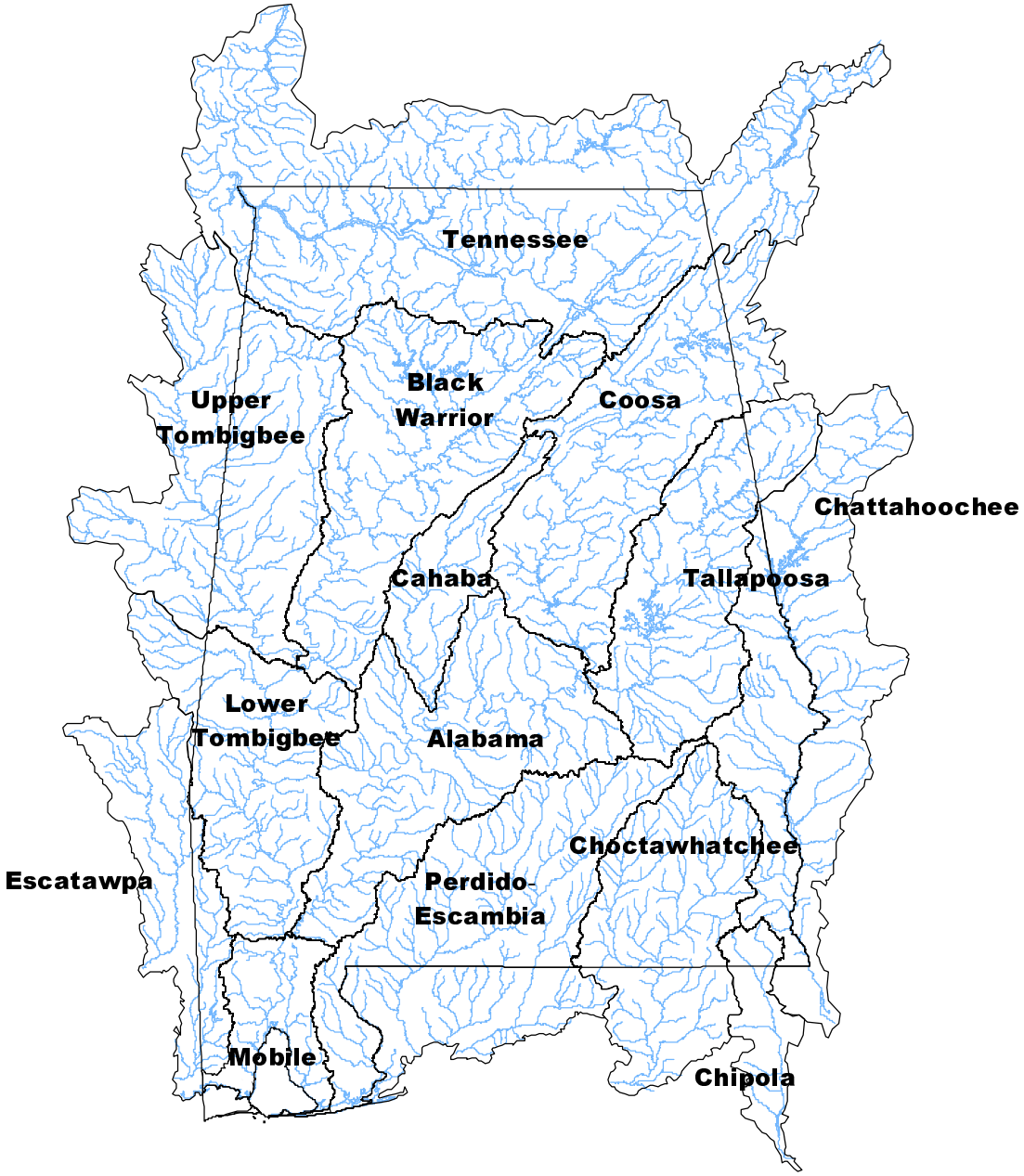
Alabama's 1998 Water Quality Report to Congress



ADEM
Alabama Department of Environmental Management
PO Box 301463 Montgomery, Alabama 36130-1463
www.adem.state.al.us

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1998 Water Quality Report to Congress

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With much appreciation to all contributors!

Alabama Department of Environmental Management
PO Box 301463 Montgomery, AL 36130-1463
www.adem.state.al.us

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List of Acronyms

A&I	Agriculture and Industry water supply use classification
AAES	Alabama Agricultural Experiment Station
ACES	Alabama Cooperative Extension Service
ACT/ACF	Alabama-Coosa-Tallapoosa/Apalachicola-Chattahoochee-Flint River Basins study
ACWI	Alabama Coastal Waters Initiative
ADAI	Alabama Department of Agriculture and Industries
ADCNR	Alabama Department of Conservation and Natural Resources
ADE	Alabama Department of Education
ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
AEEI	Alabama Environmental Education Initiative
AEMA	Alabama Emergency Management Agency
AEMC	Alabama Environmental Management Commission
AFC	Alabama Forestry Commission
AGPT	Algal Growth Potential Test
ALUS	Aquatic Life Use Assessment
ANHP	Alabama Natural Heritage Program
ASCS	Agricultural Stabilization & Conservation Service
ASMC	Alabama Surface Mining Commission
ASWCC	Alabama Soil and Water Conservation Committee
AWPCA	Alabama Water Pollution Control Act
B/H	Biological/Habitat data
BMP	Best Management Practices
CBEP	Community-Based Environmental Protection
CERS	Center for Environmental Research and Service at Troy State University
CLP	Clean Lakes Program
CNPCP	Coastal Nonpoint Pollution Control Program
CSO	Combined Sewer Overflow
CWA	Clean Water Act
DA	Drainage Area
DIZ	Discharge Information Zone for NPDES coastal permits
DO	Dissolved Oxygen
EMAP	Environmental Monitoring Assessment Program
EPA	U.S. Environmental Protection Agency
ERL-A	EPA's Environmental Research Laboratory at Athens, GA
ERL-C	EPA's Environmental Research Laboratory at Corvallis, OR
F&W	Fish and Wildlife use classification
FDA	U.S. Food and Drug Administration
FDER	Florida Department of Environmental Regulation
GIS	Geographical Information System
GPS	Global Positioning System
GDNR	Georgia Department of Natural Resources
GSA	Geological Survey of Alabama
IO	Industrial Operations
MBP	Multihabitat Bioassessment Protocol
MCL	Maximum Contaminant Level
MESC	Marine Environmental Sciences Consortium of Dauphin Island, AL
MGD	Million Gallons per Day
MOPC	Mississippi Office of Pollution Control
MOU	Memorandum of Understanding
MPSs	Hester-Dendy Multiplate Samplers

MRD	Marine Resources Division of the ADCNR
NEP	National Estuary Program
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	Superfund National Priority Listed Sites
NRCS	Natural Resource Conservation Service of the USDA
NWI	National Wetland Inventory of the USFWS
OAW	Outstanding Alabama Water use classification
ONRW	Outstanding National Resource Water designation
P/C	Physical/Chemical data
PACE	Pollution Abatement Costs and Expenditures
PCBs	Polychlorinated Biphenyls
PWS	Public Water Supply use classification
RBP	Rapid Bioassessment Protocol
RC&Ds	Resource Conservation and Development Councils of the USDA
RM	River Mile
RWC	Receiving Water Concentration
S	Swimming and Other Whole Body Water contact Sports use classification
SH	Shellfish Harvesting use classification
SM/LG	Sand Mountain/Lake Guntersville watershed study
SMZ	Streamside Management Zone
SOC	Synthetic Organic Compound
SOD/NR	Sediment Oxygen Demand/Nutrient Release studies
SOP	Standard Operating Procedures
SRF	State Revolving Fund of Alabama
SSO	Sanitary Sewer Overflow
STP	Sewage Treatment Plant
SWCD	Soil and Water Conservation District
SWCP	State Wetland Conservation Plan
TMDL	Total Maximum Daily Loads
TOT	Time-of-travel studies
TRE	Toxicity Reduction Evaluation
TSI	Trophic State Index
UAA	Use Attainability Analysis
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service of the Department of the Interior
USGS	U.S. Geological Survey
WCAMI	Wetlands Conservation and Management Initiative
WLA	Wasteload Allocation
WWTP	Wastewater Treatment Plant
VOC	Volatile Organic Compound

Introduction

The purpose of the State of Alabama's 1998 Water Quality Report to Congress is a continued effort to identify the status and recent trends of the quality of the state's waters. This biennial report is the primary document through which the EPA, the Congress, and the public evaluate Alabama's water quality and the effectiveness of statewide pollution control efforts. This report was prepared pursuant to Section 305(b) of the Clean Water Act and, to the extent possible, is organized according to the format in the EPA's Guidelines for the Preparation of the 1998 State Water Quality Assessments (305(b) Reports).

Table Intro-1 Atlas

Topics	Value
State population	4,040,587
State surface area	51,609
Number of waterbodies	14
Total miles of rivers and streams	77,274
Miles of perennial rivers/streams	47,072
Miles of intermittent (nonperennial) streams	30,170
Miles of ditches and canals	32
Border miles of shared rivers/streams	210
Number of lakes/reservoirs/ponds	7,694
Number of significant publicly-owned lakes/reservoirs/ponds	43
Acres of lakes/reservoirs/ponds	490,472
Acres of significant publicly-owned lakes/reservoirs/ponds	380,939
Square miles of estuaries/harbors/ponds	610
Miles of ocean coast	337
Miles of Great Lake shore	0
Acres of freshwater wetlands	3,600,000
Acres of tidal wetlands	27,600

Table Intro-2 Waterbody Classifications and Designations

Use Classifications	
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	IO
Navigation	N
Outstanding Alabama Water	OAW
Special Designations	
Outstanding National Resource Water	ONRW

Part I Coastal Area Assessment

Summary and Background

Water Pollution Control Program-Nonpoint Source Control Program

The United States Congress as part of the Coastal Zone Act Reauthorization Amendments of 1990 enacted Section 6217. Section 6217 requires coastal states to develop and implement a Coastal Nonpoint Pollution Control Program (CNPCP) to control land and water uses associated with Agriculture, Forestry, Urban Areas, Hydro-modification and Marinas and Recreational Boating. The Alabama Department of Environmental Management (ADEM or the Department), in cooperation with the Alabama Department of Economic and Community Affairs (ADECA), developed Alabama's CNPCP and, in July, 1995, submitted it to National Oceanic and Atmospheric Administration (NOAA) and the United States Environmental Protection Agency (USEPA or EPA) for their approval.

Alabama's CNPCP utilizes the existing programs of various State agencies in order to protect Alabama's coastal waters from sources of nonpoint pollution by ensuring the implementation of management measures through regulatory actions, education and public outreach. Some of the State agencies involved are the Alabama Cooperative Extension Service, the Alabama Department of Agriculture and Industry, ADECA, ADEM, the Alabama Department of Transportation, the Alabama Department of Public Health (ADPH), the Alabama Forestry Commission (AFC) and the Alabama Soil and Water Conservation Committee (ASWCC). Federal and Local agencies, such as the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS), the United States Army Corps of Engineers (USACE) and the South Alabama Regional Planning Commission (SARPC), also assist in the implementation of management measures.

Surface Water Assessment

Surface Water Monitoring Program

Three monitoring programs were in place during the reporting period to monitor the quality of Alabama's coastal waters. First, described in ADEM's Technical Report entitled "Water Quality and Natural Resource Monitoring Strategy For Coastal Alabama" (March 1993) is a statistically based long-term monitoring program with probabilistically chosen stations distributed throughout Mobile Bay, Mississippi Sound, Perdido Bay, Mobile River, Tensaw River and the Mobile River Delta. The monitoring program's design is based on the USEPA's Environmental Mapping and Assessment Program (EMAP) and ADEM's knowledge of its estuarine system. The strategy provides a design that allows unbiased estimates of the status of Alabama's coastal water environment as a whole or within each of nine sub-areas (regions) and will allow long-term statistical trends to be identified by once-per-year sampling during a summer index period. This program, previously referred to as REMAP, was incorporated into the Alabama's "ASSESS (ADEM's Strategy for Sampling Environmental indicators of Surface water quality Status) Program" as Coastal ALAMAP in October 1997. Sampling has recurred annually since 1993. One hundred twelve (112) sites were sampled during 1996 and one hundred thirty-one (131) sites were sampled in 1997.

Second, 18 fixed ambient monitoring stations were sampled on a monthly basis during the reporting period. In addition to the State's monitoring efforts, water quality data is gathered by the volunteers of the Baywatch Citizen's Volunteer Water Quality Monitoring Program as

administered by the Alabama Coastal Foundation. Data gathered during the reporting period is summarized in the “Baywatch Program Progress Report” (November 1997).

Finally, two (2) coastal watershed surveys were conducted during this reporting cycle. The Mobile Branch of ADEM surveyed the Bon Secour watershed (A Survey of the Bon Secour Watershed (July 1996) and the Chickasaw Creek watershed (A Survey of the Chickasaw Creek Watershed (August 1997)).

Estuary and Coastal Assessment

A. Eutrophication

Hypoxic and anoxic conditions are common in Alabama’s coastal waters and are generally most prevalent during the summer months. Naturally occurring conditions combine to result in frequently stressed water quality conditions marked by stratification with low dissolved oxygen. These conditions include: relatively shallow water depths found in all of Alabama’s open bays and sounds; low average wind and tidal energies; variable fresh water inflow; and constricted tidal passes. This persistent pattern of hypoxia manifests itself in “Jubilees”, an infrequently occurring summer condition in Mobile Bay that results when winds blowing from the mainland drive surface waters from shore, causing deeper, poorly oxygenated water to move into the shallows. Fish shrimp and crabs get caught in the poorly oxygenated water and generally rise to the surface in stress. The Jubilee phenomenon was first recorded in 1821 indicating that its underlying causes are naturally occurring. At this time it has not been determined if anthropogenic sources exasperate those underlying causes.

B. Habitat Modification

Alabama’s coastal counties are experiencing tremendous population growth. Statistics indicate that the population of Baldwin County increased from 115,266 in 1994 to 123,023 in 1996. This shows a two-year increase of 6.7%. Mobile County’s population increased by ½% (from 393,826 to 395,392) during the same time interval. Much of that growth is occurring within Alabama’s defined coastal area, particularly in Baldwin County where there has been explosive growth in the beach communities of Orange Beach and Gulf Shores and on the Eastern Shore of Mobile Bay. The area of west Mobile, inside and outside of the current city boundary, is undergoing rapid commercial and residential development. Sedimentation from erosion at the numerous construction sites and the increased post development storm water runoff have placed a heavy burden on the receiving streams in the area increasing the incidence of flooding and stream bank erosion. All of Alabama’s estuarine waters are being affected by this population growth.

The number of applications to the Department for coastal permits and certifications is growing annually and many of these applications propose projects that would have significant adverse impacts to coastal resources if approved as proposed. Projects having direct and significant adverse wetland impacts are routinely reviewed by Department personnel pursuant to the provisions of ADEM Administrative Code R.335-8 (Coastal Program) and Section 404 of the Clean Water Act and are routinely denied due to the impacts that would occur. Generally, permits are issued for projects having wetland impacts only if all of the following conditions are satisfied: 1) the activity is related to an existing or approved water dependent use, or use of regional benefit or related to an approved beach nourishment, shoreline stabilization or marsh creation, restoration or enhancement project, elimination of dead-end canals or boat slips

exhibiting poor water quality or other similar beneficial use; 2) no other feasible alternatives exist; 3) impacts to wetlands on the project site have been minimized by project design; and 4) mitigation through creation of wetlands is incorporated into the project proposal.

There have been no coastal area wide surveys completed of wetland acreage for either submersed aquatics, tidal emergence, or swamp forest during the reporting period. Due to the State's restrictive approval process, including mitigation requirements, it is believed that wetland losses that do occur are minimal for those wetlands regulated by the program and that other losses that may occur are due to natural erosion, un-permitted activities, and minimal losses due to Nationwide permitting of permissible uses by the U.S. Army Corps of Engineers. While it is believed that submersed aquatic vegetation acreage may be on an upward trend, a concern exists that many acres of native species are being replaced by an undesirable exotic, Eurasian water milfoil (Myriophyllum spicatum).

Coastal wetland data provided in Table 4-13 is based on 1991 studies and essentially confirms older data generated locally. Through the USEPA Gulf of Mexico Program's Mobile Bay Demonstration Project new wetlands totals should become available.

