Location : RSA TOWERS, MW2-2

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102064	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102064	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT

- SAMPLE ANALYSIS REPORT -
12/15/93

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

Attn: Dan Cooper

Lab number : 4102073
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION
Date/Time/By: 11/29/93 9:55 STAMPS
Location : RSA TOWERS, MW2-3

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102073	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102073	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT

- SAMPLE ANALYSIS REPORT -

12/15/93

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

Attn: Dan Cooper

Lab number : 4102072
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION

Date/Time/By: 11/29/93 10:05 STAMPS
Location : RSA TOWERS, MW2-4

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102072	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102072	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT

- SAMPLE ANALYSIS REPORT -
12/15/93

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

Attn: Dan Cooper

Lab number : 4102071
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION
Date/Time/By: 11/29/93 10:12 STAMPS
Location : RSA TOWERS, MW2-5

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102071	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102071	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT

DEC 1993
ADEM
SPECIAL PROJECTS

- SAMPLE ANALYSIS REPORT -
12/15/93

DEC 1993
"ADEM - FO"
Montgomery

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

Attn: Dan Cooper

Lab number : 4102070
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION

Date/Time/By: 11/30/93 8:40 STAMPS
Location : RSA TOWERS, MW3-1

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102070	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102070	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

DEC 1993
ADEM
SPECIAL PROJECTS

ADEM CENTRAL LABORAT[illegible]

- SAMPLE ANALYSIS REPORT -
12/15/93

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

DEC 1993
"ADEM - FO"
Montgomery"

Attn: Dan Cooper

Lab number : 4102069
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION

Date/Time/By: 11/30/93 8:46 STAMPS
Location : RSA TOWERS, MW3-2

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102069	1,1,1,2-Tetrachloroetha	0.0500	ug/g U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g U	12/09/93
	Tetrachloroethylene	0.0500	ug/g U	12/09/93
	Bromobenzene	0.0500	ug/g U	12/09/93
	Bromochloromethane	0.0500	ug/g U	12/09/93
	Bromodichloromethane	0.0500	ug/g U	12/09/93
	Benzene	0.0500	ug/g U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102069	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT

DEC 1993
ADEM
SPECIAL PROJECTS

- SAMPLE ANALYSIS REPORT -

12/15/93

DEC 1993
"ADEM - FO"
Montgomery

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

Attn: Dan Cooper

Lab number : 4102068
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION

Date/Time/By: 11/30/93 8:50 STAMPS
Location : RSA TOWERS, MW3-3

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102068	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]

- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102068	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y

DEC 1993
ADEM
SPECIAL PROJECTS

- SAMPLE ANALYSIS REPORT -
12/15/93

DEC 1993
"ADEM - FO"
Montgomery"

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

Attn: Dan Cooper

Lab number : 4102067
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION
Date/Time/By: 11/30/93 9:10 STAMPS
Location : RSA TOWERS, MW3-4

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102067	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102067	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/15/93

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

Attn: Dan Cooper

Lab number : 4102066
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION

Date/Time/By: 11/30/93 9:30 STAMPS
Location : RSA TOWERS, MW3-5

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102066	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT Y
- RESULTS REPORT -   December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102066	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102084
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION
Date/Time/By: 11/30/93 13:50 STAMPS
Location : RSA TOWERS, B1-A

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102084	1,1,1,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,1-Trichloroethane	<.025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,2Trichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethylene	<.025	ug/g	12/13/93
	1,1-Dichloropropene	<.025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,3-Trichloropropane	<.025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g	12/13/93
	1,2-Dicholoethane	<.025	ug/g	12/13/93
	1,2-Dichloropropane	<.025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g	12/13/93
	1,3-Dichloropropane	<.025	ug/g	12/13/93
	1,3-Dichloropropene	<.025	ug/g	12/13/93
	2,2-Dichloropropane	<.025	ug/g	12/13/93
	Tetrachloroethylene	<.025	ug/g	12/13/93
	Bromobenzene	<.025	ug/g	12/13/93
	Bromochloromethane	<.025	ug/g	12/13/93
	Bromodichloromethane	<.025	ug/g	12/13/93
	Benzene	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102085	Bromomethane	<.025	ug/g	12/13/93
	cis-1,2-Dichloroethylen	<.025	ug/g	12/13/93
	Chlorobenzene	<.025	ug/g	12/13/93
	Chlorodibromomethane	<.025	ug/g	12/13/93
	Chloroethane	<.025	ug/g	12/13/93
	Bromoform	<.025	ug/g	12/13/93
	Chloroform	<.025	ug/g	12/13/93
	Chloromethane	<.025	ug/g	12/13/93
	Carbon Tetrachloride	<.025	ug/g	12/13/93
	Dibromomethane	<.025	ug/g	12/13/93
	Dichlorofluoromethane	<.025	ug/g	12/13/93
	Dichloromethane	<.025	ug/g	12/13/93
	Ethylbenzene	<.025	ug/g	12/13/93
	Fluorotrichloromethane	<.025	ug/g	12/13/93
	Hexachlorobutadiene	<.025	ug/g	12/13/93
	Isopropylbenzene	<.025	ug/g	12/13/93
	m-Dichlorobenzene	<.025	ug/g	12/13/93
	m+p-Xylene	<.025	ug/g	12/13/93
	Naphthalene	<.025	ug/g	12/13/93
	n-Butylbenzene	<.025	ug/g	12/13/93
	n-Propylbenzene	<.025	ug/g	12/13/93
	o-Chlorotoluene	<.025	ug/g	12/13/93
	o-Dichlorobenzene	<.025	ug/g	12/13/93
	o-Xylene	<.025	ug/g	12/13/93
	p-Chlorotoluene	<.025	ug/g	12/13/93
	p-Dichlorobenzene	<.025	ug/g	12/13/93
	p-Isopropyltoluene	<.025	ug/g	12/13/93
	Secbutylbenzene	<.025	ug/g	12/13/93
	Styrene	<.025	ug/g	12/13/93
	t-1,2-Dichloroethylene	<.025	ug/g	12/13/93
	Tertbutylbenzene	<.025	ug/g	12/13/93
	Trichloroethylene	<.025	ug/g	12/13/93
	Toluene	<.025	ug/g	12/13/93
	Vinyl Chloride	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102086
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION
Date/Time/By: 11/30/93 . STAMPS
Location : RSA TOWERS, B1-C

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102086	1,1,1,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,1-Trichloroethane	<.025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,2Trichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethylene	<.025	ug/g	12/13/93
	1,1-Dichloropropene	<.025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,3-Trichloropropane	<.025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g	12/13/93
	1,2-Dicholoethane	<.025	ug/g	12/13/93
	1,2-Dichloropropane	<.025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g	12/13/93
	1,3-Dichloropropane	<.025	ug/g	12/13/93
	1,3-Dichloropropene	<.025	ug/g	12/13/93
	2,2-Dichloropropane	<.025	ug/g	12/13/93
	Tetrachloroethylene	<.025	ug/g	12/13/93
	Bromobenzene	<.025	ug/g	12/13/93
	Bromochloromethane	<.025	ug/g	12/13/93
	Bromodichloromethane	<.025	ug/g	12/13/93
	Benzene	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

DEC 1993
"ADEM - FO
Montgomery"

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

Attn: Dan Cooper

Lab number : 4102086
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 11/30/93 . STAMPS
Location : RSA TOWERS, B1-C

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102086	1,1,1,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,1-Trichloroethane	<.025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,2Trichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethylene	<.025	ug/g	12/13/93
	1,1-Dichloropropene	<.025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,3-Trichloropropane	<.025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g	12/13/93
	1,2-Dicholoethane	<.025	ug/g	12/13/93
	1,2-Dichloropropane	<.025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g	12/13/93
	1,3-Dichloropropane	<.025	ug/g	12/13/93
	1,3-Dichloropropene	<.025	ug/g	12/13/93
	2,2-Dichloropropane	<.025	ug/g	12/13/93
	Tetrachloroethylene	<.025	ug/g	12/13/93
	Bromobenzene	<.025	ug/g	12/13/93
	Bromochloromethane	<.025	ug/g	12/13/93
	Bromodichloromethane	<.025	ug/g	12/13/93
	Benzene	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102087
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION
Date/Time/By: 11/30/93 14:05 STAMPS
Location : RSA TOWERS, B1-D

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102087	1,1,1,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,1-Trichloroethane	<.025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,2Trichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethylene	<.025	ug/g	12/13/93
	1,1-Dichloropropene	<.025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,3-Trichloropropane	<.025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g	12/13/93
	1,2-Dicholoethane	<.025	ug/g	12/13/93
	1,2-Dichloropropane	<.025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g	12/13/93
	1,3-Dichloropropane	<.025	ug/g	12/13/93
	1,3-Dichloropropene	<.025	ug/g	12/13/93
	2,2-Dichloropropane	<.025	ug/g	12/13/93
	Tetrachloroethylene	<.025	ug/g	12/13/93
	Bromobenzene	<.025	ug/g	12/13/93
	Bromochloromethane	<.025	ug/g	12/13/93
	Bromodichloromethane	<.025	ug/g	12/13/93
	Benzene	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102087	Bromomethane	<.025	ug/g	12/13/93
	cis-1,2-Dichloroethylen	<.025	ug/g	12/13/93
	Chlorobenzene	<.025	ug/g	12/13/93
	Chlorodibromomethane	<.025	ug/g	12/13/93
	Chloroethane	<.025	ug/g	12/13/93
	Bromoform	<.025	ug/g	12/13/93
	Chloroform	<.025	ug/g	12/13/93
	Chloromethane	<.025	ug/g	12/13/93
	Carbon Tetrachloride	<.025	ug/g	12/13/93
	Dibromomethane	<.025	ug/g	12/13/93
	Dichlorofluoromethane	<.025	ug/g	12/13/93
	Dichloromethane	<.025	ug/g	12/13/93
	Ethylbenzene	<.025	ug/g	12/13/93
	Fluorotrichloromethane	<.025	ug/g	12/13/93
	Hexachlorobutadiene	<.025	ug/g	12/13/93
	Isopropylbenzene	<.025	ug/g	12/13/93
	m-Dichlorobenzene	<.025	ug/g	12/13/93
	m+p-Xylene	<.025	ug/g	12/13/93
	Naphthalene	<.025	ug/g	12/13/93
	n-Butylbenzene	<.025	ug/g	12/13/93
	n-Propylbenzene	<.025	ug/g	12/13/93
	o-Chlorotoluene	<.025	ug/g	12/13/93
	o-Dichlorobenzene	<.025	ug/g	12/13/93
	o-Xylene	<.025	ug/g	12/13/93
	p-Chlorotoluene	<.025	ug/g	12/13/93
	p-Dichlorobenzene	<.025	ug/g	12/13/93
	p-Isopropyltoluene	<.025	ug/g	12/13/93
	Secbutylbenzene	<.025	ug/g	12/13/93
	Styrene	<.025	ug/g	12/13/93
	t-1,2-Dichloroethylene	<.025	ug/g	12/13/93
	Tertbutylbenzene	<.025	ug/g	12/13/93
	Trichloroethylene	<.025	ug/g	12/13/93
	Toluene	<.025	ug/g	12/13/93
	Vinyl Chloride	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102088
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 11/30/93 14:15 STAMPS
Location : RSA TOWERS, B1-E

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102088	1,1,1,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,1-Trichloroethane	<.025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,2Trichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethylene	<.025	ug/g	12/13/93
	1,1-Dichloropropene	<.025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,3-Trichloropropane	<.025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g	12/13/93
	1,2-Dicholoethane	<.025	ug/g	12/13/93
	1,2-Dichloropropane	<.025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g	12/13/93
	1,3-Dichloropropane	<.025	ug/g	12/13/93
	1,3-Dichloropropene	<.025	ug/g	12/13/93
	2,2-Dichloropropane	<.025	ug/g	12/13/93
	Tetrachloroethylene	<.025	ug/g	12/13/93
	Bromobenzene	<.025	ug/g	12/13/93
	Bromochloromethane	<.025	ug/g	12/13/93
	Bromodichloromethane	<.025	ug/g	12/13/93
	Benzene	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102088	Bromomethane	<.025	ug/g		12/13/93
	cis-1,2-Dichloroethylen	<.025	ug/g		12/13/93
	Chlorobenzene	<.025	ug/g		12/13/93
	Chlorodibromomethane	<.025	ug/g		12/13/93
	Chloroethane	<.025	ug/g		12/13/93
	Bromoform	<.025	ug/g		12/13/93
	Chloroform	<.025	ug/g		12/13/93
	Chloromethane	<.025	ug/g		12/13/93
	Carbon Tetrachloride	<.025	ug/g		12/13/93
	Dibromomethane	<.025	ug/g		12/13/93
	Dichlorofluoromethane	<.025	ug/g		12/13/93
	Dichloromethane	<.025	ug/g		12/13/93
	Ethylbenzene	<.025	ug/g		12/13/93
	Fluorotrichloromethane	<.025	ug/g		12/13/93
	Hexachlorobutadiene	<.025	ug/g		12/13/93
	Isopropylbenzene	<.025	ug/g		12/13/93
	m-Dichlorobenzene	<.025	ug/g		12/13/93
	m+p-Xylene	<.025	ug/g		12/13/93
	Naphthalene	<.025	ug/g		12/13/93
	n-Butylbenzene	<.025	ug/g		12/13/93
	n-Propylbenzene	<.025	ug/g		12/13/93
	o-Chlorotoluene	<.025	ug/g		12/13/93
	o-Dichlorobenzene	<.025	ug/g		12/13/93
	o-Xylene	<.025	ug/g		12/13/93
	p-Chlorotoluene	<.025	ug/g		12/13/93
	p-Dichlorobenzene	<.025	ug/g		12/13/93
	p-Isopropyltoluene	<.025	ug/g		12/13/93
	Secbutylbenzene	<.025	ug/g		12/13/93
	Styrene	<.025	ug/g		12/13/93
	t-1,2-Dichloroethylene	<.025	ug/g		12/13/93
	Tertbutylbenzene	<.025	ug/g		12/13/93
	Trichloroethylene	<.025	ug/g		12/13/93
	Toluene	<.025	ug/g		12/13/93
	Vinyl Chloride	<.025	ug/g		12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT
12/27/93

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

Attn: Dan Cooper

Lab number : 4102081
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 12/01/93 9:00 STAMPS
Location : RSA TOWERS, B2-A

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102081	1,1,1,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,1-Trichloroethane	<.025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,2Trichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethylene	<.025	ug/g	12/13/93
	1,1-Dichloropropene	<.025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,3-Trichloropropane	<.025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g	12/13/93
	1,2-Dicholoethane	<.025	ug/g	12/13/93
	1,2-Dichloropropane	<.025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g	12/13/93
	1,3-Dichloropropane	<.025	ug/g	12/13/93
	1,3-Dichloropropene	<.025	ug/g	12/13/93
	2,2-Dichloropropane	<.025	ug/g	12/13/93
	Tetrachloroethylene	<.025	ug/g	12/13/93
	Bromobenzene	<.025	ug/g	12/13/93
	Bromochloromethane	<.025	ug/g	12/13/93
	Bromodichloromethane	<.025	ug/g	12/13/93
	Benzene	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102081	Bromomethane	<.025	ug/g	12/13/93
	cis-1,2-Dichloroethylen	<.025	ug/g	12/13/93
	Chlorobenzene	<.025	ug/g	12/13/93
	Chlorodibromomethane	<.025	ug/g	12/13/93
	Chloroethane	<.025	ug/g	12/13/93
	Bromoform	<.025	ug/g	12/13/93
	Chloroform	<.025	ug/g	12/13/93
	Chloromethane	<.025	ug/g	12/13/93
	Carbon Tetrachloride	<.025	ug/g	12/13/93
	Dibromomethane	<.025	ug/g	12/13/93
	Dichlorofluoromethane	<.025	ug/g	12/13/93
	Dichloromethane	<.025	ug/g	12/13/93
	Ethylbenzene	<.025	ug/g	12/13/93
	Fluorotrichloromethane	<.025	ug/g	12/13/93
	Hexachlorobutadiene	<.025	ug/g	12/13/93
	Isopropylbenzene	<.025	ug/g	12/13/93
	m-Dichlorobenzene	<.025	ug/g	12/13/93
	m+p-Xylene	<.025	ug/g	12/13/93
	Naphthalene	<.025	ug/g	12/13/93
	n-Butylbenzene	<.025	ug/g	12/13/93
	n-Propylbenzene	<.025	ug/g	12/13/93
	o-Chlorotoluene	<.025	ug/g	12/13/93
	o-Dichlorobenzene	<.025	ug/g	12/13/93
	o-Xylene	<.025	ug/g	12/13/93
	p-Chlorotoluene	<.025	ug/g	12/13/93
	p-Dichlorobenzene	<.025	ug/g	12/13/93
	p-Isopropyltoluene	<.025	ug/g	12/13/93
	Secbutylbenzene	<.025	ug/g	12/13/93
	Styrene	<.025	ug/g	12/13/93
	t-1,2-Dichloroethylene	<.025	ug/g	12/13/93
	Tertbutylbenzene	<.025	ug/g	12/13/93
	Trichloroethylene	<.025	ug/g	12/13/93
	Toluene	<.025	ug/g	12/13/93
	Vinyl Chloride	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102082
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 12/01/93 9:07 STAMPS
Location : RSA TOWERS, B2-B

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102082	1,1,1,2-Tetrachloroetha	</025	ug/g	12/13/93
	1,1,1-Trichloroethane	</025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	</025	ug/g	12/13/93
	1,1,2Trichloroethane	</025	ug/g	12/13/93
	1,1-Dichloroethane	</025	ug/g	12/13/93
	1,1-Dichloroethylene	</025	ug/g	12/13/93
	1,1-Dichloropropene	</025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	</025	ug/g	12/13/93
	1,2,3-Trichloropropane	</025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	</025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	</025	ug/g	12/13/93
	1,2-Dicholoethane	</025	ug/g	12/13/93
	1,2-Dichloropropane	</025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	</025	ug/g	12/13/93
	1,3-Dichloropropane	</025	ug/g	12/13/93
	1,3-Dichloropropene	</025	ug/g	12/13/93
	2,2-Dichloropropane	</025	ug/g	12/13/93
	Tetrachloroethylene	</025	ug/g	12/13/93
	Bromobenzene	</025	ug/g	12/13/93
	Bromochloromethane	</025	ug/g	12/13/93
	Bromodichloromethane	</025	ug/g	12/13/93
	Benzene	</025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102082	Bromomethane	</025	ug/g	12/13/93
	cis-1,2-Dichloroethylen	</025	ug/g	12/13/93
	Chlorobenzene	</025	ug/g	12/13/93
	Chlorodibromomethane	</025	ug/g	12/13/93
	Chloroethane	</025	ug/g	12/13/93
	Bromoform	</025	ug/g	12/13/93
	Chloroform	</025	ug/g	12/13/93
	Chloromethane	</025	ug/g	12/13/93
	Carbon Tetrachloride	</025	ug/g	12/13/93
	Dibromomethane	</025	ug/g	12/13/93
	Dichlorofluoromethane	</025	ug/g	12/13/93
	Dichloromethane	</025	ug/g	12/13/93
	Ethylbenzene	</025	ug/g	12/13/93
	Fluorotrichloromethane	</025	ug/g	12/13/93
	Hexachlorobutadiene	</025	ug/g	12/13/93
	Isopropylbenzene	</025	ug/g	12/13/93
	m-Dichlorobenzene	</025	ug/g	12/13/93
	m+p-Xylene	</025	ug/g	12/13/93
	Naphthalene	</025	ug/g	12/13/93
	n-Butylbenzene	</025	ug/g	12/13/93
	n-Propylbenzene	</025	ug/g	12/13/93
	o-Chlorotoluene	</025	ug/g	12/13/93
	o-Dichlorobenzene	</025	ug/g	12/13/93
	o-Xylene	</025	ug/g	12/13/93
	p-Chlorotoluene	</025	ug/g	12/13/93
	p-Dichlorobenzene	</025	ug/g	12/13/93
	p-Isopropyltoluene	</025	ug/g	12/13/93
	Secbutylbenzene	</025	ug/g	12/13/93
	Styrene	</025	ug/g	12/13/93
	t-1,2-Dichloroethylene	</025	ug/g	12/13/93
	Tertbutylbenzene	</025	ug/g	12/13/93
	Trichloroethylene	</025	ug/g	12/13/93
	Toluene	</025	ug/g	12/13/93
	Vinyl Chloride	</025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102083
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 12/01/93 9:14 STAMPS
Location : RSA TOWERS, B2-C

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102083	1,1,1,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,1-Trichloroethane	<.025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,2Trichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethylene	<.025	ug/g	12/13/93
	1,1-Dichloropropene	<.025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,3-Trichloropropane	<.025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g	12/13/93
	1,2-Dicholoethane	<.025	ug/g	12/13/93
	1,2-Dichloropropane	<.025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g	12/13/93
	1,3-Dichloropropane	<.025	ug/g	12/13/93
	1,3-Dichloropropene	<.025	ug/g	12/13/93
	2,2-Dichloropropane	<.025	ug/g	12/13/93
	Tetrachloroethylene	<.025	ug/g	12/13/93
	Bromobenzene	<.025	ug/g	12/13/93
	Bromochloromethane	<.025	ug/g	12/13/93
	Bromodichloromethane	<.025	ug/g	12/13/93
	Benzene	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y
- RESULTS REPORT

December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102083	Bromomethane	<.025	ug/g		12/13/93
	cis-1,2-Dichloroethylen	<.025	ug/g		12/13/93
	Chlorobenzene	<.025	ug/g		12/13/93
	Chlorodibromomethane	<.025	ug/g		12/13/93
	Chloroethane	<.025	ug/g		12/13/93
	Bromoform	<.025	ug/g		12/13/93
	Chloroform	<.025	ug/g		12/13/93
	Chloromethane	<.025	ug/g		12/13/93
	Carbon Tetrachloride	<.025	ug/g		12/13/93
	Dibromomethane	<.025	ug/g		12/13/93
	Dichlorofluoromethane	<.025	ug/g		12/13/93
	Dichloromethane	<.025	ug/g		12/13/93
	Ethylbenzene	<.025	ug/g		12/13/93
	Fluorotrichloromethane	<.025	ug/g		12/13/93
	Hexachlorobutadiene	<.025	ug/g		12/13/93
	Isopropylbenzene	<.025	ug/g		12/13/93
	m-Dichlorobenzene	<.025	ug/g		12/13/93
	m+p-Xylene	<.025	ug/g		12/13/93
	Naphthalene	<.025	ug/g		12/13/93
	n-Butylbenzene	<.025	ug/g		12/13/93
	n-Propylbenzene	<.025	ug/g		12/13/93
	o-Chlorotoluene	<.025	ug/g		12/13/93
	o-Dichlorobenzene	<.025	ug/g		12/13/93
	o-Xylene	<.025	ug/g		12/13/93
	p-Chlorotoluene	<.025	ug/g		12/13/93
	p-Dichlorobenzene	<.025	ug/g		12/13/93
	p-Isopropyltoluene	<.025	ug/g		12/13/93
	Secbutylbenzene	<.025	ug/g		12/13/93
	Styrene	<.025	ug/g		12/13/93
	t-1,2-Dichloroethylene	<.025	ug/g		12/13/93
	Tertbutylbenzene	<.025	ug/g		12/13/93
	Trichloroethylene	<.025	ug/g		12/13/93
	Toluene	<.025	ug/g		12/13/93
	Vinyl Chloride	<.025	ug/g		12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102079	Bromomethane	<.025	ug/g		12/13/93
	cis-1,2-Dichloroethylen	<.025	ug/g		12/13/93
	Chlorobenzene	<.025	ug/g		12/13/93
	Chlorodibromomethane	<.025	ug/g		12/13/93
	Chloroethane	<.025	ug/g		12/13/93
	Bromoform	<.025	ug/g		12/13/93
	Chloroform	<.025	ug/g		12/13/93
	Chloromethane	<.025	ug/g		12/13/93
	Carbon Tetrachloride	<.025	ug/g		12/13/93
	Dibromomethane	<.025	ug/g		12/13/93
	Dichlorofluoromethane	<.025	ug/g		12/13/93
	Dichloromethane	<.025	ug/g		12/13/93
	Ethylbenzene	<.025	ug/g		12/13/93
	Fluorotrichloromethane	<.025	ug/g		12/13/93
	Hexachlorobutadiene	<.025	ug/g		12/13/93
	Isopropylbenzene	<.025	ug/g		12/13/93
	m-Dichlorobenzene	<.025	ug/g		12/13/93
	m+p-Xylene	<.025	ug/g		12/13/93
	Naphthalene	<.025	ug/g		12/13/93
	n-Butylbenzene	<.025	ug/g		12/13/93
	n-Propylbenzene	<.025	ug/g		12/13/93
	o-Chlorotoluene	<.025	ug/g		12/13/93
	o-Dichlorobenzene	<.025	ug/g		12/13/93
	o-Xylene	<.025	ug/g		12/13/93
	p-Chlorotoluene	<.025	ug/g		12/13/93
	p-Dichlorobenzene	<.025	ug/g		12/13/93
	p-Isopropyltoluene	<.025	ug/g		12/13/93
	Secbutylbenzene	<.025	ug/g		12/13/93
	Styrene	<.025	ug/g		12/13/93
	t-1,2-Dichloroethylene	<.025	ug/g		12/13/93
	Tertbutylbenzene	<.025	ug/g		12/13/93
	Trichloroethylene	<.025	ug/g		12/13/93
	Toluene	<.025	ug/g		12/13/93
	Vinyl Chloride	<.025	ug/g		12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y

- SAMPLE ANALYSIS REPORT -
12/15/93

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

Attn: Dan Cooper

Lab number : 4102074
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION

Date/Time/By: 12/01/93 10:359 STAMPS
Location : RSA TOWERS, B4-A

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102074	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT

December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102080	Bromomethane	<.025	ug/g		12/13/93
	cis-1,2-Dichloroethylen	<.025	ug/g		12/13/93
	Chlorobenzene	<.025	ug/g		12/13/93
	Chlorodibromomethane	<.025	ug/g		12/13/93
	Chloroethane	<.025	ug/g		12/13/93
	Bromoform	<.025	ug/g		12/13/93
	Chloroform	<.025	ug/g		12/13/93
	Chloromethane	<.025	ug/g		12/13/93
	Carbon Tetrachloride	<.025	ug/g		12/13/93
	Dibromomethane	<.025	ug/g		12/13/93
	Dichlorofluoromethane	<.025	ug/g		12/13/93
	Dichloromethane	<.025	ug/g		12/13/93
	Ethylbenzene	<.025	ug/g		12/13/93
	Fluorotrichloromethane	<.025	ug/g		12/13/93
	Hexachlorobutadiene	<.025	ug/g		12/13/93
	Isopropylbenzene	<.025	ug/g		12/13/93
	m-Dichlorobenzene	<.025	ug/g		12/13/93
	m+p-Xylene	<.025	ug/g		12/13/93
	Naphthalene	<.025	ug/g		12/13/93
	n-Butylbenzene	<.025	ug/g		12/13/93
	n-Propylbenzene	<.025	ug/g		12/13/93
	o-Chlorotoluene	<.025	ug/g		12/13/93
	o-Dichlorobenzene	<.025	ug/g		12/13/93
	o-Xylene	<.025	ug/g		12/13/93
	p-Chlorotoluene	<.025	ug/g		12/13/93
	p-Dichlorobenzene	<.025	ug/g		12/13/93
	p-Isopropyltoluene	<.025	ug/g		12/13/93
	Secbutylbenzene	<.025	ug/g		12/13/93
	Styrene	<.025	ug/g		12/13/93
	t-1,2-Dichloroethylene	<.025	ug/g		12/13/93
	Tertbutylbenzene	<.025	ug/g		12/13/93
	Trichloroethylene	<.025	ug/g		12/13/93
	Toluene	<.025	ug/g		12/13/93
	Vinyl Chloride	<.025	ug/g		12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102080
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 12/01/93 9:21 STAMPS
Location : RSA TOWERS, B2-D

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102080	1,1,1,2-Tetrachloroetha	<.025	ug/g		12/13/93
	1,1,1-Trichloroethane	<.025	ug/g		12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g		12/13/93
	1,1,2Trichloroethane	<.025	ug/g		12/13/93
	1,1-Dichloroethane	<.025	ug/g		12/13/93
	1,1-Dichloroethylene	<.025	ug/g		12/13/93
	1,1-Dichloropropene	<.025	ug/g		12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g		12/13/93
	1,2,3-Trichloropropane	<.025	ug/g		12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g		12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g		12/13/93
	1,2-Dicholoethane	<.025	ug/g		12/13/93
	1,2-Dichloropropane	<.025	ug/g		12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g		12/13/93
	1,3-Dichloropropane	<.025	ug/g		12/13/93
	1,3-Dichloropropene	<.025	ug/g		12/13/93
	2,2-Dichloropropane	<.025	ug/g		12/13/93
	Tetrachloroethylene	<.025	ug/g		12/13/93
	Bromobenzene	<.025	ug/g		12/13/93
	Bromochloromethane	<.025	ug/g		12/13/93
	Bromodichloromethane	<.025	ug/g		12/13/93
	Benzene	<.025	ug/g		12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102079
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION
Date/Time/By: 12/01/93 9:36 STAMPS
Location : RSA TOWERS, B2-E

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102079	1,1,1,2-Tetrachloroetha	<.025	ug/g		12/13/93
	1,1,1-Trichloroethane	<.025	ug/g		12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g		12/13/93
	1,1,2Trichloroethane	<.025	ug/g		12/13/93
	1,1-Dichloroethane	<.025	ug/g		12/13/93
	1,1-Dichloroethylene	<.025	ug/g		12/13/93
	1,1-Dichloropropene	<.025	ug/g		12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g		12/13/93
	1,2,3-Trichloropropane	<.025	ug/g		12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g		12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g		12/13/93
	1,2-Dicholoethane	<.025	ug/g		12/13/93
	1,2-Dichloropropane	<.025	ug/g		12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g		12/13/93
	1,3-Dichloropropane	<.025	ug/g		12/13/93
	1,3-Dichloropropene	<.025	ug/g		12/13/93
	2,2-Dichloropropane	<.025	ug/g		12/13/93
	Tetrachloroethylene	<.025	ug/g		12/13/93
	Bromobenzene	<.025	ug/g		12/13/93
	Bromochloromethane	<.025	ug/g		12/13/93
	Bromodichloromethane	<.025	ug/g		12/13/93
	Benzene	<.025	ug/g		12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102074	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

DEC 1993
"ADEM - FO"
Montgomery"

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

Attn: Dan Cooper

Lab number : 4102075
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 12/01/93 10:40 STAMPS
Location : RSA TOWERS, B4-B

ADEM CENTRAL LABORATORY
- RESULTS REPORT -
December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102075	1,1,1,2-Tetrachloroetha	<.018	ug/g		12/13/93
	1,1,1-Trichloroethane	<.018	ug/g		12/13/93
	1,1,2,2-Tetrachloroetha	<.018	ug/g		12/13/93
	1,1,2Trichloroethane	<.018	ug/g		12/13/93
	1,1-Dichloroethane	<.018	ug/g		12/13/93
	1,1-Dichloroethylene	<.018	ug/g		12/13/93
	1,1-Dichloropropene	<.018	ug/g		12/13/93
	1,2,3-Trichlorobenzene	<.018	ug/g		12/13/93
	1,2,3-Trichloropropane	<.018	ug/g		12/13/93
	1,2,4-Trichlorobenzene	<.018	ug/g		12/13/93
	1,2,4-Trimethylbenzene	<.018	ug/g		12/13/93
	1,2-Dicholoethane	<.018	ug/g		12/13/93
	1,2-Dichloropropane	<.018	ug/g		12/13/93
	1,3,5-Trimethylbenzene	<.018	ug/g		12/13/93
	1,3-Dichloropropane	<.018	ug/g		12/13/93
	1,3-Dichloropropene	<.018	ug/g		12/13/93
	2,2-Dichloropropane	<.018	ug/g		12/13/93
	Tetrachloroethylene	<.018	ug/g		12/13/93
	Bromobenzene	<.018	ug/g		12/13/93
	Bromochloromethane	<.018	ug/g		12/13/93
	Bromodichloromethane	<.018	ug/g		12/13/93
	Benzene	<.018	ug/g		12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT

December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102075	Bromomethane	<.018	ug/g	12/13/93
	cis-1,2-Dichloroethylen	<.018	ug/g	12/13/93
	Chlorobenzene	<.018	ug/g	12/13/93
	Chlorodibromomethane	<.018	ug/g	12/13/93
	Chloroethane	<.018	ug/g	12/13/93
	Bromoform	<.018	ug/g	12/13/93
	Chloroform	<.018	ug/g	12/13/93
	Chloromethane	<.018	ug/g	12/13/93
	Carbon Tetrachloride	<.018	ug/g	12/13/93
	Dibromomethane	<.018	ug/g	12/13/93
	Dichlorofluoromethane	<.018	ug/g	12/13/93
	Dichloromethane	<.018	ug/g	12/13/93
	Ethylbenzene	<.018	ug/g	12/13/93
	Fluorotrichloromethane	<.018	ug/g	12/13/93
	Hexachlorobutadiene	<.018	ug/g	12/13/93
	Isopropylbenzene	<.018	ug/g	12/13/93
	m-Dichlorobenzene	<.018	ug/g	12/13/93
	m+p-Xylene	<.018	ug/g	12/13/93
	Naphthalene	<.018	ug/g	12/13/93
	n-Butylbenzene	<.018	ug/g	12/13/93
	n-Propylbenzene	<.018	ug/g	12/13/93
	o-Chlorotoluene	<.018	ug/g	12/13/93
	o-Dichlorobenzene	<.018	ug/g	12/13/93
	o-Xylene	<.018	ug/g	12/13/93
	p-Chlorotoluene	<.018	ug/g	12/13/93
	p-Dichlorobenzene	<.018	ug/g	12/13/93
	p-Isopropyltoluene	<.018	ug/g	12/13/93
	Secbutylbenzene	<.018	ug/g	12/13/93
	Styrene	<.018	ug/g	12/13/93
	t-1,2-Dichloroethylene	<.018	ug/g	12/13/93
	Tertbutylbenzene	<.018	ug/g	12/13/93
	Trichloroethylene	<.018	ug/g	12/13/93
	Toluene	<.018	ug/g	12/13/93
	Vinyl Chloride	<.018	ug/g	12/13/93

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* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT Y

- SAMPLE ANALYSIS REPORT -
12/15/93

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

Attn: Dan Cooper

Lab number : 4102076
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION

Date/Time/By: 12/01/93 10:45 STAMPS
Location : RSA TOWERS, B4-C

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102076	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102076	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORA[illegible]Y

- SAMPLE ANALYSIS REPORT -
12/15/93

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

Attn: Dan Cooper

Lab number : 4102077
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/15/93

COLLECTION INFORMATION
Date/Time/By: 12/01/93 10:51 STAMPS
Location : RSA TOWERS, B4-D

ADEM CENTRAL LABORATORY
- RESULTS REPORT - December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102077	1,1,1,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,1-Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1,2,2-Tetrachloroetha	0.0500	ug/g	U	12/09/93
	1,1,2Trichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethane	0.0500	ug/g	U	12/09/93
	1,1-Dichloroethylene	0.0500	ug/g	U	12/09/93
	1,1-Dichloropropene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,3-Trichloropropane	0.0500	ug/g	U	12/09/93
	1,2,4-Trichlorobenzene	0.0500	ug/g	U	12/09/93
	1,2,4-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,2-Dicholoethane	0.0500	ug/g	U	12/09/93
	1,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3,5-Trimethylbenzene	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropane	0.0500	ug/g	U	12/09/93
	1,3-Dichloropropene	0.0500	ug/g	U	12/09/93
	2,2-Dichloropropane	0.0500	ug/g	U	12/09/93
	Tetrachloroethylene	0.0500	ug/g	U	12/09/93
	Bromobenzene	0.0500	ug/g	U	12/09/93
	Bromochloromethane	0.0500	ug/g	U	12/09/93
	Bromodichloromethane	0.0500	ug/g	U	12/09/93
	Benzene	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]
- RESULTS REPORT -

December 15, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102077	Bromomethane	0.0500	ug/g	U	12/09/93
	cis-1,2-Dichloroethylen	0.0500	ug/g	U	12/09/93
	Chlorobenzene	0.0500	ug/g	U	12/09/93
	Chlorodibromomethane	0.0500	ug/g	U	12/09/93
	Chloroethane	0.0500	ug/g	U	12/09/93
	Bromoform	0.0500	ug/g	U	12/09/93
	Chloroform	0.0500	ug/g	U	12/09/93
	Chloromethane	0.0500	ug/g	U	12/09/93
	Carbon Tetrachloride	0.0500	ug/g	U	12/09/93
	Dibromomethane	0.0500	ug/g	U	12/09/93
	Dichlorofluoromethane	0.0500	ug/g	U	12/09/93
	Dichloromethane	0.0500	ug/g	U	12/09/93
	Ethylbenzene	0.0500	ug/g	U	12/09/93
	Fluorotrichloromethane	0.0500	ug/g	U	12/09/93
	Hexachlorobutadiene	0.0500	ug/g	U	12/09/93
	Isopropylbenzene	0.0500	ug/g	U	12/09/93
	m-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	m+p-Xylene	0.0500	ug/g	U	12/09/93
	Naphthalene	0.0500	ug/g	U	12/09/93
	n-Butylbenzene	0.0500	ug/g	U	12/09/93
	n-Propylbenzene	0.0500	ug/g	U	12/09/93
	o-Chlorotoluene	0.0500	ug/g	U	12/09/93
	o-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	o-Xylene	0.0500	ug/g	U	12/09/93
	p-Chlorotoluene	0.0500	ug/g	U	12/09/93
	p-Dichlorobenzene	0.0500	ug/g	U	12/09/93
	p-Isopropyltoluene	0.0500	ug/g	U	12/09/93
	Secbutylbenzene	0.0500	ug/g	U	12/09/93
	Styrene	0.0500	ug/g	U	12/09/93
	t-1,2-Dichloroethylene	0.0500	ug/g	U	12/09/93
	Tertbutylbenzene	0.0500	ug/g	U	12/09/93
	Trichloroethylene	0.0500	ug/g	U	12/09/93
	Toluene	0.0500	ug/g	U	12/09/93
	Vinyl Chloride	0.0500	ug/g	U	12/09/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

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

Attn: Dan Cooper

Lab number : 4102078
Sample number : 348-9074
Sample matrix : SOIL

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 12/01/93 11:00 STAMPS
Location : RSA TOWERS, B4-E

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 27, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4102078	1,1,1,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,1-Trichloroethane	<.025	ug/g	12/13/93
	1,1,2,2-Tetrachloroetha	<.025	ug/g	12/13/93
	1,1,2Trichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethane	<.025	ug/g	12/13/93
	1,1-Dichloroethylene	<.025	ug/g	12/13/93
	1,1-Dichloropropene	<.025	ug/g	12/13/93
	1,2,3-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,3-Trichloropropane	<.025	ug/g	12/13/93
	1,2,4-Trichlorobenzene	<.025	ug/g	12/13/93
	1,2,4-Trimethylbenzene	<.025	ug/g	12/13/93
	1,2-Dicholoethane	<.025	ug/g	12/13/93
	1,2-Dichloropropane	<.025	ug/g	12/13/93
	1,3,5-Trimethylbenzene	<.025	ug/g	12/13/93
	1,3-Dichloropropane	<.025	ug/g	12/13/93
	1,3-Dichloropropene	<.025	ug/g	12/13/93
	2,2-Dichloropropane	<.025	ug/g	12/13/93
	Tetrachloroethylene	<.025	ug/g	12/13/93
	Bromobenzene	<.025	ug/g	12/13/93
	Bromochloromethane	<.025	ug/g	12/13/93
	Bromodichloromethane	<.025	ug/g	12/13/93
	Benzene	<.025	ug/g	12/13/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT

December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102078	Bromomethane	<.025	ug/g		12/13/93
	cis-1,2-Dichloroethylen	<.025	ug/g		12/13/93
	Chlorobenzene	<.025	ug/g		12/13/93
	Chlorodibromomethane	<.025	ug/g		12/13/93
	Chloroethane	<.025	ug/g		12/13/93
	Bromoform	<.025	ug/g		12/13/93
	Chloroform	<.025	ug/g		12/13/93
	Chloromethane	<.025	ug/g		12/13/93
	Carbon Tetrachloride	<.025	ug/g		12/13/93
	Dibromomethane	<.025	ug/g		12/13/93
	Dichlorofluoromethane	<.025	ug/g		12/13/93
	Dichloromethane	<.025	ug/g		12/13/93
	Ethylbenzene	<.025	ug/g		12/13/93
	Fluorotrichloromethane	<.025	ug/g		12/13/93
	Hexachlorobutadiene	<.025	ug/g		12/13/93
	Isopropylbenzene	<.025	ug/g		12/13/93
	m-Dichlorobenzene	<.025	ug/g		12/13/93
	m+p-Xylene	<.025	ug/g		12/13/93
	Naphthalene	<.025	ug/g		12/13/93
	n-Butylbenzene	<.025	ug/g		12/13/93
	n-Propylbenzene	<.025	ug/g		12/13/93
	o-Chlorotoluene	<.025	ug/g		12/13/93
	o-Dichlorobenzene	<.025	ug/g		12/13/93
	o-Xylene	<.025	ug/g		12/13/93
	p-Chlorotoluene	<.025	ug/g		12/13/93
	p-Dichlorobenzene	<.025	ug/g		12/13/93
	p-Isopropyltoluene	<.025	ug/g		12/13/93
	Secbutylbenzene	<.025	ug/g		12/13/93
	Styrene	<.025	ug/g		12/13/93
	t-1,2-Dichloroethylene	<.025	ug/g		12/13/93
	Tertbutylbenzene	<.025	ug/g		12/13/93
	Trichloroethylene	<.025	ug/g		12/13/93
	Toluene	<.025	ug/g		12/13/93
	Vinyl Chloride	<.025	ug/g		12/13/93

* U denotes results less than the instrument detection limit.

WLEveL.DoC

MONITORING WELL
WATER LEVEL DATA

WELL	DATE	TOP OF WATER (- meters)	TOP OF WATER (- feet)	TOP OF WATER (feet above MSL)	TOP OF WELL CASING (feet above MSL)
MW-2	12-6-93	11.82	38.78	147.22	185.92
MW-2	2-28-94	11.69	38.35	147.57	185.92
MW-2	3-4-94	11.69	38.35	147.57	185.92
MW-2	6-13-94	11.60	38.06	147.86	185.92
MW-3	12-6-93	16.59	54.46	149.06	203.52
MW-3	2-28-94	16.50	54.13	149.39	203.52
MW-3	3-4-94	16.48	54.07	149.45	203.52
MW-3	6-13-94	16.49	54.10	149.42	203.52
MW-4	12-6-93	----	----	----	----
MW-4	2-28-94	14.80	48.56	151.10	199.66
MW-4	3-4-94	14.78	48.49	151.17	199.66
MW-4	6-13-94	14.77	48.45	151.21	199.66

NOTES: MSL = MEAN SEA LEVEL

WATER.DOC

WATER SAMPLE
TETRACHLOROETHYLENE
RESULTS
AS OF
6-13-94

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	TEST RESULTS (ppb)
WS-2	MW-1	10-15-93	536.0
WS-3	MW-1	10-15-93	607.0
MW3-UPA	MW-3	12-6-93	18.7
MW2-UPA	MW-2	12-6-93	61.7
AMW4-UP	MW-4	3-4-94	9.7
AMW4-P	MW-4	3-4-94	38.8
AMW3- UP	MW-3	3-4-94	65.0
AMW3-P	MW-3	3-4-94	41.9
AMW2-UP	MW-2	3-4-94	86.0
AMW2-P	MW-2	3-4-94	93.0
9W	PWSW#9W	6-13-94	BDL
MW-3C	MW-3	6-13-94	17.2
MW-2	MW-2	6-13-94	113.0
MW-4	MW-4	6-13-94	3.7

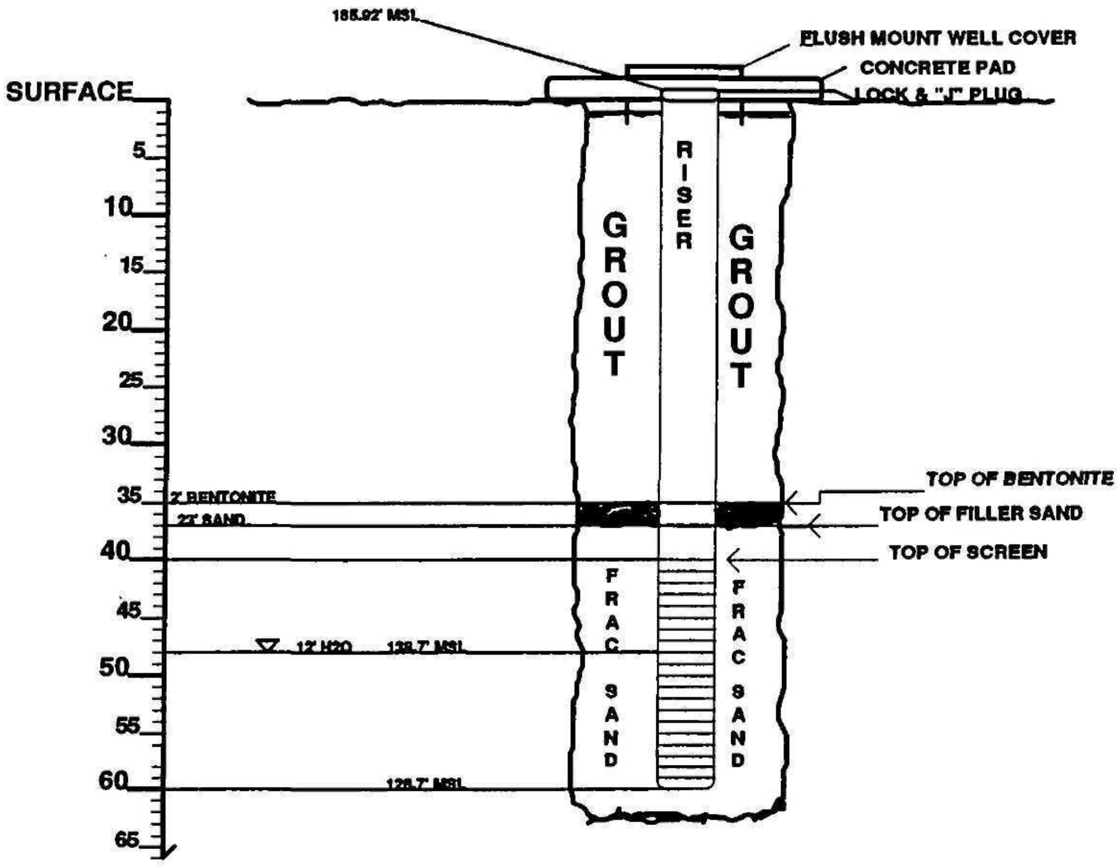
WELL #	SAMPLE ID	SAMPLE DATE	SAMPLE TIME	DEPTH TO WATER	FEET OF WATER	TETRACHLORETHYLENE CONCENTRATIONS
MW1	WS-2 P	10/15/93	2:05	22.4'	24.6'	536.0 ppb
MW1	WS-3 P	10/15/93	2:05	22.4'	24.6'	607.0 ppb
MW2	MW2-UPA	12/6/93	12:40	38.78'	21.09'	61.7 ppb
MW3	MW3-UPA	12/6/93	12:10	54.46'	4.86'	18.7 ppb
MW2	AMW2-UP	3/4/94	3:22	38.25'	21.49'	86.0 ppb
MW3	AMW3-UP	3/4/94	2:03	54.07'	5.05'	65.0 ppb
MW4	AMW4-UP	3/4/94	10:45	48.49'	19.42'	9.7 ppb
MW2	AMW2-P	3/4/94	4:15	38.25'	21.49	93.0 ppb
MW3	AMW3-P	3/4/94	2:30	54.07'	5.05'	41.9 ppb
MW4	AMW4-P	3/4/94	12:20	48.49'	19.42'	38.8 ppb
9W	9W	6-13-94	9:00	???	???	BDL
MW3	MW-3C	6-13-94	11:00	54.10'	5.05'	17.2 ppb
MW2	MW-2	6-13-94	11:10	38.05'	21.03'	113.0 ppb
MW4	MW-4	6-13-94	11:20	48.76'	14.2'	3.7 ppb

NOTES: UP= UNPURGED WELL SAMPLE
P= PURGED 3 WELL VOLUMES PRIOR TO SAMPLING

H2O Resul. Doc

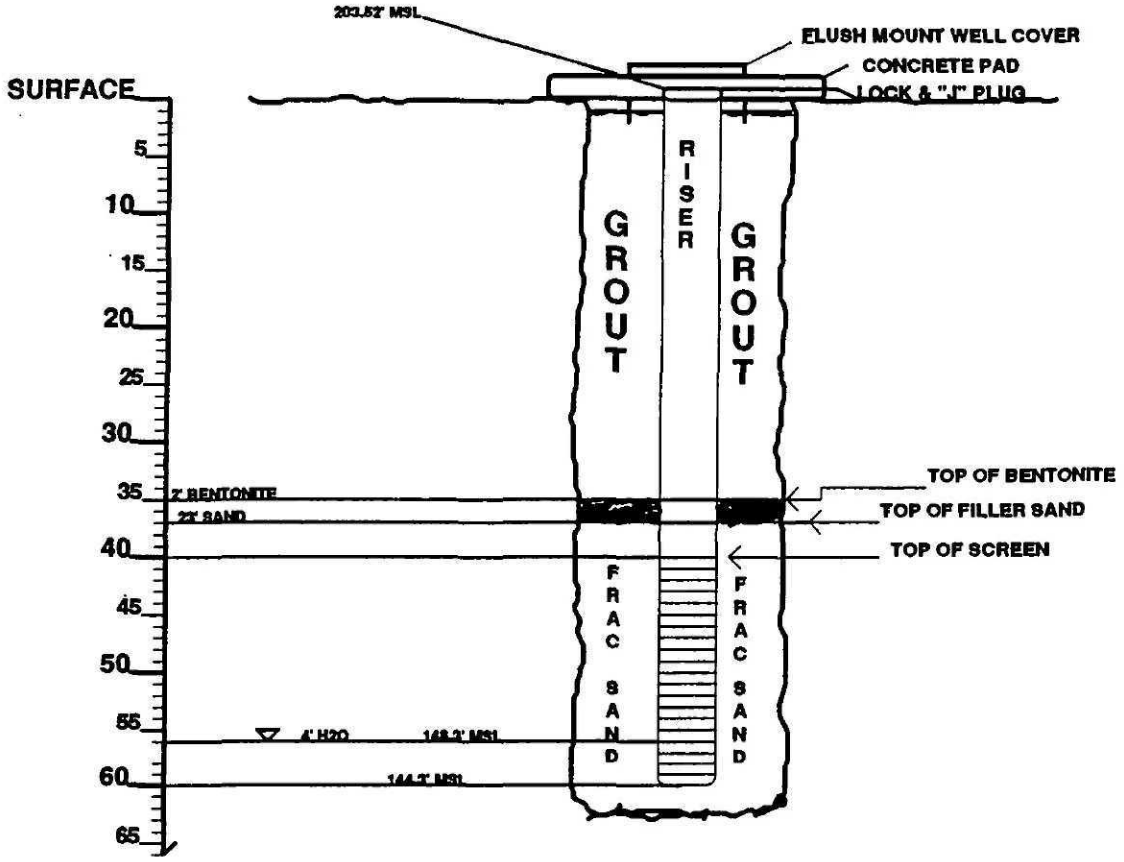
SCHEMAT2.Doc

WELL SCHEMATIC
FOR
MONITOR WELL
MW-2



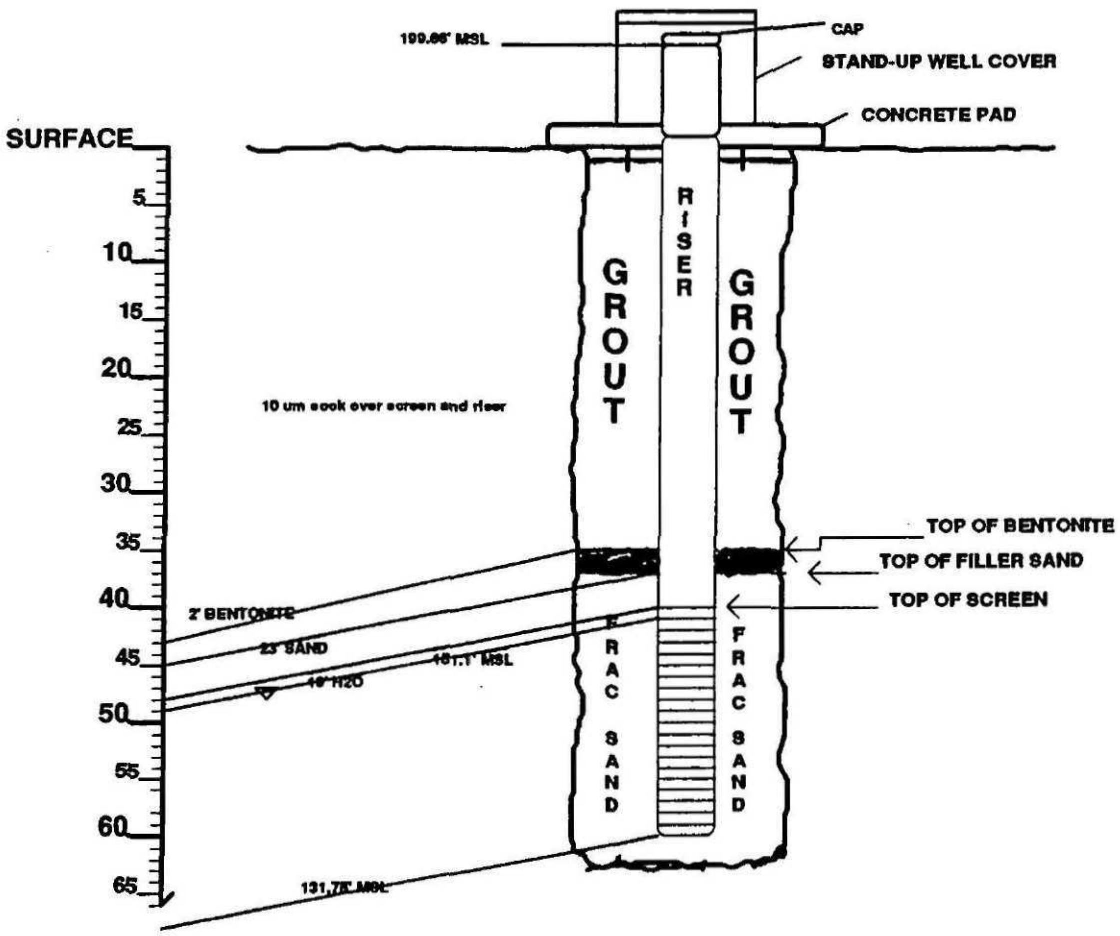
SCHEMAT3.DOC

WELL SCHEMATIC
FOR
MONITOR WELL
MW-3



Schemat 4. UCC

WELL SCHEMATIC
FOR
MONITOR WELL
MW-4



well4.doc

MONITORING WELL # 4
DRILLING LOG

0'	Black to gray sand with silt
5'	Reddish tan silt with fine sand
10'	Tan fine sand
15'	Moist tan fine sand with some silt and clay
20'	Moist tan fine sand with some silt and clay
25'	Moist reddish tan silt and clay with sand
30'	Moist tan silt and clay with sand
35'	Moist grayish tan clay
40'	Moist grayish tan clay
45'	Reddish tan sandy silt (not as moist as above)
50'	Reddish tan sandy silt

TABLE II: RSA PHASE II WATER SAMPLES AND TEST RESULTS

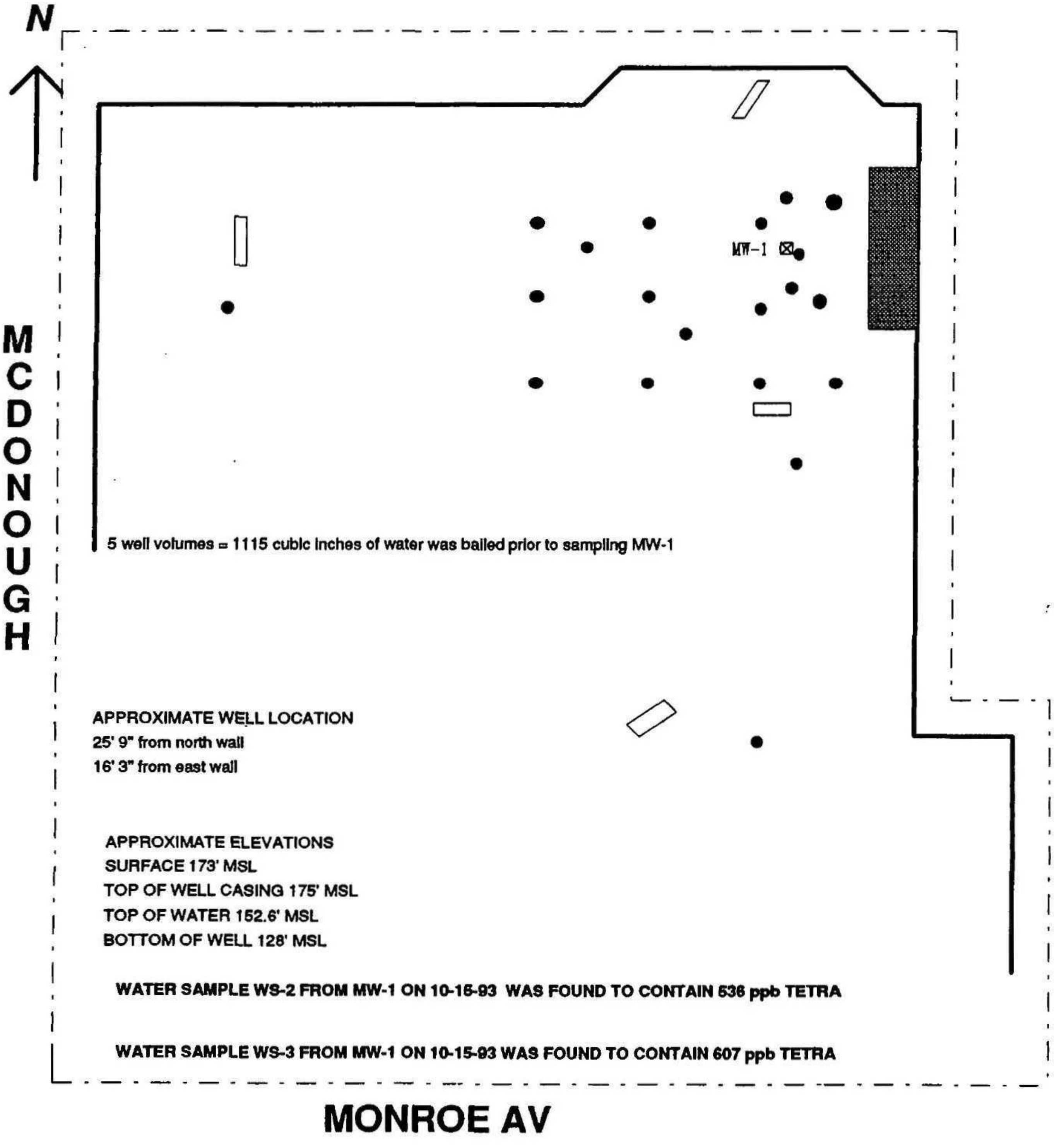
WELL #	SAMPLE ID	SAMPLE DATE	SAMPLE TIME	DEPTH TO WATER	DEPTH TO SCREEN	BOTTOM OF WELL	FEET OF WATER	TETRACHLORETHYLENE RESULTS
MW2	MW2-UPA	12-6-93	1240	38.78'	39.87'	59.87'	21.09'	61.7 ppb
MW3	MW3-UPA	12-6-93	1210	54.46'	39.32'	59.32'	4.86'	18.7 ppb

NOTES:

1. ALL MEASUREMENTS ARE TAKEN WITH RESPECT TO TOP OF WELL RISER
2. MCL FOR TETRACHLORETHYLENE IN DRINKING WATER IS *5.0 ppb*
3. WATER SAMPLE WS-3 TAKEN FROM MW-1 AT THE RSA CHILLER PLANT SITE ON 10-15-93 CONTAINED 607.0 ppb TETRACHLORETHYLENE

RSA MW1 DOC

RSA CHILLER PLANT SITE TETRACHOLRETHYLENE CONCENTRATIONS IN MONITORING WELL MW-1



5 well volumes = 1115 cubic inches of water was bailed prior to sampling MW-1

APPROXIMATE WELL LOCATION
25' 9" from north wall
16' 3" from east wall

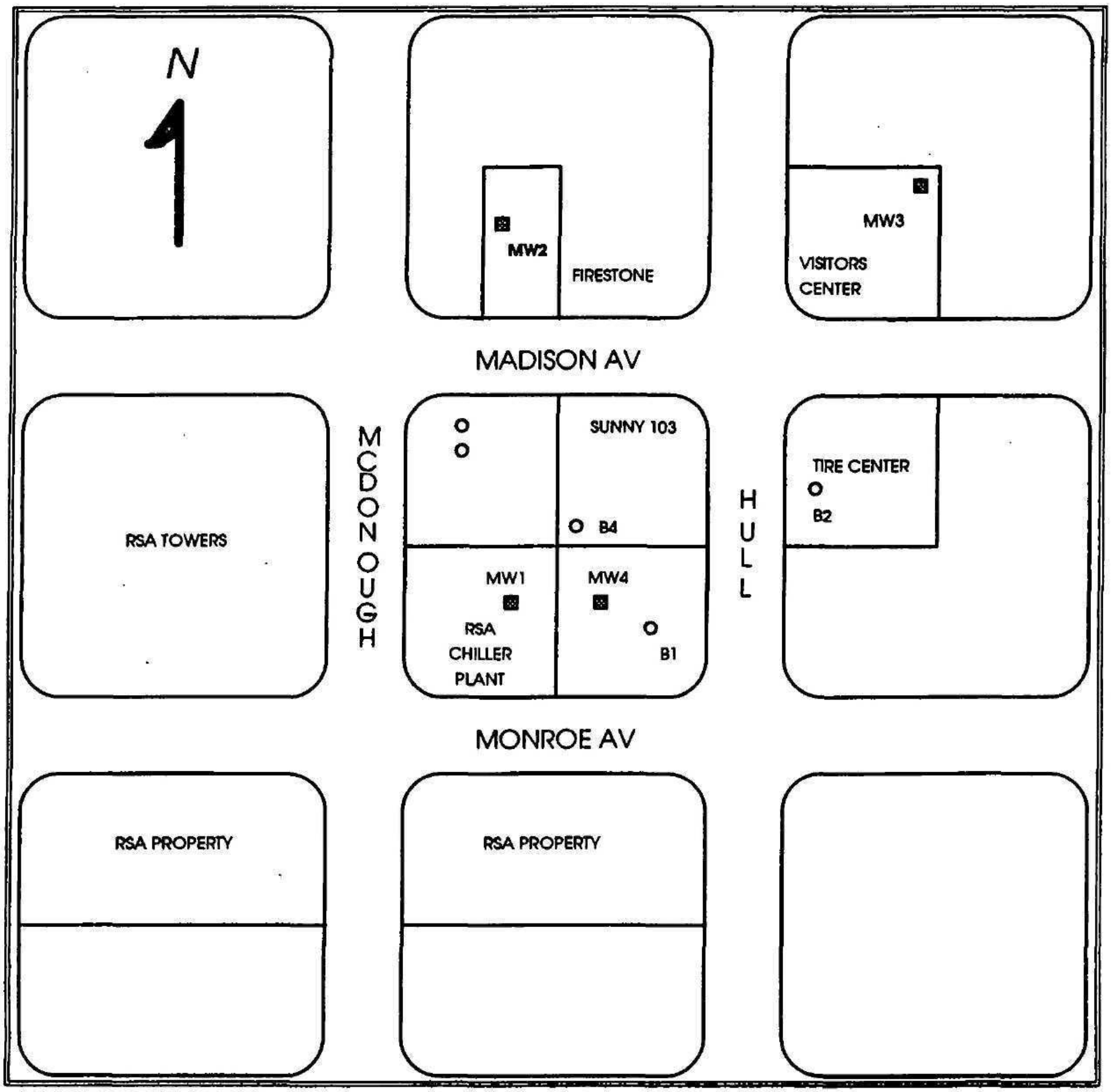
APPROXIMATE ELEVATIONS
SURFACE 173' MSL
TOP OF WELL CASING 175' MSL
TOP OF WATER 152.6' MSL
BOTTOM OF WELL 128' MSL

WATER SAMPLE WS-2 FROM MW-1 ON 10-15-93 WAS FOUND TO CONTAIN 536 ppb TETRA

WATER SAMPLE WS-3 FROM MW-1 ON 10-15-93 WAS FOUND TO CONTAIN 607 ppb TETRA

RSAMAP.DOC

RSA SITE MAP



NOT TO SCALE

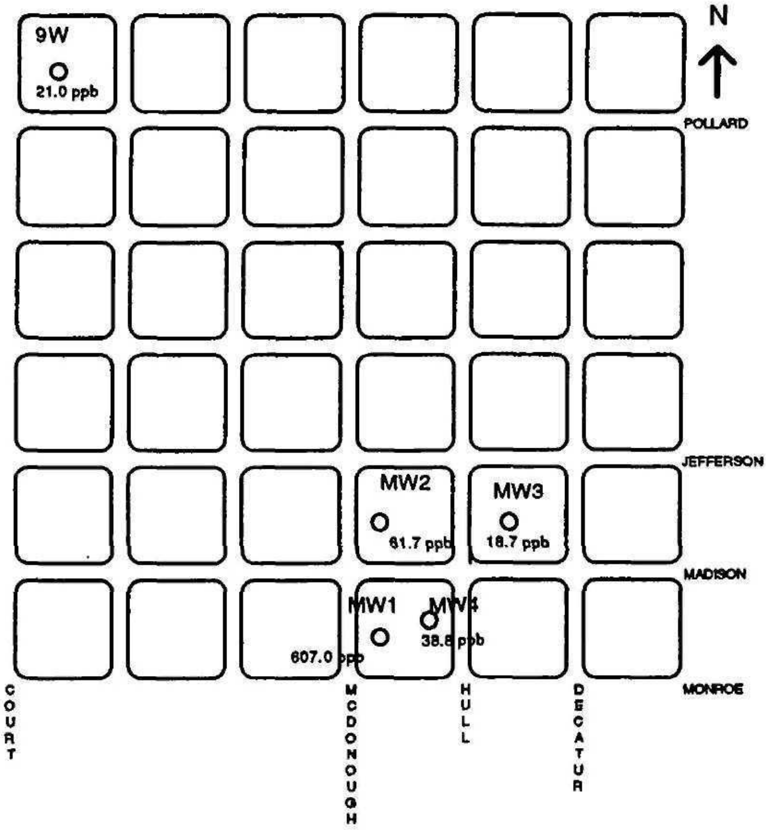
LEGEND

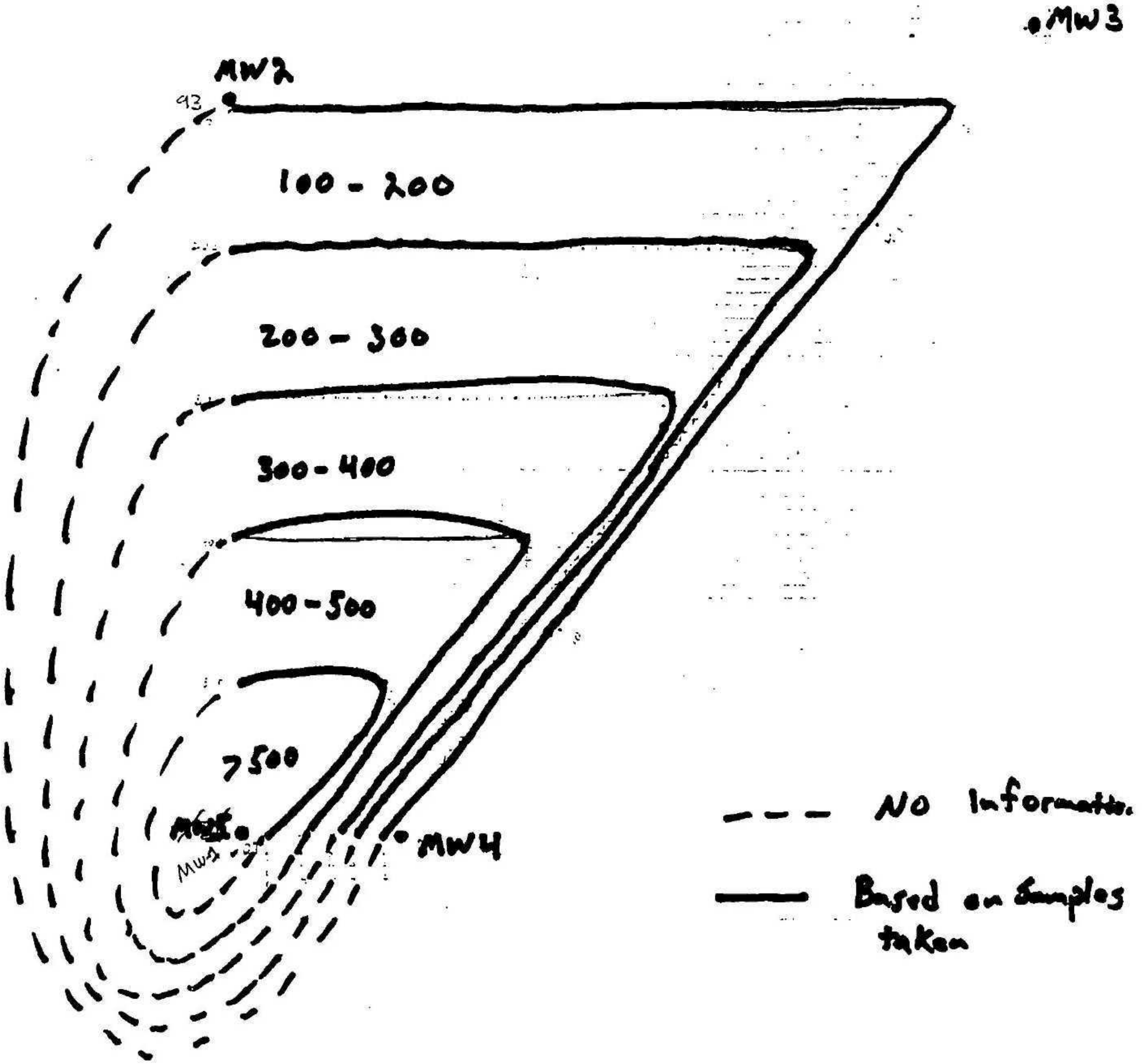
▨ MONITORING WELL

○ TEST BORING

KJAMAP3.Doc

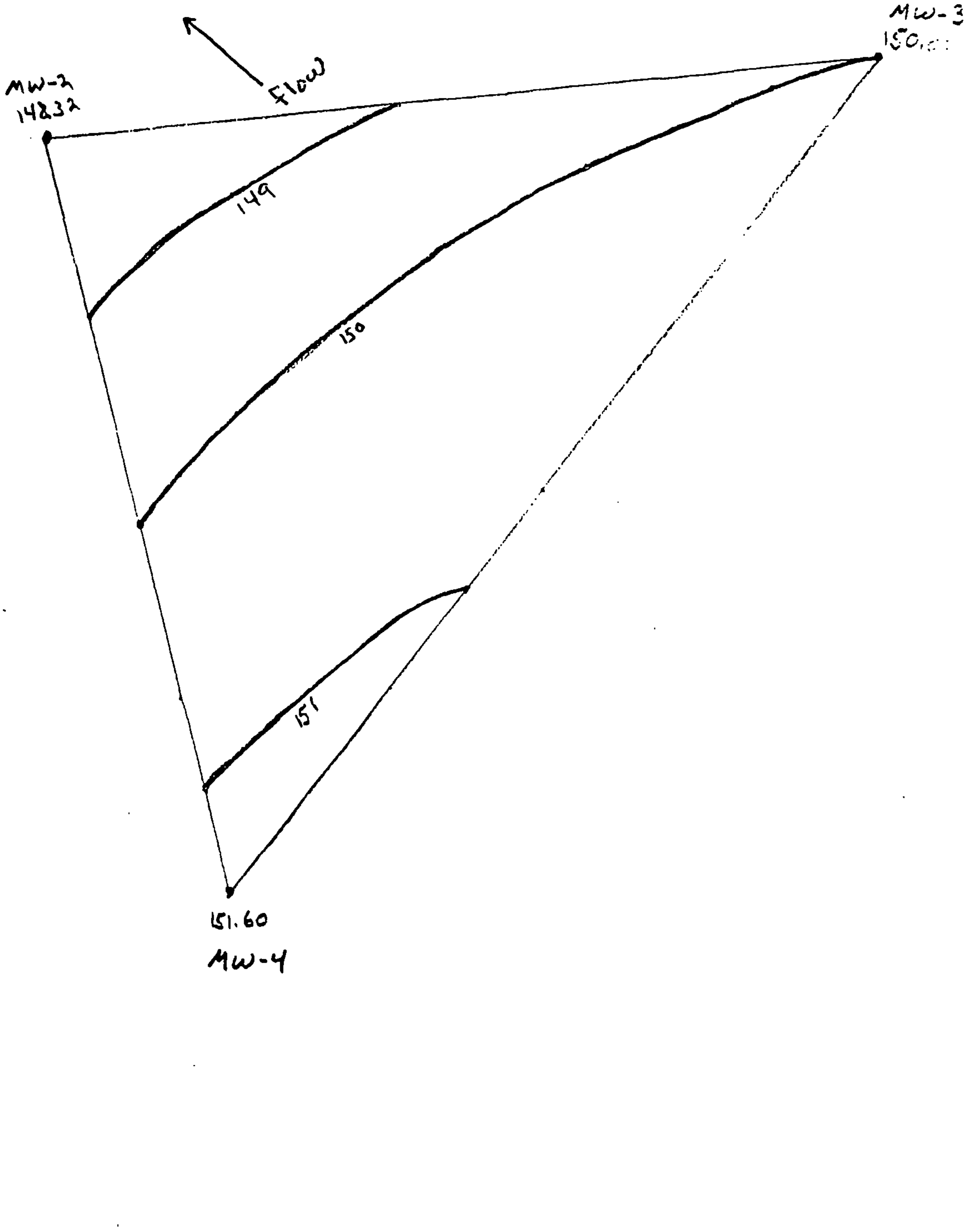
WELL LOCATIONS




MW3
MW2
93
100 - 200
200 - 300
300 - 400
400 - 500
>500
Mw1
MW4
--- NO Information
Based on Samples taken

RSA Plume

RSA



RSA Wells
348-9074

	Depth to H_2O	Total Depth of Well
MW-1	14.65 ~~ft.~~	19.10 ~~ft.~~ ? bailer in [illegible]
MW-2	11.46 ~~ft.~~	18.05 ~~ft.~~
MW-3	16.31 ~~ft.~~	18.04 ~~ft.~~

meters

Heigth to top of casing as compaired to 200' contou

MW-1 -5.98' +5.64' = -.34' +200' = 199.66'
MW-2 -19.72' + 5.64' = -14.08' +200' = 185.92'
MW-3 -2.12' +5.64' = +3.52' +200' = 203.52'

Elevations at Casings

$4.65 \cancel{\text{meters}} \times \frac{100\text{ cm}}{\cancel{\text{meter}}} \frac{1\text{ inch}}{2.54\text{ cm}} \frac{1\text{ foot}}{12\text{ inches}} = 48.064\text{ feet}$

11.46 meters = 37.598 feet

3 16.31 meters = 53.510 feet

199.66 − 48.064 = 151.596′ MW 4

185.92 − 37.598 = 148.322 MW 2

203.52 − 53.510 = 150.01 MW 3

RSA 9074

6-13-94

RSA 9W

900

pH	COND	TEMP
5.76	80	20.8

RSA MW3-C 0930 purge

DEPTH TO WATER 16.49 meters

TOTAL DEPTH 18.03 meters

pH	Cond	Temp
5.48	180 ~~[illegible]~~	22.3 ~~[illegible]~~
5.35	200	22.2
5.27	200	21.8
5.22	200	21.8

RSA MW-2 0950 purge

to water 11.60 meter

Total 17.99 meter

pH	Cond	Temp
5.41	270	22.5 ~~[illegible]~~
5.32	260	22.1
5.42	250	22.3
5.38	250	22.2

RSA MW-4 1050 purge

to water 14.77 meters

Total Depth 19.10 meters

pH	Cond	Temp
5.83	250	22.2
5.66	230	22.2
5.88	250	22.2
5.66	240	22.0

RSA 9074

6-13-94

RSA 9W	pH	COND	TEMP
900	5.76	80	20.8

RSA MW3-C 0930 purge

DEPTH TO WATER 16.49 meters

TOTAL DEPTH 18.03 meters

pH	Cond	Temp
5.48	180	22.3 ~~180~~
5.35	200	22.2
5.27	200	21.8
5.22	200	21.8

RSA MW-2 0950 purge

to water 11.60 meter

Total 17.99 meter

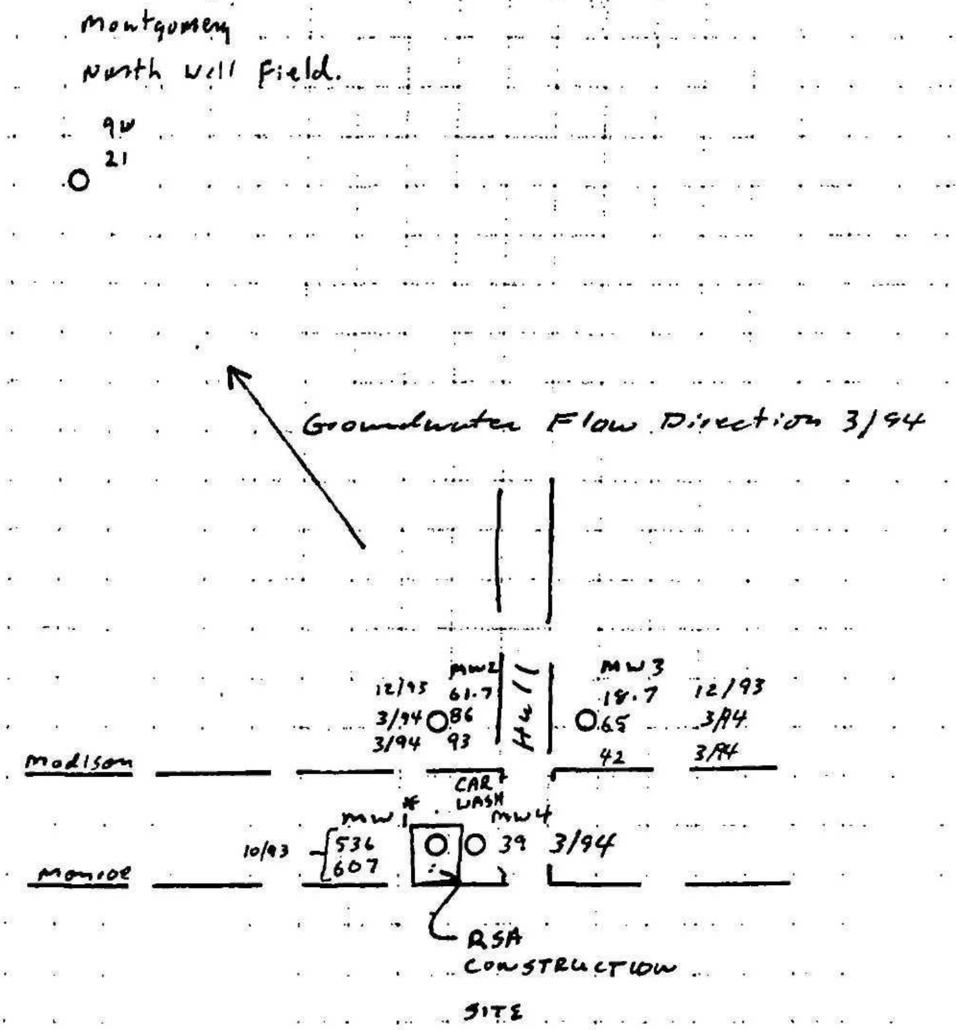
pH	Cond	Temp
5.41	270	22.5
5.32	260	22.1
5.42	250	22.3
5.38	250	22.2

RSA MW-4 1050 purge

Water 14.77 meters

al Depth 19.10 meters

pH	Cond	Temp
5.83	250	22.2
56.6	230	22.2
5.88	250	22.2
5.66	240	220

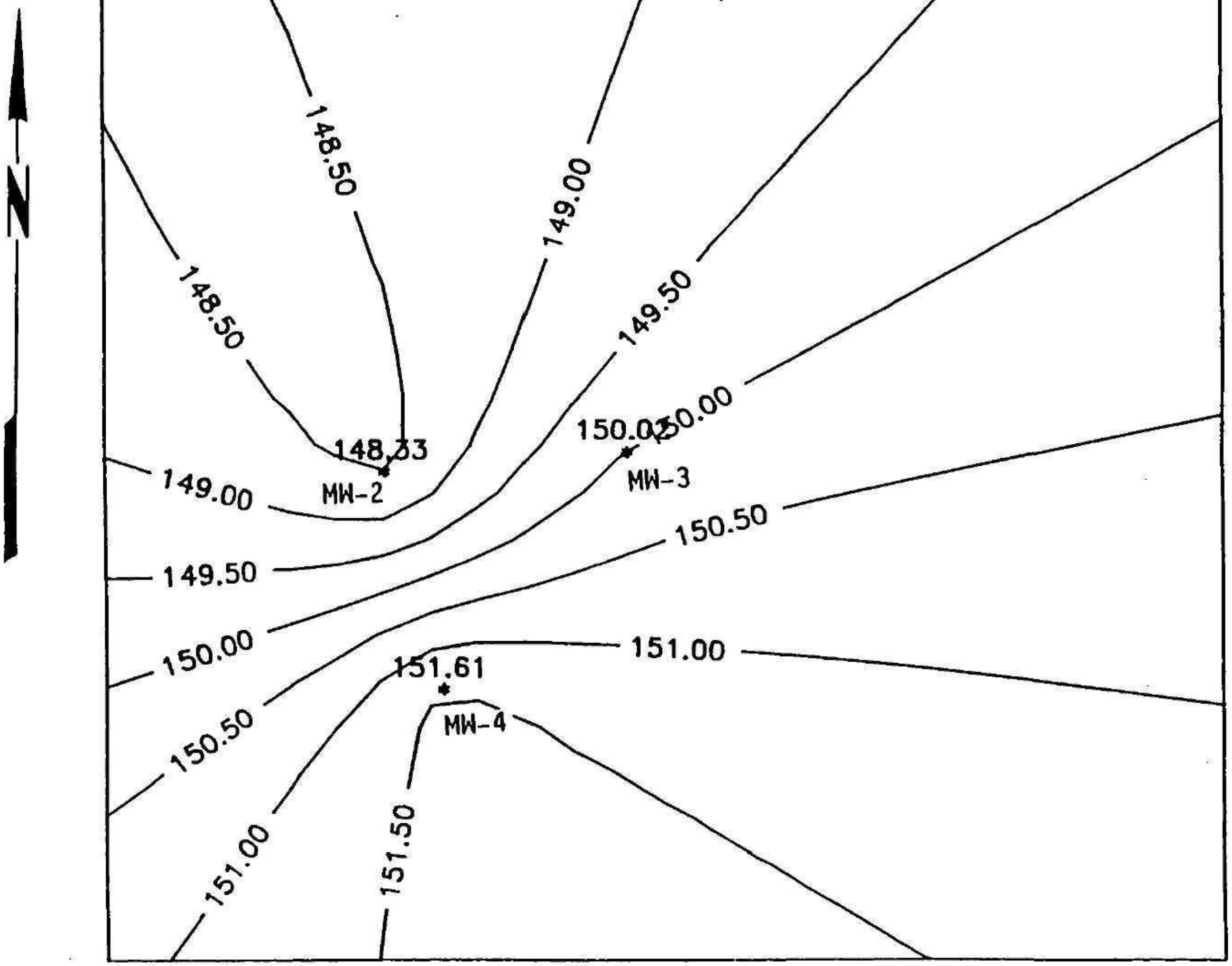


Legend

○ Monitoring well #
607 parts per billion tetrachlorethylene

* MW 1 sampled twice and abandoned.

GROUNDWATER FLOW–RSA PHYSICAL PLANT SITE



ADEM CENTRAL LABORATO

- SAMPLE ANALYSIS REPORT -
06/17/94

JUN 1994
ADEM
SPECIAL PROJECTS

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

Attn: Dan Cooper

Lab number : 4106731
Sample number : 348-9074
Sample matrix : WATER

Report Date: 06/17/94

COLLECTION INFORMATION

Date/Time/By: 06/13/94 11:20 NORTH
Location : RSA, MW-4

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

June 17, 1994

Lab#	Test	Result	Units	DL*	Analdate
4106731	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	06/14/94
	1,1,1-Trichloroethane	0.5000	ug/L	U	06/14/94
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	06/14/94
	1,1,2Trichloroethane	0.5000	ug/L	U	06/14/94
	1,1-Dichloroethane	0.5000	ug/L	U	06/14/94
	1,1-Dichloroethylene	0.9000	ug/L		06/14/94
	1,1-Dichloropropene	0.5000	ug/L	U	06/14/94
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	06/14/94
	1,2,3-Trichloropropane	0.5000	ug/L	U	06/14/94
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	06/14/94
	1,2,4-Trimethylbenzene	0.5000	ug/L	U	06/14/94
	1,2-Dicholoethane	0.5000	ug/L	U	06/14/94
	1,2-Dichloropropane	0.5000	ug/L	U	06/14/94
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	06/14/94
	1,3-Dichloropropane	0.5000	ug/L	U	06/14/94
	1,3-Dichloropropene	0.5000	ug/L	U	06/14/94
	2,2-Dichloropropane	0.5000	ug/L	U	06/14/94
	Tetrachloroethylene	3.7000	ug/L		06/14/94
	Bromobenzene	0.5000	ug/L	U	06/14/94
	Bromochloromethane	0.5000	ug/L	U	06/14/94
	Bromodichloromethane	0.5000	ug/L	U	06/14/94
	Benzene	0.5000	ug/L	U	06/14/94

JUN 1994
"ADEM - FO"
Montgomery"

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATO
- RESULTS REPORT -

June 17, 1994

Lab#	Test	Result	Units	DL*	Analdate
4106731	Bromomethane	0.5000	ug/L	U	06/14/94
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	06/14/94
	Chlorobenzene	0.5000	ug/L	U	06/14/94
	Chlorodibromomethane	0.5000	ug/L	U	06/14/94
	Chloroethane	0.5000	ug/L	U	06/14/94
	Bromoform	0.5000	ug/L	U	06/14/94
	Chloroform	0.5000	ug/L	U	06/14/94
	Chloromethane	0.5000	ug/L	U	06/14/94
	Carbon Tetrachloride	0.5000	ug/L	U	06/14/94
	Dibromomethane	0.5000	ug/L	U	06/14/94
	Dichlorofluoromethane	0.5000	ug/L	U	06/14/94
	Dichloromethane	0.5000	ug/L	U	06/14/94
	Ethylbenzene	0.5000	ug/L	U	06/14/94
	Fluorotrichloromethane	0.5000	ug/L	U	06/14/94
	Hexachlorobutadiene	0.5000	ug/L	U	06/14/94
	Isopropylbenzene	0.5000	ug/L	U	06/14/94
	m-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	m+p Xylene	0.5000	ug/L	U	06/14/94
	Naphthalene	0.5000	ug/L	U	06/14/94
	n-Butylbenzene	0.5000	ug/L	U	06/14/94
	n-Propylbenzene	0.5000	ug/L	U	06/14/94
	o-Chlorotoluene	0.5000	ug/L	U	06/14/94
	o-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	o-Xylene	0.5000	ug/L	U	06/14/94
	p-Chlorotoluene	0.5000	ug/L	U	06/14/94
	p-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	p-Isopropyltoluene	0.5000	ug/L	U	06/14/94
	Secbutylbenzene	0.5000	ug/L	U	06/14/94
	Styrene	0.5000	ug/L	U	06/14/94
	t-1,2-Dichloroethylene	0.5000	ug/L	U	06/14/94
	Tertbutylbenzene	0.5000	ug/L	U	06/14/94
	Trichloroethylene	0.5000	ug/L	U	06/14/94
	Toluene	0.5000	ug/L	U	06/14/94
	Vinyl Chloride	0.5000	ug/L	U	06/14/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORA[illegible]Y

- SAMPLE ANALYSIS REPORT -
06/17/94

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

Attn: Dan Cooper

Lab number : 4106732
Sample number : 348-9074
Sample matrix : WATER

Report Date: 06/17/94

COLLECTION INFORMATION

Date/Time/By: 06/13/94 11:10 NORTH
Location : RSA, MW-2

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

June 17, 1994

Lab#	Test	Result	Units	DL*	Analdate
4106732	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	06/14/94
	1,1,1-Trichloroethane	0.5000	ug/L	U	06/14/94
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	06/14/94
	1,1,2Trichloroethane	0.5000	ug/L	U	06/14/94
	1,1-Dichloroethane	0.5000	ug/L	U	06/14/94
	1,1-Dichloroethylene	2.8000	ug/L		06/14/94
	1,1-Dichloropropene	0.5000	ug/L	U	06/14/94
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	06/14/94
	1,2,3-Trichloropropane	0.5000	ug/L	U	06/14/94
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	06/14/94
	1,2,4-Trimethylbenzene	0.5000	ug/L	U	06/14/94
	1,2-Dicholoethane	0.5000	ug/L	U	06/14/94
	1,2-Dichloropropane	0.5000	ug/L	U	06/14/94
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	06/14/94
	1,3-Dichloropropane	0.5000	ug/L	U	06/14/94
	1,3-Dichloropropene	0.5000	ug/L	U	06/14/94
	2,2-Dichloropropane	0.5000	ug/L	U	06/14/94
	Tetrachloroethylene	113.0000	ug/L		06/14/94
	Bromobenzene	0.5000	ug/L	U	06/14/94
	Bromochloromethane	0.5000	ug/L	U	06/14/94
	Bromodichloromethane	0.5000	ug/L	U	06/14/94
	Benzene	0.5000	ug/L	U	06/14/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