Data is not kept on the miles of shoreline in stabilized versus undeveloped form. The explosive coastal population growth has resulted in continuous shoreline development, with certain areas developing more rapidly than others. The Gulf shoreline is un-stabilized along its length in Alabama, except at the passes from interior estuarine waters to the Gulf of Mexico at Perdido Pass, Little Lagoon Pass, and on the eastern tip of Dauphin Island at the entrance to Mobile Bay.

C. Changes in Living Resources

The Alabama Department of Conservation and Natural Resources-Marine Resources Division (ADCNR-MRD), manages Alabama's marine resources. According to ADCNR-MRD personnel, populations are cyclic and vary by species. Generally, population levels are all within expected levels and there are no significant declines observed, expected, or predicted.

ADCNR-MRD reports that oyster harvests have been stable in Alabama in recent years having recovered from Hurricane Fredrick (1979), in spite of closures affecting various reefs of varying duration. ADCNR oversees the re-planting of oyster reefs and believes that there has been an increase in reef size over time. Shrimp populations are cyclic and within expectations. Crab populations are stable as well.

D. Toxic Contamination

ADEM's Mobile Branch Office has directed a portion of their resources towards toxic contamination investigations in sediments and fish. The Coastal Program staff has conducted studies to determine metals enrichment in coastal water bottom sediments and has sampled water bottom sediments in proximity to shipyards, petroleum storage terminals, and industrial point source discharges. Beginning in 1993 the Mobile Branch Office implemented the Long-Term Trend Monitoring Program (Coastal ALAMAP) to provide a statistically defensible characterization of Alabama's coastal waters. This new monitoring program is more fully described in Part Three Chapter One of this report. Its parametrical coverage includes metals and selected organic compounds in water bottom sediments. However, no statement is being made as to the extent of areas having elevated levels of toxicants because no state or EPA criteria for toxins in sediments exist.

E. Pathogen Contamination

Alabama's coastal waters are monitored for pathogens and are subject to closings, advisories, or warnings. During the reporting period, all of Alabama's oyster harvest areas were closed at one time or another through closing orders issued by the State Health Officer of the Alabama Department of Public Health (ADPH). Those orders were issued when excess fresh water entered Mobile Bay from the Mobile River.

ADPH also issued several precautionary advisories for surface water bodies contaminated due to sanitary sewer collection system failures. The advisories are summarized in Table 4-19.

F. Other State Activities

1. National Estuary Program

The ADEM is an active participant in the Mobile National Estuary Program (Mobile NEP). Staff are involved on its various boards, committees, subcommittees, and workgroups. Additional information regarding the Mobile NEP is located on page 15 of Part IV: The Nonpoint Source Management Program.

2. Near Coastal Waters

The ADEM continues to actively participate in Near Coastal Water projects.

3. Gulf of Mexico Program

The ADEM has continued its active participation in the Gulf of Mexico Program (GOMP) by participation on its various boards, committees, subcommittees, and workgroups. Additional information regarding GOMP is located on page 15 of Part iv: The Nonpoint Source Management Program.

4. Other Related Activities

The Oil Pollution Act of 1990 has resulted in Mobile Office staff participation in many oil spill-planning efforts. Staff participate as co-chair and participants on committees of the United States Coast Guard's (USCG) Mississippi/Alabama Area Plan. Through its participation on the Region IV Rapid Response Team (RRT) and Response Technology Committee, ADEM has worked on dispersant use and in-situ burning plans for the RRT. Staff has gained experience from participation in both drills and real spill situations, including use of the Unified Command organizational structure.

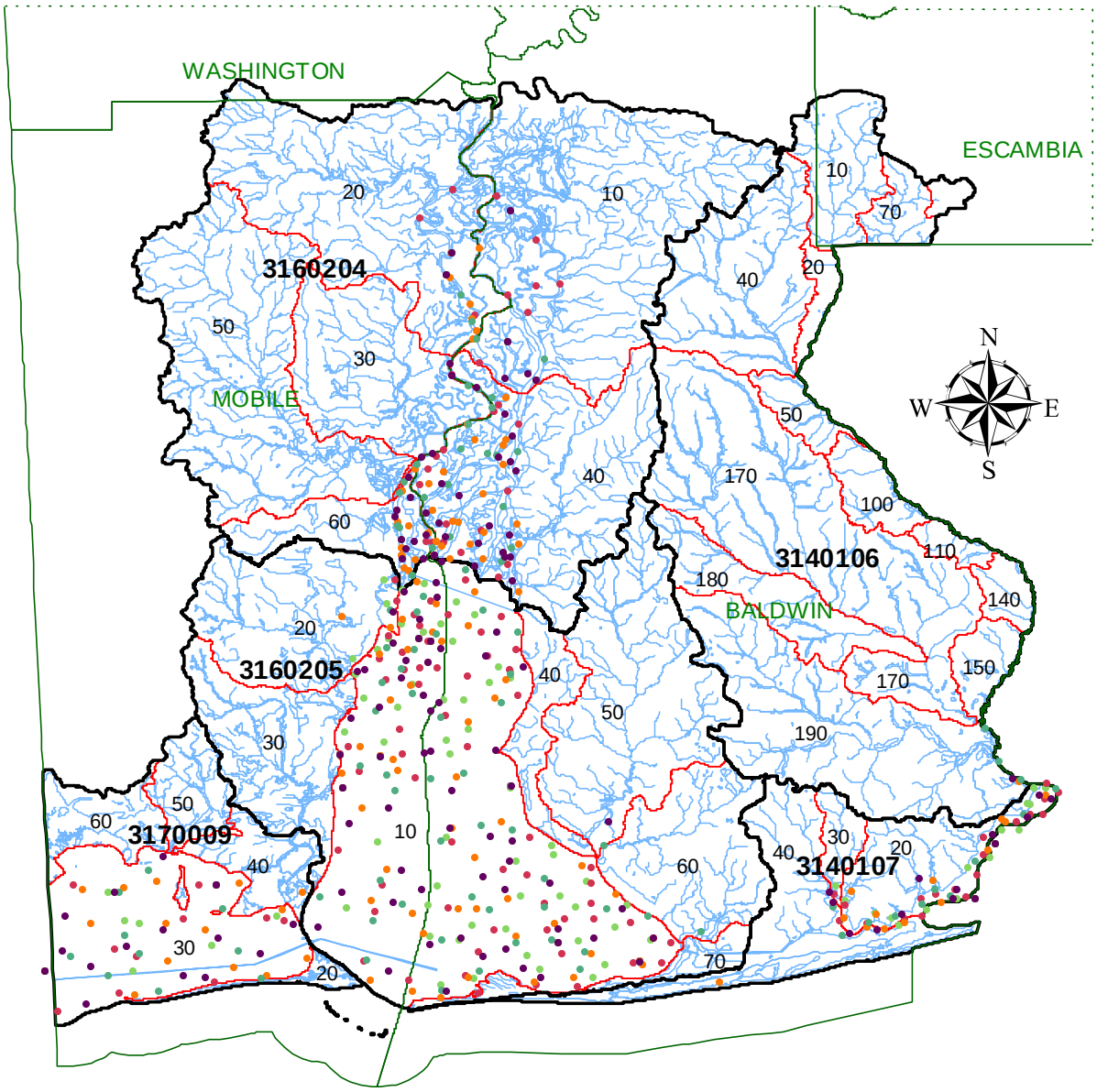
Table 1-1

1998 305(b)

SUMMARY OF MONITORED and EVALUATED COASTAL and NON-COASTAL WATERS in the MOBILE AREA

WATER BODY	TOTAL AREA MONITORED ($MILES^2$) OR ($MILES_{RIVER}$)	Classification			
REGION I MOBILE BAY	27(mi^2)	F&W	Total 610 square miles (sq. mi.) Monitored	Coastal ALAMAP Sampling Program Trends & Citizen's Volunteer Data	
REGION II MOBILE BAY	85(mi^2)	S/F & W			
REGION III MOBILE BAY	168(mi^2)	S/SH/F&W			
REGION IV MOBILE BAY	104.85(mi^2)	S/SH/F&W			
REGION V MISSISSIPPI SOUND	145.25(mi^2)	S/SH/F&W			
REGION VI PERDIDO BAY	79(mi^2)	S/SH/F&W			
REGION VII MOBILE RIVER	7 Miles	A&I	289 sq. mi. Total Area 35,000 Acres (55 sq. mi.) of Marsh and Open Water Monitored		276.73 Miles TOTAL
REGION VII MOBILE RIVER	30 Miles	F&W			
REGION VII MOBILE RIVER	9 Miles	PWS			
REGION VIII MOBILE DELTA	116 Miles	F&W			
REGION IX TENSAW RIVER	20 Miles	F&W			
REGION IX TENSAW RIVER	21 Miles	S/F&W			
REGION IX APALACHEE R.	5.4 Miles	F&W			
REGION IX BLAKELEY R.	1.5 Miles	F&W			
CHICKASAW CREEK	4.3 Miles	A&I	42.31 Miles Monitored	Chickasaw Creek Watershed Survey 1997Trends & Citizen's	
CHICKASAW CREEK	7.2 Miles	F&W			
CHICKASAW CREEK	22.61 Miles	S/F&W			
Eight Mile Creek	6.48 Miles	F&W			
Eight Mile Creek	1.72 Miles	PWS			
Halls Mill Creek	10.75 Miles	F&W			
Milkhouse Creek	7.4 Miles	F&W			
Second Creek	5.37 Miles	F&W			
ESCATAWPA RIVER	1 Miles	S/F&W	Monitored	Trend Data	

Alabama Coastal Alamap
Sampling Stations
1993-1997



1997 Coastal Alamap Stations
1996 Coastal Alamap Stations
1995 Coastal Alamap Stations
1994 Coastal Alamap Stations
1993 Coastal Alamap Stations
Counties
USGS Cataloging Units
USDA-NRCS Subwatersheds
USEPA Reach File 3

5 0 5 10 Miles

ADEM-WQ Section-1999-mjr

Summary of Percent Violations
of Alabama's Coastal Criteria for Dissolved Oxygen, pH, and Temperature
for the 1993-97 Coastal Alamap Sampling Program

1997 Coastal Alamap DO, pH & Temperature Summary	
Dissolved oxygen violations were 6.1% (8 of 131 stations)	Full Support
pH violations were 4.6% (6 of 130 stations above 8.5 pH s.u.)	Full Support
Temperature violations were1.5% (2 of 130)	Full Support

1996 Coastal Alamap DO, pH & Temperature Summary	
Dissolved oxygen violations were 0.0%	Full Support
pH violations were 2.7% (3 of 112 stations less than 6.5 pH s.u.)	Full Support
Temperature violations were 0.0%	Full Support

1995 Coastal Alamap DO, pH & Temperature Summary	
Dissolved oxygen violations were 17.2% with 5.0 mg/L as criteria (20 of 109 stations)	Partial Support
Dissolved oxygen violations were 6.0% with 4.0 mg/L (DO criteria for DO influenced by natural conditions) as criteria (7 of 109 stations)	Full Support
pH violations were 2.8% (2 of 109 stations less than 6.5 pH s.u. & 1 of 109 above 8.5 pH s.u.)	Full Support
Temperature violations were 0.9% (1 of 109 stations)	Full Support

1994 Coastal Alamap DO, pH & Temperature Summary	
Dissolved oxygen violations were 8.6% with 5.0 mg/L as criteria (11 of 128 stations)	Full Support
Dissolved oxygen violations were 3.9% with 4.0 mg/L (DO criteria for DO influenced by natural conditions) as criteria (5 of 128 stations)	Full Support
pH violations were 4.7% (5 of 128 stations less than 6.5 pH s.u. & 1 of 125 above 8.5 pH s.u.)	Full Support
Temperature violations were 0.0%	Full Support

1993 Coastal Alamap DO, pH & Temperature Summary	
Dissolved oxygen violations were15.3% (13 of 85 using 5.0 mg/L) & 14.1% (12 of 85 using 4.0 mg/L)	Partial Support
pH violations were 5.8% (6 of 85 above 8.5 pH s.u.)	Full Support
Temperature violations were 2.4%	Full Support

Note: These percentages are derived from violations at stations/total stations for one time sampling events for the respective year.

The average of annual DO percentage of violations from 1993-97 is 7.2%
The average of annual pH percentage of violations from 1993-97 is 4.1%
The average of annual Temperature percentage of violations from 1993-97 is 1.0%

Part II: Ground Water Assessment
Overview of State Ground Water Protection Programs

Many of the State of Alabama ground water programs listed in Table 2-1 are managed by subdivisions within the Alabama Department of Environmental Management (ADEM), including the Land, Field Operations, and Water Divisions. Other programs related to ground water management and protection are managed by other state and federal agencies. The on-site sewage program is managed by the Alabama Department of Public Health and the Class II Underground Injection Control Program is managed by the State of Alabama Oil and Gas Board. Ground water use is managed by the Alabama Department of Economic and Community Affairs-Office of Water Resources. Other ground water monitoring and regulatory programs are managed by the Geological Survey of Alabama and the Alabama Surface Mining Commission. The US Environmental Protection Agency (USEPA or EPA) provides oversight on all federally funded and delegated ground water programs.

Coordination of State Ground Water Programs

The State of Alabama recognizes that there is a need to coordinate management of ground water programs and as a result set up the Ground Water Programs Advisory Committee (GWPAC) in 1994 to aid in completing the requirements for EPA's Core Comprehensive State Ground Water Protection Program (CSGWPP). The ADEM Ground Water Branch and the GWPAC continue to work toward a fully integrated CSGWPP. This work includes coordinating ground water regulatory programs and addressing program refinements identified during the CSGWPP core review process.

Meetings of the GWPAC are now being held twice a year. This committee includes representatives of other state and federal agencies, consultants, water system representatives, and others who work in ground water related fields. The meetings are used to dispense ground water program information, receive feedback and coordinate ground water projects. A subcommittee of agencies involved in area wide ground water monitoring programs was formed in late 1997. This subcommittee is working to maximize resources to provide the best monitoring coverage of the state.

Significant State Ground Water Program Developments

The following items summarize some of the recent ground water developments that are underway in Alabama:

- Integration of the Source Water Assessment Program within the ADEM Water Supply Branch regulations.
- Drafting of guidance for Risk Based Corrective Action (RBCA) for petroleum fuels.
- A RBCA approach for releases other than petroleum related fuels that are regulated under the State Ground Water Program is being developed.
- Initiation of a ground water quality database for reporting.
- The deadline for UST upgrades with spill, overfill and corrosion protection is December 22, 1998. Tanks should be upgraded, replaced with a new system or permanently closed by this date.
- Modifying regulations to include requirements of the Alabama Professional Geologists Licensing Act is in progress.
- A contract was signed with the Geological Survey of Alabama in late 1997 to revise a series of 13 aquifer vulnerability reports by updating geologic names and terms to match the most recent state mapping, revising vulnerability maps from 1:250,000 scale to 1:100,000 scale,

revising the vulnerability rating methods, and to include text, maps, and figures in an electronic CDROM format.

- The Nonpoint Source Program has provided funding for pesticide sampling of residential wells in vulnerable areas of the Highland Rim Ground Water Province and also in the Coastal Plain Ground Water Province. Sampling and analysis is complete. Report preparation is in progress.
- A ground water festival was held at the University of Alabama Huntsville on March 19 and 20, 1998. Approximately twelve hundred students participated in ground water activities. Exhibits were provided along with demonstrations during the two day event.
- ADEM is writing regulations to deal with Concentrated Animal Feeding Operations (CAFOS). Hydrogeologic site evaluations will be a required part of siting requirements for CAFO lagoons and land application sites.
- The U.S. Geological Survey is working on the National Water Quality Assessment for two study units which include significant parts of Alabama's Mobile River and Lower Tennessee River Basins.
- The Alabama Department of Public Health is revising its on-site sewage regulations.
- The Alabama Department of Public Health is completing a study of nitrates and bacteria in residential wells for the Centers for Disease Control.

- **Table 2-1 Summary of State Ground Water Protection Programs**

Programs or Activities	Check	Implementation Status	Responsible State Agency (1)
Active Sara Title III Program	x	Under Development	EPA/ADEM/FOD/EMA
Ambient ground water monitoring program	x	Fully established	GSA
Aquifer vulnerability assessment	x	Fully established and being updated	ADEM/GWB
Aquifer mapping	x	Fully established	GSA
Aquifer characterization	x	Fully established	GSA
Comprehensive data management system	x	Under development	ADEM/GWB
EPA-Endorsed Core Comprehensive State Groundwater Protection Program	x	Fully established	ADEM/GWB
Ground water discharge permits	x	Established in UIC Regs.	ADEM/UIC .
Ground water Best Management Practices			
Ground water legislation			
Ground water classification	x	Established in UIC Reg Definition	ADEM/UIC
Ground water quality standards			
Interagency coordination for ground water protection initiatives	x	Continuing efforts	ADEM/GWB
Non-point source controls	x	Under development	ADEM/FOD
Pesticide State Management Plan	x	Generic Draft	ADAI
Pollution Prevention Program	x	Under Development	ADEM/OEO
Resource Conservation and Recovery Act (RCRA) Primacy	x	Fully established	ADEM/HWB
Source Water Assessment Program	x	Under Development	ADEM/WSB
State Superfund	x	Fully established	ADEM/LD
State RCRA Program incorporating more stringent requirements than RCRA Primacy			
State septic system regulations	x	Fully established	ADPH
Underground storage tank installation requirements	x	Fully established	ADEM/GWB
Underground Storage Tank Remediation Fund	x	Fully established	ADEM/GWB
Underground Storage Tank Registration Program	x	Fully Established	ADEM/GWB
Underground Injection Control Program	x	Fully established	ADEM/GWB/OGB
Vulnerability assessment for drinking water/wellhead protection	x	Fully established	ADEM/GWB
Well abandonment regulations	x	WSB Regs & Guidelines	ADEM/WSB GWB
Wellhead Protection Program (EPA-approved)	x	Fully established	ADEM/WSB
Well installation regulations	x	Fully Established	ADEM/WSB
State Ground Water Program	x	Statute Based Program	ADEM/GWB
NPDES Permits for Land Application Sites	x	Fully Established	ADEM/MUN/IIND
Subtitle D Solid Waste Program	x	Fully Established	ADEM/SWB
Ground Water Use	x	Fully Established	ADECA/WRD

1. ADEM = AL Dept Env Mngt, FOD = Field Operations Division, GWB = Ground Water Branch, WSB = Water Supply Branch, LD = Land Division, HWB = Hazardous Waste Branch, OEO=Office of Education and Outreach, SWB=Solid Waste Branch, MUN=Municipal Branch, IND=Industrial Section GSA = Geological Survey of Alabama, ADPH = AL Dept. of Public Health, ADAI = AL. Dept. Agriculture & Industries, OGB = Oil & Gas Board; ADECA=Alabama Department of Economic and Community Affairs, Office of Water Resources, EPA= Environmental Protection Agency, EMA= Emergency Management Agency

Summary of Ground Water Contamination Sources

Cumberland Plateau Ground Water Province

The Alabama Department of Environmental Management has selected the Cumberland Plateau Ground Water Province (Figure 2-1) for evaluation during this reporting period. This area includes all or parts of 13 counties in north Alabama that are underlain by three major aquifer outcrop areas. Counties in this area include: Franklin, Lawrence, Morgan, Marshall, Jackson, DeKalb, Winston, Cullman, Blount, Fayette, Walker, Jefferson, and Tuscaloosa. The aquifers outcropping in this area include the Pottsville aquifer, the Tuscumbia-Fort Payne aquifer and those aquifers of Cambrian-Ordovician age. Data contained in Table 2-3 and 2-4 were queried and retrieved by county and, therefore, some overlap into the Highland Rim, Coastal Plain and Valley and Ridge Ground Water Provinces has occurred.

Data Review and Compilation

Hydrogeologists from the ADEM Ground Water Branch are assigned to the major ground water regulatory programs as part of the Comprehensive State Ground Water Protection Program. The information contained in Table 2-3, Ground Water Contamination Summary, was researched from ADEM's electronic databases and prepared by the hydrogeologists assigned to each of the programs listed under the Source Type column.

Superfund CERCLIS And DOD Sites

ADEM's Land Division works with EPA and the Department of Defense to manage these types of sites. One facility listed in Table 2-3, Interstate Lead Company, located in Leeds, Alabama (Jefferson County) is listed on the National Priority List (NPL). This facility is a former lead smelter which has been closed and dismantled. Waste piles have been stabilized and capped and the facility has been secured. Cleanup of the site continues by EPA under the authority of the Superfund Program.

The CERCLIS listings include 339 non-NPL sites located in the Cumberland Plateau Ground Water Province. These are sites where State and Federal Funds have been used to conduct preliminary and secondary assessments by ADEM and EPA. Many of the 107 sites listed as being cleaned up include source removal such as excavation of contaminated soils and containers.

Two Department of Defense Sites (DOD) are listed in Table 2-3. These sites were identified as the Birmingham Air National Guard site at the Birmingham Airport and Courtland Army Airfield located in Lawrence County. These site assessments and cleanups are being funded by the Defense Environmental Restoration Fund.

Underground Storage Tank Program

The largest category of sites listed in Table 2-3 are underground storage tanks (UST). These sites are managed by the ADEM Ground Water Branch. Assessment and clean up of half these sites is funded through the State UST Trust Fund. The success of this program is attributed to management of the fund and contractors doing the work. Many of the cleanups listed include free product, source and soil removals. Active ground water remediation systems are also included. Most of these cleanups involve gasoline spills and leaks, but also include diesel and fuel oils. These petroleum fuels include soluble compounds such as Benzene, Ethyl

Benzene, Toluene, Xylene (BETX), Polynuclear Aromatic Hydrocarbons (PAH's), Methyl Tertiary Butyl Ether (MTBE) and lead that affect ground water quality.

Hazardous Waste Management Program (RCRA)

Twenty five (25) hazardous waste sites (RCRA) were identified in the study area. These sites are managed by the ADEM Land Division. These sites include extensive assessment, permitting and reporting requirements. Releases associated with these sites are persistent and difficult to assess and remediate. Compounds such as Chlorinated Volatile Organic Compounds (VOC's) are present in many instances and have properties that make remediation problematic. Table 2-2 lists approximately ninety (90) percent of the statewide RCRA sites as staff has been able to collect GPS coordinates in the field.

Underground Injection Control Program

The Underground Injection Control (UIC) program is managed in the ADEM Ground Water Branch. Permits are processed for Class V sites for disposal of treated waste water. Most of these sites are greenfield (new) sites and involve car washes or treated industrial or commercial waste water. Class I , and Class IV UIC wells are prohibited in Alabama. Class II injection wells are managed by the State of Alabama Oil and Gas Board.

State Ground Water Program

State Ground Water Program sites are those that are not regulated by established programs such as RCRA or UST. Sites such as bulk petroleum storage tanks, pipelines, and otherwise unregulated chemical spills are assessed and remediated using the authority of the Alabama Water Pollution Control Act (AWPCA). Releases from these sites are in many cases reported by the responsible party through company initiated environmental audits or are discovered as a result of real-estate assessments during property transactions. Other ground water incidents are discovered and reported to the Department by citizens. Assessment and cleanup of these sites is required to be conducted by the responsible party. All types of contaminant releases have been addressed by this program.

Non Point Source Program

Nonpoint source sites listed in table 2-3 are new sites where hydrogeologic site evaluations have been conducted by the Department for facilities such as mining lagoons, agricultural lagoons and land application sites.

Table 2-2

Statewide RCRA Sites

Facility	County	Latitude	Longitude	Groundwater Monitoring Status
ACIPCO	JEFFERSON	33.54751	-86.83248	DETECTION
AKZO NOBEL CHEMICALS INC.	MOBILE	30.96944	-88.02140	DETECTION
ALLIED SIGNAL	JEFFERSON	33.49762	-86.91777	CORRECTIVE ACTION
(AUGAT (PLANT NO. 3)	MONTGOMERY	32.40939	-86.23784	CORRECTIVE ACTION
BALDWIN POLE AND PILING CO. INC.	BALDWIN	30.89044	-87.75557	CORRECTIVE ACTION
BROWN WOOD PRESERVING CO. INC.	TUSCALOOSA	33.39430	-87.75654	ASSESSMENT
CAVENHAM FOREST PRODUCTS	MOBILE	30.73046	-88.04922	CORRECTIVE ACTION
CHEM WASTE MANAGEMENT	SUMTER	32.79669	-88.31055	DETECTION
CIBA GEIGY MCINTOSH PLANT	WASHINGTON	31.27570	-88.00771	CORRECTIVE ACTION
COOPER INDUSTRIES	MONTGOMERY	32.40954	-86.23765	CORRECTIVE ACTION
COOPER INDUSTRIES	CULLMAN	34.14205	-86.82721	DETECTION
CRAFT PLATING	CALHOUN	33.99115	-86.12043	ASSESSMENT
DELTA AUTOMOTIVE INC	COLBERT	34.75800	-87.69490	ASSESSMENT
DIVERSIFIED PRODUCTS	LEE	32.62570	-85.37905	ASSESSMENT
DU PONT DE NEMOURS & CO. INC.	MOBILE	30.95350	-88.02048	CORRECTIVE ACTION
E. S. ROBBINS CORPORATION	COLBERT	34.74413	-87.62700	ASSESSMENT
EVERWOOD TREATMENT CO. INC.	MOBILE	30.67834	-87.82909	ASSESSMENT
GTE	MADISON	34.59222	-86.56422	CORRECTIVE ACTION
GULF STATES STEEL GADSDEN	ETOWAH	34.01465	-86.04483	DETECTION
HUNT REFINING	TUSCALOOSA	33.19696	-87.60613	DETECTION
HUXFORD POLE AND TIMBER CO. INC	ESCAMBIA	31.22052	-87.47040	CORRECTIVE ACTION
KOPPERS - MONTGOMERY	MONTGOMERY	32.39744	-86.31771	CORRECTIVE ACTION
KOPPERS - WOODWARD COKE PLANT	JEFFERSON	33.44609	-86.96408	ASSESSMENT
KOPPERS - WOODWARD TAR PLANT	JEFFERSON	33.45359	-86.96148	CORRECTIVE ACTION
LEE BRASS	CALHOUN	33.61831	-85.78892	DETECTION
LOUISIANA PACIFIC	COVINGTON	31.00864	-86.34249	CORRECTIVE ACTION
MARSHALL SPACE FLIGHT CENTER	MADISON	34.69853	-86.62797	DETECTION
MEADOWCRAFT CORPORATION	JEFFERSON	33.64195	-86.72672	ASSESSMENT
MINESOTA MINING AND MFG CO 3M CO.	MORGAN	34.63958	-87.03833	ASSESSMENT
NATIONAL COPPER	MADISON	34.78228	-86.53347	CORRECTIVE ACTION
NORTHINGTON CLEANERS	TUSCALOOSA	33.16885	-87.52440	ASSESSMENT
OCCIDENTAL CHEMICAL COMPANY	MOBILE	30.74943	-88.06784	CORRECTIVE ACTION
OCCIDENTAL CHEMICAL COMPANY	COLBERT	34.77053	-87.63447	CORRECTIVE ACTION
OLIN CHEMICAL COMPANY	WASHINGTON	31.26493	-88.00510	CORRECTIVE ACTION
ONAN CORPORATION	MADISON	34.65508	-86.76257	ASSESSMENT
PM AG PRODUCTS INC	MOBILE	30.66597	-88.03966	CORRECTIVE ACTION
QUALITY AUTO PARTS	TALLADEGA	33.43238	-86.10454	ASSESSMENT
REDWING CARRIERS INC.	MOBILE	30.91237	-88.03745	CORRECTIVE ACTION
SAFETY KLEEN - DOLOMITE	JEFFERSON	33.46003	-86.95894	ASSESSMENT
SAFETY KLEEN - MONTGOMERY	MONTGOMERY	32.36915	-86.34187	ASSESSMENT
SAFETY KLEEN - WHISTLER	MOBILE	30.74334	-88.11748	CLOSED
SAFETY KLEEN GURLEY INACTIVE SITE	MADISON	34.69952	-86.37845	CLOSED
SANDERS LEAD CO. INC	PIKE	31.78732	-85.97939	CORRECTIVE ACTION
SEAMAN TIMBER CO. INC	SHELBY	33.06118	-86.89956	DETECTION
SOLUTIA (MONSANTO-ANNISTON)	CALHOUN	33.65141	-85.85339	CORRECTIVE ACTION
SPLENDID CLEANERS/TRACT 92	MOBILE	30.73278	-88.07861	ASSESSMENT
STALLWORTH TIMBER COMPANY	MONROE	31.73164	-87.20948	CORRECTIVE ACTION
T.R. MILLER MILL COMPANY, INC.	ESCAMBIA	31.10498	-87.06945	CORRECTIVE ACTION
U. S. PIPE BESSEMER PLANT	JEFFERSON	33.41475	-86.97435	COMPLIANCE
U. S. PIPE BHAM NORTH PLANT	JEFFERSON	33.55845	-86.81352	CORRECTIVE ACTION
U.S. PIPE/ANNISTON	CALHOUN	33.62419	-85.83194	CLOSED
UNION FOUNDRY (Parkwood Landfill)	CALHOUN	33.66794	-85.85249	CLOSED
US ALLIANCE (FORMERLY KC)	TALLADEGA	33.32171	-86.35930	CORRECTIVE ACTION
USX CORPORATION - FAIRFIELD	JEFFERSON	33.48233	-86.94655	CORRECTIVE ACTION
WESTPOINT STEVENS ENGINEERING BLDG.	CHAMBERS	32.80583	-85.19903	CORRECTIVE ACTION

Figure 2-1 Alabama Ground Water Provinces

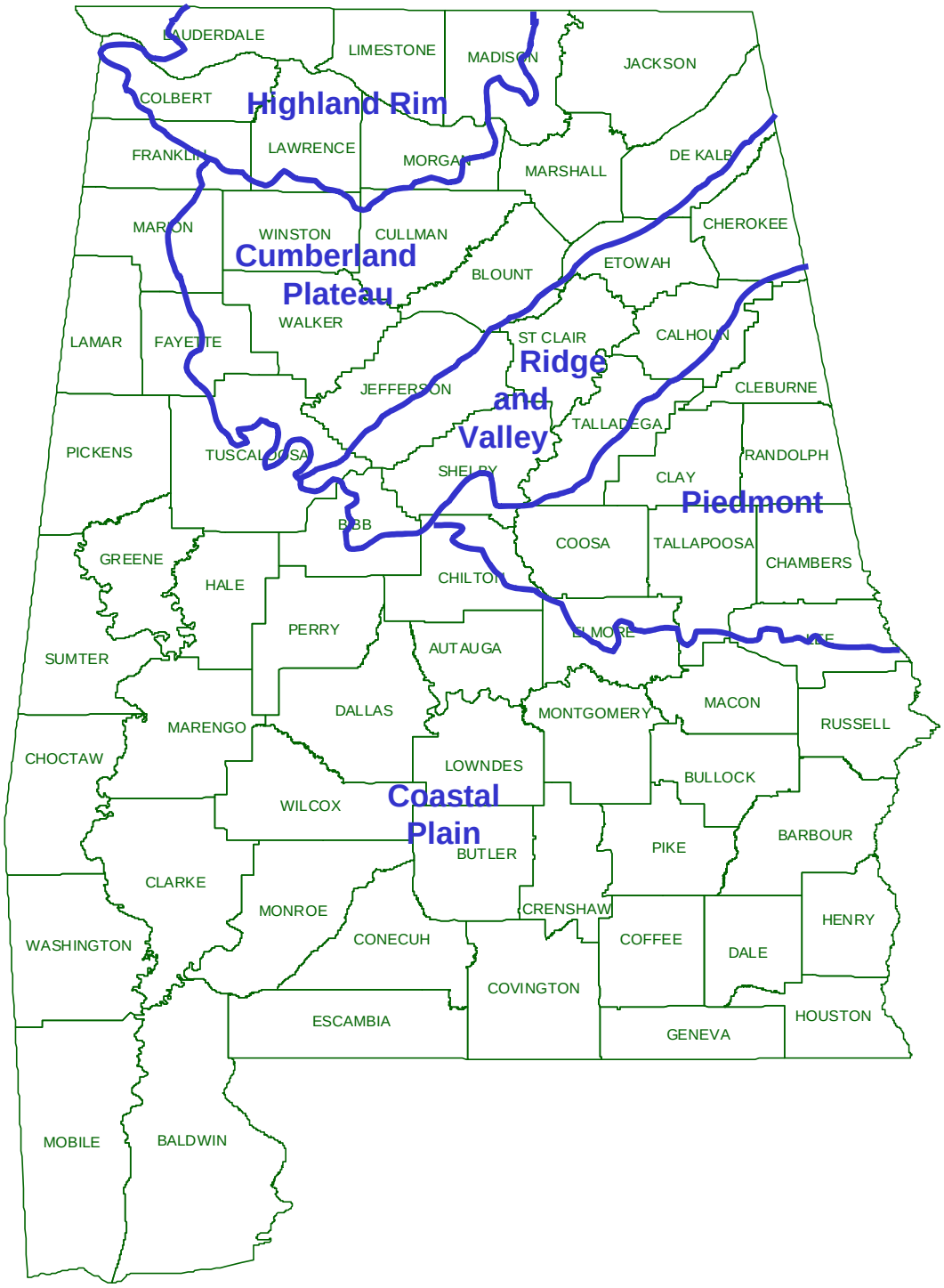


Table 2-3. Ground Water Contamination Summary

Hydrogeologic Setting: Cumberland Plateau Ground Water Province

Spatial Description: See Figure 2-1

Map Available: See Figure 2-1

Data Reporting Period: 1996-1998; Data for each Source Type are totals up through 1998.