Ju 17, 1994

Lab#	Test	Result	Units	DL*	Analdate
4106732	Bromomethane	0.5000	ug/L	U	06/14/94
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	06/14/94
	Chlorobenzene	0.5000	ug/L	U	06/14/94
	Chlorodibromomethane	0.5000	ug/L	U	06/14/94
	Chloroethane	0.5000	ug/L	U	06/14/94
	Bromoform	0.5000	ug/L	U	06/14/94
	Chloroform	0.5000	ug/L	U	06/14/94
	Chloromethane	0.5000	ug/L	U	06/14/94
	Carbon Tetrachloride	0.5000	ug/L	U	06/14/94
	Dibromomethane	0.5000	ug/L	U	06/14/94
	Dichlorofluoromethane	0.5000	ug/L	U	06/14/94
	Dichloromethane	0.5000	ug/L	U	06/14/94
	Ethylbenzene	0.5000	ug/L	U	06/14/94
	Fluorotrichloromethane	0.5000	ug/L	U	06/14/94
	Hexachlorobutadiene	0.5000	ug/L	U	06/14/94
	Isopropylbenzene	0.5000	ug/L	U	06/14/94
	m-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	m+p Xylene	0.5000	ug/L	U	06/14/94
	Naphthalene	0.5000	ug/L	U	06/14/94
	n-Butylbenzene	0.5000	ug/L	U	06/14/94
	n-Propylbenzene	0.5000	ug/L	U	06/14/94
	o-Chlorotoluene	0.5000	ug/L	U	06/14/94
	o-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	o-Xylene	0.5000	ug/L	U	06/14/94
	p-Chlorotoluene	0.5000	ug/L	U	06/14/94
	p-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	p-Isopropyltoluene	0.5000	ug/L	U	06/14/94
	Secbutylbenzene	0.5000	ug/L	U	06/14/94
	Styrene	0.5000	ug/L	U	06/14/94
	t-1,2-Dichloroethylene	0.5000	ug/L	U	06/14/94
	Tertbutylbenzene	0.5000	ug/L	U	06/14/94
	Trichloroethylene	0.6000	ug/L		06/14/94
	Toluene	0.5000	ug/L	U	06/14/94
	Vinyl Chloride	0.5000	ug/L	U	06/14/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT

- SAMPLE ANALYSIS REPORT -
06/17/94

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

Attn: Dan Cooper

Lab number : 4106733
Sample number : 348-9074
Sample matrix : WATER

Report Date: 06/17/94

COLLECTION INFORMATION

Date/Time/By: 06/13/94 11:00 NORTH
Location : RSA, MW-3C

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

June 17, 1994

Lab#	Test	Result	Units	DL*	Analdate
4106733	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	06/14/94
	1,1,1-Trichloroethane	0.5000	ug/L	U	06/14/94
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	06/14/94
	1,1,2Trichloroethane	0.5000	ug/L	U	06/14/94
	1,1-Dichloroethane	0.5000	ug/L	U	06/14/94
	1,1-Dichloroethylene	0.5000	ug/L	U	06/14/94
	1,1-Dichloropropene	0.5000	ug/L	U	06/14/94
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	06/14/94
	1,2,3-Trichloropropane	0.5000	ug/L	U	06/14/94
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	06/14/94
	1,2,4-Trimethylbenzene	0.5000	ug/L	U	06/14/94
	1,2-Dicholoethane	1.3000	ug/L		06/14/94
	1,2-Dichloropropane	0.5000	ug/L	U	06/14/94
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	06/14/94
	1,3-Dichloropropane	0.5000	ug/L	U	06/14/94
	1,3-Dichloropropene	0.5000	ug/L	U	06/14/94
	2,2-Dichloropropane	0.5000	ug/L	U	06/14/94
	Tetrachloroethylene	17.2000	ug/L		06/14/94
	Bromobenzene	0.5000	ug/L	U	06/14/94
	Bromochloromethane	0.5000	ug/L	U	06/14/94
	Bromodichloromethane	0.5000	ug/L	U	06/14/94
	Benzene	0.5000	ug/L	U	06/14/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]
- RESULTS REPORT -

June 17, 1994

Lab#	Test	Result	Units	DL*	Analdate
4106733	Bromomethane	0.5000	ug/L	U	06/14/94
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	06/14/94
	Chlorobenzene	0.5000	ug/L	U	06/14/94
	Chlorodibromomethane	0.5000	ug/L	U	06/14/94
	Chloroethane	0.5000	ug/L	U	06/14/94
	Bromoform	0.5000	ug/L	U	06/14/94
	Chloroform	0.5000	ug/L	U	06/14/94
	Chloromethane	0.5000	ug/L	U	06/14/94
	Carbon Tetrachloride	0.5000	ug/L	U	06/14/94
	Dibromomethane	0.5000	ug/L	U	06/14/94
	Dichlorofluoromethane	0.5000	ug/L	U	06/14/94
	Dichloromethane	0.5000	ug/L	U	06/14/94
	Ethylbenzene	0.5000	ug/L	U	06/14/94
	Fluorotrichloromethane	0.5000	ug/L	U	06/14/94
	Hexachlorobutadiene	0.5000	ug/L	U	06/14/94
	Isopropylbenzene	0.5000	ug/L	U	06/14/94
	m-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	m+p Xylene	0.5000	ug/L	U	06/14/94
	Naphthalene	0.5000	ug/L	U	06/14/94
	n-Butylbenzene	0.5000	ug/L	U	06/14/94
	n-Propylbenzene	0.5000	ug/L	U	06/14/94
	o-Chlorotoluene	0.5000	ug/L	U	06/14/94
	o-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	o-Xylene	0.5000	ug/L	U	06/14/94
	p-Chlorotoluene	0.5000	ug/L	U	06/14/94
	p-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	p-Isopropyltoluene	0.5000	ug/L	U	06/14/94
	Secbutylbenzene	0.5000	ug/L	U	06/14/94
	Styrene	0.5000	ug/L	U	06/14/94
	t-1,2-Dichloroethylene	0.5000	ug/L	U	06/14/94
	Tertbutylbenzene	0.5000	ug/L	U	06/14/94
	Trichloroethylene	1.0000	ug/L		06/14/94
	Toluene	0.5000	ug/L	U	06/14/94
	Vinyl Chloride	0.5000	ug/L	U	06/14/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATO

- SAMPLE ANALYSIS REPORT -
06/17/94

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

Attn: Dan Cooper

Lab number : 4106734
Sample number : 348-9074
Sample matrix : WATER

Report Date: 06/17/94

COLLECTION INFORMATION
Date/Time/By: 06/13/94 9:00 NORTH
Location : RSA, 9W

ADEM CENTRAL LABORATORY
- RESULTS REPORT -
June 17, 1994

Lab#	Test	Result	Units	DL*	Analdate
4106734	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	06/14/94
	1,1,1-Trichloroethane	0.5000	ug/L	U	06/14/94
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	06/14/94
	1,1,2Trichloroethane	0.5000	ug/L	U	06/14/94
	1,1-Dichloroethane	0.5000	ug/L	U	06/14/94
	1,1-Dichloroethylene	0.5000	ug/L	U	06/14/94
	1,1-Dichloropropene	0.5000	ug/L	U	06/14/94
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	06/14/94
	1,2,3-Trichloropropane	0.5000	ug/L	U	06/14/94
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	06/14/94
	1,2,4-Trimethylbenzene	0.5000	ug/L	U	06/14/94
	1,2-Dicholoethane	0.5000	ug/L	U	06/14/94
	1,2-Dichloropropane	0.5000	ug/L	U	06/14/94
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	06/14/94
	1,3-Dichloropropane	0.5000	ug/L	U	06/14/94
	1,3-Dichloropropene	0.5000	ug/L	U	06/14/94
	2,2-Dichloropropane	0.5000	ug/L	U	06/14/94
	Tetrachloroethylene	0.5000	ug/L	U	06/14/94
	Bromobenzene	0.5000	ug/L	U	06/14/94
	Bromochloromethane	0.5000	ug/L	U	06/14/94
	Bromodichloromethane	0.5000	ug/L	U	06/14/94
	Benzene	0.5000	ug/L	U	06/14/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATO
- RESULTS REPORT -

June 17, 1994

Lab#	Test	Result	Units	DL*	Analdate
4106734	Bromomethane	0.5000	ug/L	U	06/14/94
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	06/14/94
	Chlorobenzene	0.5000	ug/L	U	06/14/94
	Chlorodibromomethane	0.5000	ug/L	U	06/14/94
	Chloroethane	0.5000	ug/L	U	06/14/94
	Bromoform	0.5000	ug/L	U	06/14/94
	Chloroform	0.5000	ug/L	U	06/14/94
	Chloromethane	0.5000	ug/L	U	06/14/94
	Carbon Tetrachloride	0.5000	ug/L	U	06/14/94
	Dibromomethane	0.5000	ug/L	U	06/14/94
	Dichlorofluoromethane	0.5000	ug/L	U	06/14/94
	Dichloromethane	0.5000	ug/L	U	06/14/94
	Ethylbenzene	0.5000	ug/L	U	06/14/94
	Fluorotrichloromethane	0.5000	ug/L	U	06/14/94
	Hexachlorobutadiene	0.5000	ug/L	U	06/14/94
	Isopropylbenzene	0.5000	ug/L	U	06/14/94
	m-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	m+p Xylene	0.5000	ug/L	U	06/14/94
	Naphthalene	0.5000	ug/L	U	06/14/94
	n-Butylbenzene	0.5000	ug/L	U	06/14/94
	n-Propylbenzene	0.5000	ug/L	U	06/14/94
	o-Chlorotoluene	0.5000	ug/L	U	06/14/94
	o-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	o-Xylene	0.5000	ug/L	U	06/14/94
	p-Chlorotoluene	0.5000	ug/L	U	06/14/94
	p-Dichlorobenzene	0.5000	ug/L	U	06/14/94
	p-Isopropyltoluene	0.5000	ug/L	U	06/14/94
	Secbutylbenzene	0.5000	ug/L	U	06/14/94
	Styrene	0.5000	ug/L	U	06/14/94
	t-1,2-Dichloroethylene	0.5000	ug/L	U	06/14/94
	Tertbutylbenzene	0.5000	ug/L	U	06/14/94
	Trichloroethylene	0.5000	ug/L	U	06/14/94
	Toluene	0.5000	ug/L	U	06/14/94
	Vinyl Chloride	0.5000	ug/L	U	06/14/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATO

- SAMPLE ANALYSIS REPORT -
03/11/94

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

Attn: Dan Cooper

Lab number : 4103975
Sample number : 348-9074
Sample matrix : WATER

Report Date: 03/11/94

COLLECTION INFORMATION

Date/Time/By: 03/04/94 4:15 STAMPS
Location : RSA, AMW2-P

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	UnitsDL*	Analdate
4103975	1,1,1,2-Tetrachloroetha	5.0000	ug/L U	03/08/94
	1,1,1-Trichloroethane	5.0000	ug/L U	03/08/94
	1,1,2,2-Tetrachloroetha	5.0000	ug/L U	03/08/94
	1,1,2Trichloroethane	5.0000	ug/L U	03/08/94
	1,1-Dichloroethane	5.0000	ug/L U	03/08/94
	1,1-Dichloroethylene	5.0000	ug/L U	03/08/94
	1,1-Dichloropropene	5.0000	ug/L U	03/08/94
	1,2,3-Trichlorobenzene	5.0000	ug/L U	03/08/94
	1,2,3-Trichloropropane	5.0000	ug/L U	03/08/94
	1,2,4-Trichlorobenzene	5.0000	ug/L U	03/08/94
	1,2,4-Trimethylbenzene	5.0000	ug/L U	03/08/94
	1,2-Dicholoethane	5.0000	ug/L U	03/08/94
	1,2-Dichloropropane	5.0000	ug/L U	03/08/94
	1,3,5-Trimethylbenzene	5.0000	ug/L U	03/08/94
	1,3-Dichloropropane	5.0000	ug/L U	03/08/94
	1,3-Dichloropropene	5.0000	ug/L U	03/08/94
	2,2-Dichloropropane	5.0000	ug/L U	03/08/94
	Tetrachloroethylene	93.0000	ug/L	03/08/94
	Bromobenzene	5.0000	ug/L U	03/08/94
	Bromochloromethane	5.0000	ug/L U	03/08/94
	Bromodichloromethane	5.0000	ug/L U	03/08/94
	Benzene	5.0000	ug/L U	03/08/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATO
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103975	Bromomethane	5.0000	ug/L	U	03/08/94
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	03/08/94
	Chlorobenzene	5.0000	ug/L	U	03/08/94
	Chlorodibromomethane	5.0000	ug/L	U	03/08/94
	Chloroethane	5.0000	ug/L	U	03/08/94
	Bromoform	5.0000	ug/L	U	03/08/94
	Chloroform	5.0000	ug/L	U	03/08/94
	Chloromethane	5.0000	ug/L	U	03/08/94
	Carbon Tetrachloride	5.0000	ug/L	U	03/08/94
	Dibromomethane	5.0000	ug/L	U	03/08/94
	Dichlorofluoromethane	5.0000	ug/L	U	03/08/94
	Dichloromethane	5.0000	ug/L	U	03/08/94
	Ethylbenzene	5.0000	ug/L	U	03/08/94
	Fluorotrichloromethane	5.0000	ug/L	U	03/08/94
	Hexachlorobutadiene	5.0000	ug/L	U	03/08/94
	Isopropylbenzene	5.0000	ug/L	U	03/08/94
	m-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	m+p Xylene	5.0000	ug/L	U	03/08/94
	Naphthalene	5.0000	ug/L	U	03/08/94
	n-Butylbenzene	5.0000	ug/L	U	03/08/94
	n-Propylbenzene	5.0000	ug/L	U	03/08/94
	o-Chlorotoluene	5.0000	ug/L	U	03/08/94
	o-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	o-Xylene	5.0000	ug/L	U	03/08/94
	p-Chlorotoluene	5.0000	ug/L	U	03/08/94
	p-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	p-Isopropyltoluene	5.0000	ug/L	U	03/08/94
	Secbutylbenzene	5.0000	ug/L	U	03/08/94
	Styrene	5.0000	ug/L	U	03/08/94
	t-1,2-Dichloroethylene	5.0000	ug/L	U	03/08/94
	Tertbutylbenzene	5.0000	ug/L	U	03/08/94
	Trichloroethylene	5.0000	ug/L	U	03/08/94
	Toluene	5.0000	ug/L	U	03/08/94
	Vinyl Chloride	5.0000	ug/L	U	03/08/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y

- SAMPLE ANALYSIS REPORT -
03/11/94

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

Attn: Dan Cooper

Lab number : 4103974
Sample number : 348-9074
Sample matrix : WATER

Report Date: 03/11/94

COLLECTION INFORMATION
Date/Time/By: 03/04/94 3:22 STAMPS
Location : RSA, AMW2-UP

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103974	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	03/09/94
	1,1,1-Trichloroethane	5.0000	ug/L	U	03/09/94
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	03/09/94
	1,1,2Trichloroethane	5.0000	ug/L	U	03/09/94
	1,1-Dichloroethane	5.0000	ug/L	U	03/09/94
	1,1-Dichloroethylene	5.0000	ug/L	U	03/09/94
	1,1-Dichloropropene	5.0000	ug/L	U	03/09/94
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	03/09/94
	1,2,3-Trichloropropane	5.0000	ug/L	U	03/09/94
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	03/09/94
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	03/09/94
	1,2-Dicholoethane	5.0000	ug/L	U	03/09/94
	1,2-Dichloropropane	5.0000	ug/L	U	03/09/94
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	03/09/94
	1,3-Dichloropropane	5.0000	ug/L	U	03/09/94
	1,3-Dichloropropene	5.0000	ug/L	U	03/09/94
	2,2-Dichloropropane	5.0000	ug/L	U	03/09/94
	Tetrachloroethylene	86.0000	ug/L		03/09/94
	Bromobenzene	5.0000	ug/L	U	03/09/94
	Bromochloromethane	5.0000	ug/L	U	03/09/94
	Bromodichloromethane	5.0000	ug/L	U	03/09/94
	Benzene	5.0000	ug/L	U	03/09/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103974	Bromomethane	5.0000	ug/L	U	03/09/94
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	03/09/94
	Chlorobenzene	5.0000	ug/L	U	03/09/94
	Chlorodibromomethane	5.0000	ug/L	U	03/09/94
	Chloroethane	5.0000	ug/L	U	03/09/94
	Bromoform	5.0000	ug/L	U	03/09/94
	Chloroform	5.0000	ug/L	U	03/09/94
	Chloromethane	5.0000	ug/L	U	03/09/94
	Carbon Tetrachloride	5.0000	ug/L	U	03/09/94
	Dibromomethane	5.0000	ug/L	U	03/09/94
	Dichlorofluoromethane	5.0000	ug/L	U	03/09/94
	Dichloromethane	5.0000	ug/L	U	03/09/94
	Ethylbenzene	5.0000	ug/L	U	03/09/94
	Fluorotrichloromethane	5.0000	ug/L	U	03/09/94
	Hexachlorobutadiene	5.0000	ug/L	U	03/09/94
	Isopropylbenzene	5.0000	ug/L	U	03/09/94
	m-Dichlorobenzene	5.0000	ug/L	U	03/09/94
	m+p Xylene	5.0000	ug/L	U	03/09/94
	Naphthalene	5.0000	ug/L	U	03/09/94
	n-Butylbenzene	5.0000	ug/L	U	03/09/94
	n-Propylbenzene	5.0000	ug/L	U	03/09/94
	o-Chlorotoluene	5.0000	ug/L	U	03/09/94
	o-Dichlorobenzene	5.0000	ug/L	U	03/09/94
	o-Xylene	5.0000	ug/L	U	03/09/94
	p-Chlorotoluene	5.0000	ug/L	U	03/09/94
	p-Dichlorobenzene	5.0000	ug/L	U	03/09/94
	p-Isopropyltoluene	5.0000	ug/L	U	03/09/94
	Secbutylbenzene	5.0000	ug/L	U	03/09/94
	Styrene	5.0000	ug/L	U	03/09/94
	t-1,2-Dichloroethylene	5.0000	ug/L	U	03/09/94
	Tertbutylbenzene	5.0000	ug/L	U	03/09/94
	Trichloroethylene	5.0000	ug/L	U	03/09/94
	Toluene	5.0000	ug/L	U	03/09/94
	Vinyl Chloride	5.0000	ug/L	U	03/09/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

DEC 1993
"ADEM - FO"
Montgomery"

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

Attn: Dan Cooper

Lab number : 4102090
Sample number : 348-9074
Sample matrix : WATER

Report Date: 12/27/93

COLLECTION INFORMATION

Date/Time/By: 12/06/93 12:10 STAMPS
Location : RSA TOWER, MW3-UPA

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102090	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	12/20/93
	1,1,1-Trichloroethane	5.0000	ug/L	U	12/20/93
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	12/20/93
	1,1,2Trichloroethane	5.0000	ug/L	U	12/20/93
	1,1-Dichloroethane	5.0000	ug/L	U	12/20/93
	1,1-Dichloroethylene	5.0000	ug/L	U	12/20/93
	1,1-Dichloropropene	5.0000	ug/L	U	12/20/93
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	12/20/93
	1,2,3-Trichloropropane	5.0000	ug/L	U	12/20/93
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	12/20/93
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	12/20/93
	1,2-Dicholoethane	5.0000	ug/L	U	12/20/93
	1,2-Dichloropropane	5.0000	ug/L	U	12/20/93
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	12/20/93
	1,3-Dichloropropane	5.0000	ug/L	U	12/20/93
	1,3-Dichloropropene	5.0000	ug/L	U	12/20/93
	2,2-Dichloropropane	5.0000	ug/L	U	12/20/93
	Tetrachloroethylene	18.7000	ug/L		12/20/93
	Bromobenzene	5.0000	ug/L	U	12/20/93
	Bromochloromethane	5.0000	ug/L	U	12/20/93
	Bromodichloromethane	5.0000	ug/L	U	12/20/93
	Benzene	5.0000	ug/L	U	12/20/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT

December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102090	Bromomethane	5.0000	ug/L	U	12/20/93
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	12/20/93
	Chlorobenzene	5.0000	ug/L	U	12/20/93
	Chlorodibromomethane	5.0000	ug/L	U	12/20/93
	Chloroethane	5.0000	ug/L	U	12/20/93
	Bromoform	5.0000	ug/L	U	12/20/93
	Chloroform	5.0000	ug/L	U	12/20/93
	Chloromethane	5.0000	ug/L	U	12/20/93
	Carbon Tetrachloride	5.0000	ug/L	U	12/20/93
	Dibromomethane	5.0000	ug/L	U	12/20/93
	Dichlorofluoromethane	5.0000	ug/L	U	12/20/93
	Dichloromethane	5.0000	ug/L	U	12/20/93
	Ethylbenzene	5.0000	ug/L	U	12/20/93
	Fluorotrichloromethane	5.0000	ug/L	U	12/20/93
	Hexachlorobutadiene	5.0000	ug/L	U	12/20/93
	Isopropylbenzene	5.0000	ug/L	U	12/20/93
	m-Dichlorobenzene	5.0000	ug/L	U	12/20/93
	m+p Xylene	5.0000	ug/L	U	12/20/93
	Naphthalene	5.0000	ug/L	U	12/20/93
	n-Butylbenzene	5.0000	ug/L	U	12/20/93
	n-Propylbenzene	5.0000	ug/L	U	12/20/93
	o-Chlorotoluene	5.0000	ug/L	U	12/20/93
	o-Dichlorobenzene	5.0000	ug/L	U	12/20/93
	o-Xylene	5.0000	ug/L	U	12/20/93
	p-Chlorotoluene	5.0000	ug/L	U	12/20/93
	p-Dichlorobenzene	5.0000	ug/L	U	12/20/93
	p-Isopropyltoluene	5.0000	ug/L	U	12/20/93
	Secbutylbenzene	5.0000	ug/L	U	12/20/93
	Styrene	5.0000	ug/L	U	12/20/93
	t-1,2-Dichloroethylene	5.0000	ug/L	U	12/20/93
	Tertbutylbenzene	5.0000	ug/L	U	12/20/93
	Trichloroethylene	5.0000	ug/L	U	12/20/93
	Toluene	5.0000	ug/L	U	12/20/93
	Vinyl Chloride	5.0000	ug/L	U	12/20/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATO

- SAMPLE ANALYSIS REPORT -
03/11/94

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

Attn: Dan Cooper

Lab number : 4103978
Sample number : 348-9074
Sample matrix : WATER

Report Date: 03/11/94

COLLECTION INFORMATION

Date/Time/By: 03/04/94 2:30 STAMPS
Location : RSA, AMW3-P

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103978	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	03/08/94
	1,1,1-Trichloroethane	5.0000	ug/L	U	03/08/94
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	03/08/94
	1,1,2Trichloroethane	5.0000	ug/L	U	03/08/94
	1,1-Dichloroethane	5.0000	ug/L	U	03/08/94
	1,1-Dichloroethylene	5.0000	ug/L	U	03/08/94
	1,1-Dichloropropene	5.0000	ug/L	U	03/08/94
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	03/08/94
	1,2,3-Trichloropropane	5.0000	ug/L	U	03/08/94
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	03/08/94
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	03/08/94
	1,2-Dicholoethane	5.0000	ug/L	U	03/08/94
	1,2-Dichloropropane	5.0000	ug/L	U	03/08/94
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	03/08/94
	1,3-Dichloropropane	5.0000	ug/L	U	03/08/94
	1,3-Dichloropropene	5.0000	ug/L	U	03/08/94
	2,2-Dichloropropane	5.0000	ug/L	U	03/08/94
	Tetrachloroethylene	41.9000	ug/L		03/08/94
	Bromobenzene	5.0000	ug/L	U	03/08/94
	Bromochloromethane	5.0000	ug/L	U	03/08/94
	Bromodichloromethane	5.0000	ug/L	U	03/08/94
	Benzene	5.0000	ug/L	U	03/08/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATO
- RESULTS REPORT -

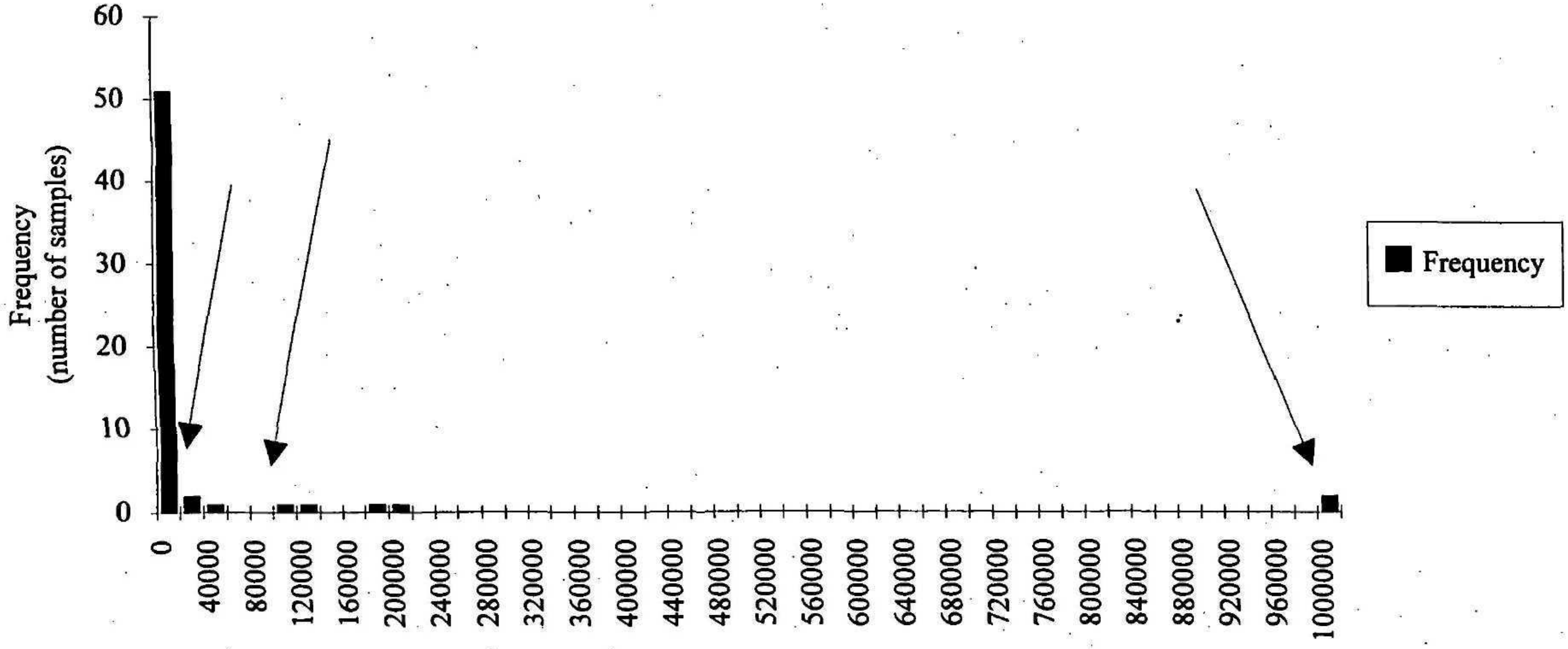
March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103978	Bromomethane	5.0000	ug/L	U	03/08/94
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	03/08/94
	Chlorobenzene	5.0000	ug/L	U	03/08/94
	Chlorodibromomethane	5.0000	ug/L	U	03/08/94
	Chloroethane	5.0000	ug/L	U	03/08/94
	Bromoform	5.0000	ug/L	U	03/08/94
	Chloroform	5.0000	ug/L	U	03/08/94
	Chloromethane	5.0000	ug/L	U	03/08/94
	Carbon Tetrachloride	5.0000	ug/L	U	03/08/94
	Dibromomethane	5.0000	ug/L	U	03/08/94
	Dichlorofluoromethane	5.0000	ug/L	U	03/08/94
	Dichloromethane	5.0000	ug/L	U	03/08/94
	Ethylbenzene	5.0000	ug/L	U	03/08/94
	Fluorotrichloromethane	5.0000	ug/L	U	03/08/94
	Hexachlorobutadiene	5.0000	ug/L	U	03/08/94
	Isopropylbenzene	5.0000	ug/L	U	03/08/94
	m-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	m+p Xylene	5.0000	ug/L	U	03/08/94
	Naphthalene	5.0000	ug/L	U	03/08/94
	n-Butylbenzene	5.0000	ug/L	U	03/08/94
	n-Propylbenzene	5.0000	ug/L	U	03/08/94
	o-Chlorotoluene	5.0000	ug/L	U	03/08/94
	o-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	o-Xylene	5.0000	ug/L	U	03/08/94
	p-Chlorotoluene	5.0000	ug/L	U	03/08/94
	p-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	p-Isopropyltoluene	5.0000	ug/L	U	03/08/94
	Secbutylbenzene	5.0000	ug/L	U	03/08/94
	Styrene	5.0000	ug/L	U	03/08/94
	t-1,2-Dichloroethylene	5.0000	ug/L	U	03/08/94
	Tertbutylbenzene	5.0000	ug/L	U	03/08/94
	Trichloroethylene	5.0000	ug/L	U	03/08/94
	Toluene	5.0000	ug/L	U	03/08/94
	Vinyl Chloride	5.0000	ug/L	U	03/08/94

* U denotes results less than the instrument detection limit.

APPENDIX E
Histograms

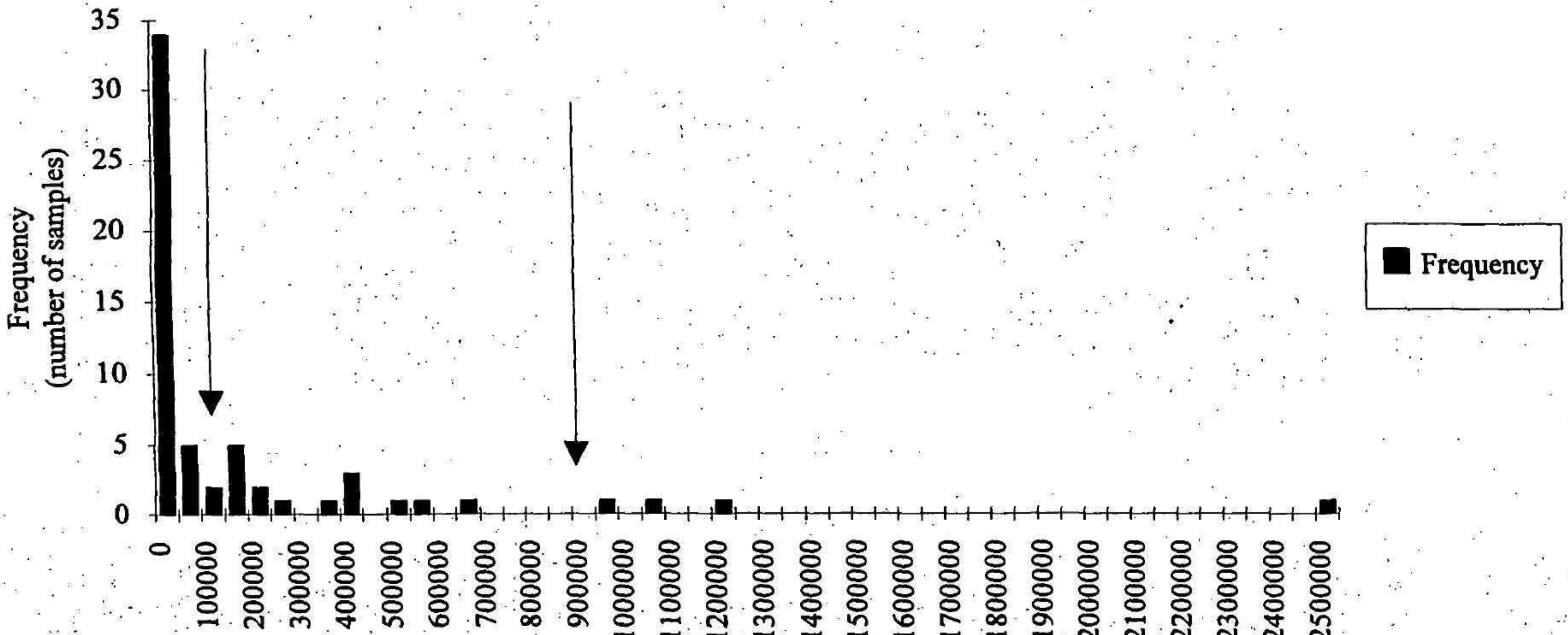
Figure 1
PCE Histogram



Relative Response (in ion counts)
Arrows indicate sample population breaks used to establish contour intervals depicted on Plate 2.

2224pce.his

Figure 2
BTEX Histogram



Relative Response (in ion counts)
Arrows indicate sample population breaks used to establish contour intervals depicted on Plate 3.

ADEM CENTRAL LABORAT

- SAMPLE ANALYSIS REPORT -
03/11/94

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

Attn: Dan Cooper

Lab number : 4103973
Sample number : 348-9074
Sample matrix : WATER

Report Date: 03/11/94

COLLECTION INFORMATION

Date/Time/By: 03/04/94 2:03 STAMPS
Location : RSA, AMW3-UP

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103973	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	03/08/94
	1,1,1-Trichloroethane	5.0000	ug/L	U	03/08/94
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	03/08/94
	1,1,2Trichloroethane	5.0000	ug/L	U	03/08/94
	1,1-Dichloroethane	5.0000	ug/L	U	03/08/94
	1,1-Dichloroethylene	5.0000	ug/L	U	03/08/94
	1,1-Dichloropropene	5.0000	ug/L	U	03/08/94
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	03/08/94
	1,2,3-Trichloropropane	5.0000	ug/L	U	03/08/94
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	03/08/94
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	03/08/94
	1,2-Dicholoethane	5.0000	ug/L	U	03/08/94
	1,2-Dichloropropane	5.0000	ug/L	U	03/08/94
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	03/08/94
	1,3-Dichloropropane	5.0000	ug/L	U	03/08/94
	1,3-Dichloropropene	5.0000	ug/L	U	03/08/94
	2,2-Dichloropropane	5.0000	ug/L	U	03/08/94
	Tetrachloroethylene	65.0000	ug/L		03/08/94
	Bromobenzene	5.0000	ug/L	U	03/08/94
	Bromochloromethane	5.0000	ug/L	U	03/08/94
	Bromodichloromethane	5.0000	ug/L	U	03/08/94
	Benzene	5.0000	ug/L	U	03/08/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT

- SAMPLE ANALYSIS REPORT -
03/11/94

MAR 1994
"ADEM - FO
Montgomery"

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

Attn: Dan Cooper

Lab number : 4103976
Sample number : 348-9074
Sample matrix : WATER

Report Date: 03/11/94

COLLECTION INFORMATION

Date/Time/By: 03/04/94 12:20 STAMPS
Location : RSA, AMW4-P

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103976	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	03/09/94
	1,1,1-Trichloroethane	5.0000	ug/L	U	03/09/94
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	03/09/94
	1,1,2Trichloroethane	5.0000	ug/L	U	03/09/94
	1,1-Dichloroethane	5.0000	ug/L	U	03/09/94
	1,1-Dichloroethylene	5.0000	ug/L	U	03/09/94
	1,1-Dichloropropene	5.0000	ug/L	U	03/09/94
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	03/09/94
	1,2,3-Trichloropropane	5.0000	ug/L	U	03/09/94
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	03/09/94
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	03/09/94
	1,2-Dicholoethane	5.0000	ug/L	U	03/09/94
	1,2-Dichloropropane	5.0000	ug/L	U	03/09/94
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	03/09/94
	1,3-Dichloropropane	5.0000	ug/L	U	03/09/94
	1,3-Dichloropropene	5.0000	ug/L	U	03/09/94
	2,2-Dichloropropane	5.0000	ug/L	U	03/09/94
	Tetrachloroethylene	38.8000	ug/L		03/09/94
	Bromobenzene	5.0000	ug/L	U	03/09/94
	Bromochloromethane	5.0000	ug/L	U	03/09/94
	Bromodichloromethane	5.0000	ug/L	U	03/09/94
	Benzene	5.0000	ug/L	U	03/09/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y
- RESULTS REPORT - March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103976	Bromomethane	5.0000	ug/L	U	03/09/94
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	03/09/94
	Chlorobenzene	5.0000	ug/L	U	03/09/94
	Chlorodibromomethane	5.0000	ug/L	U	03/09/94
	Chloroethane	5.0000	ug/L	U	03/09/94
	Bromoform	5.0000	ug/L	U	03/09/94
	Chloroform	5.0000	ug/L	U	03/09/94
	Chloromethane	5.0000	ug/L	U	03/09/94
	Carbon Tetrachloride	5.0000	ug/L	U	03/09/94
	Dibromomethane	5.0000	ug/L	U	03/09/94
	Dichlorofluoromethane	5.0000	ug/L	U	03/09/94
	Dichloromethane	5.0000	ug/L	U	03/09/94
	Ethylbenzene	5.0000	ug/L	U	03/09/94
	Fluorotrichloromethane	5.0000	ug/L	U	03/09/94
	Hexachlorobutadiene	5.0000	ug/L	U	03/09/94
	Isopropylbenzene	5.0000	ug/L	U	03/09/94
	m-Dichlorobenzene	5.0000	ug/L	U	03/09/94
	m+p Xylene	5.0000	ug/L	U	03/09/94
	Naphthalene	5.0000	ug/L	U	03/09/94
	n-Butylbenzene	5.0000	ug/L	U	03/09/94
	n-Propylbenzene	5.0000	ug/L	U	03/09/94
	o-Chlorotoluene	5.0000	ug/L	U	03/09/94
	o-Dichlorobenzene	5.0000	ug/L	U	03/09/94
	o-Xylene	5.0000	ug/L	U	03/09/94
	p-Chlorotoluene	5.0000	ug/L	U	03/09/94
	p-Dichlorobenzene	5.0000	ug/L	U	03/09/94
	p-Isopropyltoluene	5.0000	ug/L	U	03/09/94
	Secbutylbenzene	5.0000	ug/L	U	03/09/94
	Styrene	5.0000	ug/L	U	03/09/94
	t-1,2-Dichloroethylene	5.0000	ug/L	U	03/09/94
	Tertbutylbenzene	5.0000	ug/L	U	03/09/94
	Trichloroethylene	5.0000	ug/L	U	03/09/94
	Toluene	5.0000	ug/L	U	03/09/94
	Vinyl Chloride	5.0000	ug/L	U	03/09/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT

- SAMPLE ANALYSIS REPORT -
03/11/94

MAR 1994
"ADEM - FO
Montgomery"

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

Attn: Dan Cooper

Lab number : 4103977
Sample number : 348-9074
Sample matrix : WATER

Report Date: 03/11/94

COLLECTION INFORMATION

Date/Time/By: 03/04/94 10:45 STAMPS
Location : RSA, AMW4-UP

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103977	1,1,1,2-Tetrachloroetha	5.0000	ug/L	U	03/08/94
	1,1,1-Trichloroethane	5.0000	ug/L	U	03/08/94
	1,1,2,2-Tetrachloroetha	5.0000	ug/L	U	03/08/94
	1,1,2Trichloroethane	5.0000	ug/L	U	03/08/94
	1,1-Dichloroethane	5.0000	ug/L	U	03/08/94
	1,1-Dichloroethylene	5.0000	ug/L	U	03/08/94
	1,1-Dichloropropene	5.0000	ug/L	U	03/08/94
	1,2,3-Trichlorobenzene	5.0000	ug/L	U	03/08/94
	1,2,3-Trichloropropane	5.0000	ug/L	U	03/08/94
	1,2,4-Trichlorobenzene	5.0000	ug/L	U	03/08/94
	1,2,4-Trimethylbenzene	5.0000	ug/L	U	03/08/94
	1,2-Dicholoethane	5.0000	ug/L	U	03/08/94
	1,2-Dichloropropane	5.0000	ug/L	U	03/08/94
	1,3,5-Trimethylbenzene	5.0000	ug/L	U	03/08/94
	1,3-Dichloropropane	5.0000	ug/L	U	03/08/94
	1,3-Dichloropropene	5.0000	ug/L	U	03/08/94
	2,2-Dichloropropane	5.0000	ug/L	U	03/08/94
	Tetrachloroethylene	9.7000	ug/L		03/08/94
	Bromobenzene	5.0000	ug/L	U	03/08/94
	Bromochloromethane	5.0000	ug/L	U	03/08/94
	Bromodichloromethane	5.0000	ug/L	U	03/08/94
	Benzene	5.0000	ug/L	U	03/08/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]
- RESULTS REPORT -

March 11, 1994

Lab#	Test	Result	Units	DL*	Analdate
4103977	Bromomethane	5.0000	ug/L	U	03/08/94
	cis-1,2-Dichloroethylen	5.0000	ug/L	U	03/08/94
	Chlorobenzene	5.0000	ug/L	U	03/08/94
	Chlorodibromomethane	5.0000	ug/L	U	03/08/94
	Chloroethane	5.0000	ug/L	U	03/08/94
	Bromoform	5.0000	ug/L	U	03/08/94
	Chloroform	5.0000	ug/L	U	03/08/94
	Chloromethane	5.0000	ug/L	U	03/08/94
	Carbon Tetrachloride	5.0000	ug/L	U	03/08/94
	Dibromomethane	5.0000	ug/L	U	03/08/94
	Dichlorofluoromethane	5.0000	ug/L	U	03/08/94
	Dichloromethane	5.0000	ug/L	U	03/08/94
	Ethylbenzene	5.0000	ug/L	U	03/08/94
	Fluorotrichloromethane	5.0000	ug/L	U	03/08/94
	Hexachlorobutadiene	5.0000	ug/L	U	03/08/94
	Isopropylbenzene	5.0000	ug/L	U	03/08/94
	m-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	m+p Xylene	5.0000	ug/L	U	03/08/94
	Naphthalene	5.0000	ug/L	U	03/08/94
	n-Butylbenzene	5.0000	ug/L	U	03/08/94
	n-Propylbenzene	5.0000	ug/L	U	03/08/94
	o-Chlorotoluene	5.0000	ug/L	U	03/08/94
	o-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	o-Xylene	5.0000	ug/L	U	03/08/94
	p-Chlorotoluene	5.0000	ug/L	U	03/08/94
	p-Dichlorobenzene	5.0000	ug/L	U	03/08/94
	p-Isopropyltoluene	5.0000	ug/L	U	03/08/94
	Secbutylbenzene	5.0000	ug/L	U	03/08/94
	Styrene	5.0000	ug/L	U	03/08/94
	t-1,2-Dichloroethylene	5.0000	ug/L	U	03/08/94
	Tertbutylbenzene	5.0000	ug/L	U	03/08/94
	Trichloroethylene	5.0000	ug/L	U	03/08/94
	Toluene	5.0000	ug/L	U	03/08/94
	Vinyl Chloride	5.0000	ug/L	U	03/08/94

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY

- SAMPLE ANALYSIS REPORT -
12/27/93

DEC 1993
"ADEM - FO"
Montgomery

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

Attn: Dan Cooper

Lab number : 4102089
Sample number : 348-9074
Sample matrix : WATER

Report Date: 12/27/93

COLLECTION INFORMATION
Date/Time/By: 12/06/93 12:40 STAMPS
Location : RSA TOWER, MW2-UPA

ADEM CENTRAL LABORATORY
- RESULTS REPORT - *December 27, 1993*

Lab#	Test	Result	Units	DL*	Analdate
4102089	1,1,1,2-Tetrachloroetha	0.5000	ug/L	U	12/20/93
	1,1,1-Trichloroethane	0.5000	ug/L	U	12/20/93
	1,1,2,2-Tetrachloroetha	0.5000	ug/L	U	12/20/93
	1,1,2Trichloroethane	0.5000	ug/L	U	12/20/93
	1,1-Dichloroethane	0.5000	ug/L	U	12/20/93
	1,1-Dichloroethylene	0.5000	ug/L	U	12/20/93
	1,1-Dichloropropene	0.5000	ug/L	U	12/20/93
	1,2,3-Trichlorobenzene	0.5000	ug/L	U	12/20/93
	1,2,3-Trichloropropane	0.5000	ug/L	U	12/20/93
	1,2,4-Trichlorobenzene	0.5000	ug/L	U	12/20/93
	1,2,4-Trimethylbenzene	0.5000	ug/L	U	12/20/93
	1,2-Dicholoethane	0.5000	ug/L	U	12/20/93
	1,2-Dichloropropane	0.5000	ug/L	U	12/20/93
	1,3,5-Trimethylbenzene	0.5000	ug/L	U	12/20/93
	1,3-Dichloropropane	0.5000	ug/L	U	12/20/93
	1,3-Dichloropropene	0.5000	ug/L	U	12/20/93
	2,2-Dichloropropane	0.5000	ug/L	U	12/20/93
	Tetrachloroethylene	61.7000	ug/L		12/20/93
	Bromobenzene	0.5000	ug/L	U	12/20/93
	Bromochloromethane	0.5000	ug/L	U	12/20/93
	Bromodichloromethane	0.5000	ug/L	U	12/20/93
	Benzene	0.5000	ug/L	U	12/20/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORATORY
- RESULTS REPORT

December 27, 1993

Lab#	Test	Result	Units	DL*	Analdate
4102089	Bromomethane	0.5000	ug/L	U	12/20/93
	cis-1,2-Dichloroethylen	0.5000	ug/L	U	12/20/93
	Chlorobenzene	0.5000	ug/L	U	12/20/93
	Chlorodibromomethane	0.5000	ug/L	U	12/20/93
	Chloroethane	0.5000	ug/L	U	12/20/93
	Bromoform	0.5000	ug/L	U	12/20/93
	Chloroform	0.5000	ug/L	U	12/20/93
	Chloromethane	0.5000	ug/L	U	12/20/93
	Carbon Tetrachloride	0.5000	ug/L	U	12/20/93
	Dibromomethane	0.5000	ug/L	U	12/20/93
	Dichlorofluoromethane	0.5000	ug/L	U	12/20/93
	Dichloromethane	0.5000	ug/L	U	12/20/93
	Ethylbenzene	0.5000	ug/L	U	12/20/93
	Fluorotrichloromethane	0.5000	ug/L	U	12/20/93
	Hexachlorobutadiene	0.5000	ug/L	U	12/20/93
	Isopropylbenzene	0.5000	ug/L	U	12/20/93
	m-Dichlorobenzene	0.5000	ug/L	U	12/20/93
	m+p Xylene	0.5000	ug/L	U	12/20/93
	Naphthalene	0.5000	ug/L	U	12/20/93
	n-Butylbenzene	0.5000	ug/L	U	12/20/93
	n-Propylbenzene	0.5000	ug/L	U	12/20/93
	o-Chlorotoluene	0.5000	ug/L	U	12/20/93
	o-Dichlorobenzene	0.5000	ug/L	U	12/20/93
	o-Xylene	0.5000	ug/L	U	12/20/93
	p-Chlorotoluene	0.5000	ug/L	U	12/20/93
	p-Dichlorobenzene	0.5000	ug/L	U	12/20/93
	p-Isopropyltoluene	0.5000	ug/L	U	12/20/93
	Secbutylbenzene	0.5000	ug/L	U	12/20/93
	Styrene	0.5000	ug/L	U	12/20/93
	t-1,2-Dichloroethylene	0.5000	ug/L	U	12/20/93
	Tertbutylbenzene	0.5000	ug/L	U	12/20/93
	Trichloroethylene	0.5000	ug/L	U	12/20/93
	Toluene	0.5000	ug/L	U	12/20/93
	Vinyl Chloride	0.5000	ug/L	U	12/20/93

* U denotes results less than the instrument detection limit.

SPECIAL PROJECTS
ADEM
OCT 1993

OCT 1993
RECEIVED
ADEM-FO
MONTGOMERY

- SAMPLE ANALYSIS REPORT -
10/28/93

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

Attn: Dan Cooper

Lab number : 4100599
Sample number : 348-9074
Sample matrix : WATER

Report Date: 10/28/93

COLLECTION INFORMATION

Date/Time/By: 10/15/93 2:05 STAMPS
Location : RSA, WS-3

ADEM CENTRAL LABORATORY
- RESULTS REPORT -

October 28, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4100599	1,1,1,2-Tetrachloroetha	<50	ug/L	10/25/93
	1,1,1-Trichloroethane	<50	ug/L	10/25/93
	1,1,2,2-Tetrachloroetha	<50	ug/L	10/25/93
	1,1,2Trichloroethane	<50	ug/L	10/25/93
	1,1-Dichloroethane	<50	ug/L	10/25/93
	1,1-Dichloroethylene	<50	ug/L	10/25/93
	1,1-Dichloropropene	<50	ug/L	10/25/93
	1,2,3-Trichlorobenzene	<50	ug/L	10/25/93
	1,2,3-Trichloropropane	<50	ug/L	10/25/93
	1,2,4-Trichlorobenzene	<50	ug/L	10/25/93
	1,2,4-Trimethylbenzene	<50	ug/L	10/25/93
	1,2-Dicholoethane	<50	ug/L	10/25/93
	1,2-Dichloropropane	<50	ug/L	10/25/93
	1,3,5-Trimethylbenzene	<50	ug/L	10/25/93
	1,3-Dichloropropane	<50	ug/L	10/25/93
	1,3-Dichloropropene	<50	ug/L	10/25/93
	2,2-Dichloropropane	<50	ug/L	10/25/93
	Tetrachloroethylene	607.0000	ug/L	10/25/93
	Bromobenzene	<50	ug/L	10/25/93
	Bromochloromethane	<50	ug/L	10/25/93
	Bromodichloromethane	<50	ug/L	10/25/93
	Benzene	<50	ug/L	10/25/93

U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORA[illegible]RY
- RESULTS REPORT

October 28, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4100599	Bromomethane	<50	ug/L	10/25/93
	cis-1,2-Dichloroethylen	<50	ug/L	10/25/93
	Chlorobenzene	<50	ug/L	10/25/93
	Chlorodibromomethane	<50	ug/L	10/25/93
	Chloroethane	<50	ug/L	10/25/93
	Bromoform	<50	ug/L	10/25/93
	Chloroform	<50	ug/L	10/25/93
	Chloromethane	<50	ug/L	10/25/93
	Carbon Tetrachloride	<50	ug/L	10/25/93
	Dibromomethane	<50	ug/L	10/25/93
	Dichlorofluoromethane	<50	ug/L	10/25/93
	Dichloromethane	<50	ug/L	10/25/93
	Ethylbenzene	<50	ug/L	10/25/93
	Fluorotrichloromethane	<50	ug/L	10/25/93
	Hexachlorobutadiene	<50	ug/L	10/25/93
	Isopropylbenzene	<50	ug/L	10/25/93
	m-Dichlorobenzene	<50	ug/L	10/25/93
	m+p Xylene	<50	ug/L	10/25/93
	Naphthalene	<50	ug/L	10/25/93
	n-Butylbenzene	<50	ug/L	10/25/93
	n-Propylbenzene	<50	ug/L	10/25/93
	o-Chlorotoluene	<50	ug/L	10/25/93
	o-Dichlorobenzene	<50	ug/L	10/25/93
	o-Xylene	<50	ug/L	10/25/93
	p-Chlorotoluene	<50	ug/L	10/25/93
	p-Dichlorobenzene	<50	ug/L	10/25/93
	p-Isopropyltoluene	<50	ug/L	10/25/93
	Secbutylbenzene	<50	ug/L	10/25/93
	Styrene	<50	ug/L	10/25/93
	t-1,2-Dichloroethylene	<50	ug/L	10/25/93
	Tertbutylbenzene	<50	ug/L	10/25/93
	Trichloroethylene	<50	ug/L	10/25/93
	Toluene	<50	ug/L	10/25/93
	Vinyl Chloride	<50	ug/L	10/25/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y

ADEM
SPECIAL PROJECTS
OCT 1993

- SAMPLE ANALYSIS REPORT -
10/28/93

RECEIVED
ADEM-FO
MONTGOMERY
OCT 1993

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

Attn: Dan Cooper

Lab number : 4100598
Sample number : 348-9074
Sample matrix : WATER

Report Date: 10/28/93

COLLECTION INFORMATION
Date/Time/By: 10/15/93 2:05 STAMPS
Location : RSA, WS-2

ADEM CENTRAL LABORATORY
- RESULTS REPORT - October 28, 1993

Lab#	Test	Result	UnitsDL*	Analdate
4100598	1,1,1,2-Tetrachloroetha	<50	ug/L	10/25/93
	1,1,1-Trichloroethane	<50	ug/L	10/25/93
	1,1,2,2-Tetrachloroetha	<50	ug/L	10/25/93
	1,1,2Trichloroethane	<50	ug/L	10/25/93
	1,1-Dichloroethane	<50	ug/L	10/25/93
	1,1-Dichloroethylene	<50	ug/L	10/25/93
	1,1-Dichloropropene	<50	ug/L	10/25/93
	1,2,3-Trichlorobenzene	<50	ug/L	10/25/93
	1,2,3-Trichloropropane	<50	ug/L	10/25/93
	1,2,4-Trichlorobenzene	<50	ug/L	10/25/93
	1,2,4-Trimethylbenzene	<50	ug/L	10/25/93
	1.2-Dicholoethane	<50	ug/L	10/25/93
	1,2-Dichloropropane	<50	ug/L	10/25/93
	1,3,5-Trimethylbenzene	<50	ug/L	10/25/93
	1,3-Dichloropropane	<50	ug/L	10/25/93
	1,3-Dichloropropene	<50	ug/L	10/25/93
	2.2-Dichloropropane	<50	ug/L	10/25/93
	Tetrachloroethylene	536.0000	ug/L	10/25/93
	Bromobenzene	<50	ug/L	10/25/93
	Bromochloromethane	<50	ug/L	10/25/93
	Bromodichloromethane	<50	ug/L	10/25/93
	Benzene	<50	ug/L	10/25/93

* U denotes results less than the instrument detection limit.

ADEM CENTRAL LABORAT[illegible]Y
- RESULTS REPORT

October 28, 1993

Lab#	Test	Result	Units	DL*	Analdate
4100598	Bromomethane	<50	ug/L		10/25/93
	cis-1,2-Dichloroethylen	<50	ug/L		10/25/93
	Chlorobenzene	<50	ug/L		10/25/93
	Chlorodibromomethane	<50	ug/L		10/25/93
	Chloroethane	<50	ug/L		10/25/93
	Bromoform	<50	ug/L		10/25/93
	Chloroform	<50	ug/L		10/25/93
	Chloromethane	<50	ug/L		10/25/93
	Carbon Tetrachloride	<50	ug/L		10/25/93
	Dibromomethane	<50	ug/L		10/25/93
	Dichlorofluoromethane	<50	ug/L		10/25/93
	Dichloromethane	<50	ug/L		10/25/93
	Ethylbenzene	<50	ug/L		10/25/93
	Fluorotrichloromethane	<50	ug/L		10/25/93
	Hexachlorobutadiene	<50	ug/L		10/25/93
	Isopropylbenzene	<50	ug/L		10/25/93
	m-Dichlorobenzene	<50	ug/L		10/25/93
	m+p Xylene	<50	ug/L		10/25/93
	Naphthalene	<50	ug/L		10/25/93
	n-Butylbenzene	<50	ug/L		10/25/93
	n-Propylbenzene	<50	ug/L		10/25/93
	o-Chlorotoluene	<50	ug/L		10/25/93
	o-Dichlorobenzene	<50	ug/L		10/25/93
	o-Xylene	<50	ug/L		10/25/93
	p-Chlorotoluene	<50	ug/L		10/25/93
	p-Dichlorobenzene	<50	ug/L		10/25/93
	p-Isopropyltoluene	<50	ug/L		10/25/93
	Secbutylbenzene	<50	ug/L		10/25/93
	Styrene	<50	ug/L		10/25/93
	t-1,2-Dichloroethylene	<50	ug/L		10/25/93
	Tertbutylbenzene	<50	ug/L		10/25/93
	Trichloroethylene	<50	ug/L		10/25/93
	Toluene	<50	ug/L		10/25/93
	Vinyl Chloride	<50	ug/L		10/25/93

* U denotes results less than the instrument detection limit.

APPENDIX C

RSA PETREX SURVEY
FIELD NOTES

AHSCF # 9074
NERI PROJECT # 2224

12/14/94
Location: Montgomery, Alabama
Temperature: Approximately 55° F
Weather: Dry, bright, wind blowing from East at less than 5 mph

BAG 1

TUBE 2: 10:20 AM ... hole through bare ground into coarse red sand ... black coarse material at bottom ... roots nearby and in top of hole...parking lot ... hole approx. 4 paces South of tree ... approx. 25' South of Pollard St. ... approx. 25' East of drive way ... brick and concrete on surfaces ... debris all around.

1-11-95 9:42am

TUBE 1: 10:30 AM ... hole through turf and dark brown sand and gravel into brown moist silty sand ... approx. 10' South of Pollard St. ... approx. 5 1/2' North of front steps of Nichol's Auto ... storm drain 8' to Northeast ... public water wells approx. 150' to the north ... hole beneath brick ... UST approx. 35' west of hole.

1-11-95 9:51

TUBE 4: 10:40 AM ... hole through turf into brown peat and sand ... approx. 1 1/4' South of Capital Trailways Bus parking ... approx. 8' North of Randolph St. ... in side walk ... approx. 3' West of 6th fence post from East.

1-11-95 10:22

TUBE 5: 10:50 AM ... hole through turf into moist light brown coarse sand into black coarse sand at bottom ... approx. 3' West of building ... approx. 2 1/2 ' East of RR tracks ... 15' South of Randolph St. ... Budwiser Facility to West and South ... approx. 7' North of mimosa tree ... used red ribbon flagging.

1-11-95 10:26

TUBE 6: hole through turf into brown coarse sand into gray moist medium sand with silt ... approx. 10' North of fence ... approx. 6' East of utility pole ... approx. 8' East of old drive way ... approx. 2 1/2' East of fence post with flagging ... red ribbon.

1/11/95 10:37

TUBE 7: hole through turf into moist light brown medium sand ... approx. 18" North of iron fence ... approx. 2 1/2' East of 6th section of fence from West ... approx. 25' South of Randolph St. ... approx. 35' East of old walkway ... installed with core shovel.

1/11/95 10:28

TUBE 3: 11:25 AM ... hole through turf into moist brown medium sand ... approx. 1' North of Randolph St. ... 1' South of bus parking sign post ... approx. 5' West of Hull St. ... sidewalk approx. 4' to the North ... at Southeast corner of Lawson Construction company.

1/11/95 10:32

BREAK FOR LUNCH AT 11:35 AM

RETURNED TO WORK AT 12:35 PM

1/11/95 10:44 am

TUBE 10: 12:35 PM ... hole through asphalt into red coarse sand fill material ... approx. 15' South of block wall ... approx. 3 1/2' South of dirt and old logs ... approx. 25' South of Columbus St. ... approx. 28' East of building.

1/11/95 10:53

TUBE 8: hole through bare soil, brick and concrete rubble into miost brown fine sand ... approx. 2' North of 1st fence post from building ... approx. 8' West of building ... approx. 20' North of Jefferson St.

tube neck broke - transferred wires to new tube

1/11/95 11:03

TUBE 12: 1:22 PM ... hole through turf into brown clayey sand ... 1 1/4' North of iron fence ... approx. 20' South of road ... approx. 8' East of water line

1/11/95 11:05

TUBE 14: hole through turf in corner of sidewalk into brown clayey sand with some black coarse sand at bottom ... approx. 10' South of Jefferson St. ... approx. 14' West of Lawrence St.

1/11/95 11:08

TUBE 9: hole through turf into dark moist clayey sand ... approx. 3 1/2' North of Jefferson St. ... approx. 30' West of Lawrence St. ... approx. 60' Northwest of tube 14 ... approx. 4 1/2' from no right turn sign and drive way.

broke 11:[illegible] am — lunch - start back 1:30 pm

1/11/95 1:40 pm

TUBE 13: 2:03 PM ... hole through turf in sidewalk margin into moist brown silty sand ... approx. 6' South of roadway ... approx. 10' North of power transformer facility ... approx. 16' West of large power line tower ... approx. 8' East of water and sewer line.

1/11/95 1:45 pm

TUBE 11: hole through turf into red brown moist sand ... approx. 2' South of sidewalk ... approx. 6' North of Jefferson St. ... approx. 8' east of historic district sign ... approx. 35' West of street corner ... installed with core shovel.

1/11/95 1:48 pm

TUBE 23: hole through turf into moist brown sand ... approx. 15' East of tree ... approx. 4' South of Jefferson St. ... approx. 11' South of building ... approx. 60' East of street corner.

- possible car emissions - car running

1/11/95 1:50 pm

TUBE 24: hole through turf into dark brown sand ... approx. 1 1/2' South of sidewalk ... approx. 2 1/2' East of sidewalk.

1/11/95 1:52 pm

TUBE 25: 2:50 PM ... hole through thin layer of moss into dark brown sand ... approx. 5' west of Decatur St. ... approx. 6" east of sign post.

1/11/95 1:55

TUBE 26: hole through turf into dark brown and red brown sand with concrete debris ... approx. 6' North of Madison Av. in center of square of turf ... installed with core shovel.

1/11/95 1:57

TUBE 51: Through turf into brown moist medium sand ... approx. 18" south of driveway ... approx. 55' East of Street ... approx. 60' West of MW-3 ... installed with auger.

1/11/95 TUBE 20: hole through turf into moist sandy soil ... approx. 4' South of driveway ... approx. 4' East of sidewalk ... approx. 4 1/2' West of road.

1:58pm

1/11/95 2:01 pm TUBE 19: 3:16 PM ... hole through turf into coarse brown sand into red mottled clay ... approx. 10" West of street sign post ... approx. 5' West of road and sewer grate ... approx. 2' North of sewer line.

1/11/95 2:05 pm TUBE 21: hole through turf into dark sandy soil into red brown sand ... approx. 1 1/2' West of stop sign ... approx. 17' North of Madison Av. ... approx. 6 1/2' East of sidewalk.

1/11/95 2:06 pm TUBE 18: hole through turf into brown sand with some pebbles ... approx. 6' North of Madison St. .... approx. 4' east of sewer line ... approx. 20' West of utility pole ... installed with auger.

1/11/95 2:10 pm TUBE 22: hole through asphalt into dark sandy soil ... approx. 20' South of storm drain ... approx. 20' east of curb ... approx. 60' South of MW-2 ... TIME TEST LOCATION 2 TIME TEST TUBES ARE WEST OF TRUE SAMPLE TUBE.

finished 2:15pm 3:50 PM END INSTALLATION FOR WEDNESDAY 12/14/94

12/15/94 9:15 AM BEGIN INSTALLATION

Temperature: 50° F

Weather: humid with overcast sky, wind less than 5 mph from Northeast

1-12-95

2:00 TUBE 41: hole through turf into brown sand with pebbles ... approx. 10' East of fence that borders car wash ... approx. 8' North of old building pad ... approx. 70' West of Hull St. ... approx. 22' West of MW-4.

START BAG 2

10:47 TUBE 44: hole through 6" of concrete into red brown moist silty sand ... approx. 13' North of Monroe St. ... Approx. 8' east of light post ... TIME TEST TUBES LOCATED WEST OF TRUE SAMPLE TUBE

1:50 TUBE 38: hole through turf into brown sandy soil ... approx. 5 1/2' West of Hull St. ... approx. 6' South of small tree ... approx. 10' East of Northwest Finance ... approx. 5' west of parking meter.

1:56 TUBE 50: hole through grass in median between sidewalk and street ... through dirt then concrete block then into brown sand ... approx. 12' East of curb ... approx. 8' North of utility pole ... approx. 7' South of driveway to B F Goodrich.

1:55 TUBE 39: hole through sparse grass and gravel into red brown moist sand ... approx. 18" north of fence ... approx. 10 ' East of low fence ... approx. 18' East of 8' drive down to car wash.

TUBE 40:
1:52

10:12 AM ... hole through gravel and bare soil into red brown sand ... approx. 20" West of sidewalk ... approx. 2 1/2' North of fence ... approx. 2' southwest of unauthorized vehicle parking sign.

TUBE 42:
11:03

hole through asphalt into silty brown sand ... approx. 6" east of fence ... approx. 15' West of Hull St. ... approx. 5' West of concrete sidewalk ... approx. 11' North of no trespassing sign ... in center of painted square.

TUBE 43:
10:56

hole through asphalt on north edge of Monroe street into concrete and soft brown sandy soil ... Approx. 4' West of sidewalk ... approx. 12" Southwest of temporary fence post.

TUBE 48:
10:44

hole through asphalt in Monroe St. ... Approx. 8' South of Yellow line on white line path ... approx. 10' East of storm drain in corner area ... into yellow sandy soil ... approx. 25' East of Mc Donough St.

TUBE 55:
10:35

11:10 AM ... hole through asphalt in Monroe St. ... Approx. 25' West of Mc Donough St. ... Approx. 8' South of yellow line ... into tight brown sand ... approx. 3 1/2' West of white walkway line.

TUBE 54:
10:30

hole through asphalt in Monroe St. ... approx. 6 1/2' South of yellow line ... approx. 5' East of white walkway line ... approx. 20' East of Lawrence St. ... into coarse sand subgrade material.

BREAK FOR LUNCH ANT 11:30 AM
START BACK AT 1:21 PM

1-2-95

TUBE 15:
9:45

hole through asphalt into brown sand with gravel ... approx. 3' South of air conditioning units ... approx. 12' West of building ... approx. 30' North of Monitoring well, air stripping unit approx. 15' to Southeast ... TIME TEST TUBES LOCATED WEST OF TRUE SAMPLE TUBE.

TUBE 46:
9:50

2:00 PM ... hole through asphalt in parking area into red brown sandy soil ... approx. 3' East of brick wall ... approx. 30' North of Jefferson St. ... between yellow lines of parking boundaries.

TUBE 45:
9:54

hole through grass into red brown organic sand into red brown sand with clay ... approx. 15' West of Lawrence St. ... approx. 2 1/2' South of asphalt .... approx. 10' North of Jefferson St.

TUBE 17:
10:00

hole through turf into gray brown poorly sorted sand with silt ... approx. 2' West of sidewalk ... approx. 12' North of Parking lot ... approx. 14' West of Lawrence St. in center of painted square.

TUBE 16:
10:05

2:30 PM ... hole through turf into soft red and yellow sand ... in center of painted square ... approx. 10' North of Madison St. ... approx. 14' West of Lawrence St.

10:16 TUBE 30: hole through bark and soil in flower bed ... approx. 8' South of sidewalk ... approx. 8 1/2' South of Madison St. curb ... approx. 1 1/2' West of joint in sidewalk ... into yellow brown clayey sand.

TUBE 29: hole through turf into gravely sand with some asphalt ... approx. 1 1/2' East of brick wall ... approx. 16' West of Lawrence St. ... TIME TEST SAMPLES TO THE SOUTH OF THE TRUE TEST TUBE. 10:10

TUBE 27: 2:55 PM ... hole through turf into dark brown sandy soil ... approx. 14" Northwest of curve in sidewalk ... approx. 9' West of Lawrence St. ... approx. 12' North of Monroe St. 10:26

TUBE 28: hole through bare soil in edge of border ... approx. 6" South of brick wall ... approx. 8' West of Lawrence St.. approx. 63' North of #27 ... approx. 75' North of Monroe St. 10:22

PAUL LEFT AT 3:10 PM

TUBE 53: hole through humus material and red silty clay soil ... near Madison hotel ... ??? 10:30

3:15 PM END INSTALLATION FOR THURSDAY 12/15/94

12/16/94 9:30 AM BEGIN INSTALLATION
Temperature: 65° F
Weather: humid with cloudy sky, wind less than 5 mph from Northeast

wind 5-10 mph SE

13 JAN 95

0925 TUBE 31: 9:36 AM ... hole through asphalt into red silty fill material ... first parking space next to brick wall.

0928 TUBE 36: 9:45 AM ... hole through asphalt in red silty fill material ... last parking space six paces from from MW-3 ... 3' from brick wall.

1032 TUBE 37: 10:07 AM ... soil in brown humus topsoil with worms ... 4" from short brick wall ... 2' from wooden wall of dumpster.

1030 TUBE 32: 10:40 AM ... hole in brown soil ... 3' from curb in dirt ... 9' from wrong way sign.

START BAG 3

1028 TUBE 33: 10:25 AM ... under oak ... sandy loam, mottled red and brown soil ... approx. 4' from tree ... approx. 4' from roadside.

1025 TUBE 34: 10:35 AM ... loose manila sand ... something solid at bottom of hole ... 3-4' from small palm tree ... 6' from meter.

1020 TUBE 35: 10:45 AM ... red sand to brown sand and gravel ... 6' Southeast of corner of yellow building ... 8' from corner of concrete drive.

1001 TUBE 58: 11:00 AM ... across from law office ... 4' from curb

1005 TUBE 56: 11:10 AM ... area smelled of pesticide ... inside churches chain link fence nest to second concrete car curb ... 3' from fence.

1010 TUBE 47: 11:20 AM ... hole through concrete in red clay ... 6" North of chain link fence on Monroe St. ... 4' east of curb.

TUBE 52: 11:35 AM ... brown loam with pea gravel ... at corner of Davis Dry Cleaners ... 6 paces north of Southeast corner of building ... 1 1/2' from wall of building.
0943

Mr [illegible] dug tube up

LOST → TUBE 59: 11:45 AM ... brown rich loam ... 2' from street sign ... center of painted square. Lost

0948 TUBE 57: 11:53 AM ... hole through asphalt and brown sandy fill ... 1' South of wooden fence ... 4' East of chain fence. Lost
Lost collapsed [illegible]
Tube Broken

TUBE 60: 12:04 PM ... sandy loam with some roots ... nest to Ala. State Bar Asso. ... 15' North of telephone pole on corner of Dexter and Hull.
0959

TUBE 49: 12:15 PM ... hole through asphalt into fill material ... between Charlies Produce and red brick wall 48' Northeast of MW-2.
0933

FINISHED AT 12:15 PM

END OF NOTES

RSA AHSCF 9074
NERI Job #2224

5 triplicates
53 duplicates + 2 lost in field
8 Time test

BAG NUMBER ________ FIELD BLANK NUMBER ________

HANDS SHOULD BE CLEAN OF DIRT AND ODOR BEFORE HANDLING TUBES

1. Remove the cap. If the black liner has stuck to tube lip, remove it and immediately place sampler (vertically with open end down) into sample location hole. The sampler must be at least 2 inches below ground surface. Immediately cover sampler with soil.

2. Replace black liner in cap and return clean bag. Retrieval: Tube must be sealed with liner in cap asap upon removal from sample hole.

3. Note tubes which have been dug up by animals, cracked, broken, placed near R.R. tracks, asphalt, power poles, or exposed to exhaust or gas fumes, etc.

Sample #	Date In/Out	Retrieval: Check line if black liner is in cap	#3) Notations
2	12-14-94 / 1-11-95	✓	29 Days
1	↓ / ↓	↓	↓
4	↓ / ↓	↓	↓
5	↓ / ↓	↓	↓
6	↓ / ↓	↓	↓
7	↓ / ↓	↓	↓
3	↓ / ↓	↓	↓
10	↓ / ↓	↓	↓
8	↓ / ↓	↓	↓
12	↓ / ↓	↓	↓
14	↓ / ↓	↓	↓
9	↓ / ↓	↓	↓
13	↓ / ↓	↓	↓
11	↓ / ↓	↓	↓
23	↓ / ↓	↓	↓
24	↓ / ↓	↓	↓
25	↓ / ↓	↓	↓
26	↓ / ↓	↓	↓
51	↓ / ↓	↓	↓
20	↓ / ↓	↓	↓
19	↓ / ↓	↓	↓
21	↓ / ↓	↓	↓
18	↓ / ↓	↓	↓
22	↓ / ↓	↓	↓
	/		
	/		
	/		
	/		

#2224

BAG NUMBER __________ FIELD BLANK NUMBER __________

HANDS SHOULD BE CLEAN OF DIRT AND ODOR BEFORE HANDLING TUBES

1. Remove the cap. If the black liner has stuck to tube lip, remove it and immediately place sampler (vertically with open end down) into sample location hole. The sampler must be at least 2 inches below ground surface. Immediately cover sampler with soil.

2. Replace black liner in cap and return clean bag. Retrieval: Tube must be sealed with liner in cap asap upon removal from sample hole.

3. Note tubes which have been dug up by animals, cracked, broken, placed near R.R. tracks, asphalt, power poles, or exposed to exhaust or gas fumes, etc.

Sample #	Date In/Out	Retrieval: Check line if black liner is in cap	#3) Notations
41	12-15-94 / 1-12-95	✓	29 Days
44	12-15-94 / 1-12-95	↓	↓
38	↓ / ↓	↓	↓
50	↓ / ↓	↓	↓
39	↓ / ↓	↓	↓
40	↓ / ↓	↓	↓
42	↓ / ↓	↓	↓
43	↓ / ↓	↓	↓
48	↓ / ↓	↓	↓
55	↓ / ↓	↓	↓
54	↓ / ↓	↓	↓
15	↓ / ↓	↓	↓
46	↓ / ↓	↓	↓
45	↓ / ↓	↓	↓
17	↓ / ↓	↓	↓
16	↓ / ↓	↓	↓
30	↓ / ↓	↓	↓
29	↓ / ↓	↓	↓
27	↓ / ↓	↓	↓
28	↓ / ↓	↓	↓
53	↓ / ↓	↓	↓
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2224

BAG NUMBER ________ FIELD BLANK NUMBER ________

HANDS SHOULD BE CLEAN OF DIRT AND ODOR BEFORE HANDLING TUBES

1. Remove the cap. If the black liner has stuck to tube lip, remove it and immediately place sampler (vertically with open end down) into sample location hole. The sampler must be at least 2 inches below ground surface. Immediately cover sampler with soil.

2. Replace black liner in cap and return clean bag. Retrieval: Tube must be sealed with liner in cap asap upon removal from sample hole.

3. Note tubes which have been dug up by animals, cracked, broken, placed near R.R. tracks, asphalt, power poles, or exposed to exhaust or gas fumes, etc.

Sample #	Date In/Out	Retrieval: Check line if black liner is in cap	#3) Notations
31	12-16-94 / 1-13-95	✓	29 Days
36	/		
37	/		
32	/		
33	/		
34	/		
35	/		
58	/		
56	/		
47	/		
52	/		
~~59~~	/ X	X	Ala. Power Dug tube up:
~~5[illegible]~~	/ X	X	hole Collapsed — Could not find wires
60	/		
49	/		
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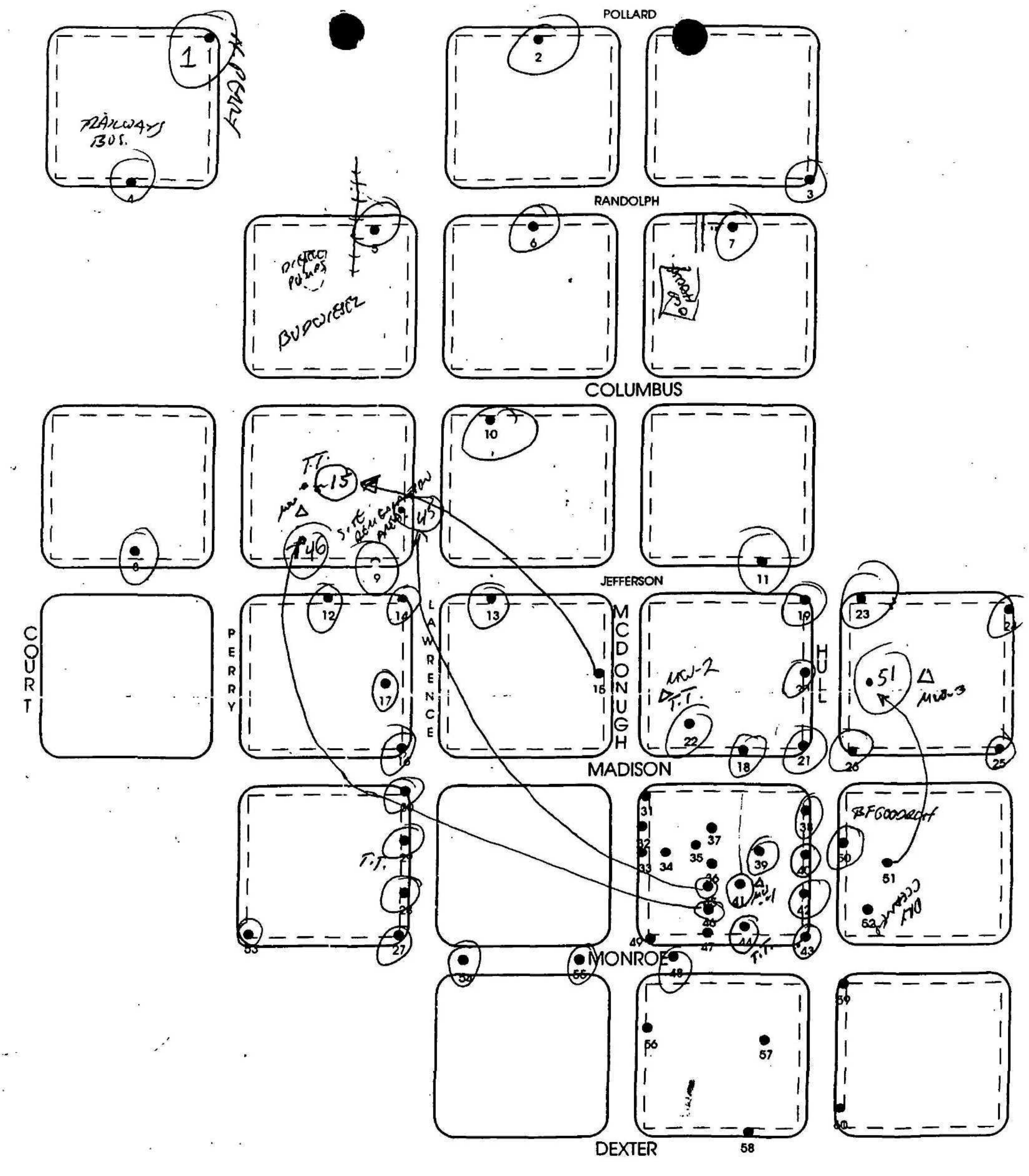
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JEFFERSON
MADISON
MONROE
DEXTER
COURT
PERRY
LAWRENCE
MCDONOUGH
HULL
TRAILWAYS BUS.
DIESEL PUMPS
BUDWEISER
T.T.
MW
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SITE REMEDIATION AREA
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T.T.
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MW-3
BFGoodrich
MW-1
T.T.
T.T.
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NERI
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January 26, 1995

Mr. Jeremy Stamps
Alabama Department of Environmental Management
Site Assessment Unit
Special Projects
P.O. Box 30463
Montgomery, Alabama

Phone: (205) 271-7700
Fax : (205) 270-5612

Dear Mr. Stamps:

Enclosed please find the preliminary report of the findings of the PETREX Soil Gas investigation performed at the Downtown Montgomery Site located in Montgomery, Alabama.

If you have any questions concerning the enclosed, please do not hesitate to call. We will await your comments prior to issuing our final report.

Respectfully Submitted,
NORTHEAST RESEARCH INSTITUTE LLC

Julia Olney Gullett

Julia Olney Gullett
Senior Geologist

JAN 1995
ADEM
SPECIAL PROJECTS

encl
/JOG

D2224JG/01.25.95

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Fax 303-238-2522

REPORT ON THE FINDINGS
OF THE PETREX SOIL GAS SURVEY
PERFORMED AT THE
DOWNTOWN MONTGOMERY SITE

PREPARED FOR:
THE ALABAMA DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

PREPARED BY: DATE:

Julia Olney Gullett 1/26/95

Julia Olney Gullett, Senior Geologist

APPROVED BY: DATE:

1/26/95

Paul A. Harrington, Operations Manager

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1294-2224E

JAN 1995
ADEM
SPECIAL PROJECTS

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

Northeast Research Institute (NERI) and the Alabama Department of Environmental Management (ADEM) recently performed PETREX Soil Gas sampling at the Downtown Montgomery Site located in Montgomery, Alabama. Tetrachloroethene (PCE) has been discovered in groundwater production wells in the vicinity. The purpose of the PETREX Soil Gas survey was to map the distribution of PCE as detected in soil gas, to help determine potential source areas, preferential migration pathways and the areal extent of chemical migration.

Tetrachloroethene (PCE) and the petroleum hydrocarbon compounds benzene, toluene, ethylbenzene/xylene(s) (BTEX) were detected in the soil gas. The distribution of the compound occurrences has been mapped and potential source areas and preferential migration pathways appear to have been identified. Potential source areas for PCE were identified in the vicinity of the city blocks bounded by Monroe Street to the south, McDonough Street to the west, Decatur Street to the east and on the north and south sides of Madison Avenue. The primary potential source area of BTEX release appears to be located in the vicinity of the city block bounded by Dexter Street to the south, Lawrence Street to the west, McDonough Street to the east and Monroe Street to the north. The areal extent of PCE migration appears to be limited, and confined to the study area; the areal extent of BTEX migration extends beyond the survey limits to the south and southeast, and was not defined.

2.0 INTRODUCTION

Northeast Research Institute (NERI) and the Alabama Department of Environmental Management (ADEM) recently performed PETREX Soil Gas sampling at the Downtown Montgomery Site located in Montgomery, Alabama. Tetrachloroethene (PCE) has been discovered in groundwater production wells in the vicinity.

In August 1993, NERI provided ADEM with three PETREX passive soil gas samplers as part of a pilot test to determine the effectiveness of the PETREX technique in detecting the known contaminant. PCE was detected at all locations sampled in the pilot investigation and a follow up investigation was initiated. For additional discussions on the results of the pilot investigation, please refer to Appendix A.

The purpose of the PETREX Soil Gas survey was to map the distribution of PCE as detected in soil gas, to help determine potential source areas, preferential migration pathways and the areal extent of chemical migration.

3.0 OVERVIEW OF THE PETREX TECHNIQUE

Each PETREX soil gas sampler consists of two or three activated charcoal adsorption elements (collectors) housed in a resealable glass container in an inert atmosphere.

Soil gas sample collection is performed by unsealing the sampler and exposing the collector to the soil gas of the subsurface environment at the base of a shallow borehole. Sample collection proceeds via free vapor diffusion through the opening of the uncapped sampler container. Following a controlled period of time, the sampler is retrieved from the borehole, resealed, and submitted for analysis.

One collector from each soil gas sampler is analyzed by Thermal Desorption/Mass Spectrometry (TD-MS). Selected second collectors may be analyzed by Thermal Desorption-Gas Chromatography/Mass Spectrometry (TD-GC/MS) for compound confirmation. At least ten percent of samplers used in any project are three collector samplers. The third collector is used for setting instrument sensitivity prior to analysis.

Compounds are identified by comparison to standard reference spectra run on the same instrument. The mass spectral ion count of the appropriate indicator peak(s) for each compound or group of compounds is then plotted as relative response on a map and contoured using a variety of standard geostatistical analyses.

For a more detailed and technical discussion of the method, please refer to Appendix A, PETREX Protocol.

4.0 OBJECTIVES

The purposes of the PETREX Soil Gas Survey were to:

1. Identify PCE in soil gas;
2. Map the distribution of PCE occurrences to aid in defining potential source areas, preferential migration pathways and the areal extent of chemical migration.
3. Provide data to aid in developing strategies for monitoring groundwater quality, and developing future investigative studies.

5.0 SCOPE OF WORK

Sixty (60) PETREX soil gas samplers were utilized for this soil gas survey. Samplers were placed throughout the downtown area, where accessibility allowed.

The sampler locations are shown on Plate 1, provided separately.

6.0 FIELD ACTIVITIES

Samplers were installed on December 14 - 15, 1994. On December 14, 1994, a NERI Geologist trained representatives from ADEM in PETREX field methods and protocols. Sampler installation and retrieval was then completed by ADEM. Sampler installation was performed by creating a narrow borehole, approximately 18" in depth below the surface, with a rotary hammer drill. The opened sampler was then placed, inverted, at the bottom of the hole. The borehole was backfilled with aluminum foil, with the sampler in place, and sealed with a concrete patch.

Sampler exposure time was determined by the use of time test samplers (time tests). Time test samplers were installed concurrently with the survey sampler installation and removed for analysis following varying exposure periods. The purpose of the time test samplers was to assess the loading rate of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) onto the PETREX collectors. Based upon the analyses of time test samplers 29 days was determined to be a sufficient exposure period for this phase of investigation. The exposure period for the pilot investigation was 12 days; the difference in exposure periods between the two phases of sampling was due to seasonal variations in soil gas emanation rates.

Samplers were retrieved on January 17, 1995. Samples 57 and 59 were destroyed in field, therefore they were not retrieved.

7.0 METHOD QA/QC

7.1 Lot Control

Quality assurance/quality control (QA/QC) collectors from each lot manufactured by NERI were analyzed by TD-MS to ensure that they were contaminant free before the lot of collectors used in the field was released from the PETREX laboratory. No compounds were detected above background on the QA/QC collectors.

7.2 Travel Blanks

Two PETREX samplers were provided as travel blanks. These travel blanks remained sealed and traveled with the survey samplers from the laboratory to the field and back to the laboratory to monitor for potential contamination of the survey samplers. The travel blanks were analyzed under the same instrument conditions as the survey collectors. The results of the analysis of the travel blank samples are provided in Table 1, Appendix C.

A more detailed description of the PETREX QA/QC may be found in the PETREX Protocol located in Appendix B.

8.0 RESULTS

All samplers were analyzed by NERI's standard method of Thermal Desorption/Mass Spectrometry (TD-MS). Tetrachloroethene (PCE) and the petroleum hydrocarbon compounds benzene, toluene, ethylbenzene/xylene(s) were the most prominent compounds detected in soil gas. The distributions of the compound occurrences were reported and mapped. In order to map the reported compounds, mass spectral peaks indicative of the compounds were selected and their corresponding ion counts were summed and plotted. Table 2 lists the reported compounds and their selected indicator mass peaks.

TABLE 2

Reported Compounds and Their Indicator Mass Peaks

Reported Compound	Indicator Mass Peak(s) (AMU)
PCE	164
BTEX	78, 92, 106

The distributions of the compounds have been mapped and are shown on the following plates:

Plate 1: Sample Locations Map
Plate 2: Relative Response of Tetrachloroethene (PCE)
Plate 3: Relative Response of Benzene, Toluene, Ethylbenzene/Xylene(s) (BTEX)

Plates 1-3 are provided separately.

Sample mass spectra of the compounds and compound mixtures identified are provided as Figures 1-3, Appendix D.

9.0 DISCUSSION

The soil gas response levels discussed in the following section are described as elevated and moderate relative to the entire data set. The ion count values that have been reported represent qualitative soil gas values that were evaluated relative to the other sampler locations.

The response values are reported in ion counts. Ion count values are the unit of measure assigned by the mass spectrometer to the relative intensities associated with each of the reported compounds. These intensity levels or response levels do not represent an actual concentration of the reported compounds; however, they are best utilized as a qualitative measurement. A difference in ion count values of an order of magnitude or more is considered significant when interpreting potential source areas and migration/dispersion pathways versus background areas.

The contour intervals depicted on Plates 2-3 were determined based upon groupings in the data as observed in histograms formulated from the statistical distribution of the soil gas data. The histograms are shown as Figures 1-2, Appendix E.

For a complete discussion of relative response map evaluation, please refer to the PETREX Protocol, Appendix A.

9.1 The Distribution of Tetrachloroethene (PCE)

The distribution of PCE as detected in soil gas is shown on Plate 2. High relative response values, which generally depict potential source areas, were detected in the southwest corner of the intersection of Hull Street and Madison Avenue, and within the city block located northeast of the intersection of Mc Donough Street and Madison Avenue. A secondary potential source area may have also been identified in the vicinity located between Monroe, Mc Donough and Hull Streets and Madison Avenue. Migration of PCE appears to have occurred in a northwest southeast pattern, depending upon the location of the potential source area. The areal extent of PCE migration appears to be limited to this vicinity.

9.2 The Distribution of Benzene, Toluene, Ethylbenzene/Xylene(s) (BTEX)

BTEX distribution is shown on Plate 3. The primary BTEX occurrence was identified in the vicinity of Monroe Street, north of the city block located at Monroe, Dexter, Lawrence and Mc Donough Streets. Migration of BTEX appears to have occurred towards the northeast and potentially to the southeast from the potential source area. The areal extent of BTEX migration extends beyond the survey boundaries to the south and east, and was not defined in these directions. Secondary BTEX occurrences were identified in the southern portion of the city block bound by Jefferson, Hull and Decatur Streets and Madison Avenue; and in the center of the city block located at Columbus, Perry, Lawrence and Jefferson Streets. Isolated occurrences were identified in the northwestern portion of the survey area. The data surrounding these occurrences are insufficient to determine the environmental significance of the isolated detections.

10.0 CONCLUSIONS

Tetrachloroethene (PCE) and the petroleum hydrocarbon compounds benzene, toluene, ethylbenzene/xylene(s) (BTEX) were detected in the soil gas. The distributions of the compound occurrences have been mapped and potential source areas and preferential migration pathways appear to have been identified. Potential source areas for PCE were identified in the vicinity of the city blocks bounded by Monroe Street to the south, McDonough Street to the west, Decatur Street to the east and on the north and south sides of Madison Avenue. The primary potential source area of BTEX release appears to be located in the vicinity of the city block bounded by Dexter Street to the south, Lawrence Street to the west, McDonough Street to the east and Monroe Street to the north. The areal extent of PCE migration appears to be limited, and confined to the study area; the areal extent of BTEX migration extends beyond the survey limits to the south and southeast, and was not defined.

Because soil gas emanation rates are site and chemical specific, the environmental significance of the soil gas response values must be determined relative to compound concentrations in subsurface soil and/or groundwater. Changes in soil gas response in orders of magnitude may be used to plan future investigative studies, and to aid in characterizing the behavior (migration, attenuation) of the chemicals in the subsurface. The PETREX method is extremely sensitive and often detects compounds in the low part per billion (ppb) to part per trillion (ppt) range; therefore areas depicted as background by the PETREX method generally do not represent environmentally significant contaminant levels in the subsurface.

11.0 RECOMMENDATION

Based upon the findings of the PETREX soil gas survey, NERI makes the following recommendation:

1. Extend the soil gas survey to the south where chemical migration appears to have extended beyond the survey boundaries, and in areas where further source identification is warranted (i.e. in the city blocks bound by Madison Avenue to the north, Monroe Street to the south and Hull and Mc Donough Streets to the east and west). The information obtained from this follow-up investigation can be used to determine additional potential source areas, define preferential migration pathways and the areal extent of chemical occurrences.

12.0 LIMITATIONS

This report represents NERI's professional interpretation and judgment based on technical information gathered during investigative activities. Professional judgments expressed herein are restricted to facts available within the established limits of the scope of work, budget, and schedule. NERI assumes no responsibility for the existence or disclosure of conditions which did not come to its knowledge, or conditions not generally recognized as environmentally unacceptable, at the time this report was prepared.

It is NERI's specific intent that all observations and conclusions presented will be used as a guide and not necessarily a firm course of action unless explicitly stated as such. No warranties are expressed or implied and the information included in this report is not to be construed as legal advice.

D2224JG/08.15.94

APPENDIX A
Results of the PETREX Pilot Soil Gas Investigation

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FINAL REPORT ON THE FINDINGS OF THE PETREX SOIL GAS SURVEY CONDUCTED FOR THE ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AT THE DOWNTOWN MONTGOMERY SITE LOCATED IN MONTGOMERY, ALABAMA

PREPARED BY: DATE:

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APPROVED BY: DATE:

8/17/94

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1.0 EXECUTIVE SUMMARY

Northeast Research Institute (NERI) and the Alabama Department of Environmental Management (ADEM) recently performed PETREX Soil Gas sampling at the Downtown Montgomery Site located in Montgomery, Alabama. Tetrachloroethene (PCE) has been discovered in groundwater on site. The purpose of this phase of the soil gas investigation was to determine the effectiveness of the PETREX technique in detecting the known contaminant.

Tetrachloroethene (PCE) was detected at all locations sampled in this investigation. The highest soil gas response levels for PCE were detected at sample locations 1 and 2, while lower response levels were detected at location 3. The relative soil gas response levels for each of these locations are provided in Table 1, Appendix B.

2.0 INTRODUCTION

Northeast Research Institute (NERI) and the Alabama Department of Environmental Management (ADEM) recently performed PETREX Soil Gas sampling at the Downtown Montgomery Site located in Montgomery, Alabama. Tetrachloroethene (PCE) has been discovered in groundwater on site. The purpose of this phase of the soil gas investigation was to determine the effectiveness of the PETREX technique in detecting the known contaminant.