Source Type	Number of Sites	Number of Sites that are listed and/or have confirmed releases	Number with confirmed ground water contamination	Contaminants	Number of Site Investigations (optional)	Number of sites that have been stabilized or have had the source removed	Number of sites with corrective action plans (optional)	Number of sites with active remediation (optional)	Number of sites with cleanup completed (optional)
NPL	1	1	1	lead	1	0	1	1	0
CERCLIS (non-NPL)	339	200	150	VOC's & metals	244 SI's 95 PA's 23 other	128	56	29	107
DOD/ DOE	2	2	2	organics, BTEX and TCE	1	0	1	1	0
UST	885	885	841	BETX, PAH, MTBE, lead	377	800	62	62	421
RCRA Corrective Action	25	23	17	VOC, SVOC, metals, dioxins and furans	25	16	11	4	7
Underground Injection	147	0	0	VOCs	1	1	0	0	1
State Sites	125	61	61	VOCs, PAH, bacteria, metals, inorganics	125		14	8	29
Non-point Sources	8	1	0	chlorides	8				
Totals	1532	1173	1072		892	945	145	105	565

Aquifer Monitoring

Ambient Monitoring Network

Aquifer monitoring data listed in Table 2-4 were evaluated for counties in and adjacent to the Cumberland Plateau Ground Water Province through the use of data from the Geological Survey of Alabama and from information contained in ADEM's computer databases. The Geological Survey of Alabama (GSA) maintains an ambient ground water monitoring network throughout the state. One Hundred and Fifty sites are monitored annually for inorganic compounds. Five hundred and fifty sites are monitored in the spring and fall for water levels. One half of these water level sites are springs. The following six wells and seven springs were monitored by the GSA in the Cumberland Plateau Ground Water Province. None of the springs detected any nitrate over 5 mg/l.

Well / Spring Number and or Name	**County**	**Aquifer Monitored**
Well F-4	Walker	Pottsville
Well N-40	Jackson	Tuscumbia
Well Q-01	DeKalb	Bangor
Well I-18	Marshall	Bangor
Well X-2	Marshall	Pottsville
Well P-7	Blount	Cambro-Ordovician
Spring H-25, Cove Spring	Etowah	Bangor
Spring M-8, Springville Springs	St. Clair	Knox Group Cambro-Ordovician
Spring Y-1, Rowan Spring	Jefferson	Chickamauga
Spring Z-01, Weems Spring	St. Clair	Knox Group, Cambro-Ordovician
Spring J-4 Dixie Brown Spring	DeKalb	Knox Group, Cambro-Ordovician
Spring C-4, Bridgeport Spring	Jackson	Bangor
Spring T-2, Allgood Spring	Blount	Knox Group, Cambro-Ordovician

Source: Kopaska-Merkel, 1998

Finished Water Quality Data

The Federal Reporting Data System (FRDS) was used to determine the number of public water supply wells in these counties. Ninety two (92) public water supply wells were identified (table 2-4) for the counties in and adjacent to Cumberland Plateau Ground Water Province. The FRDS data indicate that out of 92 wells 11 had detected volatile organic compounds (VOC's) and 8 had detected synthetic organic compounds (SOC) greater than the minimum detection limit but less than the maximum contaminant level (MCL) required for drinking water supplies. One well had a detection exceeding the MCL. Fifty-six wells had nitrate concentrations less than 5 mg/l. Table 2-4 documents that contamination was not detected in most wells. This can be attributed in part to enforcement of construction and water supply system operation standards by ADEM. Wells are taken out of service, upgraded with treatment or abandoned when detections are made.

Ground Water Use In The Cumberland Plateau

Ground water use in the 13 counties located in and adjacent to the Cumberland Plateau Ground Water Province totaled 16,875,791,910 gallons in 1993 (Table 2-4b). Ninety percent of this use was for public water supply. Eight percent was for non-public use and two percent was used for irrigation (Durham, 1998).

Table 2-4a. Aquifer Monitoring Data

Hydrogeologic Setting: Cumberland Plateau Ground Water Province (See Figure 1) Reporting Period: Status Up To 1998

			Number of Wells								
			No detections of parameters above MDLSs or background levels		Nitrate concentrations range from background levels to less than or equal to 5 mg/l No detections of parameters other than nitrate above MDLs or background levels and/or located in areas that are sensitive or vulnerable		Nitrate ranges from greater than 5 to less than or equal to 10 mg/l	Parameters are detected at concentrations exceeding the MCLs	Removed from service	Special Treat-ment	Back-ground parameters exceed MCLs
Monitoring Data Type	**Total No. of Wells Used in the Assessment**	**Para-meter Groups**	**No Detects above the method detec-tion limit**	**Number of wells in sensitive or vulnerable areas (Optional)**	**Nitrate ≤ 5 mg/L** **VOC, SOC, and Other parameters not detected**	**Number of wells in sensitive or vulnerable areas**	**Other parameters are detected at concentrations exceeding the MCLs**				
Ambient Monitoring Network	7 Wells 8 Springs	VOC									
		SOC									
		NO_3	10		5						
		Mn	14				1				1
Raw Water Quality Data from Public Water Supply Wells		VOC									
		SOC									
		NO_3									
		Other*									
Finished Water Quality Data from Public Water Supply Wells	92	VOC	80				11	1			
		SOC	84				8				
		NO_3	36		56						
		Other*									

Table 2-4b Aquifer Monitoring Data

Major uses of the aquifer or hydrologic units Pottsville	x Public water supply x Private water supply	x Irrigation ___ Thermoelectric	___ Commercial ___ Livestock	___ Mining ___ Industrial	___ Baseflow ___ Maintenance
Major uses of the aquifer or hydrologic units Tuscumbia Ft. Payne	x Public water supply x Private water supply	x Irrigation ___ Thermoelectric	___ Commercial ___ Livestock	___ Mining ___ Industrial	___ Baseflow ___ Maintenance

Table 2-5
Estimated Groundwater Withdrawals For Selected Counties

County	Public	Non-Public	Irrigation	Total GW Use	% Public	% Non-Public	% Irrigation
	Gal/yr	Gal/yr	Gal/yr	Gal/yr			
Blount	759782400			759782400	100	0	0
Cullman	150000000			150000000	100	0	0
DeKalb	50619800	269568000	420000	320607800	16	84	<1
Fayette	13200000			13200000	100	0	0
Franklin	325388100			325388100	100	0	0
Jackson	1841790221	4000000		1845790221	100	<1	0
Jefferson	3067014900	261470000	134406800	3462891700	88	8	4
Lawrence	143500			143500	100	0	0
Marshall	839942775	162339996	8592000	1010874771	83	16	1
Morgan	250000	431182080		431432080	<1	100	0
Tuscaloosa	8036953713	232576000	120146000	8389675713	97	2	1
Walker	97295000			97295000	100	0	0
Winston	68710625			68710625	100	0	0
Totals	15251091034	1361136076	263564800	16875791910	90	8	2

Source: Durham, 1998

Summary of Ground Water Quality

Hydrogeology

The Cumberland Plateau in Alabama was described by Moore (1976) as "a submaturely-to maturely-dissected upland which is underlain largely by nearly flat lying rocks of Pennsylvanian age but contains anticlinal valleys of older Paleozoic limestone and dolomite. In northern Alabama the upland lies at an altitude between 1,500 and 2,000 feet and to the south the altitude is about 500 feet, where it passes under deposits of the Coastal Plain. The eastern boundary of the plateau is formed by an outward-facing escarpment of Little Mountain which overlooks the Highland Rim Section of the Interior Low Plateaus. To the west and south, the boundary follows the edge of the Coastal Plain, where the older Pennsylvanian rocks pass beneath the sand, clay, and gravel of the Tuscaloosa Group. In Alabama the Cumberland Plateau Section is divided into the Warrior Basin, Jackson County Mountains, Sand Mountain, Sequatchie Valley, Blount Mountain, Murphree's Valley, Wills Valley, and Lookout Mountain Districts."

The Pottsville Formation has the largest outcrop area in this province and consists of consolidated and tightly cemented interbeds of quartzose sandstone, shale, siltstone, conglomerate, limestone, and clay with several bituminous coal beds. Hinkle (1976) indicated that the thickness of the Pottsville Formation ranges from less than 300 feet to 9000 feet in the Cahaba coal field. The Pottsville aquifer outcrop area includes all of the Warrior coal basin, Blount Mountain, Lookout Mountain and Sand Mountain. It also caps the high table-like areas of the Cumberland Plateau north of the Tennessee River and forms most of the Coosa and Cahaba Ridges. Structurally the rocks in Pottsville outcrop areas are relatively flat lying and dip to the southwest at 30 to 40 feet per mile. There are areas where faulting and folding have taken place.

The Pottsville aquifer yields ground water from fractures, joints, and bedding planes. Relatively small quantities of ground water are produced from wells that are generally less than 100 feet in depth. The average yield is 10 gallons per minute, however some wells have produced up to 375 gpm. Wells completed on Lookout Mountain yield 25 gpm where the aquifer is 250 feet thick (Hinkle, 1976).

The Sequatchie Valley is a narrow faulted valley that trends from the northeast corner of Alabama for 100 miles to the southwest where its older rocks disappear under the younger Pottsville Formation (Moore, 1967). This valley is developed on the crest of the Sequatchie anticline and is underlain by carbonate rocks of late Cambrian to late Mississippian age.

Murphree's Valley is a faulted valley approximately 40 miles in length and 2 to 3 miles wide. It trends from the northeast to the southwest through Etowah, Blount, and Jefferson Counties. Moore (1967) indicated that a thrust fault forms the eastern margin of this valley . Rocks of Paleozoic age form the valley floor and dip steeply to the northwest.

The Tuscumbia Limestone and the Fort Payne Chert geologic formations and associated aquifers crop out in thin belts along the flanks of the Sequatchie, and Murphree's Valleys and are the principal water bearing units in the valleys according to Bossong (1989). Also included are lesser aquifers within the Bangor Limestone, the Pride-Mountain Formation, the Harstelle Sandstone, and the Monteagle Limestone. These formations are consolidated sedimentary rocks of Mississippian to Cambrian age. Ground water in these aquifers is found in solution cavities, joints, and other secondary features. Primary porosity and permeability in most of these rocks are limited. Production rates vary from a gallon per minute or less to thousands of gallons per minute.

General Statement of Ground Water Quality and Vulnerability

The shallow aquifers in the Cumberland Plateau Ground Water Province are considered vulnerable to contamination from surface sources through fractures and sinkholes that provide for direct recharge to the subsurface. Other deeper aquifers are in some cases better protected by confining shale and clay beds. Ground water in the Pottsville is generally poor in quality because of high concentrations of naturally occurring iron and other inorganic compounds.

Other aquifers in the valleys in and adjacent to the Cumberland Plateau produce good quality ground water from carbonate rocks. These aquifers are highly vulnerable to contamination from surface sources through karst features that provide direct access from the surface into the aquifer. In many cases bacteria originating from a variety of surface sources are a common contaminant.

References Cited

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Part III: Lake Water Quality Assessment

A. Background

Section 314 (a) (2) of the Clean Water Act, as amended by the Water Quality Act of 1987, requires states to conduct assessments of publicly owned lake water quality and report the findings as part of the biennial 305(b) Water Quality Report to Congress. The US EPA Regional Clean Lakes Coordinators review the reports for approval/disapproval, determine the state's eligibility for Clean Lakes funding, and notify the EPA Headquarters Clean Lakes Program of the state's eligibility status. The assessment process is assisted by state and additional EPA funding.

The Department has defined publicly owned lakes/reservoirs as those that are of a multiple-use nature, publicly accessible, and exhibit physical/chemical characteristics typical of impounded waters. Lakes designated strictly for public water supply, privately owned lakes, or lakes managed by the Alabama Department of Conservation and Natural Resources (ADCNR) strictly for fish production are not included in this definition. Lakes currently meeting the above definition are included in the tables that follow.

The need for information on the trophic state of Alabama's publicly owned lakes led to the initial lakes survey in 1985. The survey established limited baseline information on publicly owned lakes with all data collected during September 1985.

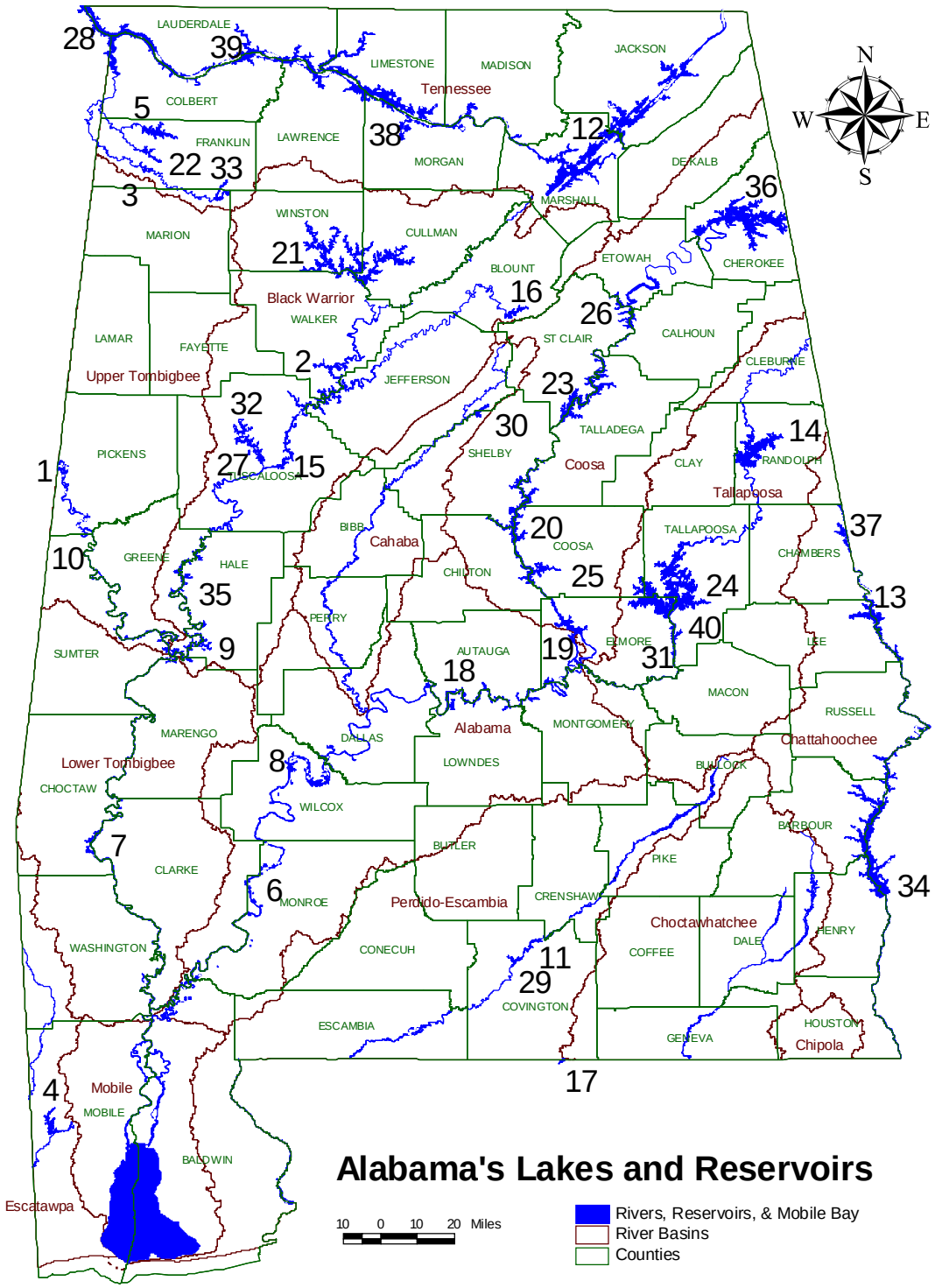
In 1989, Clean Lakes Program funds enabled the ADEM to conduct required water quality assessments of thirty-four (34) publicly owned lakes in the state and submit collected information as part of the **1990 Water Quality Report to Congress**. Trophic state index (TSI) values calculated from data gathered for the water quality assessments indicated potentially significant increases when compared to the TSI values derived from the 1985 study.

In 1990, the Reservoir Water Quality Monitoring (RWQM) Program was initiated by the Field Operations Division of ADEM. Through monitoring activities of the RWQM Program, the collection of data necessary to discern trophic state trends for lakes was begun. From 1990-1992, thirty-one (31) publicly-owned lakes in the state were monitored at least once. Lakes indicated to be use-threatened or impaired from previously collected data were monitored annually. Additional funding received in 1991 through the Clean Lakes Program allowed the expansion of the Program to include all of the forty (40) publicly-owned lakes in the state, including border lakes not included in earlier water quality assessments. Expansion of the program also allowed more intensive monitoring of certain lakes for which water quality concerns were greatest. Production of the RWQM Program Report takes place every two (2) years in concert with the 305(b) report.

Beginning in 1994, frequency of reservoir monitoring in the RWQM Program was increased to a minimum of once every two years so that the water quality database and trends in trophic status could be more rapidly developed. Lakes indicated to be use-threatened or impaired continued to be monitored annually. Realignment of the reservoir sampling schedule was also conducted in 1994 so that reservoir sampling by basin could be instituted by 1996.

In 1997, spring season sampling for the RWQM Program was discontinued to allow allocation of resources toward intensive monitoring of reservoirs by basin. Intensive monitoring consists of monthly sampling of multiple stations in each reservoir in the respective basin from April through October. Reservoirs of the Coosa and Tallapoosa River basins were intensively monitored during 1997 with reservoirs of the Black Warrior River basin scheduled for monitoring in 1998.

Figure 3-1
Publicly Accessible Reservoirs of Alabama



1) Aliceville
2) Bankhead
3) Bear Creek
4) Big Creek
5) Cedar Creek
6) Claiborne
7) Coffeeville
8) Dannelly
9) Demopolis
10) Gainesville
11) Gantt
12) Guntersville
13) Harding
14) Harris
15) Holt
16) Inland
17) Jackson
18) Woodruff
19) Jordan
20) Lay
21) Lewis Smith
22) Little Bear Creek
23) Logan-Martin
24) Martin
25) Mitchell
26) Neely Henry
27) Oliver
28) Pickwick
29) Point A
30) Purdy
31) Thurlow
32) Tuscaloosa
33) Upper Bear Creek
34) W. F. George
35) Warrior
36) Weiss
37) West Point
38) Wheeler
39) Wilson
40) Yates

Initiated in 1989, water quality monitoring of lakes of the Tennessee River system continues through the Tennessee Valley Authority (TVA) Reservoir Vital Signs Monitoring Program. The Program provides results of its monitoring activities to the ADEM on an annual basis through Program reports. Activities of the Program are based on the examination of appropriate physical, chemical, and biological indicators in the forebay, mid-region, and headwater areas of each lake. Objectives of the Program are to provide basic information on the "health" or integrity of the aquatic ecosystem in each TVA lake and to provide screening level information for describing how well each reservoir meets the "fishable" and "swimmable" goals of the Clean Water Act.

Table 3-1
Overall Use Support Summary for Lakes and Reservoirs (acres)

Degree of Use Support	Assessment Category		
	Monitored	Evaluated	Total Assessed
Size Fully Supporting	289,238	17,215	306,453
Size Fully Supporting but Threatened	25,150	0	25,150
Size Partially Supporting	79,225	9,580	88,805
Size Not Supporting	41,118	1,585	42,703
TOTAL ASSESSED	434,731	28,380	463,111

B. Trophic Status

In the RWQM Program, the ADEM uses Carlson's trophic state index (TSI) for determination of the trophic state of Alabama lakes. Carlson suggests the use of chlorophyll a concentrations in calculations of the trophic state of lakes during the summer months. Using chlorophyll a concentrations to determine trophic state is considered to give the best estimate of the biotic response of lakes to nutrient enrichment when phytoplankton is the dominant plant community.

Carlson's TSI provides the limnologist and the public with a single number that serves as an indicator of trophic status of a lake but does not necessarily define it. Lakes with a TSI of seventy (70) or greater are generally considered to be hypereutrophic and in need of regulatory action appropriate for protection and restoration. A TSI of fifty (50) to seventy (70) indicates eutrophic conditions in a lake. Trophic state index values of forty (40) to fifty (50) indicate mesotrophic conditions while oligotrophic conditions are indicated by TSI values less than forty (40).

The number and surface area of lakes for each trophic classification appear in Tables 3-2. A trophic state ranking of Alabama lakes appears in Table 3-3.

Table 3-2
Trophic Status of Significant Publicly Owned Lakes

	Number of Lakes	Acreage of Lakes
Total	39	473,811
Assessed	31	265,201
Oligotrophic	3	585
Mesotrophic	8	54,077
Eutrophic	21	210,539
Hypereutrophic	1	11235
Dystrophic	0	0
Unknown	8	208,610

C. Control Methods

The ADEM has not defined control methods specifically for lakes. Instead, the pollution controls discussed in Nonpoint Source Section of this document are applicable for all of the state's surface waters.

D. Restoration Efforts

Water quality data collected by the RWQM Program enabled the ADEM to determine lakes in need of Clean Lakes Program Phase I Diagnostic/Feasibility Studies. A list of the Clean Lakes Program Projects of Alabama appears in Table 3-4.

The final report of the Phase I Diagnostic/Feasibility Study of Lewis Smith Reservoir is currently being completed. Objectives of the study were as follows:

1. to determine current water quality conditions of Smith Lake and several of its important tributary streams and embayments;
2. to measure nutrient and sediment loading from five (5) tributaries;
3. to determine land-use and land cover in a large portion of the watershed; and
4. to estimate point and nonpoint source loading of Smith Lake.

Table 3-3
Trophic State of Alabama Reservoirs

Trophic State Designation	Reservoir	Basin	Trophic State Index Value*
Eutrophic	Weiss	Coosa	64
	Neely Henry	Coosa	62
	Logan Martin	Coosa	60
	Lay	Coosa	58
	Woodruff	Alabama	58
	Mitchell	Coosa	57
	Aliceville	Tombigbee	56
	Purdy	Cahaba	56
	Coffeeville	Tombigbee	56
	Dannelly	Alabama	56
	W.F. George	Chattahoochee	55
	Jordan	Coosa	54
	Gainesville	Tombigbee	54
	Warrior	Warrior	53
	Claiborne	Alabama	53
	Jackson	Yellow	54
	Harding	Chattahoochee	53
	West Point	Chattahoochee	52
	Demopolis	Tombigbee	52
	Big Creek	Escatawpa	51
	Holt	Warrior	50
	Oliver	Warrior	50
Mesotrophic	Bankhead	Warrior	49
	Point A	Conecuh	48
	Harris	Tallapoosa	48
	Gantt	Conecuh	42
	Smith	Warrior	42
	Yates	Tallapoosa	41
	Martin	Tallapoosa	40
	Tuscaloosa	Warrior	40
Oligotrophic	Thurlow	Tallapoosa	35
	Inland	Warrior	33

*Mean values of data collected at dam forebay stations during August or September.

Oligotrophic	< 40
Mesotrophic	40-49
Eutrophic	50-69
Hypereutrohic	> 70

Table 3-4
List of Clean Lakes Program Projects

Name of Project	Type of Project	Federal Funding ($)	Problems Addressed	Management Measures Proposed or Undetaken
West Point Reservoir	Phase I	100,000	Diagnostic/Feasibility	See Report
W.F. George Reservoir	Phase I	70,000	Diagnostic/Feasibility	See Report
Neely Henry Reservoir	Phase I	92,000	Diagnostic/Feasibility	See Report
Weiss Reservoir	Phase I	142,583	Diagnostic/Feasibility	See Report
Smith Reservoir	Phase I	93,000	Diagnostic/Feasibility	See Report

All Clean Lakes Program Phase I Diagnostic/Feasibility Studies are being conducted through cooperative agreements between ADEM and Auburn University.

E. Impaired and Threatened Lakes

Summary information on support of individual uses of lakes appears in Table 3-7. Cause categories for lake waters not fully supporting uses and for lake waters considered threatened appear in Tables 3-5 and 3-6. Source categories for lake waters not fully supporting appear in Tables 3-8. Use support status of individual lakes appears in Table 3-12. In all tables, surface acres listed as threatened refer to those waters that fully support their designated uses but may not fully support uses in the future because of anticipated sources or adverse pollution trends.

Water quality data collected by the RWQM Program, Clean Lakes Program Phase I Studies, TVA Reservoir Monitoring Program, and ADEM intensive reservoir surveys were used for determination of use support status. Available data from each reservoir was examined for repeated violations of the Water Quality Criteria established by the ADEM and evaluated with adherence to the **Guidelines For Preparation of the State Water Quality Assessments (305(b) Reports)**. Waters affected by health advisories related to fish consumption were determined to be either partially supporting or not supporting. This determination was dependent upon whether advisories specified limited consumption or no consumption of a particular species as directed in the guidelines mentioned above.

TVA assessed 187,575 acres of reservoirs for three (3) uses: aquatic life, fish consumption, and recreation. Limits on recreation use are due to historic pollution problems; urban runoff, discharges, and/or agricultural runoff. Mine drainage impacts aquatic life in Bear Creek, Little Bear Creek, and Upper Bear Creek Reservoirs. Hypolimnetic oxygen depletion affects all four (4) reservoirs in the Bear Creek Watershed and the Elk River Embayment of Wheeler Reservoir. Fish kills occurred in Wilson and Wheeler Reservoirs from agricultural use of pesticides.

At present, criteria specific to lakes have not been developed. However, the EPA is preparing guidance documents for states to use as they develop nutrient criteria for lakes and reservoirs. EPA has indicated that states must include numeric criteria to address nutrients in their water quality standards by 2003.

F. Toxic Effects on Lakes

Lake specific monitoring information for toxic pollutants is limited. Point source control efforts are directed at the source of toxic pollutants through NPDES permitting programs. Total lake acres affected by toxicants is contained in Part V Public Health. Lake acreage monitored for toxicants consists of lakes for which fish have been collected and analyzed through the ADEM Fish Tissue Monitoring Program and the TVA Reservoir Program. Lake acreage with elevated levels of toxicants consists of lake areas upon which health advisories have been instituted that relate to consumption of fish contaminated with certain priority pollutants.

Fish will continue to be collected from major lakes, rivers, and certain waterbodies of concern and analyzed for toxic pollutants as part of the ADEM Fish Tissue Monitoring Program. Fish tissue sampling results are contained in the Fish Tissue Monitoring section of Part III Chapter One.

G. Acid Effects on Lakes

The number and acreage of lakes affected by acidity appear in Table 3-9. The number and acreage of lakes affected by sources of high acidity appear in Table 3-10. No reservoirs monitored by ADEM have been determined to be impacted by high acidity based on data collected through the RWQM Program. However, the following reservoirs are considered vulnerable to acidity based on low alkalinities and pH values observed in monitoring data that were near limits set by the ADEM Water Quality Criteria: Big Creek; Inland; Jackson; Point A; Smith; and Tuscaloosa. Low pH values measured in Big Creek, Jackson, and Point A Reservoirs are determined to be of natural origin and are considered unlikely to cause adverse impacts. In the cases of Smith and Tuscaloosa Reservoirs, mining activities in the watershed were also considered in determining the vulnerability of the reservoirs to acid effects.

According to information supplied by the TVA, mine drainage impacts aquatic life in the Bear Creek, Little Bear Creek, and Upper Bear Creek Reservoirs of the Tennessee River Basin.

H. Trends

Trend information is included in Table 3-11. Trends were determined by review of three (3) or more years of water quality data from each reservoir during the period 1985-1997.

The trend of West Point Reservoir is considered to be improving based on data collected through Phase I Studies of the lake and limited data collected through the RWQM Program.

Assignment of a particular reservoir to the Stable category does not necessarily indicate desirable water quality but only that the water quality appears stable. Though highly eutrophic, Weiss Reservoir has not exhibited increases in trophic state nor other affects to water quality as have lower reservoirs of the Coosa River basin.

Reservoirs considered to be degrading were those that have exhibited increases in trophic state, increases in nutient concentrations, institution of fish tissue consumption advisories, infestation of filamentous blue-green algal species, violations of ADEM Water Quality Criteria or a combination of these factors. Reservoirs considered to be degrading include:

a) Neely Henry
b) Logan Martin
c) Lay
d) Mitchell
e) Jordan

Future data collection is critical in further establishing trends in water quality of these and other reservoirs in the state. Trends were considered unknown when water quality data varied widely in the years studied.

Table 3-5
Total Sizes of Waters Not Fully Supporting Uses by Various Cause Categories for Lakes and Reservoirs (acres)

	Size of Waters bv Contribution to Impairment	
Cause Category	**Major**	**Moderate/Minor**
Cause Unknown	21,525	
Pesticides	9,250	
Priority organics	68,698	
Nonpriority organics		
Metals		1,850
Ammonia		
Chlorine		
Other inorganics		
Nutrients	6,085	
pH		1,850
Siltation	60	
Organic enrichment/low DO	24,285	35,885
Salinity/TDS/chlorides		
Thermal modifications		
Flow alterations		
Other habitat alterations		
Pathogen indicators	15,155	
Radiation		
Oil and grease		
Taste and order		
Suspended solids		
Noxious aquatic plants		
Filling and draining		
Total toxics		
Turbidity		
Filling and draining		
Exotic species		
Other		

Table 3-6
Total Sizes of Waters Fully Supporting Uses but Threatened by Various Cause Categories
Type of Waterbody: Lakes (acres)

Cause Category	Size of Waters by Contribution to Impairment	
	Major	**Moderate/Minor**
Cause Unknown		
Pesticides	12,500	
Priority organics	12,650	
Nonpriority organics		
Metals		
Ammonia		
Chlorine		
Other inorganics		
Nutrients	83,648	
pH		
Siltation		
Organic enrichment/low DO	24,463	
Salinity/TDS/chlorides		
Thermal modifications		
Flow alterations		
Other habitat alterations		
Pathogen indicators		
Radiation		
Oil and grease		
Taste and order		
Suspended solids		
Noxious aquatic plants	18,800	
Filling and draining		
Total toxics		
Turbidity		
Filling and draining		
Exotic species		
Other		

Table 3-7
Individual Use Support Summary
Type of Waterbody: Lakes (acres)

Use	Size Supporting	Size Supporting but Threatened	Size Partially Supporting	Size Not Supporting	Size Not Attainable	Size Unassessed
Fish Consumption	362,033	25,150	41,435	34,493	0	0
Shellfishing	N/A	N/A	N/A	N/A	N/A	N/A
Aquatic Life Support	308,991	69,219	76,895	8,010	0	0
Swimming and Secondary Contact	317,693	80,188	16,955	200	0	0
Drinking Water Supply	29,743	40,436	0	0	0	0
Agriculture	0	0	0	0	0	0
Outstanding Alabama Water	0	0	0	0	0	0

Table 3-8
Total Sizes of Waters Not Fully Supporting Uses Affected by Various Source Categories for Lakes and Reservoirs (acres)