3.0 OVERVIEW OF THE PETREX TECHNIQUE

Each PETREX soil gas sampler consists of two or three activated charcoal adsorption elements (collectors) housed in a resealable glass container in an inert atmosphere.

Soil gas sample collection is performed by unsealing the sampler and exposing the collector to the soil gas of the subsurface environment at the base of a shallow borehole. Sample collection proceeds via free vapor diffusion through the opening of the uncapped sampler container. Following a controlled period of time, the sampler is retrieved from the borehole, resealed, and submitted for analysis.

One collector from each soil gas sampler is analyzed by Thermal Desorption/Mass Spectrometry (TD-MS). Selected second collectors may be analyzed by Thermal Desorption-Gas Chromatography/Mass Spectrometry (TD-GC/MS) for compound confirmation. At least ten percent of samplers used in any project are three collector samplers. The third collector is used for setting instrument sensitivity prior to analysis.

Compounds are identified by comparison to standard reference spectra run on the same instrument. The mass spectral ion count of the appropriate indicator peak(s) for each compound or group of compounds is then plotted as relative response on a map and contoured using a variety of standard geostatistical analyses.

For a more detailed and technical discussion of the method, please refer to Appendix A, PETREX Protocol.

4.0 OBJECTIVES

The purpose of the PETREX Soil Gas Survey was to identify PCE in soil gas.

5.0 SCOPE OF WORK

Three (3) PETREX soil gas samplers were utilized for this pilot soil gas survey. Samplers were placed in the vicinity of groundwater monitoring wells with known concentrations of PCE.

Sampler installation and retrieval was performed by personnel of the ADEM.

6.0 FIELD ACTIVITIES

Sampler installation and retrieval was performed between August 1st and August 12th 1994.

Sampler exposure time was determined based upon the nature of the target compounds and site conditions. The samplers were exposed for twelve days.

7.0 METHOD QA/QC

7.1 Lot Control

Quality assurance/quality control (QA/QC) collectors from each lot manufactured by NERI were analyzed by TD-MS to ensure that they were contaminant free before the lot of collectors used in the field was released from the PETREX laboratory. No compounds were detected above background on the QA/QC collectors.

7.2 Travel Blanks

Two PETREX samplers were provided as travel blanks. These travel blanks remained sealed and traveled with the survey samplers from the laboratory to the field and back to the laboratory to monitor for potential contamination of the survey samplers. The travel blanks were analyzed under the same instrument conditions as the survey collectors.

A more detailed description of the PETREX QA/QC may be found in the PETREX Protocol located in Appendix A.

8.0 RESULTS

Tetrachloroethene (PCE) was detected at all locations sampled in this investigation. The relative soil gas response levels for each of these locations are provided in Table 1, Appendix B.

The response values are reported in ion counts. Ion count values are the unit of measure assigned by the mass spectrometer to the relative intensities associated with each of the reported compounds. These intensity levels or response levels do not represent an actual concentration of the reported compounds; however, they are best utilized as a semiquantitative measurement. A difference in ion count values of an order of magnitude or more is considered significant when interpreting potential source areas and migration/dispersion pathways versus background areas.

Table 2 lists the reported compound and the indicator mass peak which was selected to represent the compound occurrences reported on Table 1.

TABLE 2
REPORTED COMPOUND AND ITS INDICATOR MASS PEAK

Compound	Indicator peak
Tetrachloroethene (PCE)	164

A sample mass spectra of the compounds identified is provided as Figure 1, Appendix C.

9.0 CONCLUSIONS

Tetrachloroethene (PCE) was detected at all locations sampled in this investigation. The highest soil gas response levels for PCE were detected at sample locations 1 and 2, while lower response levels were detected at location 3.

10.0 RECOMMENDATIONS

Based upon the findings of the PETREX soil gas survey, the following recommendations can be made:

1. Perform a full size PETREX soil gas survey throughout the site to locate the potential source area, preferential migration pathways and the areal extent of PCE migration.

11.0 LIMITATIONS

This report represents NERI's professional interpretation and judgment based on technical information gathered during investigative activities. Professional judgments expressed herein are restricted to facts available within the established limits of the scope of work, budget, and schedule. NERI assumes no responsibility for the existence or disclosure of conditions which did not come to its knowledge, or conditions not generally recognized as environmentally unacceptable, at the time this report was prepared.

It is NERI's specific intent that all observations and conclusions presented will be used as a guide and not necessarily a firm course of action unless explicitly stated as such. No warranties are expressed or implied and the information included in this report is not to be construed as legal advice.

R997ADEM/08.15.94

APPENDIX A
PETREX Protocol

REVISED SEPTEMBER 1993

PETREX ENVIRONMENTAL SOIL GAS PROTOCOL

INTRODUCTION

The PETREX Technique provides a means by which trace quantities of gases from subsurface derived organic contaminants can be detected and collected at the earth's surface. The Technique is integrative, thereby eliminating the short-term variations associated with other gas/vapor detection methods. The PETREX Technique directly collects and records a broad range of organic compounds emanating from subsurface sources.

SOIL GAS COLLECTOR PREPARATION

Adsorption collector wires (after construction) are cleaned by heating to 358° C in a high vacuum system. Wires are packed under an inert atmosphere in glass culture tubes. One collector out of every batch of thirty is checked for cleanliness by mass spectrometry. Another collector from the batch is checked for adsorptive capability. Based on the results, the batch of collectors is approved for release into the field.

SOIL GAS SAMPLER INSTALLATION

The sampler consists of two or three collectors, each a ferromagnetic wire coated with an activated charcoal adsorbent in a screw top glass culture tube. Each sampler is typically placed in a shallow hole, 14-18 inches deep. The hole is backfilled and the location is marked. The sampler is left in the ground from one to thirty days, then retrieved and sealed for transportation back to the laboratory for analysis.

The PETREX soil gas sampling technique is adaptable to various surface conditions commonly encountered within survey areas. These surfaces typically include concrete, asphalt, grass, and gravel. Two installation methods are routinely utilized to adapt to these surface conditions.

The first method utilizes a coring shovel for sampler installations in grass or otherwise loosely consolidated soil conditions. The shovel cores a 14 inch deep by 2 inch diameter hole in the surface soils.

PETREX soil gas samplers are placed (open end down) at the bottom of each core hole. The samplers are then backfilled with an aluminum foil plug and the original excavated soil. To complete installation, sample locations are marked with ribbon flagging and a numbered pin flag, as well as entered into a field notebook and plotted on a field map.

The second method of sampler installation utilizes an electric rotary hammer, equipped with an 18 inch by 1.5 inch diameter drill bit, for sampler installations under concrete, asphalt, or otherwise consolidated conditions. A hole is drilled through the surface to the dimensions of the drill bit equipped to the rotary hammer.

PETREX soil gas samplers are placed at the bottom of each drilled hole. For retrieval purposes, a cleaned galvanized steel wire is attached to each sampler. Aluminum foil is used to plug each hole to approximately two inches below grade. Then each hole is capped to grade with hydraulic cement. The hydraulic cement serves as protection from the external surface environment.

To complete sampler installation, sampler locations are marked with paint (where applicable), entered into a field notebook, and plotted on a field map.

SOIL GAS SAMPLER RETRIEVAL

PETREX soil gas samplers are retrieved following a time period that has allowed for the soil gas emanating from the subsurface environment of a survey area to equilibrate with the installed PETREX samplers. This time integration period is determined for each PETREX soil gas survey based on time calibration data or site conditions.

Retrieval operations are dependent on surface conditions and routinely consist of the following two methods.

The first method applies to grass covered or loosely consolidated soil conditions. A trowel is utilized to expose the backfilled samplers; then with a pair of tongs, the samplers are brought to the surface. At the surface, the samplers are sealed, cleaned, and labeled. Following retrieval, all debris are gathered and the core hole is backfilled with original material.

The second method applies to concrete, asphalt, or other consolidated surface conditions. A hammer and chisel is utilized to remove the hydraulic cement plug and expose the sampler. By means of the pre-attached retrieval wire, the sampler is brought to the surface. At the surface, the retrieval wire is removed and the sampler is sealed, cleaned, and labeled. Following retrieval, each drill hole is backfilled and patched with cement or asphalt.

TIME CALIBRATION SAMPLERS

Time calibration samplers are included in PETREX soil gas surveys, as appropriate. These samplers are included as a means of monitoring the loading rates of volatile and semivolatile organic compounds (VOCs and SVOCs) emanating from the soil gas at a survey area onto the PETREX collectors.

During PETREX sampler installation, two sets of three to five time calibration samplers are also installed at survey sample locations that best represent the range of soil gas response for the survey area. These representative locations are determined based on previous soils and/or groundwater studies and other site specific conditions such as gradient and potential source areas.

The first set of time calibration samplers are generally retrieved within a week or less following the initial installation and the second set one week later. Often, permanent on-site personnel are instructed to perform time calibration sampler retrieval.

Lengths of exposure periods of the survey samplers for each survey are determined based on the results of each respective set of time calibration samplers. Time calibration samplers are usually analyzed within 24 hours upon receipt at the laboratory. At the first indication of significant relative ion count intensities and significant total ion count values, the decision is made to retrieve the entire complement of survey samplers.

If there are no significant relative ion count intensities detected from the second set of time calibration samplers, then the survey samplers are allowed to equilibrate in the field for a maximum time period of up to 30 days. The average environmental PETREX soil gas survey requires a collector integration period of one day to two weeks.

METHOD QA/QC

Within every survey sampler, the two or three collector wires should have adsorbed identical compounds. Like compounds on separate collectors relate an acceptable quality assurance (QA) during the survey's analysis. The first wire is analyzed by Thermal Desorption/Mass Spectrometry (TD/MS). The data from the first wire is reported on the relative response maps. The second wire is retained for analysis by Thermal Desorption-Gas Chromatography/Mass Spectrometry (TD-GC/MS), if warranted by the initial TD/MS analysis of the second wire.

Approximately ten percent of the total PETREX survey samplers contain three collector wires. The third collector wire, a QC collector wire, is used by the operator to test the mass spectrometer's operating conditions prior to survey analysis. Some of these quality control (QC) collectors are also used to check the mass spectrometer sensitivity during survey analysis. In addition, the QC collector may be used to compare the reproducibility of the detected VOCs.

TRAVEL BLANKS

Two PETREX samplers, each containing a single collector wire, are included with each PETREX soil gas survey as travel blanks. These blanks are analyzed with the survey samplers to indicate whether there may have been contamination introduced to the survey samplers during installation or shipment. If compounds other than normal atmospherics (e.g., CO_2, H_20, N_2, and Ar) are detected on the blanks, these results are taken into consideration in the data presentation. This process, an initial step to data interpretation, involves the correction of ion count values of the detected blank contaminants from the entire survey's data set. The resulting ion count values are provided on the relative response maps.

MASS SPECTROMETER TUNING

An Extranuclear Quadrupole C-50 Mass Spectrometer or similar instrument, equipped with a Curie-point pyrolysis/thermal desorption inlet, is used for collector analysis. Mass assignment and resolution are manually adjusted using a Perfluorotributylamine (PFTBA) standard or a built-in tuning program, depending on the instrument. A linear correction, based on the known spectrum of PFTBA, is calculated. This correction is applied to a second PFTBA spectrum. If correct mass (M/Z) values are obtained, the operator proceeds to the next tuning step. If not, Step 1 is repeated until correct masses are obtained.

Peak intensity ratios are set from the major peaks in the PFTBA spectrum using the following values:

Mass (M/Z)		Spectrum Intensities
69	=	100%
131	=	48% ± 5%
219	=	50% ± 5%

During tuning, the ion signal for mass (M/Z) 69 of PFTBA is measured at a preset sample pressure and detector voltage and compared to previous values at the same setting.

Electron energy is set to 70 electron volts. All other operating parameters, such as scans, scan range, and mass offset, are established in the computer program. These values may only be changed by the laboratory manager.

Tuning is performed at the beginning of a run so that an individual survey is analyzed at the same set of instrument conditions. The samplers are analyzed in random order.

LABORATORY ANALYSIS

Periodic machine background and blank PETREX collector analyses are performed to assure that there is no carry-over between successive collectors. If there are peaks present which are not related to atmospheric gases, the supervisor is notified and the mass spectrometer is shut down and cleaned as necessary.

A written sample number record is kept during the analysis to prevent accidental cross numbering. The mass spectrometer control program contains appropriate "flag statements" that prompt the operator with a warning if an input sample number has already been analyzed. The operator then checks the current number, along with the disk storage location of the previously entered number to identify the true numbering situation.

COMPOUND IDENTIFICATION

Compound identification is based on molecular weight, compound fragmentation, and isotope distribution, as applicable. Each VOC exhibits a unique mass spectral signature. NERI maintains a large library of spectra of individual compounds, accessible by computer. In addition, the company maintains a large library of mass spectra of commonly used chemical mixtures; e.g., gasolines, diesels, industrial oils and solvents, coatings, plastics, etc. These spectra are used to assist in both compound and mixture identifications.

The ion count response of an indicator peak(s), representative of the compound and away from interference by other compounds, is extracted for data presentation and mapping.

INTERPRETATION OF SOIL GAS DATA

Soil gas data (including PETREX) reflect volatile and semivolatile organics collected at a point in the near surface. The sources of these volatile organics may be in the stratigraphic column and/or in groundwater below the collection point. Thus, the organics can be derived from surface spills, deposition, or migration into the deeper vadose zone, and groundwater. The soil gas survey reveals the areal extent of contamination and is the optimum guide in identifying areas in order to develop a vertical profile, including the drilling of soil borings and monitoring wells.

Soil gas data are always semi-quantitative in that multiple sources in soil and/or groundwater cannot be differentiated. However, the higher ion responses are representative of higher concentrations in the subsurface, given that geologic conditions are relatively consistent.

Due to chemical differences between individual compounds, including their ability to both adsorb and desorb from the charcoal PETREX collector element, it is invalid to compare the ion count of a compound at one sampling location to that of another compound.

Patterns of compound distribution in the soil gas, as detected at the surface, can be strongly influenced by irregularities in the near surface and subsurface environment through which the soil gas diffuses. These irregularities include subsurface man-made structures, such as concrete foundations, drainage systems, and wells, and such naturally occurring structures as fractured and unfractured bedrock, clay, and shale lenses.

Other factors influencing the soil gas signal include ground and surface water, the free carbon content of soils, microbiotic activity in the soil, and natural and synthetic ground cover.

All of these factors indicate that the most powerful use of soil gas data is in reconnaissance; identifying and mapping the relative abundance of the widest array of chemical species and mixtures. Efforts to relate soil gas response directly to groundwater or soil contaminant concentrations is generally not regarded as productive owing to the assumptions that are required for heterogeneity and source distribution.

RELATIVE RESPONSE DETERMINATION AND MAPPING

The relative response values are reported as the ion counts of indicator peaks for any given compound or mixture. Sample locations on a base map are digitized as X-Y coordinates and ion counts for the reported compounds are plotted at respective locations.

Mapping of the ion counts occurs after contour intervals for each compound or component class are determined. In order to establish the contour intervals, factors such as statistical analysis of ion count distribution, physiochemical considerations, and component-source material relationships (if known) are taken into account for each compound or class, in each area, on an individual basis. Each map is then contoured by hand. The resultant contour zones for each compound or component class in each area are color coded on a relative basis depending on whether the data are interpreted to be of high, moderate to high, moderate, etc., intensity. The response values found on each of the response maps are color coded and contoured on this basis.

APPENDIX B
Table 1

TABLE 1

PETREX Relative Soil Gas Response Values

(in ion counts)

ADEM Site - Montgomery, Alabama

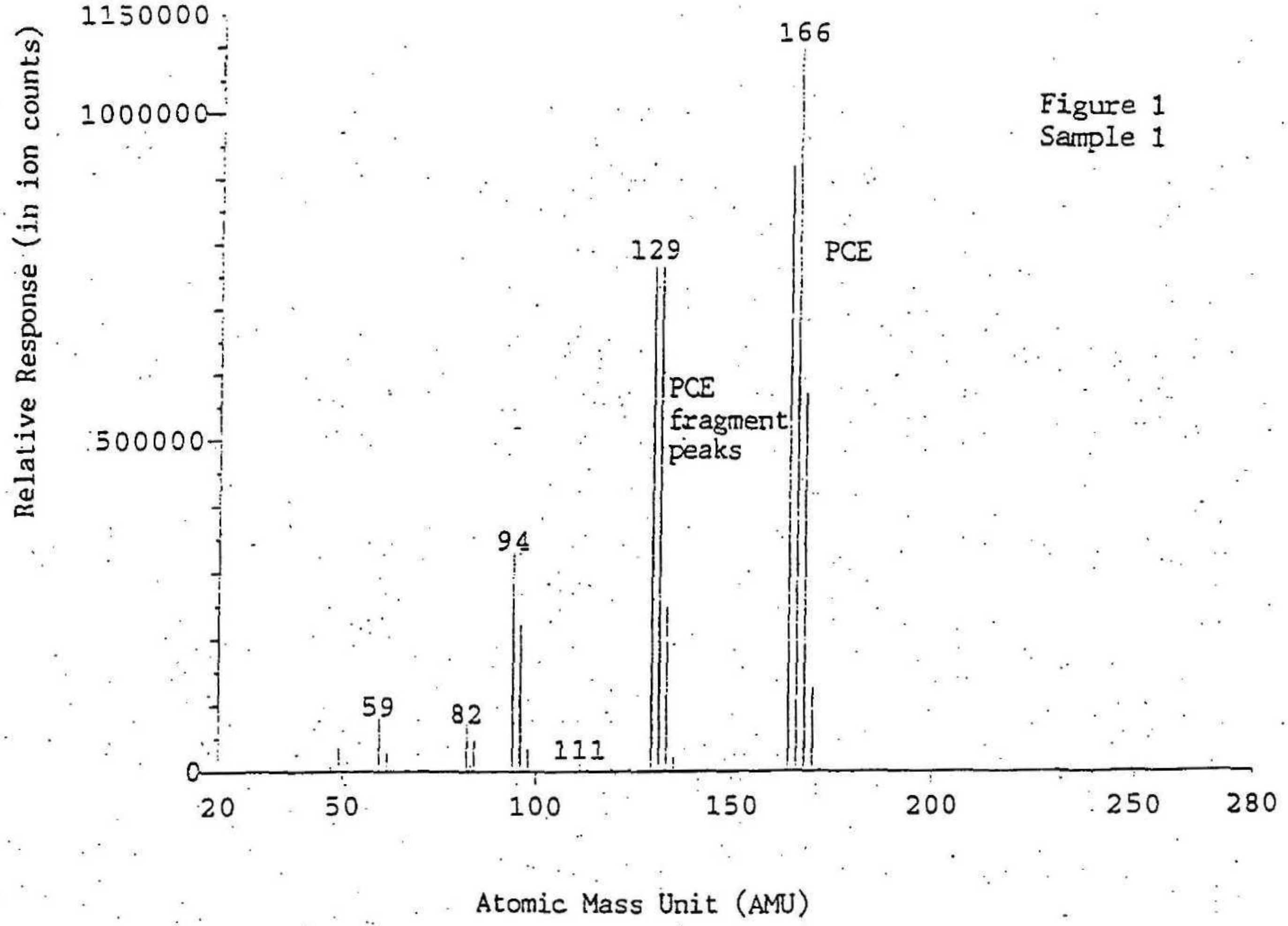
Sample	PCE
1	868098
2	2120106
3	33080

PCE- Tetrachloroethene

Indicator Mass Peak - 164

APPENDIX C
Sample Mass Spectra

C:\data\997-1X\0001.TKF: Scan Avg 1-20 (0.01 - 0.14 min)



APPENDIX B
PETREX *Protocol*

REVISED SEPTEMBER 1993

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The ion count response of an indicator peak(s), representative of the compound and away from interference by other compounds, is extracted for data presentation and mapping.

INTERPRETATION OF SOIL GAS DATA

Soil gas data (including PETREX) reflect volatile and semivolatile organics collected at a point in the near surface. The sources of these volatile organics may be in the stratigraphic column and/or in groundwater below the collection point. Thus, the organics can be derived from surface spills, deposition, or migration into the deeper vadose zone, and groundwater. The soil gas survey reveals the areal extent of contamination and is the optimum guide in identifying areas in order to develop a vertical profile, including the drilling of soil borings and monitoring wells.

Soil gas data are always semi-quantitative in that multiple sources in soil and/or groundwater cannot be differentiated. However, the higher ion responses are representative of higher concentrations in the subsurface, given that geologic conditions are relatively consistent.

Due to chemical differences between individual compounds, including their ability to both adsorb and desorb from the charcoal PETREX collector element, it is invalid to compare the ion count of a compound at one sampling location to that of another compound.

Patterns of compound distribution in the soil gas, as detected at the surface, can be strongly influenced by irregularities in the near surface and subsurface environment through which the soil gas diffuses. These irregularities include subsurface man-made structures, such as concrete foundations, drainage systems, and wells, and such naturally occurring structures as fractured and unfractured bedrock, clay, and shale lenses.

Other factors influencing the soil gas signal include ground and surface water, the free carbon content of soils, microbiotic activity in the soil, and natural and synthetic ground cover.

All of these factors indicate that the most powerful use of soil gas data is in reconnaissance; identifying and mapping the relative abundance of the widest array of chemical species and mixtures. Efforts to relate soil gas response directly to groundwater or soil contaminant concentrations is generally not regarded as productive owing to the assumptions that are required for heterogeneity and source distribution.

RELATIVE RESPONSE DETERMINATION AND MAPPING

The relative response values are reported as the ion counts of indicator peaks for any given compound or mixture. Sample locations on a base map are digitized as X-Y coordinates and ion counts for the reported compounds are plotted at respective locations.

Mapping of the ion counts occurs after contour intervals for each compound or component class are determined. In order to establish the contour intervals, factors such as statistical analysis of ion count distribution, physiochemical considerations, and component-source material relationships (if known) are taken into account for each compound or class, in each area, on an individual basis. Each map is then contoured by hand. The resultant contour zones for each compound or component class in each area are color coded on a relative basis depending on whether the data are interpreted to be of high, moderate to high, moderate, etc., intensity. The response values found on each of the response maps are color coded and contoured on this basis.

APPENDIX C
Tabular Data

Table 1
PETREX Relative Soil Gas Response Values
(in ion counts)
ADEM Montgomery, Alabama Site

Sample	PCE	BTEX
1	4,119	32,090
2	ND	173,136
3	1,119	41,762
4	489	15,910
5	7,295	411,622
6	2,349	47,561
7	ND	11,553
8	6,462	7,271
9	ND	12,852
10	ND	71,384
11	ND	13,232
12	12,416	38,616
13	502	3,974
14	52,197	10,685
15	7,642	183,579
16	ND	14,963
17	4,038	8,757
18	ND	26,445
19	4,571	41,652
20	ND	ND
21	1,203	15,528
22	1,192,590	23,292
23	ND	18,315
24	8,812	99,216
25	19,167	500,077
26	1,956	14,641
27	ND	1,395
28	ND	1,766
29	545	7,131
30	1,742	17,339
31	5,579	1,060,887
32	ND	31,372
33	199,503	240,141
34	33,606	164,581
35	208,082	400,689
36	ND	41,232
37	ND	4,849

Table 1
PETREX Relative Soil Gas Response Values
(in ion counts)
ADEM Montgomery, Alabama Site

Sample	PCE	BTEX
43	19,560	353,922
44	108,770	34,301
45	ND	52,988
46	601	211,303
47	19,441	171,125
48	1,978	2,503,283
49	129,486	161,181
50	ND	430
51	16,385	501
52	18,582	263,433
53	583	42,114
54	9,145	984,201
55	20,658	1,247,738
56	3,601	132,857
57	MISSING	
58	4,754	107,846
59	MISSING	
60	2,772	448,599
* 900	ND	ND
* 901	ND	ND

PCE - Tetrachloroethene
Indicator Mass Peak - 164

BTEX - Benzene, Toluene, Ethylbenzene/xylene(s)
Indicator Mass Peaks - 78, 92, 106

* QA/QC Travel Blank Sample

ND - Not Detected

Missing - Missing Sample

NER
Northeast Research Institute LLC

605 Parfet Street • Suite 10
Lakewood, Colorado 8021
303-238-0090 • 800-845-51
Fax 303-238-252

FACSIMILE COVER SHEET

FEB 1995
ADEM
SPECIAL PROJECTS

DATE: 2/1/95

TO: Jeremy Stamps FAX: ______

COMPANY: ADEM

FROM: Julie Collett

TOTAL NUMBER OF PAGES 3 (Including Cover Sheet)

COMMENTS: Jeremy,

Data for samples 38-42 were lost due to the page break. They have been added to the following Table and are included on the maps. Sorry for the oversight.

Julie

If there is a problem with this fax, please call at the phone number listed above.

___ Original to follow by Overnight / 2nd Day Mail
___ Original will not follow by Mail
___ Original to follow by Regular Mail

Table 1
PETREX Relative Soil Gas Response Values
(in ion counts)
ADEM Montgomery, Alabama Site

Sample	PCE	BTEX
1	4,119	32,090
2	ND	173,136
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13	502	3,974
14	52,197	10,685
15	7,642	183,579
16	ND	14,963
17	4,038	8,757
18	ND	26,445
19	4,571	41,652
20	ND	ND
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22	1,192,590	23,292
23	ND	18,315
24	8,812	99,216
25	19,167	500,077
26	1,956	14,641
27	ND	1,395
28	ND	1,766
29	545	7,131
30	1,742	17,339
31	5,579	1,060,887
32	ND	31,372
33	199,503	240,141
34	33,606	164,581
35	208,082	400,689
36	ND	41,232
37	ND	4,849

Table 1
PETREX Relative Soil Gas Response Values
(in ion counts)
ADEM Montgomery, Alabama Site

Sample	PCE	BTEX
38	1,436,060	17,370
39	ND	50,225
40	6,044	75,173
41	8,098	550,749
42	5,436	693,082
43	19,560	353,922
44	108,770	34,301
45	ND	52,988
46	601	211,303
47	19,441	171,125
48	1,978	2,503,283
49	129,486	161,181
50	ND	430
51	16,385	501
52	18,582	263,433
53	583	42,114
54	9,145	984,201
55	20,658	1,247,738
56	3,601	132,857
57	MISSING	
58	4,754	107,846
59	MISSING	
60	2,772	448,599
* 900	ND	ND
* 901	ND	ND

PCE - Tetrachloroethene
Indicator Mass Peak - 164

BTEX - Benzene, Toluene, Ethylbenzene/xylene(s)
Indicator Mass Peaks - 78, 92, 106

* QA/QC Travel Blank Sample

ND - Not Detected

Missing - Missing Sample

APPENDIX D
Sample Mass Spectra

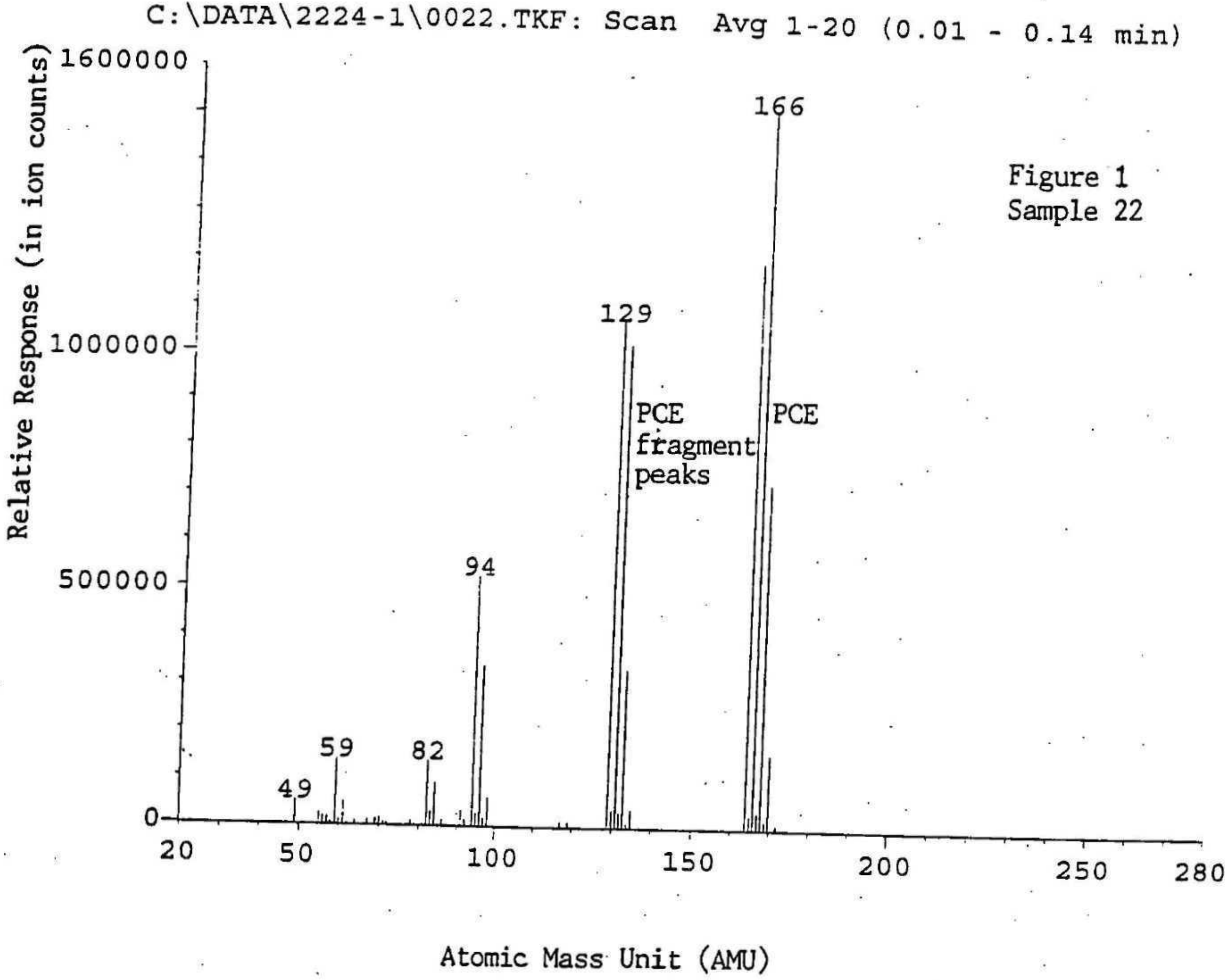


Figure 1
Sample 22

C:\DATA\2224-1\0900.TKF: Scan Avg 1-20 (0.01 - 0.14 min)

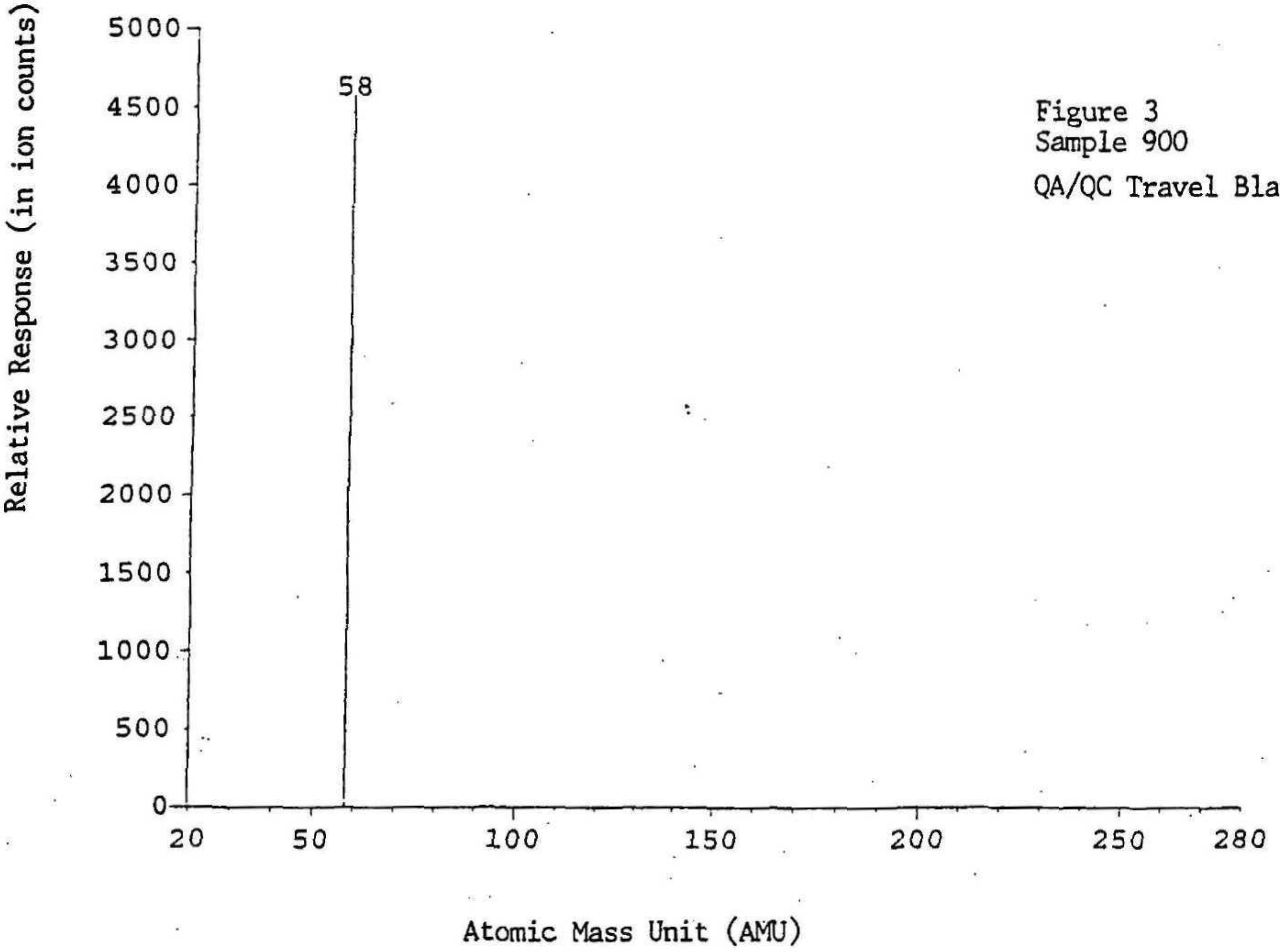
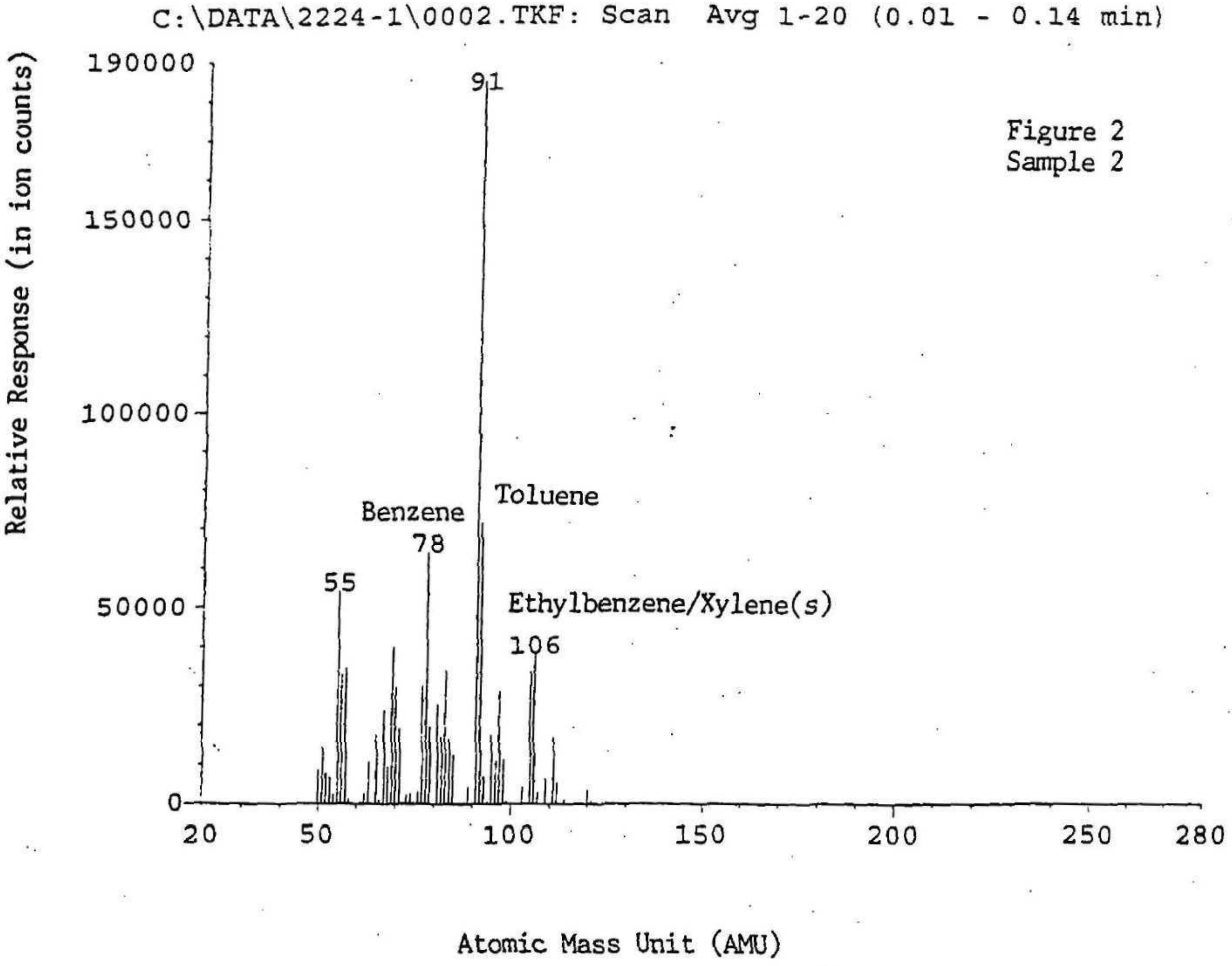


Figure 3
Sample 900
QA/QC Travel Blank Sample


C:\DATA\2224-1\0002.TKF: Scan Avg 1-20 (0.01 - 0.14 min)
Figure 2
Sample 2
Relative Response (in ion counts)
190000
150000
100000
50000
0
91
Toluene
Benzene
78
55
Ethylbenzene/Xylene(s)
106
20
50
100
150
200
250
280
Atomic Mass Unit (AMU)

U . S .   E P A   R E G I O N   I V

SDMS

Unscannable Material Target Sheet

DocID: 10449682 Site ID: AL0001058056

Site Name: Capital City Plume

Nature of Material:

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

Other (describe): Radius Site Map

Amount of material:

Please contact the appropriate Records Center to view the material.

ATTACHMENTS

ATTACHMENT 1

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Leigh Pegues, Director

Jim Folsom
Governor

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MONTGOMERY AL
36130-1463

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Dickinson Drive
Montgomery, AL
36109-2608

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FAX 271-7950
270-5612

Field Offices:

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35209-4702
(205) 942-6168
FAX 941-1603

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

2204 Perimeter Road
Mobile, AL
36615-1131
(205) 450-3400
FAX 479-2593

September 16, 1993

MEMORANDUM

TO: Steven O. Jenkins, Chief RWB/for
RCRA Compliance Branch
Land Division

THROUGH: Robert W. Barr, Chief RWB
South Unit
RCRA Compliance Branch
Land Division

FROM: Stephen C. Maurer SCM
South Unit
RCRA Compliance Branch
Land Division

RE: Contamination Investigation
RSA utility building construction site
N.E. corner of S. McDonough St. and Monroe St.
Montgomery, Alabama

On September 13, 1993 at 12:40 p.m., I arrived at Davis One Hour Cleaners & Laundry at 401 Monroe Street, Montgomery, to begin investigating a report of perchloroethylene soil contamination detected during excavation work for the RSA utility building site at the northeast corner of Monroe Street and S. McDonough Street, Montgomery.

The report of perchloroethylene contamination was filed by Mr. Jerry Gilbert, President of CTE Environmental, 2821 Chestnut Street, Montgomery, phone number 834-4719.

Mr. Gilbert of CTE is involved with the on-going construction of the RSA utility building for the State of Alabama in conjunction with PH&J Architects, Inc., 807 S. McDonough Street, Montgomery.

Mr. Gilbert initially reported that excavation to a depth of 25 feet for the basement and sidewall area construction had revealed an area of perchloroethylene contamination approximately 20 feet wide and 15 feet deep, with a strong perchloroethylene odor.

I made an appointment to meet with Mr. Gilbert at the job site the next day at 8:00 a.m. to look at the excavated area and take samples for VOC analysis.

Davis Dry Cleaning does not perform dry cleaning at the 401 Monroe Street location; this location serves only as a customer drop-off and pick-up point. Actual dry cleaning is performed at another Davis Cleaner location.

According to Mr. Davis, who I spoke to on the phone while I was at the Monroe Street facility, Davis Cleaners has never performed cleaning at the 401 Monroe Street location.

The interior back area of the building at 401 Monroe Street had dry cleaned clothing hung up and ready for customer pick-up. It did not appear that dry cleaning had ever been conducted at this location, as there was no evidence of previous machine hook-ups, although there were some parts of dry cleaning machines stored.

Also stored in the back interior part of the building were 11-55 gallon drums marked perchloroethylene, which appeared to be mostly empty.

Two additional 55 gallon drums of the open type lid construction were not marked, and one contained used dry cleaning cartridges. The other drum had the ring bung secured, and appeared to have something in it.

Another drum, which appeared to be full, was marked Johnson Wax Products and floor finish remover, but had a screw in bung which would not allow containerization of spent dry cleaning cartridges.

Although this location does not appear to generate perchloroethylene waste, it appears that some waste has been stored here from other Davis Cleaner locations. This location does not have an EPA I.D. Number.

Appropriate enforcement will be implemented concerning the small amount of waste presently being stored.

On September 14, 1993 at 8:00 a.m., I arrived at the PH&J Architects trailer office on the RSA utility building job site and met with Mr. Chip Langlois of PH&J and Mr. Jerry Gilbert of CTE Environmental to discuss the contamination problem.

This trailer office is behind the Madison Avenue Car Wash.

Mr. Langlois showed me a picture of the building they had torn down recently, which had been located at the southest corner of Hull Street and Monroe Street. The building was called the Degostin & Angelini Brothers Building, nicknamed the "Tile Building",.

A VOC analysis of soil samples, performed by Analytical Systems, Inc. Environmental Testing Lab for CTE, indicated concentrations of 7,066 ppb perchloroetheylene, 1037 ppb methylene chloride, and 255 ppb 1,1,2-trichloroethane. Mr. Gilbert gave me a copy of the lab analysis (copy attached). The sample was collected on September 9, 1993, one foot into the bank at 21.5 feet below ground level, according to the chain of custody report.

The northeast bottom area of the construction site excavation, where the perchloroethylene was detected by construction workers by smell last Thursday, has been taped off and construction halted until the situation can be evaluated and a course of action determined.

According to Mr. Gilbert, depth to groundwater is estimated to be 55 feet and the soil is sandy with lower clay layers.

Mr. Gilbert and I proceeded to the excavated area on the west side of the trailer office. The excavation was approximately 25 feet deep and shored up with vertical columns and horizontally placed lumber.

I used the Hnu meter to check different faces at the base of the excavation, and determined that detectable levels (varying from 5-200 ppm) of volatile substances appeared to be confined to a horizontal width of about 10 feet.

Hnu detection and VOC soil sampling was limited to the open face area near the base of the excavation, due to the lumber and steel column retaining wall. Sections of the dirt were dug out by construction workers using hand shovels prior to Hnu testing and sampling. a strong perchloroethylene odor was evident in some areas when the soil was dug out with the shovels.

I took three soil samples at the marked mean sea level elevation area of 174.5 feet (about 25 feet below ground level), about three feet apart, within the area where the Hnu readings were detectable.

Mr. Gilbert and I then drove west about two blocks down Monroe Street to the south side of the street, where dirt from the contaminated area had been dumped on land for another future RSA building. We attempted to dig into some piles of dirt with my steel scoops, but were unable to get any detectable readings on the Hnu meter due to insufficient depth. I advised Mr. Gilbert to discontinue dumping of dirt in this area until we determined a course of action.

Upon turning in the three soil samples for VOC analysis at the ADEM lab, I made a verbal request to Bill Brackin for expediting the sample analysis, explaining that construction would probably be halted on the RSA utility building until we could determine a course of action to address the perchloroethylene contamination.

On September 15, 1993, Mr. Gilbert of CTE brought me a copy of the Phase I preliminary assessment report for the RSA properties. This report was performed by the CWA Group for PH&J Architects, Inc.

This report revealed that Madison Avenue Dry Cleaners and Madison Avenue Cleaners used to be located at 400 and 320/330 Madison Avenue, beginning in 1946 and 1947 respectively. Tire Center, Inc. appears to now be located at the old Madison Avenue Dry Cleaner location (see Figure 6.3 of Phase I report). No other businesses in the immediate area are thought to have contributed to the present perchloroethylene contamination at the RSA Utility building site.

It is believed that the perchloroethylene contamination at the RSA utility building site occurred as a result of activities prior to RCRA (1980) and that these prior activities do not come under the Division 14 regulations.

A copy of this memorandum and the Phase I report will be forwarded to Mr. Daniel Cooper of ADEM Special Projects for investigation and remediation under the CERCLA authority.

SCM/mt:SE#121(207-210)

File: Montgomery County

ATTACHMENT 2

SEP 1993
ADEM
SPECIAL PROJECTS

INTER-AGENCY TRANSMITTAL/COORDINATION FORM

The attached document(s) is (are) being transmitted to you for your information and/or response as indicated.

DATE SUBMITTED: 9/16/1993

TO: Dan Cooper

BRANCH: Special Projects
DIVISION: Office of the Director

FROM: Stephen C. Maurer SCM

BRANCH: RCRA Compliance
DIVISION: Land

SUBJECT: Complaint referral-Retirement Systems of Alabama (RSA) utility building site at N.E. corner of S. McDonough and Monroe Street, Montgomery, Alabama

RESPONSE REQUESTED? **Yes** X **No**____

RESPONSE DATE DUE? ASAP

RESPONSE CONTACT? Jerry Gilbert, President, CTE Environmental-834-4719

COMMENTS: Copy of trip memo from Steve Maurer dated 9/16/1993, Analytical Systems, Inc. lab results, and Phase I preliminary environmental assessment by CWA Group, Inc. Construction has been halted until course of action can be determined. Need to resolve soon.

File: Complaint-Montgomery Co.
Document SE#136-34

CWA PROJECT NO. 275.01J

SEP 1993
RECEIVED
ADEM
LAND DIVISION

PREPARED FOR:
PH&J ARCHITECTS, INC.
BOX 215
MONTGOMERY, ALABAMA 36101

ATTN: MR. GRIFFIN HARRIS

PHASE I - PRELIMINARY ENVIRONMENTAL ASSESSMENT RETIREMENT SYSTEMS OF ALABAMA (RSA) MONTGOMERY, MONTGOMERY COUNTY, ALABAMA

Tommy Reid

Tommy Reid
Senior Geologist

L. Bruce Christian
President

PREPARED BY:
THE CWA GROUP, INC.
2623 LOWER WETUMPKA ROAD
MONTGOMERY, ALABAMA 36110

JUNE 3, 1992

CWA PROJECT NO. 275.011

PREPARED FOR:
PH&J ARCHITECTS, INC.
BOX 215
MONTGOMERY, ALABAMA 36101

ATTN: MR. GRIFFIN HARRIS

PHASE I - PRELIMINARY ENVIRONMENTAL ASSESSMENT
RETIREMENT SYSTEMS OF ALABAMA (RSA)
MONTGOMERY, MONTGOMERY COUNTY, ALABAMA

The CWA Group, Inc.
Soil & Groundwater Environmental Services

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SECTION 1

INTRODUCTION

SECTION 1 INTRODUCTION

The CWA Group, Inc. (CWA) was retained on April 29, 1992, by PH&J Architects Inc. to conduct a Phase I - Environmental Site Assessment of various properties located in the downtown area of Montgomery, Alabama.

The purpose of this investigation was to identify potential environmental hazards resulting from past or present utilization of the site and/or adjacent properties. The scope of work for this project includes the following:

The scope of work for this project includes the following:

a. Review public records regarding ownership for the past ± 40 years.

b. Investigate prior use of the site and adjacent properties.

c. Investigate the site's regulatory history.

d. Review topographic, survey, geologic and hydrogeologic maps and aerial photographs to assess past and present site conditions.

e. Review published information about surface and subsurface conditions.

f. Inspect site and buildings for indications of the presence of environmental hazards.

g. Review EPA Superfund Site List and ADEM Wastelan List for hazards or potentially hazardous waste sites at or in the vicinity of the site.

h. Interview public State and local officials with respect to hazardous materials incidents occurring at or in the vicinity of the site.

SECTION 2
LOCATION

SECTION 2 LOCATION

The Phase I - Environmental Site Assessment conducted by CWA targeted properties located in downtown Montgomery, Alabama (Figures 2.1 and 2.2). The properties were located in seven different blocks of the downtown area (Figure 2.3) and are described as follows:

1) Union Office Building - bounded on the north by Madison Avenue, on the south by Monroe Street, on the east by Ripley Street and on the west by Union Avenue, and further described by Figure 2.4.

2) State Office Building Parking Deck - bounded on the north by Madison Avenue, on the south by Monroe Street, on the east by Bainbridge Street and on the west by Decatur Street, and further described by Figure 2.5.

3) Energy Plant - bounded on the north by Madison Avenue, on the south by Monroe Street, on the east by Hull Street and on the west by McDonough Street, and further described by Figure 2.6.

4) Tower Office Building - bounded on the north by Madison Avenue, on the south by Monroe Street, on the east by McDonough Street and on the west by Lawrence Avenue, and further described by Figure 2.7.

5) Child Care Building - bounded on the north by Monroe Street, on the south by Dexter Avenue, on the east by Hull Street and on the west by McDonough Street, and further described by Figure 2.8.

6) Judicial Parking Deck - bounded on the north by Monroe Street, on the south by Dexter Avenue, on the east by McDonough Street and on the west by Lawrence Avenue, and further described by Figure 2.9.

7) Commercial Property - bounded on the north by Monroe Street, on the south by Dexter Avenue, on the east by Lawrence Avenue and on the west by Perry Street, and further described by Figure 2.10.

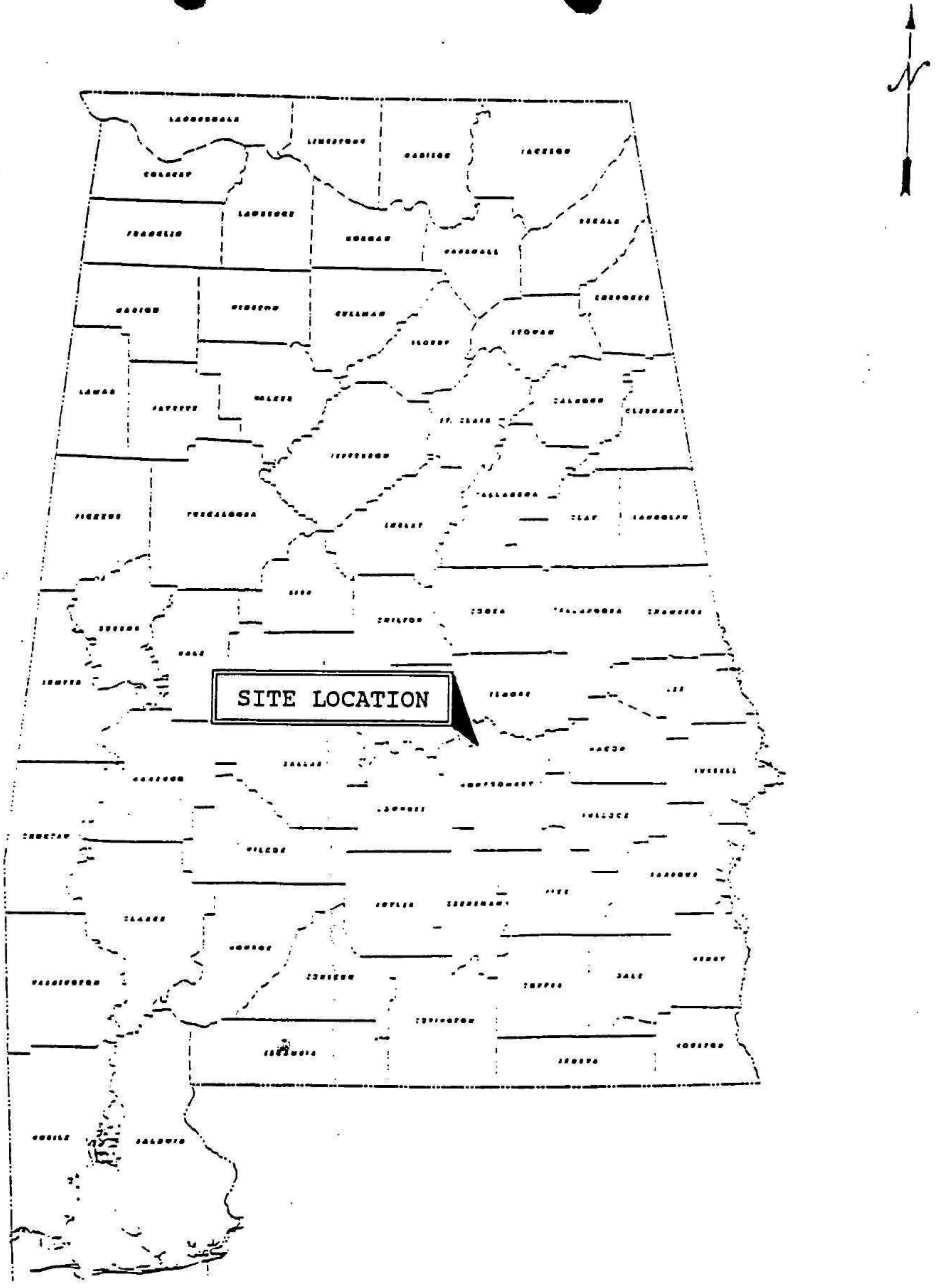


Figure 2.1

REGIONAL LOCATION MAP
RETIREMENT SYSTEMS OF ALABAMA
PHASE - I ENVIRONMENTAL SITE
ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA
PROJECT NO. 275.01I

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE:
WJR		5/22/92

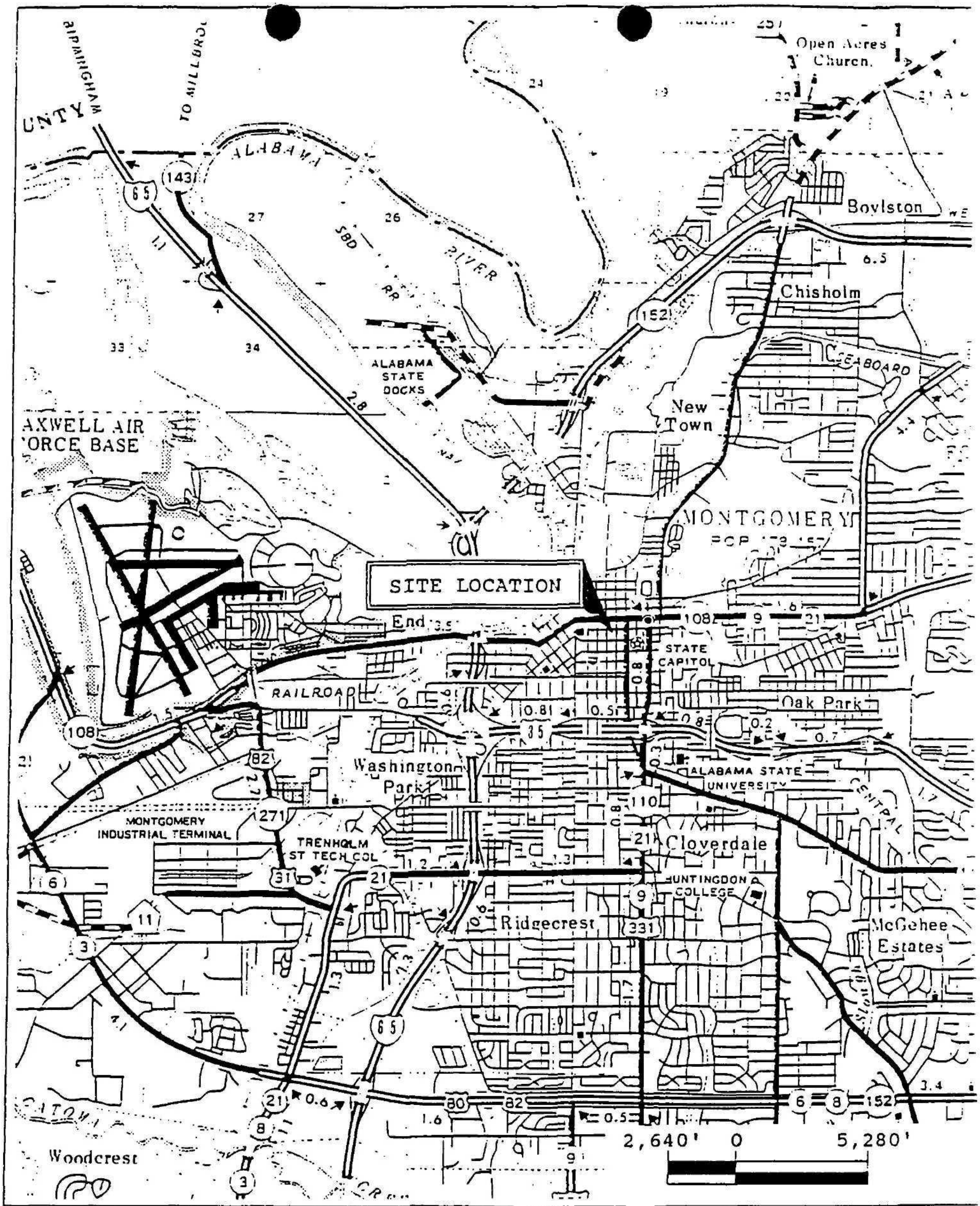
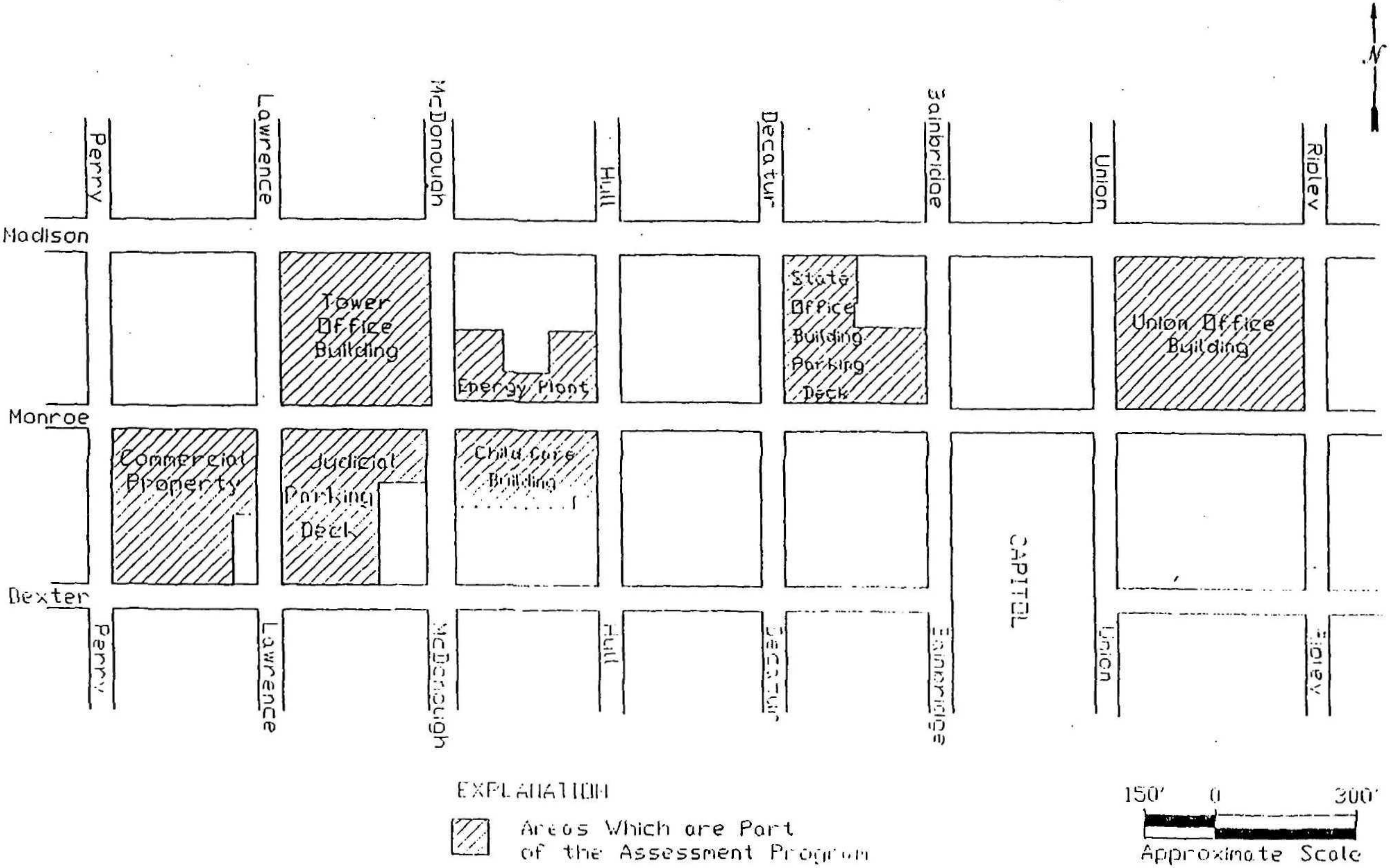


Figure 2.2

PROPERTIES LOCATION MAP
RETIREMENT SYSTEMS OF ALABAMA
PHASE - I ENVIRONMENTAL SITE
ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA
PROJECT NO. 275.01I

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE
WJR		05/22/9



IGURE
2.3

PROPERTIES MAP
RETIREMENT SYSTEMS OF ALABAMA
PHASE I - ENVIRONMENTAL SITE ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA
PROJECT NO. 275.01I

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE:
[illegible]		05/22/92

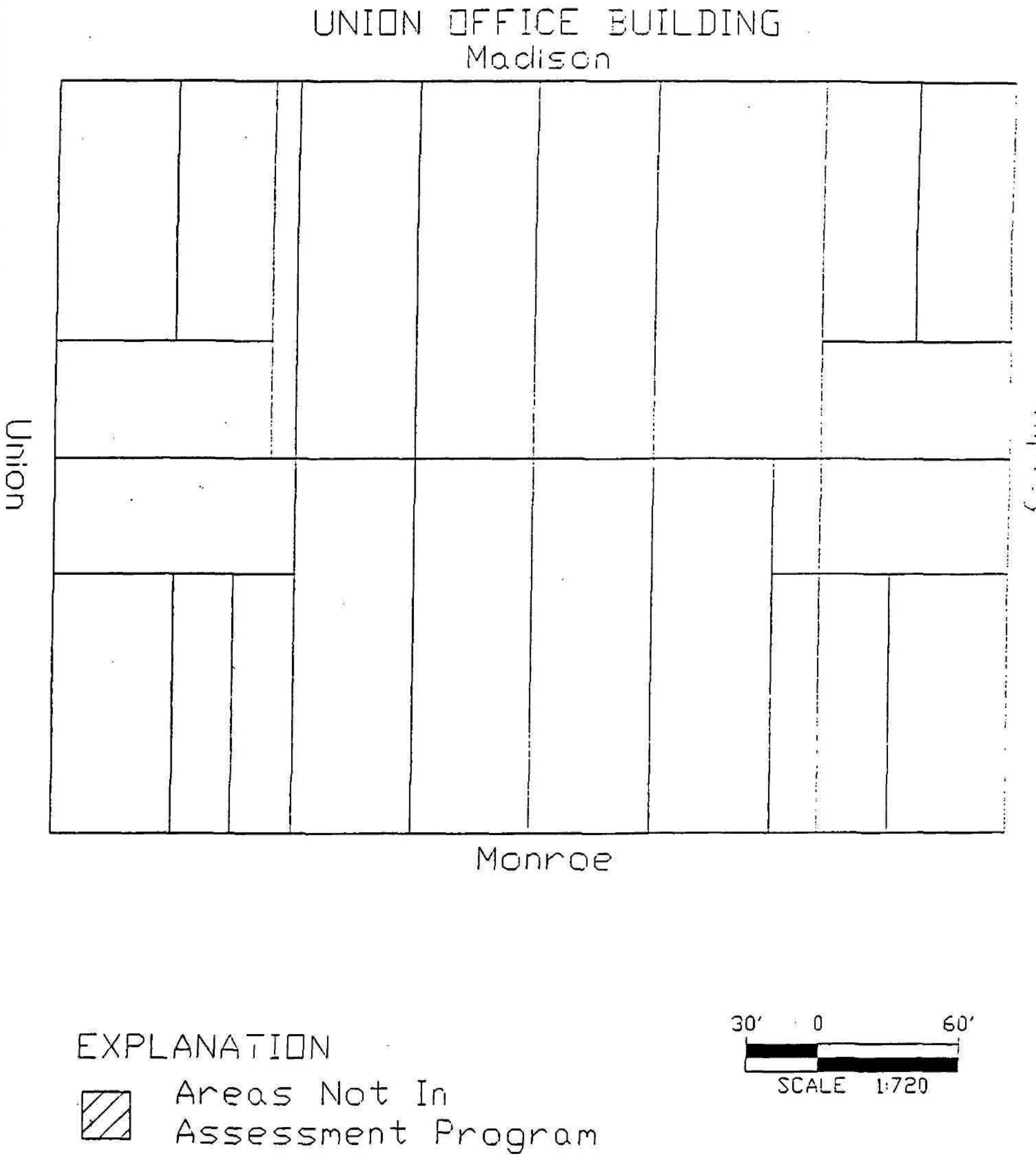


Figure 2.4	UNION OFFICE BUILDING PROPERTIES MAP RETIREMENT SYSTEMS OF ALABAMA PHASE - I ENVIRONMENTAL SITE ASSESSMENT PROGRAM MONTGOMERY, ALABAMA	THE CWA GROUP, INC. 2623 Lower Wetumpka Road Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE
W.J.R.		05/22/

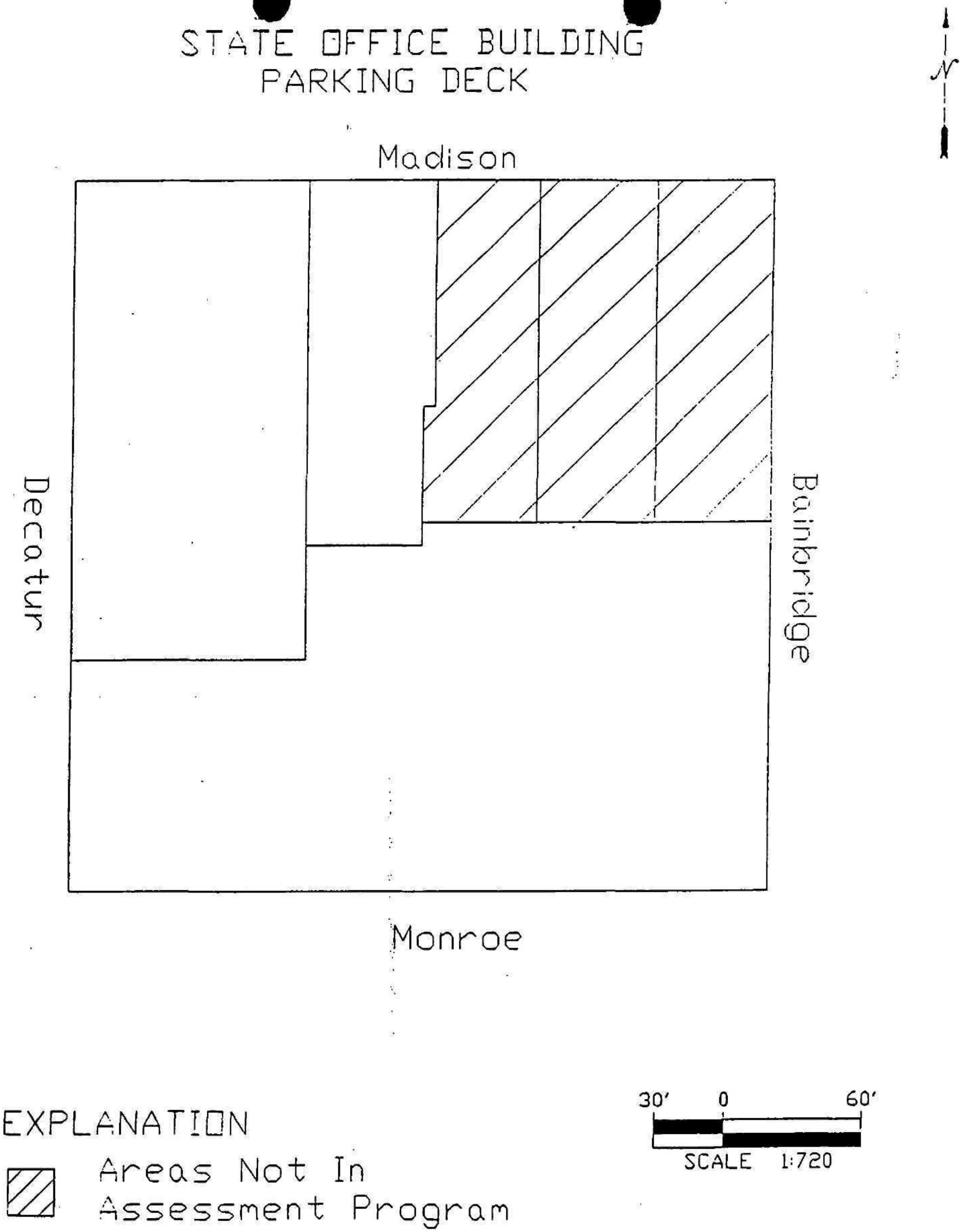


Figure 2.5	STATE OFFICE BUILDING PARKING DECK PROPERTIES MAP RETIREMENT SYSTEMS OF ALABAMA PHASE - I ENVIRONMENTAL SITE ASSESSMENT PROGRAM MONTGOMERY, ALABAMA	THE CWA GROUP, INC. 2623 Lower Wetumpka Road Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE:
WJR		05/22/92

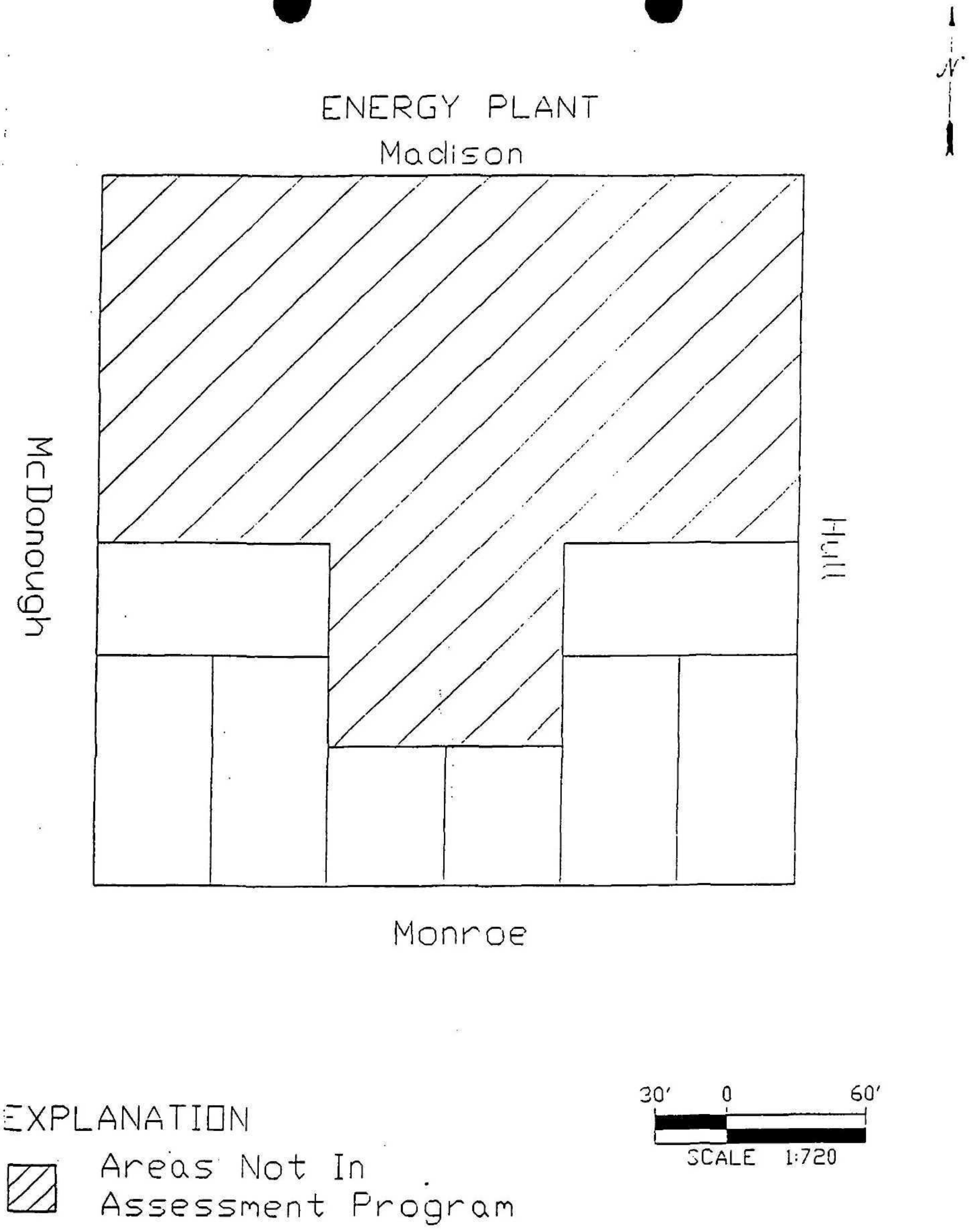


Figure 2.6

ENERGY PLANT
PROPERTIES MAP
RETIREMENT SYSTEMS OF ALABAMA
PHASE - I ENVIRONMENTAL SITE
ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE:
		05/22/92

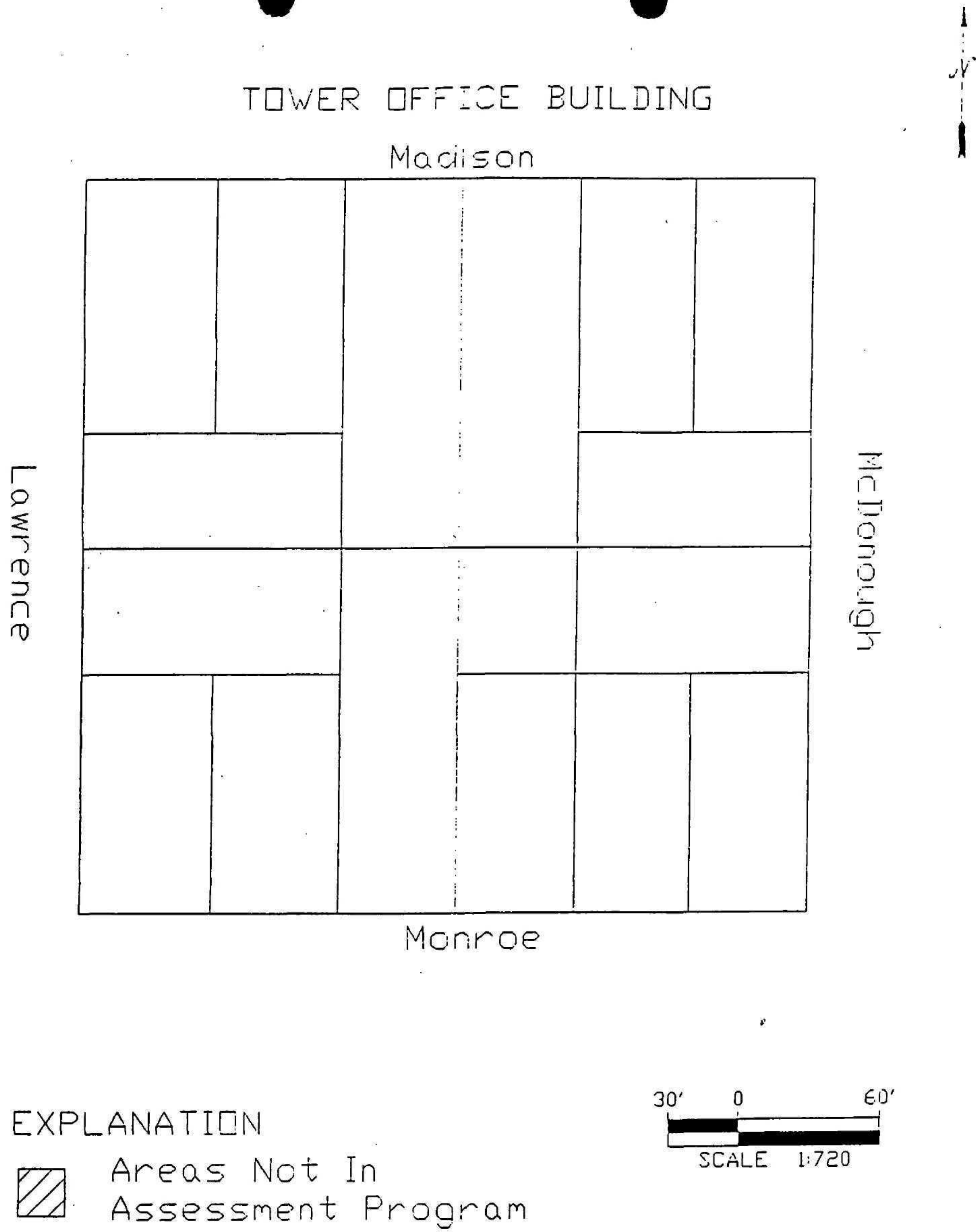


Figure 2.7	TOWER OFFICE BUILDING PROPERTIES MAP RETIREMENT SYSTEMS OF ALABAMA PHASE - I ENVIRONMENTAL SITE ASSESSMENT PROGRAM MONTGOMERY, ALABAMA	THE CWA GROUP, INC. 2623 Lower Wetumpka Road Montgomery, Alabama 36110

DESIGNED BY: WJR	CHECKED BY:	DATE: 05/22/92

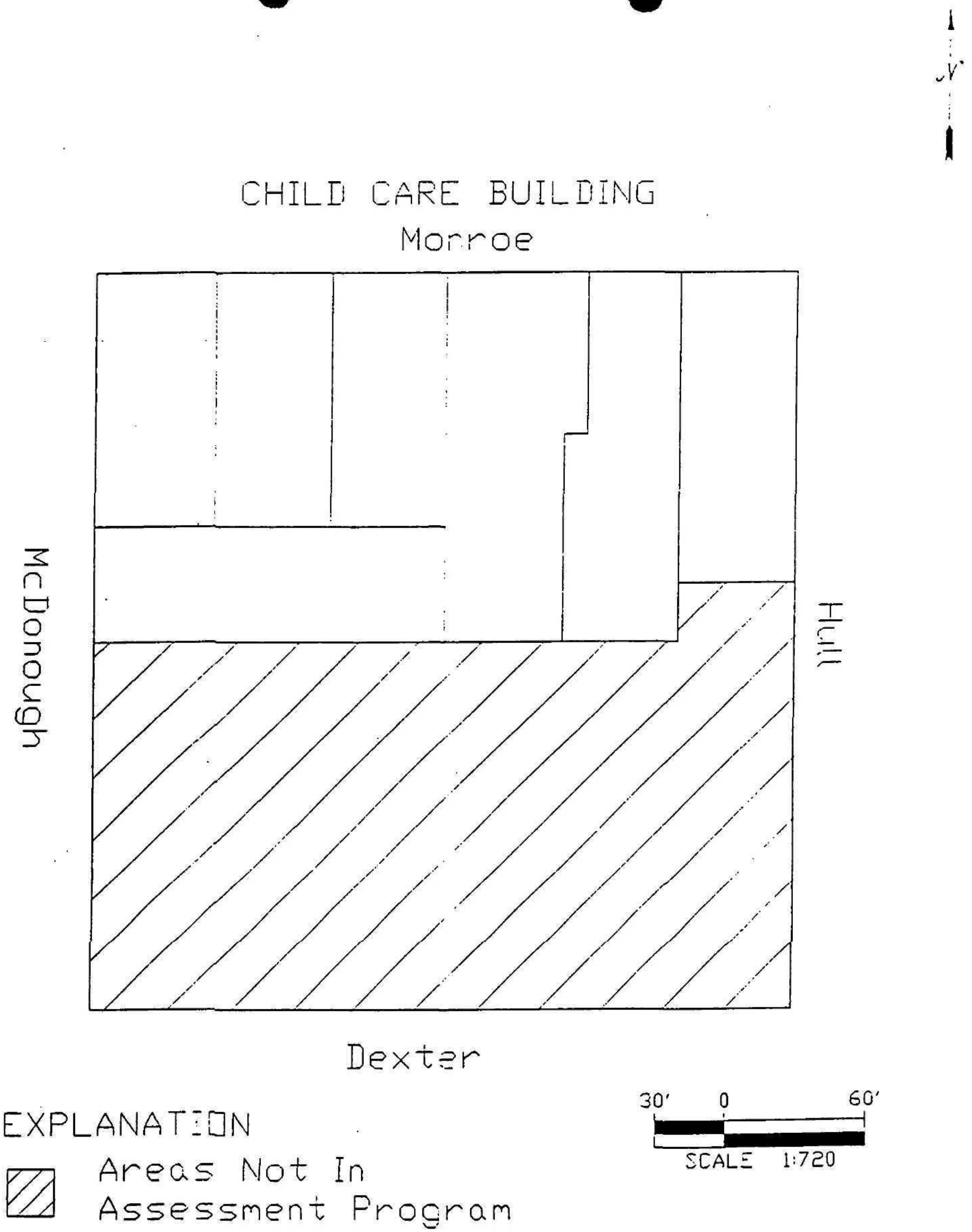


Figure 2.8

CHILD CARE BUILDING
PROPERTIES MAP
RETIREMENT SYSTEMS OF ALABAMA
PHASE - I ENVIRONMENTAL SITE
ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY:

CHECKED BY:

DATE: 05/22/92

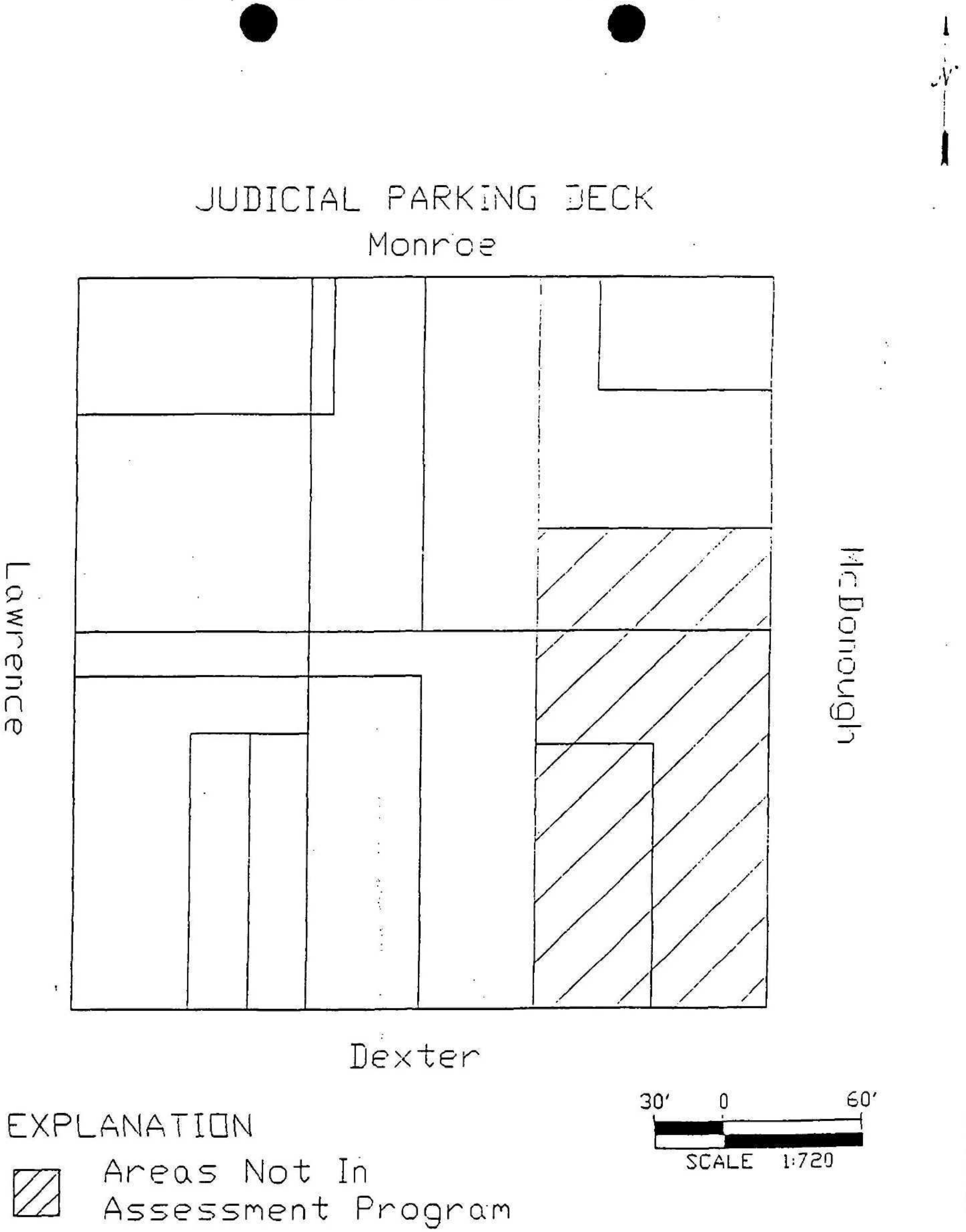


Figure 2.9

JUDICIAL PARKING DECK
PROPERTIES MAP
RETIREMENT SYSTEMS OF ALABAMA
PHASE - I ENVIRONMENTAL SITE
ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE:
		05/22/92

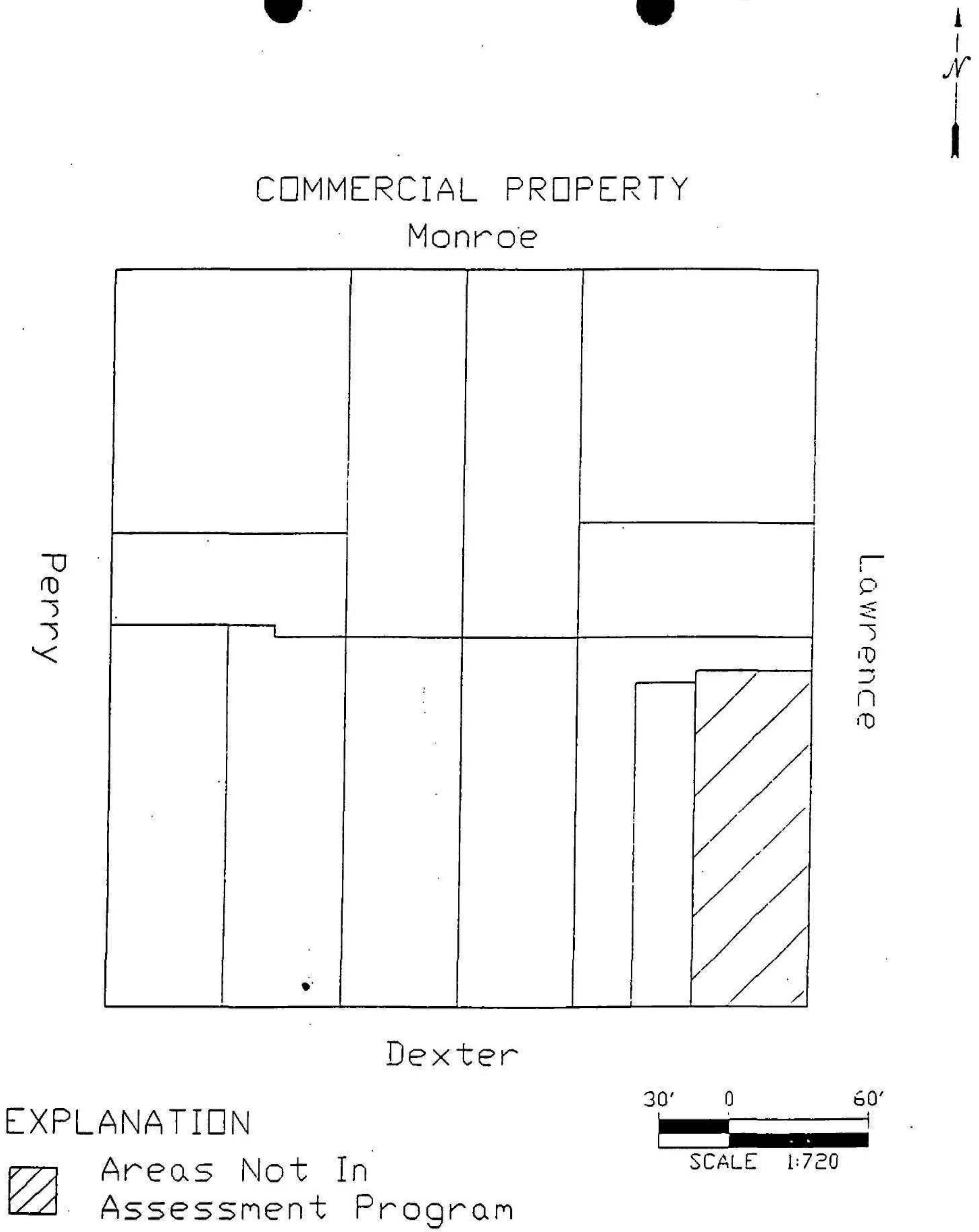


Figure 2.10

COMMERCIAL PROPERTY
PROPERTIES MAP
RETIREMENT SYSTEMS OF ALABAMA
PHASE - I ENVIRONMENTAL SITE
ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY: WJR

CHECKED BY:

DATE: 05/22/92

SECTION 3

GEOLOGY AND HYDROGEOLOGY

SECTION 3 GEOLOGY

Section 3.1 REGIONAL GEOLOGY

The properties are located in the Eastern Gulf Coastal Plain physiographic province of Central Alabama in Montgomery County, Alabama. Geologic formations with surface exposures in the Montgomery County area vary from marine gravel, sand, clay, silt and chalk of Cretaceous Age to alluvial sediments of Tertiary and Quaternary Age. Formations relevant to the study area are the Coker and Gordo Formations comprising the Tuscaloosa Group, the Eutaw Formation, and the Mooreville Chalk of the Selma Group, all of which are of Cretaceous Age, and alluvial sediments of Quaternary and Tertiary Age. These sediments were deposited on essentially impermeable igneous and metamorphic rocks of Precambrian to Jurassic Age which are exposed in Elmore County to the north.

The Coker Formation is the basal unit of the Cretaceous Age formations in Montgomery County with surface exposures occurring in Chilton, Elmore and Autauga Counties. Sediments consist of a basal nonmarine gravel, sand and clay facies deposited on metamorphic and igneous rocks. The basal facies is typically covered by a clay zone approximately 50 feet thick which is overlain by a marine sequence of gravel, sand, silt and clay. The Upper Coker Formation is capped by a clay interval which is an effective permeability barrier separating the Coker and overlying Gordo Formations. Thickness of the Coker Formation is variable but attains as much as 1,000 feet in southern Montgomery County.