Source Category	Contribution to Impairment	
	Major	Moderate/Minor
Industrial Point Sources	71,678	
Municipal Point Sources	60	750
Combined Sewer Overflows		85
Agriculture	3,155	200
Silviculture		
Construction	4,480	
Urban Runoff/Storm Sewers	350	2,110
Resource Extraction	1,850	1,960
Land Disposal		
Hydromodification/Habitat Modification		10,250
Contaminated Sediments	8,000	
Atmospheric Deposition		
Unknown Source	39,785	35,885
Other (Natural Sources)	6,025	
Other (Wildlife)	11,080	2,250

Table 3-9
Lakes Affected By Acidity

	Number of Lakes	Acreage of Lakes
Assessed for Acidity	39	485,046
Impacted by High Acidity	1	1,850
Vulnerable to Acidity	6	32,930

Table 3-10
Sources of High Acidity in Lakes and Reservoirs

	Number of Lakes Impacted	Acreage of Lakes Impacted
Acid Deposition	0	0
Acid Mine	1	1,850
Natural Sources	0	0
Other (list)	0	0

Table 3-11 Trends in Significant Public Lakes

	Number of Lakes	Acreage of Lakes
Assessed for Trends	39	464,011
Improving	1	2,300
Stable	26	179,363
Degrading	5	51,208
Trend Unknown	12	231,140

Table 3-12
Use Support Status of Individual Lakes/Reservoirs (acres)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Alabama	Woodruff	Aquatic Life	None	12,510				
		Rec.	None	8,132				
		Fish Cons.	None	12,510				
	Dannelly	Aquatic Life	TSI & D.O.	17,200				
		Rec.	TSI & D.O.	13,800				
		Fish Cons.	None	17,200				
	Claiborne	PWS	None	904				
		Aquatic Life	D.O.	3,936				
		Rec.	D.O.	2,624				
		Fish Cons.	None	3,936				
Black Warrior	Lewis Smith	PWS	TSI & Mining	1,344				
		Aquatic Life	TSI & Mining	21,200				
		Rec.	TSI & Mining	21,200				
		Fish Cons.	Metals	21,200				

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Black Warrior	Tuscaloosa	PWS	TSI		5,885			
		Aquatic Life	TSI & Mining		5,885			
		Rec.	TSI	5,885				
		Fish Cons.	None	5,885				
	Inland	PWS	None	1,095				
		Aquatic Life	None	1,095				
		Rec.	None	1,095				
		Fish Cons.	None	1,095				
	Bankhead	PWS	TSI & Mining	9,345				
		Aquatic Life	TSI & Mining, & DO		9,345			
		Rec.	TSI & Mining	9,345				
		Fish Cons.	None	9,345				

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Black Warrior	Holt	Aquatic Life	TSI & Mining	3,300				
		Rec.	TSI & Mining	3,300				
		Fish Cons.	None	3,300				
	Warrior	Aquatic Life	None	7,800				
		Fish Cons.	None	7,800				
Cahaba	Purdy	PWS	TSI	1,050				
		Aquatic Life	TSI	1,050				
		Rec.	TSI	1,050				
		Fish Cons.	None	1,050				
Chattahoochee	West Point	Aquatic Life	Nutrients		2,304			
		Rec.	Nutrients		2,304			
		Fish Cons.	Chlordane				2,304	
	Lake Harding	PWS	None	2,176				
		Aquatic Life	None	2,176				
		Rec.	None	2,176				
		Fish Cons.	Chlordane				2,176	

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Chattahoochee	W. F. George	Aquatic Life	TSI	12,527				
		Rec.	TSI	12,352				
		Fish Cons.	US chlordane		12,527			
Coosa	Weiss	PWS	Nutrients & TSI		21,129			
		Aquatic Life	Nutrients & TSI		30,200			
		Rec.	Nutrients & TSI		30,200			
		Fish Cons.	PCB			30,200		
	Neely Henry	PWS	Nutrients & TSI		2,145			
		Aquatic Life	Nutrients, TSI & D.O.			11,235		
		Rec.	Nutrients & TSI		9,335			
		Fish Cons.	PCB			11,235		
	Logan Martin	Aquatic Life	Nutrients, TSI & D.O.		15,263			
		Rec.	Nutrients & TSI		15,263			
		Fish Cons.	PCB			15,263		

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Coosa	Lay	PWS	Nutrients & TSI		11,142			
		Aquatic Life	Nutrients, D.O., TSI			12,000		
		Rec.	Nutrients TSI, & Algae		10,380			
		Fish Cons.	Upstream advisory				12,000	
	Mitchell	PWS	Nutrients & TSI		5,850			
		Aquatic Life	Nutrients, TSI, & D.O.			5,850		
		Rec.	Nutrients & TSI		5,850			
		Fish Cons.	US PCBs		5,850			
	Jordan	Aquatic Life	Nutrients, TSI, & Algae			6,800		
		Rec.	Nutrients, TSI, & Algae		6,800			
		Fish Cons.	US PCBs		6,800			

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Escatawpa	Big Creek	PWS	TSI	3,600				
		Aquatic Life	TSI	3,600				
		Fish Cons.	None	3,600				
Lower Tombigbee	Gainesville	Aquatic Life	TSI	6,400				
		Rec.	TSI	6,400				
		Fish Cons.	None	6,400				
Perdido- Escambia	Gantt	Aquatic Life	Nutrients & TSI		2,767			
		Fish Cons.	None	2,767				
	Lake Jackson	Aquatic Life	None	256				
		Rec.	None	256				
		Fish Cons.	None	256				

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Perido-Escambia	Point A	Aquatic Life	None	900				
		Rec.	None	900				
		Fish Cons.	None	900				
Tallapoosa	Harris	Aquatic Life	TSI	10,660				
		Fish Cons.	None	10,660				
	Martin	PWS	None	1,920				
		Aquatic Life	Nutrients	38,940	60			
		Rec.	Nutrients	38,940	60			
		Fish Cons.	None	39,000				
	Yates	PWS	None	1,980				
		Aquatic Life	Trib. WQ	1,980				
		Rec.	Trib. WQ	1,980				
		Fish Cons.	None	1,980				

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Tallapoosa	Thurlow	PWS	None	585				
		Aquatic Life	None	585				
		Rec.	None	585				
		Fish Cons.	None	585				
Tennessee	Guntersville	Aquatic Life	---	66,365				
		Rec.	Pathogens	62,755		3,610		
		Fish Cons.	---	66,365				
	Wheeler	Aquatic Life	Pesticides Nutrients D.O.	42,550		24,550		
		Rec.	Pathogens	56,545		10,555		
		Fish Cons.	Pesticides	64,350			2,750	
	Wilson	Aquatic Life	Pesticides D.O.	5,250		10,250		
		Rec.	Pathogens	40				
		Fish Cons.		15,500				
	Pickwick	Aquatic Life	Unknown	24,450		6,150		
		Rec.	Pathogens	27,650		2,750	200	
		Fish Cons.		30,660				

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Tennessee	U. Bear Creek	Aquatic Life	D.O. Metals pH				1,850	
		Rec.		1,850				
		Fish Cons.		1,850				
	Bear Creek	Aquatic Life	D.O.				400	
		Rec.		400				
		Fish Cons.		400				
	Little Bear Creek	Aquatic Life	D.O.				1,560	
		Rec.		1,560				
		Fish Cons.		1,560				
	Cedar Creek	Aquatic Life	D.O.				4,200	
		Rec.		4,200				
		Fish Cons.		4,200				
Upper Tombigbee	Aliceville	Aquatic Life	TSI	8,300				
		Rec.	TSI	8,300				
		Fish Cons.	None	8,300				

Table 3-12 (cont.)

Basin	Reservoir	Use	Concern*	Full	Threat	Partial	Non	NA
Upper Tombigbee	Demopolis	Aquatic Life	TSI	10,000				
		Rec.	TSI	10,000				
		Fish Consum.	None	10,000				
	Coffeeville	Aquatic Life	TSI	8,500				
		Fish Cons.	None	8,500				

D.O. = Dissolved Oxygen, TSI = Trophic State Concern, Rec. = Recreation

Fish Cons.= Fish Consumption, U. = Upper, Trib WQ = Tributary Water Quality

Table 3-13

State Owned and Operated Public Fishing Lakes

County	County Fishing Lakes	Acres	County	County Fishing Lakes	Acres
Barbour Co.	Barbour Co. Lake	75	Favette Co.	Favette Co. Lake	60
Bibb Co.	Bibb Co. Lake	100	Geneva Co.	Geneva Co. Lakes	65
Chambers Co.	Chambers Co. Lake	183	Lamar Co.	Lamar Co. Lake	68
Clay Co.	Clay Co. Lakes	74	Lee Co.	Lee Co. Lake	130
Coffee Co.	Coffee Co. Lake	80	Madison Co.	Madison Co. Lake	105
Crenshaw Co.	Crenshaw Co. Lake	53	Marion Co.	Marion Co. Lake	37
Dale Co.	Dale Co. Lake	92	Monroe Co.	Monroe Co. Lake	94
Dallas Co.	Dallas Co. Lake	100	Pike Co.	Pike Co. Lake	45
DeKalb Co.	DeKalb Co. Lake	120	Walker Co.	Walker Co. Lake	163
Escambia Co.	Escambia Co. Lake	184	Washington Co.	Washington Co. Lake	84
Totals				**20 State Fishing Lakes**	**1,061**

Part IV The Nonpoint Source Management Program

1. The Nonpoint Source Program Overview

During the period 1990-1998, Alabama received approximately $14.5 M of annual CWA Section 319(h) grant appropriations to fund a variety of nonpoint source (NPS) pollution control demonstration efforts. Approximately 135 individual Section 319 workplan projects have been funded since 1990 to address NPS pollution, also known as runoff, diffuse, or wet-weather pollution. Alabama ranks fourth in the total amount of Section 319(h) grant funds appropriated by Congress to EPA Region 4 states. Section 319(h) grant funds are for NPS demonstration project purposes and therefore cannot be used to implement all the controls that may be required to address a particular cause of NPS pollution. Funding does target a wide range of NPS categories/subcategories (approximately 50) and can provide options for their solutions. Section 319(h) grants are appropriated by Congress annually, although the duration of individual NPS projects may extend over a period of up to 7 years, i.e., the ADEM NPS Unit have several fiscal year Section 319(h) grants open in any given calendar year. Currently, open grant workplans (FY94-98) each include 10-20 individual projects that, in total, address literally hundreds of individual NPS pollution control related activities.

Total annual appropriations of Section 319(h) grant funds to Alabama are insufficient to provide for all the financial needs or incentives needed for best management practices (BMP) or other control effort needs. Funds are used as “seed” money to demonstrate the proper installation, use, and management of the most efficient and cost-effective BMPs and to provide limited stakeholder “educational” outreach and training activities. Request for long-term project funding is discouraged. All Section 319 cooperators are encouraged to institutionalize their efforts by seeking other, more permanent sources of non-federal funding for long-term project activity implementation.

Section 319 grant funds require a minimum of 40% non-federal total project cost match. For the period FY90 - FY93, cooperators consistently exceeded the minimum nonfederal match requirement at time of grant closeout. This indicates that there is much interest among stakeholders in the state to address NPS pollution.
The Table below illustrates Alabama Section 319 NPS demonstration grant funding in millions ($M) of dollars:

FY	1990	1991	1992	1993	1994	1995	1996[a]	1997	1998
Federal ($M)	0.76	0.61	0.84	1.13	1.46	3.04[b]	2.06	1.95	2.05
Non-federal ($M)	.57	.79	.96	1.0	1.0	2.6	1.4	1.7	1.4

It is expected that for the period FY94 - FY98 (grants currently open), nonfederal cooperator match will also exceed the minimum 40% nonfederal match requirement.

[a]Includes an additional appropriation of $110 K above baseline

[b]Includes $775 K federal funds for a 7-year Lightwood-Knot Creek Watershed National NPS Best Management Practice Monitoring Project (Covington County).

2. NPS Management Program Direction

As the Alabama NPS Management Program continues to mature, the EPA has allowed Alabama more flexibility in setting Section 319 funding priorities, i.e., the ability to "drive" the program; implement the most effective NPS pollution control efforts; and to use a portion of Section 319 grant funds to update and revise the 1989 Alabama NPS Management Program and the Alabama NPS Assessment Report. However, while ADEM now has some flexibility in prioritizing the best NPS projects for the state, it is also being held more accountable for making progress in achieving and maintaining beneficial uses of water. Many projects or activities may receive priority Section 319 grant funding. The ADEM NPS Unit's priorities include, but are not limited to:

- achieving NPS Leadership State status as per EPA FY97 National Guidance for Section 319 projects
- incorporation of EPAs "9-Key Elements" into the revised Alabama NPS Management Program
- supporting "unified" NPS water quality assessments
- Implementing a 5-year rotational river basin/watershed management schedule and approach
- supporting community based environmental program (CBEP) efforts
- demonstrating practical, effective, feasible, cost effective NPS pollution best management practices
- securing and maintaining cooperative public and private sector participation and partnerships
- raising public awareness through education, training, and incentives
- developing, prioritizing, and implementing NPS TMDLs
- addressing Clean Water Action Plan Initiatives

Overall statewide efforts to protect, maintain, and improve the physical, chemical and biological conditions of NPS impacted waters continues to be a challenge. Several tools are still needed to successfully facilitate the NPS management efforts. These include, but are not limited to:

- increased financial assistance to meet the goals of the CWA, i.e. fishable/swimmable waters
- clear, aggressive, goals and incentives for best management practice implementation
- flexibility in addressing unclear, unreasonable, or unfunded internal/external initiatives that result in little or no direct environmental improvement
- focused/unified water quality monitoring strategies
- coordinated and cooperative data and information collection, analysis and management including enhanced GIS capabilities
- increasing types and numbers of source control/on-the-ground best management practices
- technical guidance, assistance, training, and technology transfer
- comprehensive land use and management planning
- increasing environmental education, outreach, and training
- strengthening enforcement resources and runoff controls
- need for well-defined long and short term goals, procedures, plans, standards, criteria, indicators, support status, etc., that effectively measure and interpret NPS program effectiveness
- stakeholder cooperation to implement a holistic PS/NPS watershed approach, i.e. everyone "works off the same page" (e.g. Clean Water Action Plan)
- easily accessible, recent, valid, user-friendly water quality data and resource information

Nonpoint Source management should present a "balanced" approach between individual watersheds and statewide NPS programs. This approach appears to have the

greatest potential for institutionalization of NPS efforts. Historically, many states limited their NPS programs to single NPS category/subcategory water quality impacted areas. However, the ADEM NPS Unit is moving away from narrowly defined, quantitative and spatially deficient, rote demonstration project efforts and toward a more holistic watershed and community based environmental protection approach. Water quality protection resources target high priority NPS impacted surface and ground waters on a much larger scale and within specifically assessed and prioritized geographic areas, i.e., implementing the ADEM Water Divisions Watershed Management Schedule and the Clean Water Action Plan, as applicable. The watershed approach may be characterized by the following four principles:

1. Well integrated partnerships
2. A specific geographic focus
3. Action driven by environmental objectives and by strong science and data
4. Coordinated priority setting and integrated solutions

The ADEM NPS Unit initiated a 5-year rotational Watershed (River Basin) Management (NPS Assessment) Schedule approach beginning with an FY96 Section 319 grant. The approach involves assessing and identifying the sources and causes of NPS impacts to water quality, prioritizing impacted watersheds, and providing Section 319(h) and other resources to protect or improve water quality. The first major NPS River Basin assessments were conducted in 1996/97 in the Lower Cahaba and Black Warrior River Basins. High funding priority was given to FY99 Section 319 projects that addressed NPS impacted watersheds in these two river basins. The NPS Unit will assess the Tennessee River Basin utilizing FY98 Section 319 grant funding with subsequent funding to follow.

Implementation timelines for river basin watershed programs, including “on-the-ground” best management practices, may vary because of poor or lacking water quality data and other information needs, project logistics and scheduling, limited resources, and unanticipated or other demands and priorities. Section 319(h) project proposals are requested in the year following completion of the major NPS River Basin assessment. For instance, having recently completed the Lower Cahaba River and Black Warrior River assessments (1996-98), a major portion of FY99 Section 319 grant funds will be dedicated to addressing high priority NPS impacted watersheds identified in those two basins.