The Gordo Formation overlies the Coker Formation and surface exposures occur to the north and northwest in southern Elmore County, Autauga County and southern Chilton County. Sediments consist of a basal gravelly sand overlain by alternating beds of sand and clay. The Upper Gordo Formation is a clay unit which separates the high porosity zones of the Gordo Formation from the overlying Eutaw Formation. Thickness of the unit is variable as a result of Tertiary and Quaternary Age erosion and original depositional environment. The maximum thickness of 300 feet is found in the subsurface of southern Montgomery County.

The Eutaw Formation is the basal member of the Selma Group and surface exposures of this unit outcrop in approximately two-thirds of Autauga County, southern Elmore County and in a narrow band across northern Montgomery County. Sediments consist of an upper and lower marine sand facies separated by a clay facies. The basal marine sand facies varies in thickness from 30 to 50 feet and is characterized by a glauconitic sand intercalated with sandy clay. The middle facies is a calcareous to sandy clay varying in thickness from 50 to 150 feet. The upper facies consists of a massive glauconitic sand intercalated with beds of sandy limestone and calcareous sandstone. Thickness of the Eutaw Formation varies but can be 400 feet or more.

The Mooreville Chalk is exposed in central Montgomery County, northern Lowndes County and sporadically in southern Autauga County. Sediments consist of chalk, clay, calcareous clay and in the upper portions sandy clay. The Mooreville Chalk is essentially impermeable and functions as the upper confining layer for the Eutaw aquifer. Formation thickness varies primarily because of Quaternary Age erosional processes but the maximum thickness attained in Montgomery County is approximately 500 feet.

Quaternary Age alluvial sediments are found throughout Alabama. In Montgomery County these sediments are found both as erosional outliers (terrace deposits) and in modern drainage basins. The lithologies found in these units are typical of floodplain areas consisting of gravel, sand, silt and clay.

Alluvial deposits are usually relatively thin but may be as thick as 80 feet or more.

Section 3.2 SITE GEOLOGY

The properties are located on soils derived from alluvial sediments of Tertiary and Quaternary Age. Other geologic formations pertinent to the present investigation are the Gordo, Coker and Eutaw Formations of Cretaceous Age. Formations exposed at the surface in the immediate vicinity of the site are the Eutaw Formation and alluvial sediments of Tertiary and Quaternary Age.

The Coker Formation of Cretaceous Age is found in surface exposures approximately eight (3) miles northeast of the property in Elmore County. Depth to the top of the formation from ground surface at the site is approximately 715 feet. The basal contact of the Coker with the relatively impermeable metamorphic rocks is at approximately 1,275 feet below ground surface. Apparent thickness (not corrected for dip components) of the units if 840 feet, including both the marine and non-marine sand and gravel facies, the middle clay facies and the clay unit at the top of the formation which acts as the upper confining layer for the Coker aquifer.

The Gordo Formation conformably overlies the Coker Formation and the nearest surface exposure is approximately 11 miles northeast of the study area in Elmore County. Depth to the top of the formation in the vicinity of the site is approximately 330 feet beneath the surface and the contact of the Coker Formation with the Gordo Formation is at approximately 715 feet below ground surface. Total formation thickness in the site area is approximately 385 feet. The upper clay facies of the Gordo may be absent in the vicinity of the site as the result of original depositional thinning and erosion of the clay unit during deposition of the younger gravel and sand facies of the Eutaw Formation. Absence of the clay facies at the site would create the possibility of hydraulic interconnection of the Gordo and Eutaw aquifers.

The Eutaw Formation is exposed approximately one (1) mile north of the site in the Jackson Ferry Road area. Depth to the top of the formation at the site is probably within 100 feet of the ground surface. The contact of the Eutaw Formation and the Gordo Formation is approximately 330 feet below ground surface and the total thickness of the formation is approximately 230 feet.

The properties are located on soils derived from alluvial sediments of Tertiary and Quaternary Age. The various lithologies which should be expected beneath the surface are sand, gravel, clay and sandy clay. Tertiary and Quaternary Age sediments typically have well developed porosity and high permeability. The total thickness of the alluvial deposits is approximately 100 feet.

Section 3.3 REGIONAL HYDROGEOLOGY

Three primary aquifers, the Coker, Gordo and Eutaw aquifers, exist in the Montgomery County area and all are found in the subsurface beneath the properties. These aquifers outcrop to the north of the site area in Elmore, Autauga and Chilton Counties. The outcrop areas are aquifer recharge areas and are susceptible to surface or near surface contamination. Aquifer recharge is primarily through rainfall and/or infiltration of surface water through outcrops and Tertiary and Quaternary Age sediments, where in contact with permeable portions of the Cretaceous Age sediments. An additional source of recharge in this area is the Tallapoosa River to the north, which supplies water through the Quaternary Age sediments to the permeable portions of the Eutaw aquifer.

Public water supply in the vicinity of the properties is derived from the three primary aquifers, the Coker, Gordo and Eutaw aquifers. The Montgomery North and West Well Fields are located approximately 1/2 mile north and 1½ miles west of the site, respectively, and pump water from the Gordo, Coker and Eutaw aquifers. Extensive pumpage in the West Well Field has resulted in depression of the potentiometric surfaces of all three aquifers. Average combined production from the two (2) fields is approximately 11 Mgpd (million gallons per day). Rural public water systems in the remaining Montgomery County area produce an estimated four (4) Mgpd. Private water wells in the county are utilized primarily for industrial and agricultural purposes, although some wells are used for private consumption.

The Coker aquifer is a primary source of water supply in Montgomery County and both the basal gravelly sand and the marine sand units of the Coker Formation produce water. Wells producing from the Coker aquifer typically produce 720,000 gpd. Depth to the Coker is approximately 785 feet beneath ground surface at the site.

The Gordo aquifer is also a major aquifer in the study area. The Montgomery North and West Well Fields produce from the Gordo and wells in this interval can produce as much as 500 gpm (gallons per minute) in some areas. A depression has developed in the potentiometric surface of the Gordo aquifer in the Montgomery West Well Field as a result of extensive pumpage from this unit. This aquifer is utilized primarily in Montgomery, Autauga and Lowndes Counties. Utilization of the Gordo in Chilton and Elmore Counties is minimal due to the aquifer's close proximity to the ground surface.

The Eutaw aquifer is a principal aquifer throughout Montgomery County except for the City of Montgomery. The Eutaw is sometimes produced in conjunction with the Coker and Gordo aquifers. Both sand facies in the Eutaw Formation comprise the aquifer and flow rates are typically 450 gpm in the lower sand facies and 500 gpm in the upper sand facies. The Eutaw aquifer is highly susceptible to contamination in the City of Montgomery area due to erosion of the formation by Quaternary Age alluvial sediments associated with the Tallapoosa River and Coosa River drainage basins.

Sediments of Tertiary and Quaternary Age are found throughout the Montgomery County area, predominantly in association with flood plains of active river and drainage systems. These sediments are not generally developed for water supply, although in some areas the lower portions of the unit are screened in conjunction with other aquifers. These alluvial sediments are hydraulically connected with the Eutaw aquifer in northern Montgomery County and are also a recharge mechanism for the aquifer.

Section 3.4 SITE HYDROGEOLOGY

The properties are located in northern Montgomery County on Tertiary and Quaternary sediments. Three primary aquifers for the Montgomery County area are located beneath the site area. The Eutaw aquifer is possibly in direct hydraulic connection with the underlying Gordo aquifer beneath the site. The study area is within the recharge area of the Eutaw aquifer. Contamination of these aquifers by a release of hazardous materials at the ground surface could occur due to a contaminant release north of the site of investigation and subsequent contact with the Quaternary Age alluvium and the deeper Eutaw Formation.

The Coker aquifer is located approximately 785 feet beneath the site of investigation and the nearest surface exposures are approximately eight (8) miles to the northeast in Elmore County. Drainage of the site is northwest to the Alabama River. Contamination of the Coker aquifer from the vicinity of the study area is unlikely. The potentiometric surface of the Coker near the site location is at approximately 110 feet above sea level and this aquifer could be utilized for water supply in the site vicinity.

The Gordo aquifer is approximately 330 feet beneath the site and the nearest surface exposures are 11 miles northeast of the site in Elmore County. The clay facies of the Gordo Formation is probably absent in the site vicinity and as a result the Gordo and Eutaw aquifers are probably in direct hydraulic communication. The potentiometric surface of this aquifer is at approximately 125 feet above mean sea level. Although not immediately susceptible to contamination by hazardous materials, the aquifer could be indirectly affected by contaminants migrating through the Eutaw aquifer.

The Eutaw Formation is located near the surface of the study area, where it is covered by a thin, approximately 100 foot thick veneer of Tertiary and Quaternary sediments. Exposures of the formation are found approximately one (1) mile north of the study area. The Eutaw aquifer is an important aquifer in Montgomery County and is highly susceptible to contamination in the Montgomery area. The potentiometric surface of this aquifer is at approximately 155 feet above sea level.

SECTION 4

SITE HISTORY

SECTION 4 SITE HISTORY

Abstracts of Title for the properties involved in this assessment were reviewed by CWA and provided by Mr. George Wakefield and by Retirement Systems of Alabama. Numerous lots, or tracts, are a part of this assessment, and many of the lots have undergone a significant number of ownership changes since the mid-1940's. As such, only lots from which indications of the potential for the presence of hazardous materials were recognized will be presented.

An additional source of information for the history of the properties involved in this assessment was the City Directory. A listing for each of the lots, or addresses, was obtained through the period from 1945 through 1990. As with the abstract information, only those lots from which the indications of the potential for the presence of hazardous materials were recognized will be presented.

The information obtained from the Abstracts of Title and from the City Directory, along with information obtained during the site inspections, have been combined into Figure 6.3 and Table 6.1. Figure 6.3 illustrates the approximate locations of areas with the potential for the presence of hazardous materials on or under the ground surface and Table 6.1 describes the location and the material or materials of concern. Facilities presented in these two (2) items are located either on the properties which are being assessed or are in the immediate vicinity of one (1) or more of the properties, and thus subject to impact the properties.

SECTION 5

INTERVIEW OF STATE AND LOCAL AUTHORITIES

SECTION 5 INTERVIEW OF STATE AND LOCAL AUTHORITIES

Section 5.1 LOCAL AUTHORITIES

Captain Wyatt Gantt of the Montgomery Police Department was contacted on May 4, 1992, and he stated that he was not aware of any incidents related to hazardous materials in the vicinity of the properties.

Major Roy Campbell of the Montgomery Fire Department was contacted on May 4, 1992, and he stated that he was not aware of any incidents related to hazardous materials in the vicinity of the site. Major Campbell did relate that gasoline stations may have existed on some of the lots in the past, but he could not recall specific locations.

Section 5.2 STATE AUTHORITIES

Mr. Joe Downey of the Alabama Department of Environmental Management's (ADEM) Special Projects Group was contacted on May 6, 1992, and was questioned regarding listed RCRA or CERCLA sites or permitted handlers of potentially hazardous materials in the vicinity of the site. Mr. Downey stated that there are no listings of any kind within a one (1) mile radius of the site.

CWA personnel reviewed the "U.S. EPA Superfund Program; CERCLIS; List-8: Site/Event Listing" for listed RCRA or CERCLA sites and the "U.S. EPA, Region 4, Wastelan, Preremedial/Federal Facility Report" for sites which have been or are under investigation under the direction of the EPA and the ADEM, in the vicinity of the properties. No listings were determined to be within a one (1) mile radius of any of the properties under assessment.

Two (2) facilities in the vicinity of the properties were listed by the ADEM in their files for known underground storage tank sites. Mr. Lynn Ford of the ADEM's Groundwater Branch was contacted on May 15, 1992, concerning the Madison Mini Mart, Inc. gasoline service station located at 318 Madison Avenue and the Madison Car Wash Inc. facility located at 300 Madison Avenue on Madison Avenue between Hull and McDonough Streets. According to Mr. Ford, Madison Car Wash Inc. has closed and removed their underground storage tanks (UST's) and there were no incidents or complaints on file for that facility. Mr. Ford stated that Madison Mini Mart Inc. operates three (3) UST's and that there are no violations or complaints on file for that station at this time.

SECTION 6

SITE INSPECTION

SECTION 6 SITE INSPECTION

Section 6.1 TOPOGRAPHIC MAPS AND AERIAL PHOTOGRAPHS

One (1) topographic map, the Montgomery North quadrangle was examined by CWA personnel. The Montgomery North quadrangle (Figure 6.1) is a 7.5 minute series map published by the United States Geological Survey in 1981 and covers each of the properties involved in this assessment. The map indicates that the properties are located in an area of moderate relief along the northern flank of topographic high centered in downtown Montgomery. Primary surface drainage is to the northwest, toward the Alabama River.

Aerial photographs taken in 1964, 1980 and 1986 were examined by CWA personnel at the offices of the Agricultural Stabilization and Conservation Service in Montgomery on May 4, 1992. The properties were too densely developed for the photographs to provide any useful information as to the potential for hazardous materials to exist on the properties.

Section 6.2 VISUAL INSPECTION

Visual inspections of the properties were conducted by CWA personnel on April 27, and May 8, 12 and 15, 1992. The exterior areas of each of the properties were examined and accessible portions of the interiors of each of the buildings, except as noted on Figure 6.2, were examined by CWA personnel. Additionally, Mr. Steve Sain of Sain Engineering Associates (SEA), examined the interiors of each of the buildings, except as noted on Figure 6.2. Appendix A is a report issued by SEA indicating areas in which the potential for the presence of hazardous materials exists in the interior areas of the buildings. The report issued by SEA specifically addresses asbestos, leaded paints, polychlorinated biphenolds (pcb's) and radon. CWA personnel examined the interior

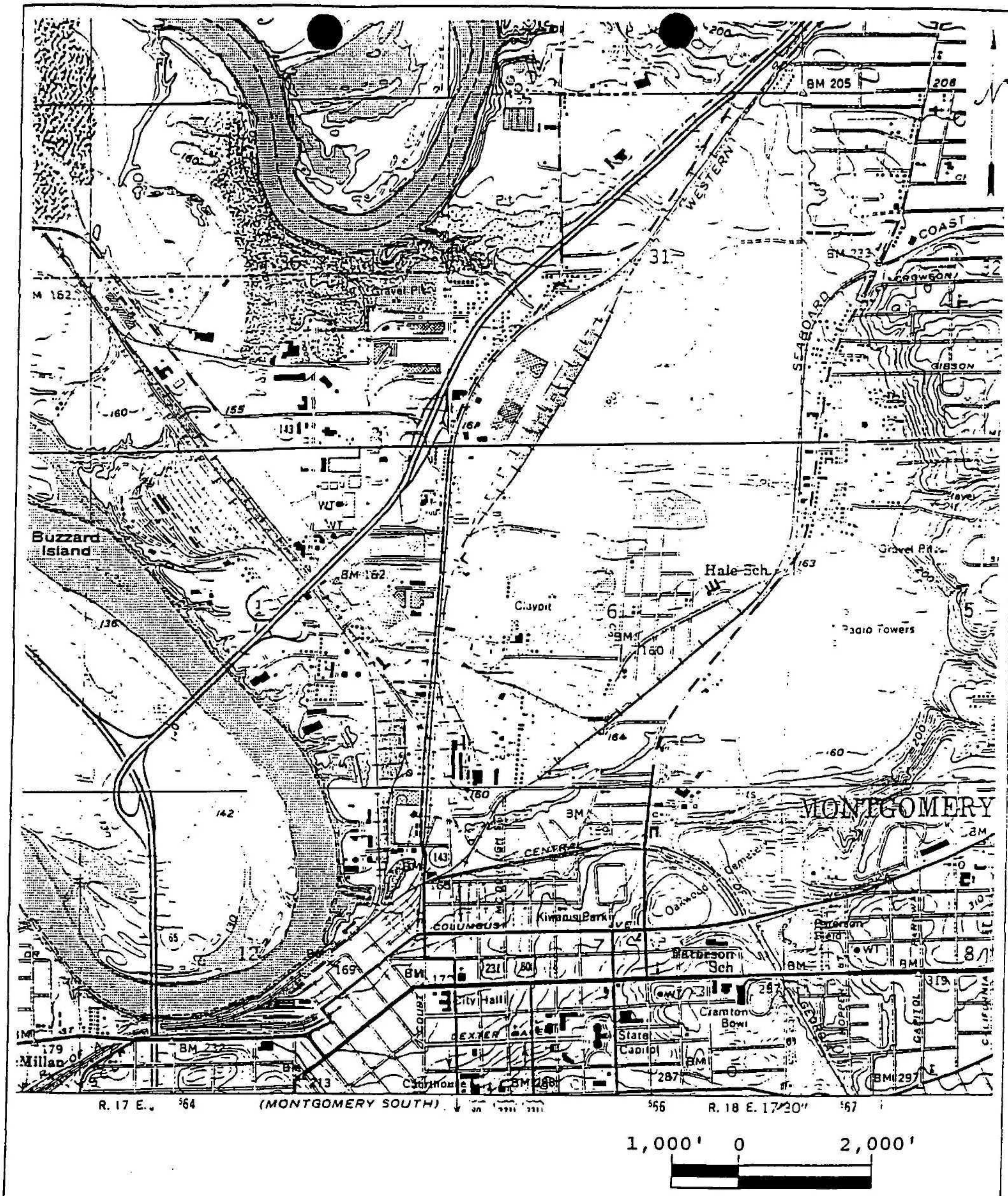


Figure 6.1

TOPOGRAPHIC MAP - 7.5' SERIES
MONTGOMERY NORTH QUADRANGLE - 1981
RETIREMENT SYSTEMS OF ALABAMA
PHASE - I ENVIRONMENTAL SITE
ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE:
WJR		05/22/92

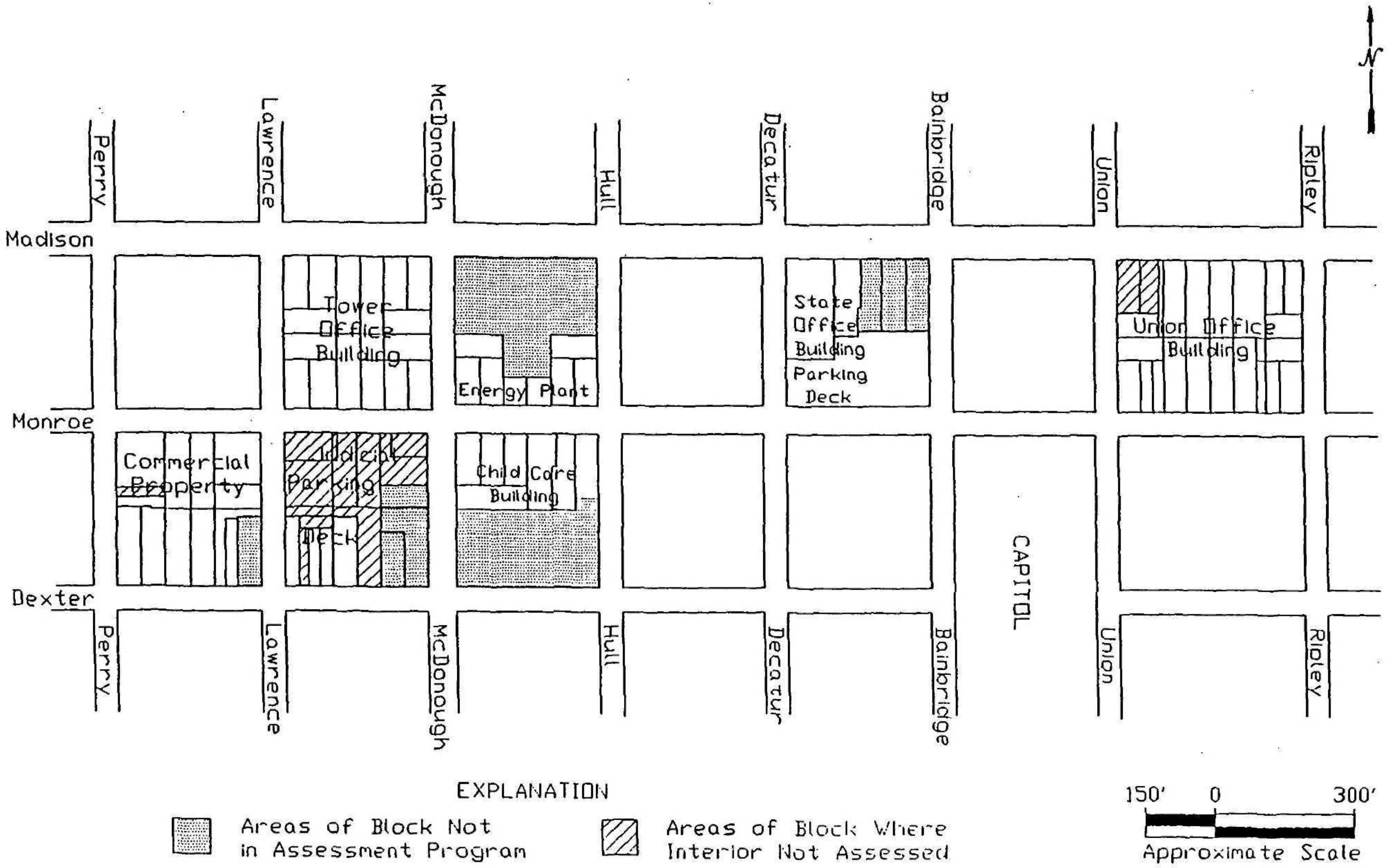


FIGURE 6.2

AREAS OF INTERIOR AND EXTERIOR ASSESSMENT MAP
RETIREMENT SYSTEMS OF ALABAMA
PHASE I - ENVIRONMENTAL SITE ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA
PROJECT NO. 275.01I

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY: WJR	CHECKED BY:	DATE: 05/20/92

and exterior portions of the sites to address the potential for the presence of hazardous materials on or beneath the ground surface of the site not specifically addressed by the SEA report.

Figure 6.3 is a compilation of areas identified as representing a potential for the existence of hazardous materials on or beneath the ground surface, both on or in the immediate vicinity of the properties, not specifically addressed by the SEA report. The compilation includes areas identified by the site inspections, by a review of the Abstracts of Title and by a review of the City Directory.

Table 6.1 is to be used in conjunction with Figure 6.3 and provides the addresses of the facilities of concern and lists the potential sources of contamination which may impact the properties.

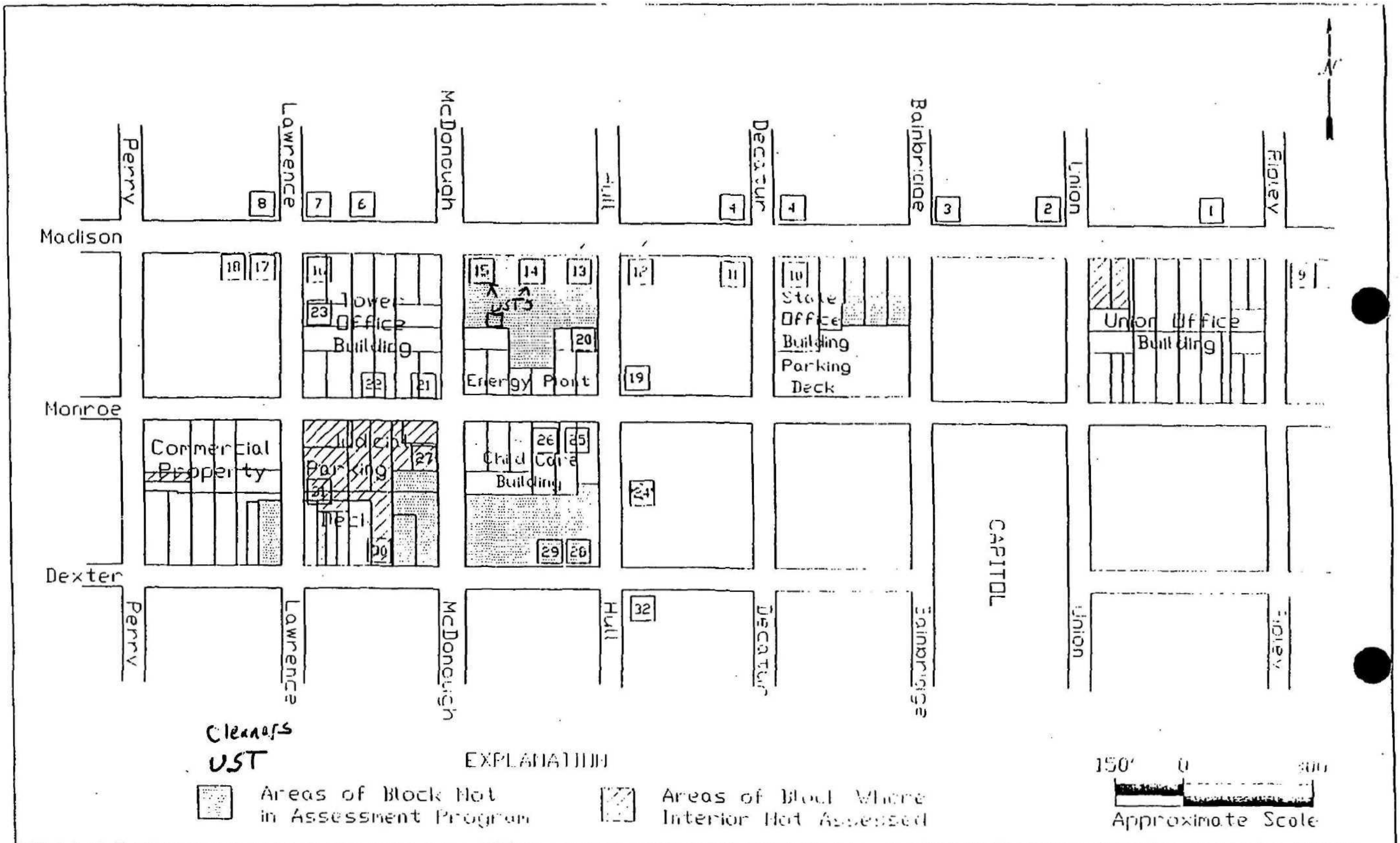


FIGURE
6.3

AREAS IDENTIFIED AS POTENTIAL SOURCES OF CONTAMINATION
RETIREMENT SYSTEMS OF ALABAMA
PHASE I - ENVIRONMENTAL SITE ASSESSMENT PROGRAM
MONTGOMERY, ALABAMA
PROJECT NO. 275.01I

THE CWA GROUP, INC.
2623 Lower Wetumpka Road
Montgomery, Alabama 36110

DESIGNED BY:	CHECKED BY:	DATE:
WJR		5/22/92

Table 6.1
List of Facilities With The Potential For the Presence of Hazardous Materials

Site No.	Address		Year First Occupied	Business Name in First Year Listed
1)	727-729	Madison	1964	Alabama Radiator Service[3]
2)	629/637	Madison	1951	Jim Massey Cleaners[3]
3)	601	Madison	1946	Parker Service Station[1,2]
4)	503	Madison	1946	Jones Service Station[1,2]
5)	423/433	Madison	1946	Hughey Service Station[1,2]
6)	213	Madison	1946	Parker Sno-White Cleaners[3]
7)	201/205	Madison	1946	Henderson Service Station[1,2]
8)	121/131	Madison	1946	Track Side Gas Station[1,2]
9)	800	Madison	1974	Madison Exxon[1,2]
10)	502	Madison	1961	Frasier Tire Service[2]
11)	420/432	Madison	1946	Lane's Service Station[1,2]
– 12)	400	Madison	1946	Madison Ave. Dry Cleaners[3]
– 13)	320/330	Madison	1947	Madison Ave. Cleaners[3]
14)	318	Madison	1955	Madison Auto Car Wash[1]
15)	300	Madison	1946	Gulf Service Station[1,2]
16)	200-202	Madison	1946	Standard Service Station[1,2]
17)	120/132	Madison	1946	Goree Tire and Battery[1,2,3]
18)	118	Madison	1946	Spencer Auto Repair[1,2,3]
19)	401	Monroe	1988	Davis Cleaners[3]
– 20)	319	Monroe	1946	Swift and Co.[1]
21)	221	Monroe	1951	Carr & Barton Filling Station[1,2]
22)	217-219	Monroe	1947	Montgomery Fair Filling Station[1,2]
23)	118-120	Lawrence	1957	Alabama Radiator Service[3]
24)	20	Hull	1954	State Agricultural Greenhouse[3]
– 25)	322	Monroe	1963	Sheehan-Loren Auto Repair[1,2]
26)	310	Monroe	1963	Merrett Auto Electric & Brake[2]
27)	23	McDonough	1955	Parking Lot/Public Transfer[1]
28)	323/351	Dexter	1946	Dexter Ave. Pan-Am Service Sta.[1,2]
29)	317/341	Dexter	1946	Paramount Cleaners[3]
30)	217/237	Dexter	1946	Loo Sing Laundry[3]
31)	10	Lawrence	1946	City Cleaners[3]
32)	400/408	Dexter	1946	Goolsby Service Station[1,2]

Potential Contaminants:

[1] Underground Storage Tank

[2] Hydraulic Lift

[3] Solvents, other chemicals, metals

SECTION 7 CONCLUSIONS AND RECOMMENDATIONS

The Phase I - Environmental Site Assessment Program conducted by CWA recognized 32 separate facilities, on or in the vicinity of the properties for which the assessment was performed, that have the potential for the presence of hazardous materials on or beneath the ground surface. The 32 facilities included gasoline service stations, various automobile repair centers, private underground storage tank locations and clothes cleaners which typically use solvents in their cleaning processes. Of those 32 facilities, 21 facilities are located on adjacent properties not directly included in the assessment program. Eleven (11) of the facilities recognized are or were located on the properties for which this assessment was performed. Only four (4) of the facilities recognized are currently located on the properties and show visual indications of the potential for the presence of hazardous materials on or beneath the ground surface. The other eight (8) facilities which were located on the properties no longer show visual indications of the potential for the presence of hazardous materials.

The Phase I - Environmental Site Assessment Program conducted by CWA recognized 34 buildings which had the potential for the presence of hazardous materials associated with the buildings located on the properties. Thirty-three (33) of those buildings contained construction materials which are considered suspect for the presence of asbestos containing building materials (ACBMs). Three (3) of those buildings were found to contain solvents which may simply be removed from the buildings prior to demolition activities. There is minimal potential for the presence of leaded paints, polychlorinated biphenols (PCBs) or radon in any of the buildings. Appendix A is a report generated by Sain Engineering Associates (SEA) which discusses the specific results of the building inspections. That report was issued on May 15, 1992, prior to gaining access to Road-Mart, located at 502 Madison Avenue.

Three (3) suspect ACBMs were found at that location on May 22, 1992, being the floor and ceiling tiles and wall plaster.

It is our understanding that RSA's primary concerns were with those properties with visual indications of the potential for the presence of hazardous materials and that additional investigations should be directed toward those specific facilities. Those facilities include the buildings which were determined to have the potential for the presence of ACBMs, three (3) facilities on which hydraulic lifts are located and one (1) facility at which there was a visual indication that underground storage tanks are, or were, located. Toward the accomplishment of that goal, The CWA Group, Inc. recommends that a Phase II - Environmental Site Assessment Program be undertaken to collect materials samples from those buildings determined to have the potential for the presence of ACBMs and have those samples analyzed for the presence of asbestos and to collect soil samples from the ground surface and beneath the ground surface from those four (4) facilities which had visual indications of the potential for the existence of hazardous materials on or beneath the ground surface and have those samples analyzed for the presence of petroleum hydrocarbons. A proposal for these Phase II - Preliminary Environmental Assessment services will be issued under separate cover.

APPENDIX A

SAIN ENGINEERING ASSOCIATES
SUMMARY REPORT OF
PHASE I ENVIRONMENTAL SITE ASSESSMENT

SUMMARY REPORT
of
PHASE I ENVIRONMENTAL SITE ASSESSMENT
May 15, 1992
by
Sain Engineering Associates

GENERAL

On May 12th & 15th, Steve Sain of Sain Engineering Associates and Tommy Reid of CWA Group physically inspected 7 parcels of land (defined herein as "blocks") containing a total of 52 facilities within their respective boundaries in downtown Montgomery, Alabama. Most of these facilities are at least 40 years old and are/were used as either retail businesses or office buildings. All but 2 buildings are constructed of standard masonry exteriors with either masonry or wood support structures. Several sections/buildings are presently unoccupied.

The primary function of this site assessment is understood to be a due diligence attempt to discover any air pollutants &/or hazardous materials used as construction materials in these buildings which may present a pollution &/or safety concern in the event any of these buildings are demolished. In light thereof, the primary material of focus during these inspections is asbestos, in that, the National Emissions Standard for Hazardous Air Pollutants (NESHAPs) requires that asbestos containing building materials (ACBMs) be removed prior to demolition.

Of the 52 facilities targeted for inspection, only 5 buildings were not physically accessed. Additionally, 12 buildings in block #6 were deemed to be assessed by the City of Montgomery. Aside from these exclusions, this report will summarize the asbestos &/or hazardous materials found in these buildings.

ASBESTOS

Approximately 150 *suspect* ACBMs were found. All but 31 of these materials are either nonfriable flooring, ceiling tiles or roofing materials. In order to accurately determine if these *suspect* ACBMs actually contain asbestos, polarized light microscopy analysis is recommended for approximately 184 material samples.

HAZMATS

No apparent lead based paint was discovered. Similarly, all electrical power transformers feeding these buildings were exterior to the properties, and all lighting fixtures/ballasts appeared &/or are labeled as standard, non-PCB containing. Therefore, no PCB hazards were found. Also, basements were found to be in relatively good structural condition and well vented which virtually eliminates the probability of a radon gas hazard. Dagostina & Angelini Bros. Tile Co. in block #3, Montgomery Import Car Center in block #5, and Wright's Automotive also in block #5 have a minor amount of solvents stored on premises. These solvents are actively corrosive (labeled as such) and should be removed and properly restored prior to demolition.

CONCLUSION

As a result of these findings, a *Phase II Environmental Site Assessment* is correspondingly recommended. Data sheets which display a detailed account of findings on a per building basis are attached for reference.

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Various Buildings
Montgomery, Alabama
May '92, Page 1 of 3
Sain Engineering Associates

		SUSPECT ASBESTOS CONTAINING MATERIALS					SUSPECT HAZMATS			SAMPLES	
Address	**Tenant / Use**	**FT**	**CT**	**Insulation**	**Surfacing**	**Miscellaneous**	**LBP**	**PCB**	**Radon**	**ACBMs**	**HazMats**
BLOCK #1 *(Ripley, Monroe, Union & Madison, to be Union Office Building)*											
725 Monroe	Lurleen Wallace Museum	-	-	-	-	Shingle Roof	-	-	-	2	-
702 Madison	Vacant Office	No Access									
740 Madison	Vacant Office	1	1	-	-	-	-	-	-	4	-
744 Madison	State Employees Insurance Board	-	2	-	Wall Plaster	Transite O'hang	-	-	-	6	-
BLOCK #2 *(Bainbridge, Monroe, Decatur & Madison, to be State Office Building Parking Deck)*											
502 Madison	Road Mart Tire Store	No Access									
512 Madison	Signs in Seconds	1	1	-	-	Shingle Roof	-	-	-	4	-
BLOCK #3 *(Hull, Monroe, McDonough & Madison, to be Energy Plant)*											
315 Monroe	Dagostina & Angelini Bros. Tile Co.	3	3	-	-	Transite Cylinder	-	-	-	9	-
313 Monroe	Electrical Contractor's Office	1	-	-	Ceiling Finish	-	-	-	-	4	-
BLOCK #4 *(McDonough, Monroe, Lawrence & Madison, to be Tower Office Building)*											
227 Monroe	State ABC Store	2	1	-	Troweled Display	Transite O'hang	-	-	-	5	-
221B Monroe	Bon Cel Ver Corporation (Dr's Office)	1	1	-	-	-	-	-	-	4	-
221A Monroe	Fantasy III Unisex Salon	-	1	-	-	-	-	-	-	3	-
Madison @ Lawr.	Associates Financial Services	2	2	-	-	-	-	-	-	6	-
Madison @ McDn.	Lighting & Electrical Supply	6	2	-	Wall Plaster	Fire Rated ShtRck	-	-	-	12	-
BLOCK #5 *(Hull, Dexter, McDonough & Monroe, to be Child Care Building)*											
Hull @ Monroe	Montgomery Import Car Center	-	-	-	-	-	-	-	-	2	-
Monroe @ McDn.	Wright's Automotive	-	-	-	2 Ceiling Finishes	-	-	-	-	4	-

Abbreviations:
HazMat - hazardous material, FT - flooring tile or linoleum, CT - ceiling tile, LBP - lead based paint, PCB - polychlorinated biphenyls, ACBM - asbestos containing building material, ShtRck - sheetrock, Insul'tn - insulation

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Various Buildings
Montgomery, Alabama
May '92, Page 2 of 3
Sain Engineering Associates

		SUSPECT ASBESTOS CONTAINING MATERIALS					SUSPECT HAZMATS			SAMPLES	
Address	**Tenant / Use**	**FT**	**CT**	**Insulation**	**Surfacing**	**Miscellaneous**	**LBP**	**PCB**	**Radon**	**ACBMs**	**HazMats**
<u>BLOCK #6</u> *(McDonough, Dexter, Lawrence & Monroe, to be Judicial Parking Deck)*											
239 Dexter	Vacant Upstairs Offices	City Responsibility									
237 Dexter	Vacant Retail Store	City Responsibility									
231 Dexter	Montgomery Mortgage of America	City Responsibility									
225 Dexter	Vacant Retail Store	4	3	-	Ceiling Finish	-	-	-	-	9	-
217 Dexter	Dillaman Electronics	2	2	-	Wall Plaster	-	-	-	-	6	-
? Dexter	Tasty Burger	1	1	-	-	-	-	-	-	4	-
? Dexter	Zippers	No Access									
201 Dexter	Shakoor's Thrift Store	1	1	-	-	-	-	-	-	4	-
Lawrence @ Dex.	National-Joseph's Clothing	City Responsibility									
28 Lawrence	Davis Style Shop	City Responsibility									
? Lawrence	This 'n That Imports	City Responsibility									
? Lawrence	Lawrence Street Cafe	City Responsibility									
? Lawrence	Pekin Theater	City Responsibility									
? Lawrence	Kozy Room	City Responsibility									
216 Monroe	Mae's Beauty Shop	City Responsibility									
220 Monroe	Weaver's Furniture	City Responsibility									
238 Monroe	Dorothy's Beauty Salon	City Responsibility									
244-254 Monroe	Jones Building	No Access									

<u>Abbreviations:</u>
HazMat - hazardous material, FT - flooring tile or linoleum, CT - ceiling tile, LBP lead based paint, PCB - polychlorinated biphenyls, ACBM - asbestos containing building material, ShtRck - sheetrock, Insul'tn - insulation

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Various Buildings
Montgomery, Alabama
May '92, Page 3 of 3
Sain Engineering Associates

		—— SUSPECT ASBESTOS CONTAINING MATERIALS ——					– SUSPECT HAZMATS —			—— SAMPLES ——	
Address	**Tenant / Use**	**FT**	**CT**	**Insulation**	**Surfacing**	**Miscellaneous**	**LBP**	**PCB**	**Radon**	**ACBMs**	**HazMats**
<u>BLOCK #7</u> *(Lawrence, Dexter, Perry & Monroe, to be Commercial Property)*											
? Lawrence	Red Bell Sports Center	-	-	-	-	-	-	-	-	2	-
25 Lawrence	Salvation Army Store	1	-	-	Wall Plaster	-	-	-	-	4	-
147 Dexter	Home Furniture Co.	2	1	-	Wall Plaster	-	-	-	-	6	-
141 Dexter	Goodwill Store	1	1	-	-	Cooling Tower	-	-	-	5	-
135 Dexter	Furniture Town	5	-	3 Pipe Insul'tn	-	-	-	-	-	10	-
121-3 Dexter	Gulley's Furniture	2	2	5 Pipe Insul'tn	Wall Plaster	2 Vault Fireproofing	-	-	-	14	-
111 Dexter	Mangel's Clothing	6	1	Boiler Insul'tn	Wall Plaster	Fire Rated ShtRck	-	-	-	12	-
101 Dexter	Looking Good Clothing	1	1	-	Wall Plaster	Transite Wall Pnls	-	-	-	6	-
12 Perry	Professional Studio	-	-	-	-	-	-	-	-	2	-
14 Perry	Chesterfield Co.	1	1	-	-	-	-	-	-	4	-
16 Perry	General Finance	-	1	-	-	-	-	-	-	3	-
18 Perry	Johnson Candle & Herbs	-	1	-	-	-	-	-	-	3	-
22 Perry	Downtown Grocery	1	1	Pipe Insul'tn	-	-	-	-	-	5	-
26 Perry	Spencer's Clothing	No Access									
32 Perry	Eagle Clothing Co.	1	1	-	Wall Plaster	-	-	-	-	5	-
42 Perry	Franco Novelty Co.	-	-	-	Wall Plaster	-	-	-	-	3	-
110 Monroe	The James Store	-	1	-	Wall Plaster	-	-	-	-	4	-
? Monroe	Partially Demolished	1	-	-	-	-	-	-	-	3	-
148 Monroe	Max's Discount Jewelers	2	1	-	-	-	-	-	-	5	-

<u>Abbreviations:</u>
HazMat = hazardous material, FT - flooring tile or linoleum, CT - ceiling tile, LBP - lead based paint, PCB - polychlorinated biphenyls, ACBM - asbestos containing building material, ShtRck = sheetrock, Insul'tn = insulation

NOTE: Plat must have embossed seal f[illegible]egal conveyance
Subject to any covenants, easements, restrictions, etc. that may apply

SCALE: 1" = 50'

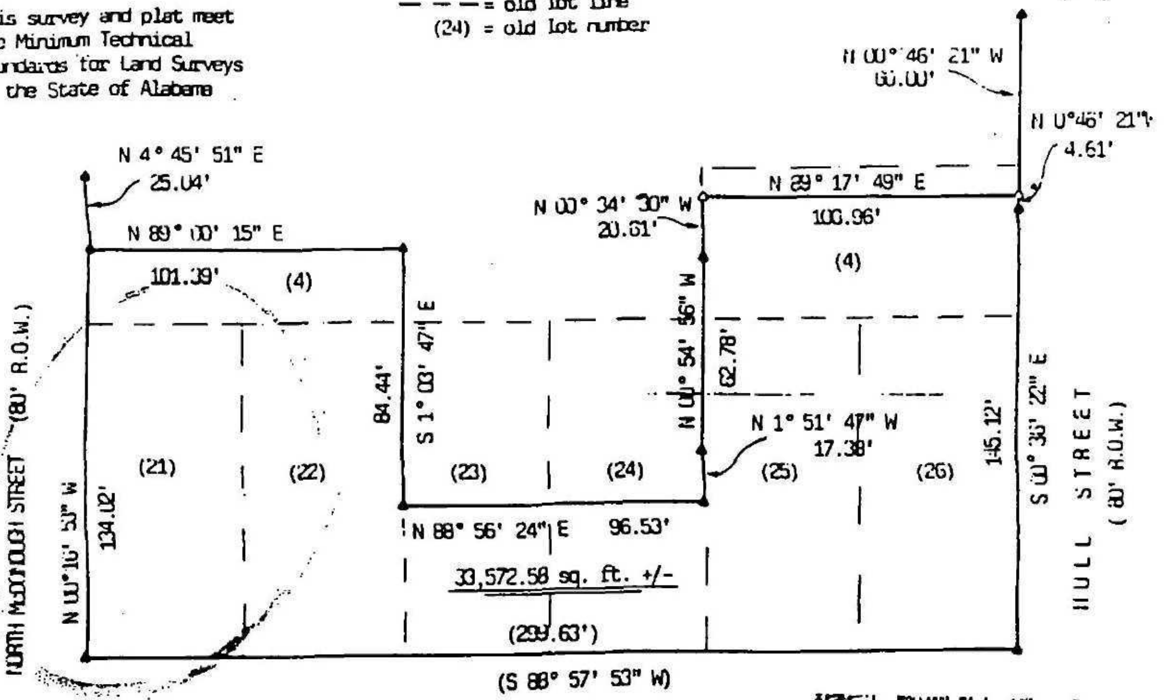
Bearing assumed from plat

LOAN SURVEY

This survey and plat meet
the Minimum Technical
Standards for Land Surveys
in the State of Alabama

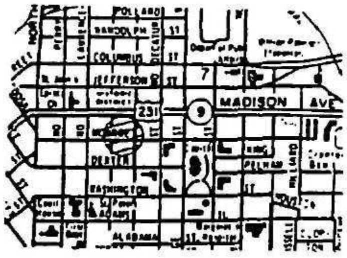
LEGEND

▲ = iron pin found
△ = iron pin set
— — — = old lot line
(24) = old lot number



Bearings and distances in parentheses are from plat; others determined by Sheffield Survey Service

I have reviewed the National Flood Insurance Program Flood Insurance Rate Map & found the described property is not in a flood plain according to map dated January 2, 1992
Community Panel No. 0110100065 F
Property located in Zone C



LOCATION MAP

STATE OF ALABAMA

COUNTY OF Montgomery

I, William C. Sheffield, Jr., a Professional

Land Surveyor, hereby certify that the foregoing is a true and correct map or plat of the following described property.

All that 0.77 acre parcel being all of lots 21, 22, 25, 26 and the South 50 feet of lots 23 and 24 lying North of Monroe Street and part of lot 4 on the East side of North McDonough Street and part of lot 4 lying on the West side of Hull Street in that part of the City of Montgomery, Alabama, formerly known as New Philadelphia and more particularly described as follows: Commence at an iron pin on the North right-of-way limits of Monroe Street and intersection of the West right-of-way limits of Hull Street; thence S 88° 57' 53" W bounded by Monroe Street a distance of 299.63 feet to an iron pin at McDonough Street; thence N 00° 16' 53" W bounded by McDonough Street a distance of 134.02 feet to an iron pin; thence N 89° 00' 15" E bounded by Madison Car Wash, Inc. a distance of 101.39 feet to an iron pin; thence S 1° 03' 47" E bounded by said car wash a distance of 84.44 feet to an iron pin; thence N 88° 56' 24" E bounded by said car wash a distance of 96.53' to an iron pin; thence N 1° 51' 47" W bounded by said car wash a distance of 17.38 feet to an iron pin; thence N 00° 54' 56" W bounded by said car wash a distance of 62.78 feet to an iron pin; thence N 00° 34' 30" W bounded by said car wash a distance of 20.61 feet to an iron pin; thence N 89° 17' 49" E a distance of 100.96 feet to an iron pin situated on the west right-of-way limits of Hull Steet; thence S 00° 36' 22" E bounded by Hull Street a distance of 165.12 feet to the point of beginning, containing 0.77 acres (33,572.58 square feet) more or less.

I further certify that the buildings now erected on said property are within the boundaries of same; that there are no encroachments by buildings on the adjoining property; and there are no rights-of-way, easements, or joint driveways over or across said land visible on the surface of the ground; there are no electric or telephone wires (excluding wire which serve the premises only) or structures or supports therefor including poles, anchors and guy wires on or over said premises, except as shown. The property is not within a flood plain and: that the correct address is ________
Alabama, the property of ________

According to my survey this the 20th day of January, 19 92

Sheffield Survey Service, Inc.
30-D Gaylan Court Montgomery, AL 36109
Phone: (205) 272-1996

Ala. Reg. No. 9044

ATTACHMENT 3

Construction Testing & Engineering, Inc.

FILE

September 20, 1993

PH&J Architects, Inc.
P.O. Box 215
Montgomery, Alabama 36101

Attn: Mr. Terry Chesnutt

Ref: Environmental Investigation, Chiller Building
RSA Tower Project

Dear Mr. Chesnutt:

As you are aware, CTE has been involved in the investigation of the environmental problem at the northeast corner of the Chiller Project Site. On September 14, I met with Mr. Steve Maurer with the RCRA Compliance Branch of the Department of Environmental Management. We discussed our concerns and gathered samples at the site. A copy of the environmental assessment was forwarded to his office for review. It was determined that the site contamination occurred possibly in the 1940 time frame, prior to RCRA compliance laws. The file has now been transfered to Mr. Dan Cooper of the Special Projects Office at ADEM.

As we have stated on occasion, it is difficult to quickly move things through ADEM's offices due to the amount of paperwork and the volume of various projects they deal with daily. This letter basically notifies you that we will have some time constraints in the efficient solution of the contaminated soils at the Chiller site. I intend to call daily until Mr. Cooper resolves the issue and gives guidance on the proper disposal of the soils. It might be prudent for Mr. Ron Blount to consider any contacts he has with ADEM to expedite the regulatory process.

2821
Chestnut Street
Montgomery
Alabama
36107
(205) 834-4719
P.O. Box 6325
36106

CTE appreciates this opportunity to be of continued service to PH&J and RSA. Please call if you have additional questions which we can offer assistance with.

Very truly yours,
Construction Testing and Engineering, Inc.

Jerry W. Gilbert, P.E.
President

JWG/enl

cc: Mr. Ron Blount

ATTACHMENT 4

COPY

9/20/93

RETIREMENT SYSTEM CONSTRUCTION SITE
(Site Investigation Report)

On September 20, 1993, Jymalyn Redmond, Jake Hall, and Jerremy Stamps, visited the Retirement System Construction site, at the corner of Monroe and McDonough Street, in Montgomery, Alabama.

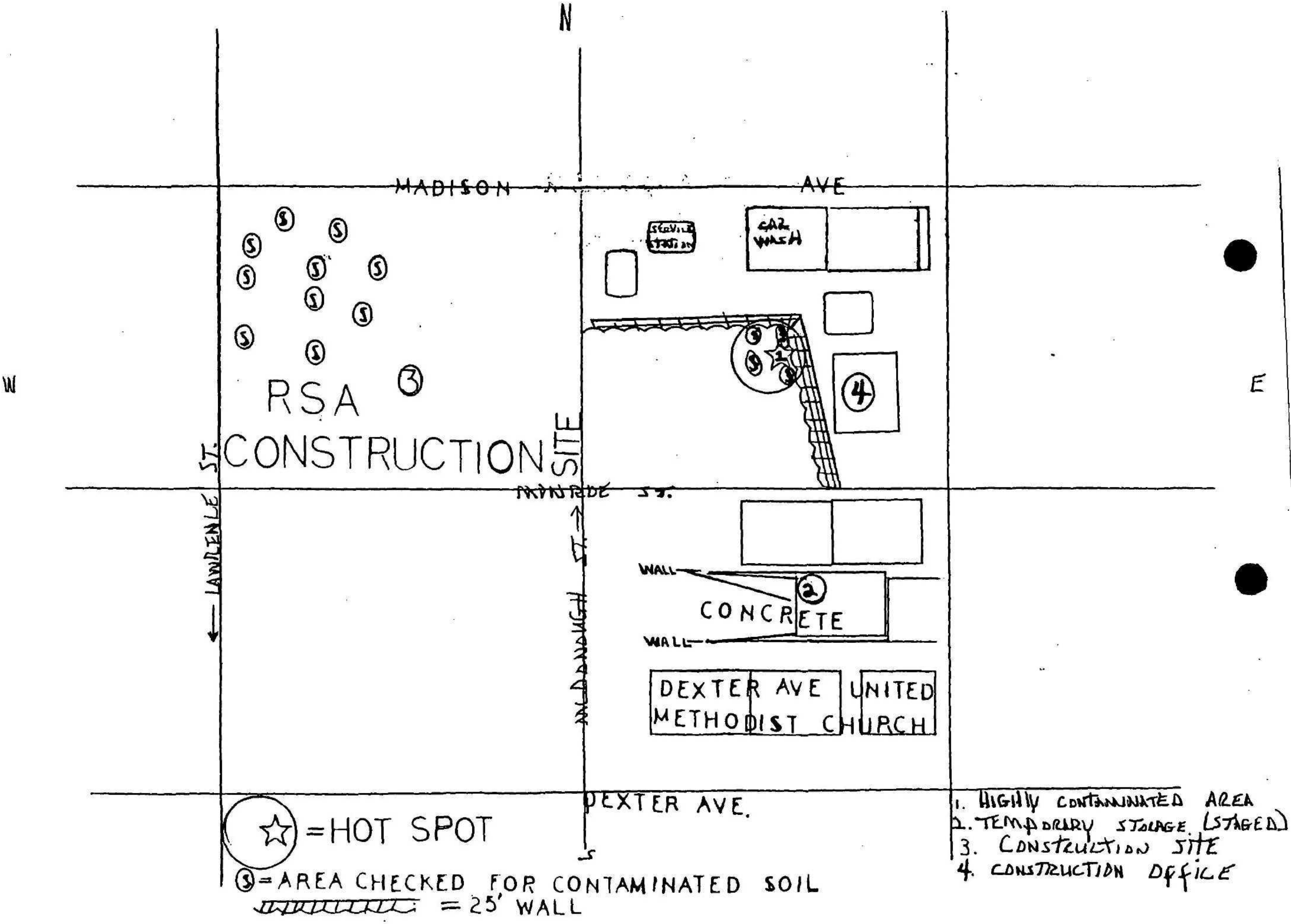
The ADEM personnel met with Mr. Jerry W. Gilbert, P.E., President of CTE Environmental, Inc., 2821 Chestnutt St, Montgomery, AL, 36107, (205) 834-4719 and Mr. Terry Chestnutt of PH & J Architects, Inc., 807 S. McDonough St., Montgomery, AL, (205) 265-8781.

The ADEM personnel viewed the N. E. corner of the site, thought to be contaminated with high levels of Tetrachloroethylene (dry cleaning fluid). The Hot Spot was found by workers approximately 25 ft. down, on 9/16/93.

Mr. Gilbert, Mr. Chestnut, and Mrs. Redmond, discussed temporary storage of the contaminated soil. The 1st option: Wrap the contaminated soil in plastic, top to bottom, on a concrete slab across the street. The 2nd option: The loading of the soil directly onto trucks for immediate transport for disposal at an approved disposal facility (Map and chemical characterization are attached).

The Hot Spot and construction site were checked with the Photoinoization Analyzer. High levels were found at Hot Spot and very low levels were found on the construction site.

JH/tpc


N
W
E
MADISON AVE
SERVICE STATION
CAR WASH
RSA CONSTRUCTION SITE
3
4
1
LAWRENCE ST.
MONROE ST.
McDONOUGH ST.
WALL
CONCRETE
2
WALL
DEXTER AVE UNITED METHODIST CHURCH
DEXTER AVE.
=HOT SPOT
S=AREA CHECKED FOR CONTAMINATED SOIL
= 25' WALL
1. HIGHLY CONTAMINATED AREA
2. TEMPORARY STORAGE (STAGED)
3. CONSTRUCTION SITE
4. CONSTRUCTION OFFICE

ATTACHMENT 5

cte environmental

October 4, 1993

FILE

The Retirement Systems of Alabama
321 Monroe Street
Montgomery, Alabama 36130

Attn: Mr. Harrell Copeland

Ref: Environmental Soil Removal,
RSA Chiller Site, Monroe Street
Montgomery, Alabama

Dear Mr. Copeland;

Per our conversation, I am forwarding you the names and phone numbers of the individuals involved with the Chiller Building soil removal which is tenatively scheduled for Saturday, October 9, 1993. The excavation and hauling company is ADEM approved and permitted for temporary storage of the soils at their location. An ADEM approval list is attached for your information.

Structural Design	Spencer, White, and Prentice Foundation Corporation Mr. Joe Mastrocinque 703-451-0577/ 703-451-9123 FAX
Excavation Contractor	Mr.Stan Wood 205-744-8440
Licensed Transporter	Mr. Robbie D. Wood, Jr. 205-744-8440
Disposal Permit to Chem. Waste Management Emille Landfill	CTE Environmental Mr. Jerry McCain, P.E. 205-834-4719

CTE Environmental greatly appreciates this opportunity to provide our services for this project. Should have any questions concerning these contractors, please do not hesitate to give us a call.

Very truly yours,

Jerry W. Gilbert, P.E.
President

2821
Chestnut Street
Montgomery
Alabama
36107
(205) 834-4719
P.O. Box 6325
36106

ATTACHMENT 6

9074

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Leigh Pegues, Director

Jim Folsom
Governor

Mailing Address:
PO BOX 301463
MONTGOMERY AL
36130-1463

hysical Address:
1751 Cong. W. L.
ickinson Drive
ontgomery, AL
36109-2608

205) 271-7700
AX 271-7950
270-5612

ield Offices:

10 Vulcan Road
irmingham, AL
5209-4702
205) 942-6168
AX 941-1603

00 Well Street
.O. Box 953
ecatur, AL
5602-0953
05) 353-1713
AX 340-9359

204 Perimeter Road
obile, AL
6615-1131
05) 450-3400
AX 479-2593

October 6, 1993

OCT 1993
ADEM
SPECIAL PROJECTS

MEMORANDUM

TO: Dan Cooper, Chief
Special Projects Branch

FROM: Rusty Kestle, Geologist
Groundwater Branch

RE: RSA Building Site Evaluation, Montgomery, AL

SUMMARY

On 9/29/93 a site investigation was conducted at the request of Jymalyn Redmond in Special Projects. The purpose of this investigation was to determine the source of tetrachloroethylene soil contamination which was discovered during the construction of the basement of the physical plant for the RSA building. Historical records showed that there had been several dry cleaning operations in the immediate vicinity and these were thought to be a possible source. The contamination was discovered in the northeast corner of the excavation at a depth of approximately twenty feet, which would indicate the edge of a plume that had traveled from off-site. During the on-site investigation, a sewer manhole was found to be located just off of the northeast corner of the RSA property. Further investigation revealed strong solvent odors coming from the manhole. The owner of an adjacent car wash informed us that the only discharge into the sewer at that point was the wastewater from his auto detailing shop. An investigation is now in progress to determine the nature of this wastewater and the possibility of its release from the sewer.

LOCATION

The RSA building physical plant site is located in the Northeast 1/4 of the Southwest 1/4 of section 7, Township 15 North, Range 17 East, Montgomery North, Alabama 7.5 Topographic Quadrangle. The site can be accessed at the corner of Monroe and Hull streets in downtown Montgomery.

HYDROGEOLOGY

The major aquifers in Montgomery County are, in descending order, the Eutaw aquifer, the Gordo aquifer, and the Coker aquifer.The RSA site excavation is located in the Eutaw formation, and the local appearance of this formation was observed in the walls of the excavation. It is a mottled red/grey sandy clay with some lenses of light brown colored sand. The sand lenses vary in size and lateral extension, but generally appear to be the main conduits of contamination (based on field photoionization detector readings). The clay zone appeared to have the highest concentrations of VOCs. The underlying sandy zone did not detect significant VOCs.

Other observations at the site included drive pilings that had been installed in boreholes and were filled with formation sand. These boreholes have penetrated clay confining units within the Eutaw aquifer. Vertical migration of contaminants trapped in the clays may be enhanced by these structures.

AREA GROUNDWATER USE

There is a large amount of groundwater pumped on a daily basis in the vicinity of this site. The total maximum groundwater pumpage for Montgomery is more than 30 Mgal/d (USGS, 1987). A few municipal wells in the Montgomery North Well Field are screened in the Quaternary Alluvium deposits along the Alabama River and the underlying Eutaw Formation, which is hydraulically connected with the alluvium (USGS, 1987). The Eutaw aquifer and the Quaternary Terrace deposits were observed at the site and are both highly susceptible to contamination from the surface.

Review of Groundwater Branch records and discussion with Keith Yarborough of the Montgomery Public Works indicated that fifteen wells are in use in the Montgomery North Well Field. Five of these wells are shallow (screened at 70 to 74 feet). There is also a 79 foot well which is not in use due to the detection of tetrachloroethylene.

CONCLUSIONS AND RECOMMENDATIONS

Soil borings into the floor and sides of the excavation are necessary to delineate the vertical and lateral extent of the soils contamination. Also, water samples should be taken from the borings where the water table is reached. If it becomes evident that this is a widespread contamination, it may become necessary to install monitoring wells to determine extent of groundwater contamination and to find the source.

cc: Jymalyn Redmond

TO: Jeremy Stamps
Special Projects

FROM: Rusty Kestle
Hydrogeology Unit

SUBJECT: RSA Building Well Survey

Here is a list of wells that are located in the RSA building area.

Owner	Address	Depth of Well
Aronov Realty	520 S. Court St.	one 70' and three 30'
Capital City Laundry	1001 Madison Ave	300'
James Parker	6282 Thach Rd	150'
Rubber House	2733 Gunter Park	150'
Richard Kohn	3444 Wildwood Dr	120'
Barry Gager	4565 Chryston Rd	120'
Alan Wonell	3326 Boxwood Dr	100'

Capital City Laundry is the only well in area

262-5286 - Corner of Decatur & High Street

FEB 1994
ADEM
SPECIAL PROJECTS

ATTACHMENT 7

RSA™

(Mailing Address)
P. O. Box 302150
Montgomery, Alabama 36130-2150
(Office Location)
135 South Union Street
Montgomery, Alabama 36104-0001
Telephone: (205) 832-4140

The Retirement Systems of Alabama

October 26, 1993

Ms. Jymalyn E. Redmond, Chief
Site Assessment Unit
Alabama Department of
Environmental Management
P. O. Box 301463
Montgomery, Alabama 36130-1463

Dear Ms. Redmond:

This is in response to your letter dated October 21, 1993 and will confirm your authorization for the Alabama Department of Environmental Management to collect soil boring samples on Retirement System property in the block bounded by Monroe, McDonough, and Hull Streets in downtown Montgomery. Mr. Charles Humphries of PH&J Architects will serve as the contact person on behalf of our department. Please let me know if I can be of additional assistance.

Sincerely,

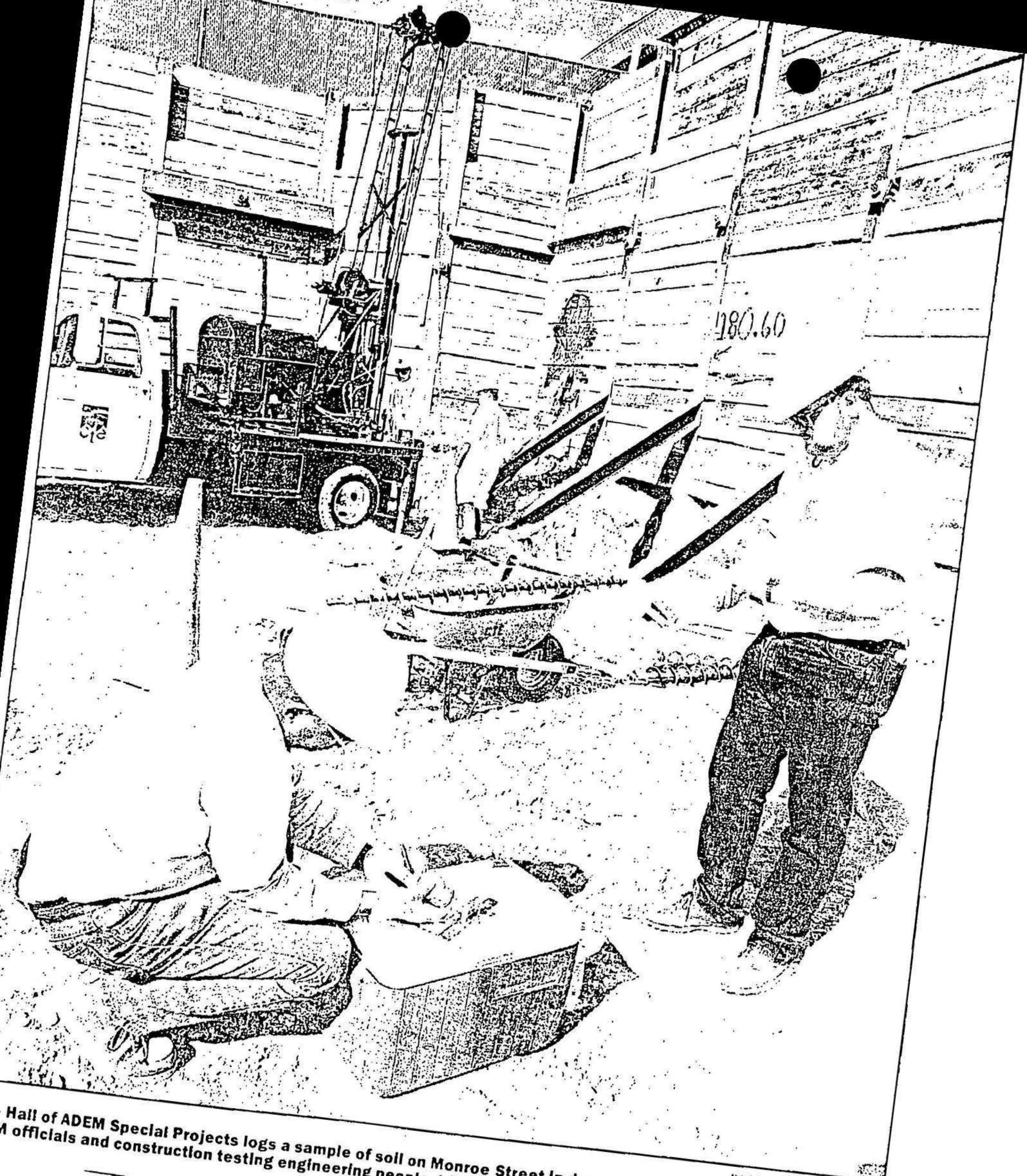
Marcus H Reynolds Jr

Marcus H. Reynolds, Jr.
Retirement Executive

MHR/go

OCT 1993
ADEM
SPECIAL PROJECTS

ATTACHMENT 8



PATRICIA MIKLIK STAFF

Hall of ADEM Special Projects logs a sample of soil on Monroe Street in downtown Montgomery on Tuesday.
M officials and construction testing engineering people drill for more samples in the background.

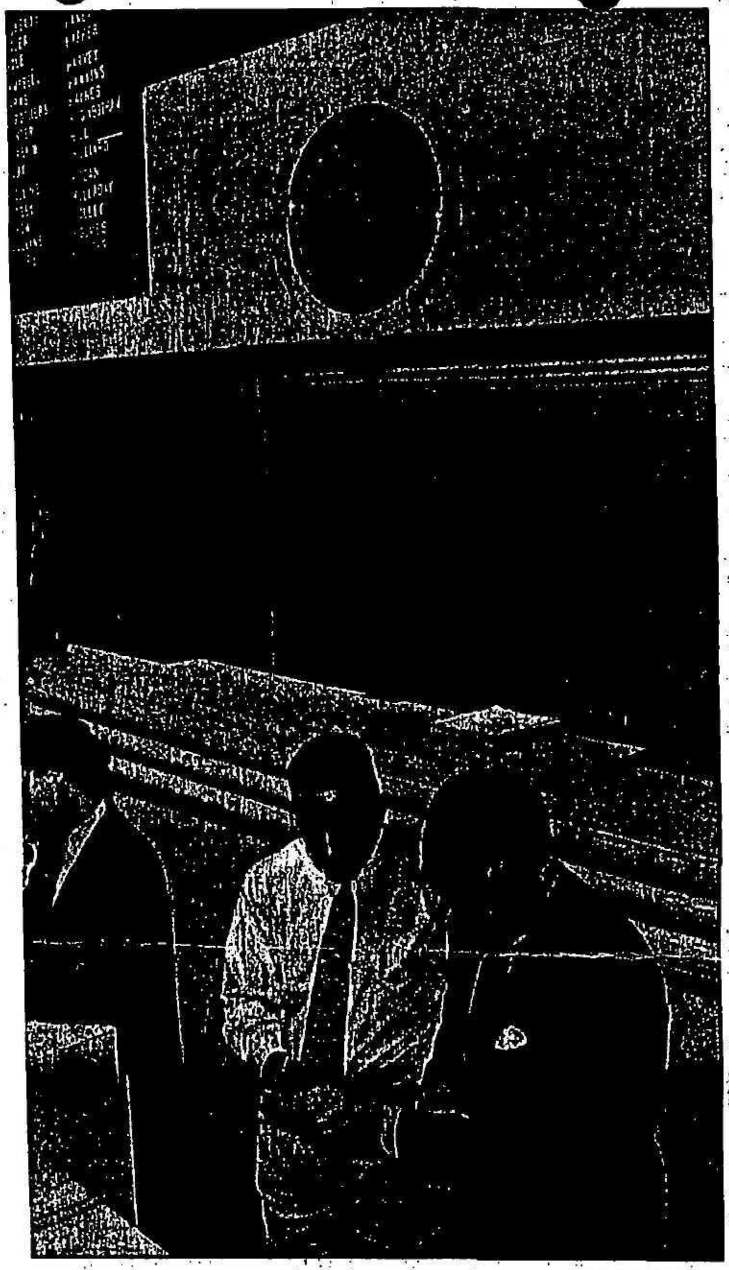
ATTACHMENT 9

pe that this will put this until the next census or

cluded Alabama's first majority black district and led to the election of Rep.

state Legislature adopted an approved plan to replace it.

1-11-94



MICKEY WELSH STAFF

ls Monday in preparation of the start of the regular session of the
Pappas, clerk of the House; Don Ladner, assistant clerk of the
of the House; and Porter Banister, assistant bill clerk of the House.

he would hold off on pushing these bills to a committee for a few more weeks, however.

"I won't push these until we have had a meeting with Mercedes-Benz on Jan. 18," he said.

Finally, church-and-state separatists may join the debate on a measure prefiled by Rep. Bill Fuller, D-Lafayette, exempting the Holy Bible "and similar books commonly recognized as being Holy Scripture" from sales and use taxes.

ADEM withholds test results

By Katherine Bouma
ADVERTISER STAFF WRITER

The Alabama Department of Environmental Management isn't ready to reveal how much downtown Montgomery soil is toxic three months after the discovery of contaminated dirt at a Retirement Systems of Alabama project.

"I cannot determine whether RSA has been informed of the results," said ADEM spokesman Clark Bruner. "Until I can, I can't really release this."

Both of the employees working on the project were out of the office Monday, he said.

Last week, he said the results could be released by the end of the week, after ADEM Acting Director Jim Warr saw them.

Mr. Bruner said more testing must be done to determine the extent of the contamination. One round of soil sampling is complete.

The first tests were scheduled to sample borings from the four-block area bordered by McDonough, Monroe, Decatur and Jefferson streets,

"There is not an immediate health threat, for a number of reasons," Mr. Bruner said. "It's not anything that citizens can come in contact with."

Last fall, workers discovered perchloroethylene 20 to 25 feet below ground at a Monroe Street construction site, It is trapped in a pocket distant from both the ground water and the surface, an ADEM spokeswoman has said.

The chemical was found in concentrations 750 times higher than health-related guidelines allow.

It is thought to be dangerous only if touched or inhaled. Effects include skin and eye irritation, kidney and liver damage and cancer. It is not flammable.

The toxic solvent is used in dry cleaning, degreasing certain machinery and manufacturing fluorocarbons.

At the time, ADEM officials said they suspected it had traveled to the RSA site from somewhere else.

Sides agree on center's demise

ATTACHMENT 10

ADEMNews

ALABAMA DEPARTMENT
OF ENVIRONMENTAL MANAGEMENT ... FOR IMMEDIATE RELEASE!

Alabama Department
of Environmental Management
1751 Cong. W.L. Dickinson Drive
Montgomery, Alabama

Mailing Address
P.O. Box 301463
Montgomery, Alabama 36130-1463

James W. Warr
Director

ADEM DATA IDENTIFIES GROUNDWATER CONTAMINATION AT DOWNTOWN MONTGOMERY SITES

JAN. 12, 1994

Groundwater contamination from a commonly used dry cleaning and degreasing solvent has been identified in an area of downtown Montgomery (four-block area bordered by McDonough, Monroe, Decatur and Jefferson streets) based on test results completed recently by the Alabama Department of Environmental Management.

The samples, collected from ground water monitoring wells, identified tetrachlorethylene levels (perchloroethylene) as follows: well located behind the City of Montgomery Visitors' Center on Madison Ave., 18.7 parts per billion (ppb); well located in parking lot between Firestone on Madison Ave. and Charlie's AAA Produce on McDonough, 61.7 ppb. An additional sample collected from a temporary well located in the RSA Chiller Plant excavation site contained 607 ppb of tetrachlorethylene. Environmental standards which apply to groundwater pollution are the maximum contaminant levels (MCLs) established by the Safe Drinking Water Act. The MCL for tetrachlorethylene is 5 ppb.

According to ADEM Director Jim Warr, "These levels are high and this matter is being given priority, however we have no indication that this contamination would adversely affect people living and working in the area."

ADEM initiated the investigation as a result of reports from Retirement Systems of Alabama (RSA) officials in October that workers at its Monroe Street construction site, the proposed location of the physical plant to serve RSA Towers, noticed a distinct odor when excavation at the site reached 20-25 feet in depth. Soil tests at the construction site revealed an isolated patch of soil, in the northeast corner of the excavation, containing perchloroethylene at levels in the

(Continued)

range of 7,500 parts per million (ppm). Health related guidelines require that soil concentrations for this pollutant not exceed 10 ppm.

Subsequently, RSA removed contaminated soil at the site. Further soil samples in the vicinity of the RSA site did not detect contamination.

ADEM contracted with ATEC, an environmental consulting firm, in October to conduct an environmental assessment. Work did not begin until Nov. 29 due to delays caused by inclement weather and in securing access authorization from some out-of-state property owners. All soil and groundwater sampling was completed in December.

The assessment included analyzing 25 soil samples at five foot intervals at five different locations for tetrachlorethylene and other volatile organic compounds. All 25 samples were below detection limits for all of these compounds. Monitoring wells were subsequently installed at two locations at a depth of approximately 60 feet and groundwater samples collected and tested for VOCs. With the exception of tetrachlorethylene, levels for other volatile *compounds were below detection.*

In cooperation with ADEM, RSA contractors will install another monitoring well in the vicinity of the corner of Hull St. and Monroe Ave. to gather more data on ground water flow. This determination, a significant component of the investigation, should assist in defining the plume of contamination.

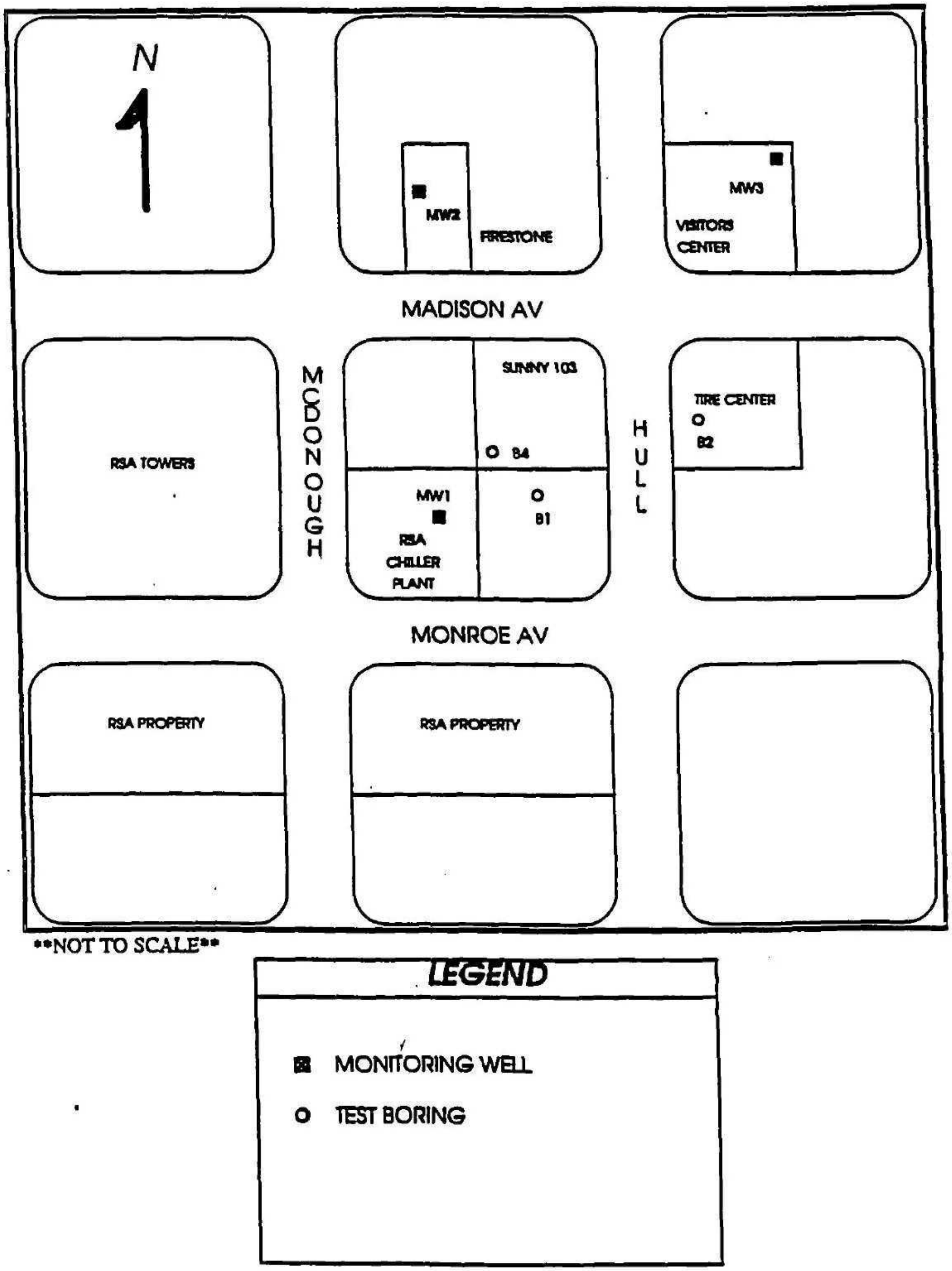
As a part of the investigation, ADEM geologists and Special Projects personnel have reviewed historical records on the area which indicate the possibility that the contamination may have traveled from off-site. A number of facilities with the potential to generate the solvent, some of which have been closed more than a decade, either currently operate in the vicinity or did so in the past. These include service stations, dry cleaners, and car washing and automotive repair operations.

Perchloroethylene is classified as a hazardous waste. It volatilizes easily and can cause dizziness, sleepiness and headaches at levels in the range of 100 to 200 ppm in air. Direct contact may irritate or burn skin and eyes. The federal Occupational Safety and Health Administration requires that levels not exceed 100 ppm for protection of workers in an enclosed area, exposed eight hours a day, five days a week. It has an ether-like odor, is extremely stable and non-flammable and is insoluble in water.

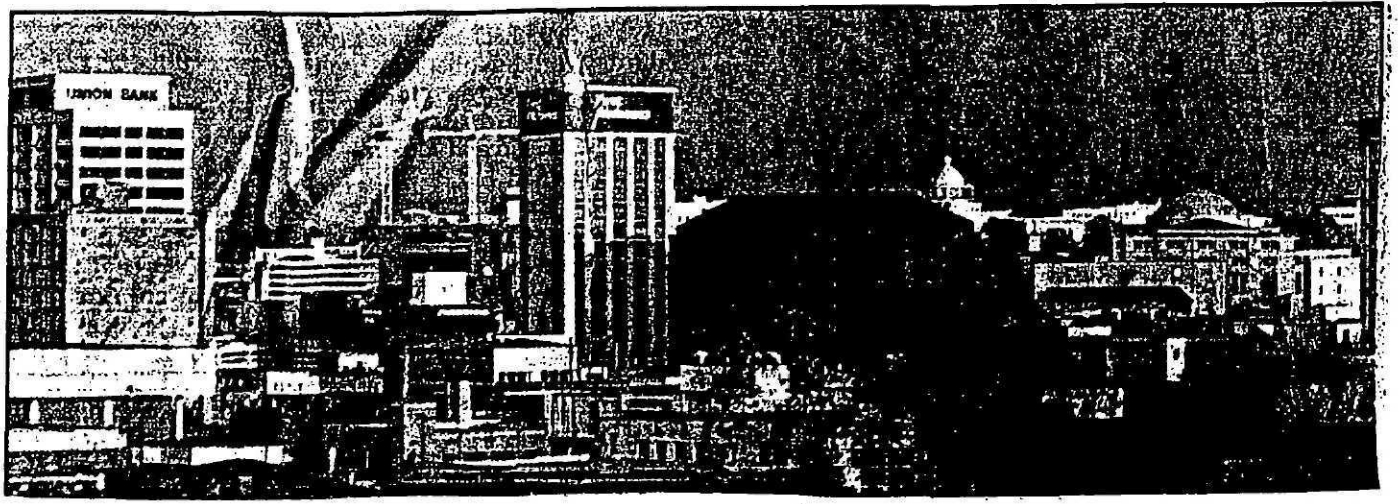
###

TABLE II

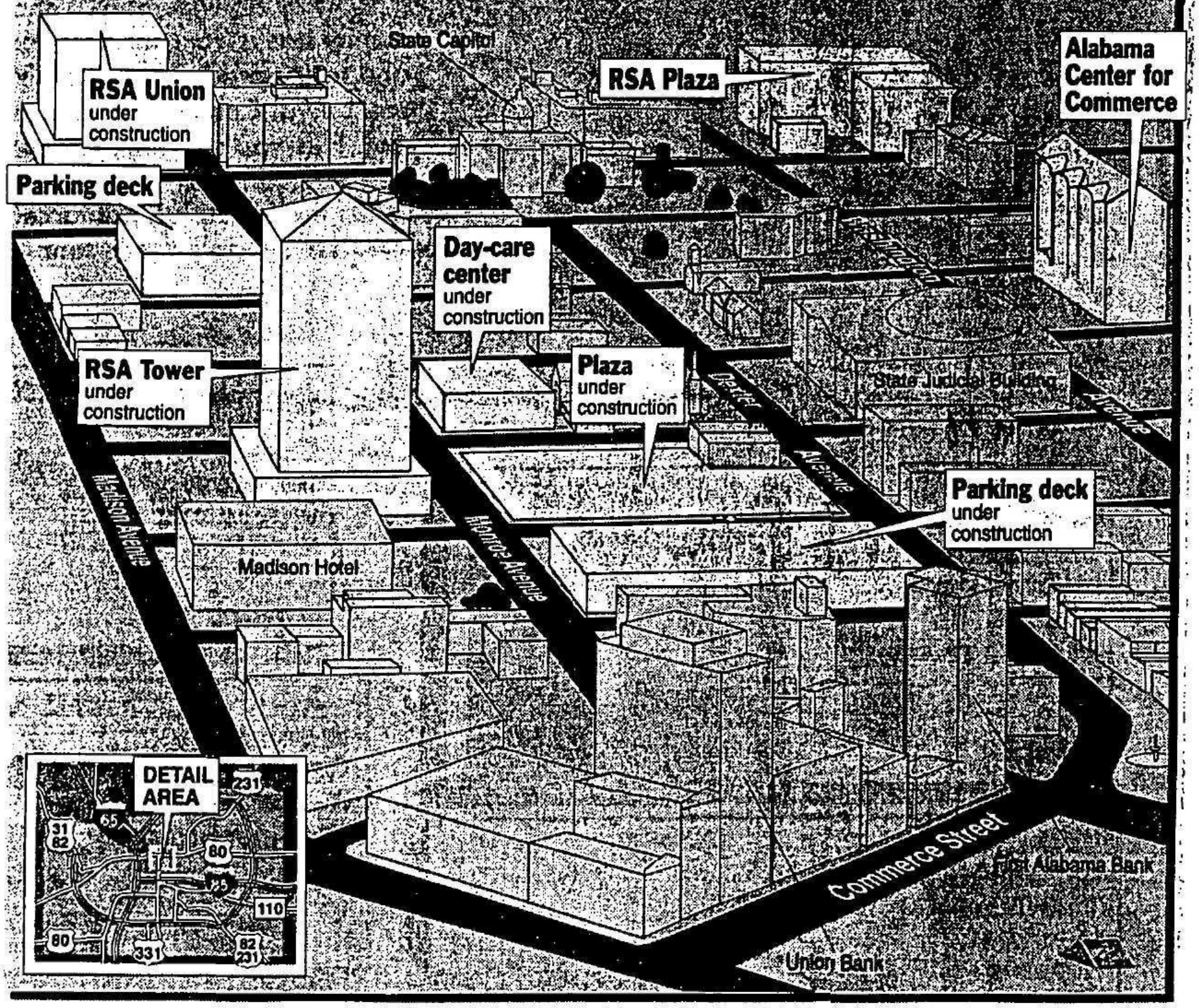
RSA SITE MAP



NOT TO SCALE



RSA's Montgomery building boom



ATTACHMENT 11

Ground water contaminated

By Katherine Bouma
ADVERTISER STAFF WRITER

Ground water a half-mile from a Montgomery drinking water well is contaminated with a cancer-causing industrial solvent, state officials said Wednesday.

For now, officials have no idea how far the contamination extends. However, the city well tested clean for the chemical last month, Montgomery Water Works and Sanitary Sewer System General Manager Buddy Morgan said.

"We're continuing to monitor it and watch it very closely and make sure there's nothing in there," Mr. Morgan said.

Three downtown wells were contaminated at levels ranging from about three to 121 times the level allowed under federal drinking water standards, said officials of Alabama Department of Environmental Management.

In October, workers on a Retirement Systems of Alabama construction project at the corner of Monroe and McDonough streets noticed an ether-like odor 20 to 25 feet below ground. ADEM soil tests found the industrial solvent perchloroethylene in levels about 750 times higher than federal health guidelines allow.

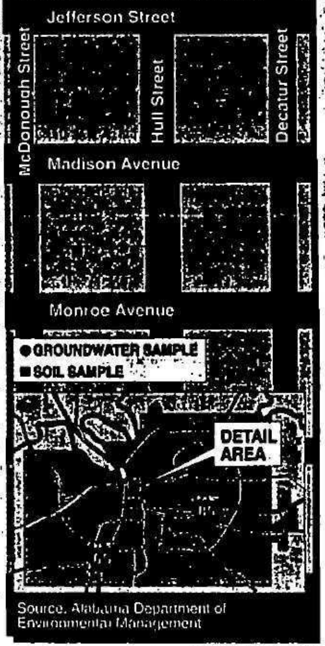
Effects of exposure to the toxic chemical include skin and eye irritation, kidney and liver damage and cancer. However, it's extremely unlikely anyone would be exposed to the chemical now, because it's underground and removed from the water supply, ADEM spokeswoman Catherine Lamar said.

"There's no opportunity for any exposure now through air, land or water," she said.

Perchloroethylene, also called

Please turn to **WATER, 4A**

Downtown groundwater contamination



Source: Alabama Department of Environmental Management

1-13-94

Montgomery Advertiser

WATER

from page 1A

tetrachlorethylene, is not flammable. However, it is extremely volatile, or likely to turn into a gas, at temperatures as low as normal summertime weather, said Jymalyn Redmond, ADEM chief of site assessment.

The chemical is one of many for which the U.S. Environmental Protection Agency requires all water works systems to monitor, Mr. Morgan said.

The toxin showed up in three monitoring wells downtown at levels of 18.7 parts of tetrachlorethylene per billion parts of water, 61.7 parts per billion and 607 parts

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ADE... scientists don't know how far the contamination extends, or the direction or speed of the ground water flow in the area, Ms. Redmond said.

Information from a fourth well Monroe and Hull streets would allow scientists to get the speed and flow of the water in the area, she said.

"We are looking for the data that will give us enough information to decide where to test next," she said.

RSA will pay for that well, she said.

ADEM also took 25 soil samples, which all tested clean, officials said.

Ms. Redmond said it's too early to guess what business generated the spill. Suspects include six or seven dry cleaners and various service stations, car washes and automotive repair businesses that have operated in the area over the past several decades, officials said.

RSA chief executive officer Da-
Bronner said work on the
lding resumed immediately af-
removing a few cubic yards of
ntaminated dirt last fall.

Ms. Lamar said ADEM's reve-
on of the test results were de-
ed in part by bad weather last
and trouble reaching out-of-
n landowners for permission
est their land. Work did not begin until about six weeks after the initial discovery of the chemical, she said.

All soil and ground water sampling was completed in December, according to a printed statement ADEM released Wednesday.

Att. 11

ATTACHMENT 12

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

James W. Warr, Director

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Governor

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November 30, 1994

TO: Jymalyn E. Redmond, Chief
Site Assessment Unit

FROM: Bonnie L. Temple, PCS
Site Assessment Unit

SUBJECT: Trip Report: Tax Assessor's Office and
Appraisal/Mapping Office
Montgomery County
Montgomery, AL

On November 29-30, 1994 I searched the records in both the Tax Assessor's Office in Montgomery City Hall and the Montgomery County Appraisal Office, Mapping Division to locate property owners and billing addresses in the vicinity of the site, RSA Towers, in preparation for sampling activities slated for December 12-13, 1994. I met with Bud Ayers, Mapping Supervisor, and Jim Widgeon for assistance.

Selected property owners and their addresses in the sampling area are attached.

BLT

Attachment

List of Selected Property Owners in the Vicinity of the RSA Towers Project

Map Number	Section Number	Name	Address
10-03-07-02-203	01	Clyde L. and Freida M. Luster	442 N. Lawrence St. Montgomery, AL 36104-2639
	11	Frank S. Schilleci	500 N. Perry St. Montgomery, AL 36104-2649
	13	Blake W. Harper, Jr. (5/8 Int) and Blake W. Harper, III (3/8 Int)	425 N. McDonough St. Montgomery, AL 36104-2642
	22	Bertie Lee Tucker	2778 Crestview Ave. Montgomery, AL 36109-2002
	36	Baker Bros. Inc.	PO Box 2954 Jacksonville, FL 32203-2954
10-03-07-02-204	17	City of Montgomery	City Hall Building Montgomery, AL 36104-0000
10-03-07-03-301	10	Richard S. Johnson	318 Madison Ave. Montgomery, AL 36104-0000
	11	Richard S. Johnson	318 Madison Ave. Montgomery, AL 36104-0000
	12& 12.02	Employees Retirement Systems of AL & The Teachers Retirement System of AL (composite name ERS)	135 S. Union St. Montgomery, AL 36130-0000
	19	Richard C. and Sharon Whitaker	6441 Wynwood Ave. Montgomery, 36117-3460
	20	Richard Carlton Whitaker	6441 Wynwood Ave. Montgomery, 36117-3460
	27	Employees Retirement Systems of AL & The Teachers Retirement System of AL (composite name ERS)	135 S. Union St. Montgomery, AL 36130-0000

Map Number	Section Number	Name	Address
10-03-07-03-301	28	Dexter Avenue Methodist Church	301 Dexter Ave. Montgomery, AL 36104-3740
	32	Kenneth B., Jr. and Barbara W. Fash	3838 Cove Dr. Birmingham, AL 35213-3802
10-03-07-03-302	10	J. P. and Betty C. Bailey	227 Madison Ave. Montgomery, AL 36104-3625
	13	Episcopal Church in the Diocese of AL Trustee for St. John's Parish	113 Madison Ave. Montgomery, AL 36104-3623

PLATES

PLATE 1

U.S. EPA REGION IV

SDMS

Unscannable Material Target Sheet

DocID: 10469682 Site ID: AL0001058056

Site Name: Capital City Plume

Nature of Material:

Map: ________ Computer Disks: ________

Photos: ________ CD-ROM: ________

Blueprints: ________ Oversized Report: ________

Slides: ________ Log Book: ________

Other (describe): Sample Locations Maps

Amount of material: ________

Please contact the appropriate Records Center to view the material.