The 5-year rotational River Basin Assessment Schedule for **assessing** NPS pollution using Section 319 funds will tentatively proceed as follows:

	River Basin(s)	Assessment Schedule
1.	Cahaba; Black Warrior	(Year 1. Completed)
2.	Tennessee	(Year 2. Fiscal 1998)
3	Chattahoochee; Chipola; Choctawhatchee; Escambia; Perdido	(Year 3. Fiscal 1999)
4.	Coosa; Tallapoosa; Alabama	(Year 4. Fiscal 2000)
5.	Mobile; Escatawpa; Lower Tombigbee; Upper Tombigbee	(Year 5. Fiscal 2001)

The NPS River Basin Assessment cycle will continually repeat upon itself. Each major river basin assessed (or at least one watershed "nested" within a basin "grouping") will be "treated", as limited stakeholder funding allows, i.e., the Lower Cahaba/Black Warrior River Basins will again be assessed in Year 6. Fiscal 2002, with watershed/water quality protection projects or "treatments" tentatively to be demonstrated and implemented beginning in Fiscal 2003.

Several uncertainties exist related to implementation and funding of the river basin management schedule e.g., Clean Water Action Plan and associated Unified Watershed Assessments, resolution of TMDL lawsuits, and inadequate resources to successfully address on-going priorities. Therefore, these and other issues may preempt continuation of the basic rotational river basin management schedule. Project cooperators should propose Section 319 projects according to the above scheduled assessments/completions unless otherwise notified.

Another type of balanced NPS management program is programmatic. The ADEM supports Community Based Environmental Protection (CBEP) efforts, whereby local stakeholders join forces to plan and implement environmental protection measures that make good sense for particular environmental problems within their local communities. Cooperative efforts that may provide effective local community pollution control solutions are actively sought by the ADEM NPS Unit for potential Section 319(h) and other funding. Specific solutions that address local CBEP areas are not prescribed by the ADEM NPS Unit nor by EPA. Rather, citizen-led efforts are driven by local interest and needs and may include, but not be limited to: education, training, technical assistance, financial incentives, technology transfer, best management practices, and enforcement.

A statewide balance to address several categories/subcategories of NPS pollution is important and also mandated by the Clean Water Act Section 319. Although agricultural related activities are generally the predominate and primary source of water quality degradation, other NPS categories/subcategories such as on-site septic systems, construction, erosion and sedimentation, urban run-off, resource extraction, silviculture, etc., must be addressed each year - primarily as part of a holistic watershed project.

3. Alabama NPS Management Program Revision

A purpose of CWA Section 319(h) grants is to provide financial assistance to implement a state NPS management program. The 1989 Alabama Nonpoint Management Program document discusses NPS impacts and describes strategies and programs to address NPS problems in Alabama. However, the 1989 document is outdated and does not fully identify or address current NPS issues and programs in Alabama.

EPA's FY97 national grant guidance encouraged all states to update their NPS management program document and NPS assessment reports. In 1998, the ADEM NPS Unit entered into a cooperative agreement with the Environmental Institute at Auburn University to produce a new, updated and revised, Alabama Nonpoint Source Management Program document. The document is expected to be available to the public by fall 1999. All NPS stakeholders are strongly encouraged to provide input into updating the new NPS management program. It is not an "ADEM" document, but will be

a resource and planning tool to aid in preventing duplication of efforts and insure that the greatest environmental benefits are obtained utilizing very limited resources.

Unlike point sources of pollution, which enter waters at defined locations such as discharge pipes from wastewater treatment facilities, NPS originates from numerous, often-diffuse sources. Listed below are examples of categories and subcategories of NPS pollution that have been identified and which the ADEM NPS Unit and cooperating agencies/organizations strive to address as applicable and as resources allow:

Table IV-1

ADEM NONPOINT SOURCE CATEGORIES AND SUBCATEGORIES

Agriculture

Non-irrigated crop production
Irrigated crop production
Specialty crop production (horticulture, citrus, nuts, fruits)
Pasture land
Range land
Riparian grazing
Upland grazing
Animal operations
Confined animal feeding operations (non-permitted)
Aquaculture
Off-farm animal holding/management areas
Manure lagoons
Pesticides

Silviculture

Harvesting, reforestation, residue management
Forest management
Logging road construction/maintenance

Construction

Highway - road - bridge
Land development

Urban Runoff/Storm Sewers

Non-permitted runoff from Residential, commercial, industrial, and park-land areas not covered under other source categories

Resource Extraction
manuals,
Surface mining
Subsurface mining
Placer mining
Dredge mining
Petroleum activities
Mill tailings
Mine tailings
Acid mine drainage

Land Disposal

Sludge
Wastewater
Landfills / illegal dumps
Industrial land treatment
Onsite wastewater systems (septic tanks, etc.,)
Hazardous waste
Septage disposal
Solid waste

Hydromodification

Channelization
Dredging
Dam construction
Upstream impoundment
Flow regulations/modifications

Habitat Modification

Removal of riparian vegetation
Streambank modification and/or destabilization
Drainage/filling of wetlands

Water Quality Assessment

River/streams
Lakes
Groundwater
Wellhead protection
Source water
CitizenVolunteer

Education and Outreach

Resource material (BMP fact sheets, etc.,)
Videos/Slide set
Survey
Meeting, conference, seminar
Field days/tour
Pollution prevention

Table IV-1 (cont.)

Other

Marinas
Spills
Waste storage/leaking tanks
Highway maintenance and runoff
Atmospheric deposition
Contaminated sediments
Natural resources
Recreational activities
Land preservation/acquisition
Total Maximum Daily Load (TMDL)
Coastal Areas (CZARA, NEP, GOMP, etc.)
Community Based Environmental Protection (CBEP)

Some NPS subcategories may also be addressed or controlled through ADEM or other state and federal agency enforcement and regulatory programs. The above list is dynamic and other NPS categories/subcategories may be added as new sources and causes are identified.

Nonpoint source pollution efforts in Alabama strive to meet EPA's long-term national vision that, "***All States Are Implementing Dynamic And Effective Nonpoint Source Programs Designed To Achieve And Maintain Beneficial Uses Of Water***." This vision will be will be realized by inclusion and implementation of EPA's FY97 Section 319 national grant guidance's "Nine Key Elements" into the revised Alabama NPS Management Program. Section 319 grants will priority fund projects that address facilitation of the "Nine Key Elements" listed below:

NINE KEY ELEMENTS OF ALABAMA'S NONPOINT SOURCE MANAGEMENT PROGRAM

1. Explicit short-and long-term goals, objectives and strategies to protect surface and ground water.

2. Strong working partnerships and collaboration with appropriate State, interstate, Tribal, regional, and local entities (including conservation districts), private sector groups, citizen groups, and federal agencies.

3. A balanced approach that emphasizes both statewide nonpoint source programs and on-the-ground management of individual watersheds where waters are impaired or threatened.

4. The State program (a) abates known water quality impairments resulting from nonpoint source pollution and (b) prevents significant threats to water quality from present and future activities.

5. An identification of waters and watersheds impaired or threatened by nonpoint source pollution and a process to progressively address these waters.

6. The State reviews, upgrades, and implements all program components required achieving and maintaining beneficial uses of water as expeditiously as practicable.

7. An identification of federal lands and objectives which are not managed consistently with State program objectives.

8. Efficient and effective management and implementation of the State's nonpoint source program, including necessary financial management.

9. A feedback loop whereby the State reviews, evaluates, and revises its nonpoint source assessment and its management program at least every five years.

4. NPS Water Quality Assessment

An Alabama Nonpoint Source Assessment Report was produced in 1989 as a Clean Water Act (1987) Section 319 requirement. The report identified waterbodies impacted by nonpoint sources of pollution using both existing water quality data and evaluations, since in many cases, NPS water quality data were not available. Most waterbodies listed in Appendix D were assessed based on evaluations rather than monitoring. Evaluations were based on information other than ambient water quality data, such as citizen water pollution complaints, fish kill reports, sediment surveys, and best professional judgment. During the nonpoint source assessment process, virtually all of the listed waterbodies were assessed based upon current available information.

Because of the diversity of data presented in this table, numeric codes described by the NPS Legend of Table Codes are used to summarize assessment information for each listed waterbody. The codes identify typical causes of NPS pollution described in the table and provide information on the extent of major impairment, moderate/minor impairment, and total miles and acres of impacted waterbodies. Of these causes, organic enrichment/low dissolved oxygen (D.O.), siltation, and nutrients have the greatest impact in terms of the extent of water quality impairment to streams and rivers. Pesticides, nutrients, and organic enrichment/low D.O. cause the most extensive impairment to lakes and bays.

Some of the 1989 Assessment Report data may be outdated and is currently being revised. A river basin/watershed assessment approach based on the ADEM Water Division's 5-year rotational Watershed Management Schedule and other Clean Water Action Plan initiatives is progressing as resources allow. Assessment information is being obtained using two Section 319 water quality assessment approaches to ascertain NPS impacts.

The first approach measures the chemical, physical, and biological condition of water bodies utilizing EPA approved standard operation procedures and quality assurance/quality control scientific data collection and assessment methodologies. The ADEM NPS Unit initiated the Watershed Management Schedule with FY96 Section 319 grant funds. The process involves sample collection and analyses, site assessments, identifying the sources and causes of NPS impacts to water quality, prioritizing impacted watersheds, and subsequently providing Section 319(h) and other resources to protect or improve water quality.

The first major river basin assessments were conducted during 1996/97 in the Lower Cahaba and Black Warrior River Basins. As a result of these assessments, high priority was given to FY99 Section 319 projects that address priority NPS impacted watersheds

in those two river basins. Following the watershed management schedule, the Lower Cahaba/Black Warrior River Basins will again be assessed in Year 6. (Fiscal 2002), with Section 319 projects or "treatments" to be tentatively demonstrated and implemented beginning in FY2003. The river basin assessment cycle will continually repeat upon itself with the Tennessee River Basin scheduled for NPS assessments in 1998-99 utilizing FY98 Section 319 funding.

After each major river basin is assessed, Section 319 and other sources of funding (e.g. state and federal cost-share) resources will be provided to improve water quality in the basin - or at least in watershed(s) "nested" within an assessed river basin "grouping." Providing that unforeseen internal and external obstacles do not arise, the NPS Unit 5-year rotational River Basin Assessment Schedule will tentatively proceed as previously outlined in the table on page IV-3

The second NPS assessment process involves an active public participation opportunity utilizing local community based environmental protection stakeholder input. The ADEM, in cooperation with the Soil and Water Conservation Committee and Districts, is instituting citizen based water quality assessment committees and watershed assessment teams in each District (all 67 Alabama counties). These citizen-led committees and teams record water quality assessment information in each county using standardized conservation assessment worksheets. Assessment data is collected and assessed based on such factors as watershed surveys (field assessments), existing water quality monitoring data, instream data collected by trained water quality monitors, interviews with persons knowledgeable about the watershed, aerial surveys, and other data that may be available. As of June 1998, at least sixteen of the sixty-seven counties had completed their assessments, although the data is still in draft form and not available for inclusion in this 305(b) report. Additional Section 319 funds are available to Districts that develop watershed protection plans and projects with additional consideration given to District's whose plans or projects serve as models for other Districts.

Regardless of the assessment methodology, temporal and spatial demonstration/implementation of "on-the-ground" best management practices may vary because of incomplete/unavailable water quality data or other information needs, new priorities, reluctance of landowners/landusers to participate, logistics, and scheduling lag times. Stakeholder project proposals will usually be requested in the year following completion of the basin/watershed assessment and should be submitted according to the scheduled assessment completions.

5. Water Quality Improvements and Nonpoint Source Program Effectiveness

Past efforts and future program plans can best evaluate the effectiveness of NPS pollution management in Alabama. Basing conclusions on the results of one-time or short-term sampling events or relying solely on "bean-counts" are not effective measures of success of NPS pollution control programs. Success of a NPS pollution control project or program is often difficult to measure quantitatively, is often intuitive, and typically involves long–term project commitment efforts. Problems associated with quantifying NPS project effectiveness are presented below:

- The NPS pollution problem is ***large***. It represents the dominant fraction of surface water pollution with 40% of assessed waters not meeting water quality goals and about half of the nation's 2,000 major watersheds having serious or moderate water quality problems.
- The problem is ***complex***. It involves a large number of stakeholders and important sectors of the economy.
- The problem is ***highly variable*** in both time and space. Over time, land use patterns and shifts in population continually occur, ever increasing and changing NPS environmental stresses.

Everyone contributes to NPS pollution. Unlike point source pollution that usually can be easily collected and treated through regulatory controls, NPS pollution is primarily voluntary and is addressed using a combination of stakeholder education and training and the adoption and implementation of usually simple, feasible, practical and cost-effective best management practices (BMPs). Implementing and maintaining appropriate and adequate BMPs allows for continuation of everyday activities, reduces or prevents NPS pollution, protects water quality, and maintains the environmental and economic value of Alabama's resources.

The need continues for resource agencies and other stakeholders to cooperatively focus environmental protection efforts on changing individual behaviors, processes and approaches that contribute to NPS pollution. Many challenges remain in trying to quantify water quality improvements and documenting project successes. Stakeholder education appears to be to the most efficient and cost effective approach available for reducing NPS pollution, protecting natural resources, and improving water quality. Nonregulatory education and outreach takes as much time, funding, and efforts as regulatory approaches. Education and outreach is used by the ADEM NPS Unit as an important pollution prevention and water quality protection tool. It should not be thought of as regulatory, assessment, or BMP afterthought; or as "low-cost" warm and fuzzy endeavors. Indeed, in many cases, providing NPS education to stakeholders holds the key to "what works".

Most Section 319 projects incorporate a reuse, recycle, and reduce pollution prevention or other educational component in order to assure long-term pollution controls. Measurement of project success is associated with building cooperative relationships and sharing/utilizing limited resources with many and varied stakeholders. In building long-term state and local capacity to implement NPS pollution control programs, many opportunities for stakeholder input, community based environmental projects, and new and innovative pollution control efforts continue to emerge and grow in Alabama.

The time frame for documenting holistic river basin/watershed environmental results of NPS projects is usually many years, and may even be decades. Because of the diffuse nature of NPS pollution, it may not be realistic to expect improvements of some water quality criteria in time frames shorter than this. Nonpoint source project successes may be more effectively measured through appropriate surrogate measures or a combination of the following programs or activities:

a. Educational Outreach:

This is an essential part of most NPS workplan projects. Projects raise the level of public awareness about how NPS pollution affects water quality and about the practical, feasible, and often simple and cost-effective BMPs that are available to control it. Nonpoint source pollution is a people problem. If people don't know about or understand the problem, the problem can not be managed or resolved.

b. Technical Assistance:

Providing land users with sound information on both structural and non-structural BMPs (including installation and maintenance) is an integral part of NPS projects.

c. Financial Assistance:

Projects can provide financial assistance incentives from several resources that encourage people to install pollution control practices or change land use and management practices.

d. Training:

NPS pollution control strategies and technologies are rapidly developing and changing, resulting in a frequent need to train professional and volunteer staff to facilitate emerging, new and innovative NPS controls.

e. Watershed Demonstration Activities:

Demonstration of BMPs provides opportunities for landowners and users to learn about the holistic approach to pollution control.

f. Enforcement:

Section 319 projects provide resources to implement and enforce existing laws and regulations. The NPS Unit supports staff positions in the Montgomery, Decatur, and Birmingham Field Operations Division offices to address NPS pollution related citizen complaints. The laws and associated regulations administered by ADEM are designed to limit the introduction of pollutants into the environment to levels that are protective of public health and the environment. State standards must be as stringent as federal standards, which are developed to be protective of public health and environmental quality. Like similar agencies in other states, ADEM administers NPS protection programs through a regulatory system which limits (not prohibits) the introduction of pollutants into the environment. The regulations dealing with waste are generally designed to prevent uncontrolled releases to the environment.

6. Other Related Projects : Cooperation and Coordination With Stakeholders

Because of the magnitude of NPS pollution problems in Alabama, the ADEM actively seeks cooperation, expertise, and resources integration from a multitude of stakeholders including federal and state agencies, committees, advisory groups, and citizens. Interagency and other stakeholder cooperative NPS pollution control efforts include:

a. Memoranda of Understanding (MOU) or Memoranda of Agreement (MOA): federal and state agencies have developed unified framework documents to ensure quality stewardship of limited resources and to enhance water quality protection efforts. These memoranda are reviewed as needed for consistency and compliance with state and

federal laws and to assure that limited resources are effectively and efficiently expended for the greatest environmental benefits.

- The ADEM has in place separate MOUs with the Alabama Forestry Commission (AFC) and the U.S. Forest Service (USDA-USFS) in order to effectively address citizen's water quality pollution complaints related to silvicultural practices, enhance program and planning strategies, and coordinate and implement best management practices and approaches that protect water quality.
- A cooperative MOU exist between the ADEM, the Alabama Soil and Water Conservation Committee (ASWCC), and the USDA-Natural Resources and Conservation Service (NRCS). This agreement - addresses agricultural related NPS pollution control efforts; encourages voluntary adoption of agricultural NPS pollution controls; identifies and clarifies lead agency authorities, roles, and responsibilities, and assures interagency activities and resources are used effectively and consistently to protect water quality.
- A MOA is in place between the Alabama Cooperative Extension System (CES), Alabama Department of Agriculture and Industries (ADAI), Alabama Department of Environmental Management (ADEM), Alabama Department of Public Health (ADPH), Alabama Soil and Water Conservation Committee (ASWCC), College of Agriculture-Auburn University (Co-Ag), and the USDA Natural Resources and Conservation Service (NRCS). This MOA identifies specific responsibilities and activities to be performed by each agency in a coordinated effort to mange animal waste from Animal Feeding Operations (AFOs) and those AFOs that are defined or operated as Concentrated Animal Feeding Operations (CAFOs). The MOA clarifies, leverages, and utilizes the expertise and resources of signatory stakeholders in an effort to protect ground and surface waters in a complementary rather than duplicative manner. It establishes statewide AFO waste management partnerships and addresses management authorities, programs, and initiatives that are needed to protect, maintain, and restore water quality.

Efforts are underway to establish an MOA between the ADEM and the Alabama Department of Public Health (onsite septage). New rules and regulations are being developed for proper installation and management of on-site systems. The MOA will clarify efforts to be conducted by both agencies that will insure protection of public health and water quality.

b. Task Forces/Work Groups: The ADEM has initiated or participates in several NPS category/subcategory specific partnerships to ensure that stakeholder efforts are coordinated. These tasks forces or work groups meet regularly or as needed in order to address public health threats posed by NPS pollution; provide a forum for more effective control of polluted runoff; and to promote water quality protection. A high priority for ADEM is to expand stakeholder collaboration and participatory opportunities.

Erosion Control Task Force. This group has continued to meet regularly since January 1996. Representatives of state and federal agencies, the regulated community, engineering firms, consultants, and citizen and environmental groups and organizations with a responsibility or an interest in controlling erosion and sedimentation are participating. The purpose of the Task Force is to examine and improve erosion control in Alabama. With publication of the Task Force's, "*Recommendations for Reducing Pollution From Erosion and Sedimentation in Alabama*" (December 10, 1997) efforts are now proceeding to implement the recommendations.

In addition, erosion control best management practice training is offered in each county by the staff of the ADEM Office of Education/NPS Unit. County/city planners, engineers, local officials, and road crews are presented instruction on appropriate and effective BMPs related to road construction and other land disturbance activities. Other stakeholder training and outreach opportunities are affiliated the Alabama Technology Transfer Center, Alabama Extension System, other university assistance programs, private organizations, International Erosion Control Association, the Soil and Water Conservation Society, and others.

Agricultural-Environmental Advisory Council: This work group, composed of ADEM, NRCS, ASWCC, ACES and other representatives, provides agricultural information to the AU Environmental Institute for update of the Alabama NPS Management Program. Specific items addressed include incorporation of EPAs "nine key elements" for an effective management program.

Confined Animal feeding Operations Work Group: This work group is comprised of state and federal agencies, environmental groups, commodity and agricultural interests, university representatives, and others. The primary function of this workgroup has been to develop an Alabama specific NPDES permitting compliance structure involving CAFO Registration by Rule. The Rule has been developed and initially approved by EPA as a first of its kind in the country. The group continues to meet regularly in order to promote and expedite implementation to the maximum extent practicable, recognizing a balance between environmental protection, commodity production, and resource use that will meet short and long term state and federal rules and regulations.

Alabama Conservation Buffer Initiative: This workgroup provides oversight of conservation reserve program (CRP) stream buffers as per the 1996 Farm Bill. Landowners are offered financial, technical, and educational assistance to implement conservation practices on privately owned land. The effort is a partnership between USDA-NRCS, USDA-FSA (Farm Services Agency), and other public and private agencies and organizations. Outreach to landowners/stakeholders is an on-going priority.

Septage Task Force: This stakeholder workgroup is comprised of agency, university, industry, homebuilder association, engineering, and other entities. The groups five sub-committees (education, technical, legislative, certification, training center) meet regularly to address the NPS Management Program update/revision process. Priorities are also given to updating the state's on-site sewage rules, installer certification, BMPs, and coordination of activities at the Alternative Septage Treatment Training Center at the University of West Alabama. An On-site Sewage Management Plan has been produced by the Task Force that addresses past and future problems, current practices, and future actions.

Mining and Resource Extraction: Generally considered NPDES regulated activities, ADEM NPS Unit staff support non-regulatory Acid Mine Drainage (AMD) activities and abandoned mine-land reclamation efforts. Efforts proceed to coordinate Section 319 grant funding with Office of Surface Mining and other federal and state funding sources to reclaim abandoned mine lands responsible for causing water quality degradation (e.g., Cane Creek Restoration project; Sunlight Mine Reclaiming Project); promote agency, environmental, and industry coalitions; increase public awareness; and promote the watershed approach.

Urban Task Force: This work group is in the initial stages of formation. Efforts are underway to involve and coordinate water quality awareness and protection efforts of

various state and federal agencies, Resource Conservation and Development Councils, Regional Planning Commissions, Alabama Cooperative Extension System, Regional Council of Governments, Association of County Commissioners, and the League of Municipalities. Primary efforts will address urban development and design and economic and resource issues related to environmental protection. Promotion of educational outreach, training, and technical assistance that promote good environmental stewardship will be priorities. Planners, developers, and citizens benefit both economically and environmentally.

Forestry Task Force: Composed of state forestry agency, association, forest industry and other state and federal agency stakeholders, this group reviews the current status and need for updates, as applicable, of silvicultural best management practices. The task force is participating in revising/updating the Alabama NPS Management Program document, as applicable. Efforts are underway to address and promote more urban forestry initiatives.

Sod and Turf Grass Task Force: Composed of state agency, university, and idustry stakeholders, this group reviews the current status of best management practices and is participating in revising/updating the Alabama NPS Management Program document as applicable. A Best Management Practices Manual is in production.

Nonpoint Source Education for Municipal Officials (NEMO) Watershed Team: This ADEM NPS Unit led outreach effort targets local decision makers. It involves an educational approach to NPS pollution, natural resource protection and watershed management; a focus on land use planning; and the use of various geospatial and information technologies. Participants include Regional Planning Commissions, Alabama Cooperative Extension System, community colleges, League of Municipalities, and the Association of County Commissioners, and others, Efforts are underway to identify stakeholder roles and responsibilities, training opportunites and developing education outreach materials.

State Pesticide Management Plan Committee: This Alabama Dept. of Agriculture and Industry lead agency project addresses management strategies related to the use of pesticides that pose a risk to contamination of groundwater resources. Efforts support the statewide Wellhead Protection Program, the Comprehensive State Groundwater Protection Plan, and support Drinking Water Standards monitoring requirements. The Committee is producing a State Management Plan describing how the state will manage certain regulated pesticides and the roles and responsibilities of stakeholders.

Legacy, Inc.: The Alabama Environmental Education Initiative (AEEI) was established in late 1991. In January 1992, a Steering Committee was established through cooperative efforts of the ADEM, ADE, ADCNR, AFC, ADECA, EPA, and TVA. Other members of the Steering Committee (now the Legacy Board of Directors) are representatives from various education, corporation, business, association, organization, and agency sectors. This coalition formed a statewide environmental education program in Alabama for school grades K-12 and the general public. In July 1992, the AEEI changed its name to Legacy, Partners in Environmental Education, Inc., and in March 1993, the Internal Revenue Service approved Legacy, Inc., as a 501(c)(3) nonprofit organization. Generally funded by environmental license plate sales, the organization provides funding for several and varied statewide environmental education projects. Nonprofit status allows donors to Legacy to consider all gifts, bequests, legacies, or transfers as deductible for federal estate and gift tax purposes, subject to applicable federal tax code provisions. Accomplishments include publication and distribution of an Alabama Water

Resources poster and handbook for teachers, grades 3-5 and grades 9-12 Water Source Books, Environmental Partnership Conferences, a K-12 Environmental Curriculum Supplement and Directory, Enviro-Bowl competitions, awarding of several contracts for environmental projects, and a number of environmental education teacher workshops.

Alabama Water Watch: This citizen volunteer water quality monitoring organization is dedicated to collecting and sampling waters statewide. This grassroots program encourages citizens to be aware of and involved in the ecological and socio-economic aspects of their watershed. Certification and quality assurance and quality control, training, meeting and sharing of data, and development of action plans, are important aspects of the program.

Project Coordinators: In order to facilitate successful implementation and completion of Section 319 projects, project coordinator positions are partially funded in the Flint Creek, Sand Mountain/Lake Guntersville, Weeks Bay, Choccolocco Creek, and Paint Rock River watersheds. An agricultural coordinator with the ASWCC facilitates all statewide agricultural related Section 319 NPS pollution control projects. In addition, Section 319 funds are utilized to partially fund volunteer citizen water quality monitoring staff positions with Alabama Water Watch, statewide NPS educational and erosion control outreach and training activities at Troy State University-Center for Environmental Research and Services, and on-site septage management at the Alabama Department of Public Health.

National Estuary Program (NEP): The NEP is administered under Section 320 of the Clean Water Act. The NEPs goals include prioritizing problems and developing solutions to the unique needs of the Mobile Bay and its estuary. The Mobile Bay was designated a National Estuary Program in July 1995. In addition to the Bay itself, the Mobile Bay NEP bounds Mobile and Baldwin counties, delta waters, the Mississippi Sound, and nearby Gulf waters. A community based approach is utilized to address resources, data management, and area land/water uses. There needs to be more collaboration/coordination of efforts between the NEP, CZARA, Section 319, and Clean Water Action Plan initiatives in the future.

Gulf of Mexico Program (GOMP): This inter-governmental program was created in 1988 by EPA as a holistic ecosystem management approach experiment. Involving 5 southeastern Gulf states, the GOMP addresses fisheries, tourism, environmental, and business related issues. Specific problem area Focus Teams (e.g., Hypoxia, Shellfish contamination, Habitat loss, and Exotic species introduction) have been created and public outreach efforts/partnerships are actively pursued. As with the NEP, more collaboration/coordination of inter and intra-state watershed management efforts are needed.

Community Based Environmental Protection Committees: This Section 319 effort provides an opportunity for a wide cross section of local community stakeholders to be involved in water quality assessment and improvement processes. Community based assessment results are incorporated into the Alabama NPS Assessment Report, Section 305(b) reports, Section 303(d) lists, and other documents as appropriate. Utilizing FY97 Section 319 funds, the ASWC Districts provide leadership at the local level and are responsible for developing citizen based water quality assessment committees and teams. The committees and teams assess the status of water quality of each district based on many factors. Some of these factors are watershed surveys (field assessments), existing water quality monitoring data, instream monitoring using trained

volunteers or members of the assessment teams, interviews with persons knowledgeable of the watershed, aerial surveys, and other data that may be available. Each District provides a report to the Soil and Water Conservation Committee. The report includes a narrative description of the watersheds and the potential for or actual water quality problems in priority, the completed forms, and recommendations regarding ways to improve or to protect local water. Districts are provided incentive funds to encourage and promote local public support of the project and to offset expenses. The project also involves a competitive grants program for Districts that develop watershed protection plans and projects. Additional funding consideration is provided to Districts whose projects could be used as models for other Districts in controlling or abating NPS pollution in their watersheds.

Note: There is additional information to the management of nonpoint source pollution in Part I Coastal Area Assessment

Figure 6-1

Alabama's River Basins and Counties

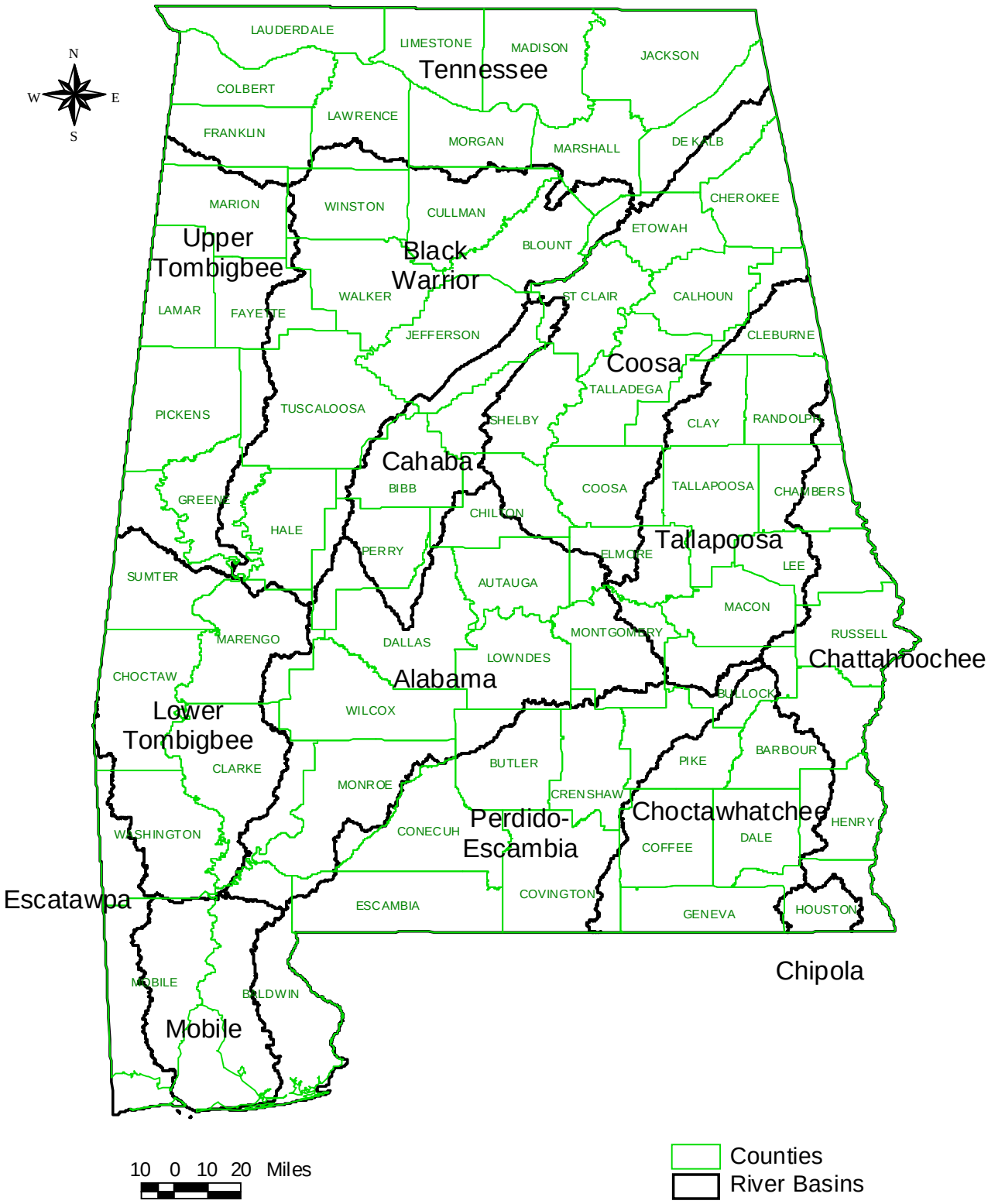


Table 6-1-ALRB

Alabama River Basin Land Use	
1.44%	Water
1.07%	Developed
2.40%	Barren
63.31%	Natural Forested Upland
21.04%	Herbaceous Planted/Cultivated
10.74%	Wetlands

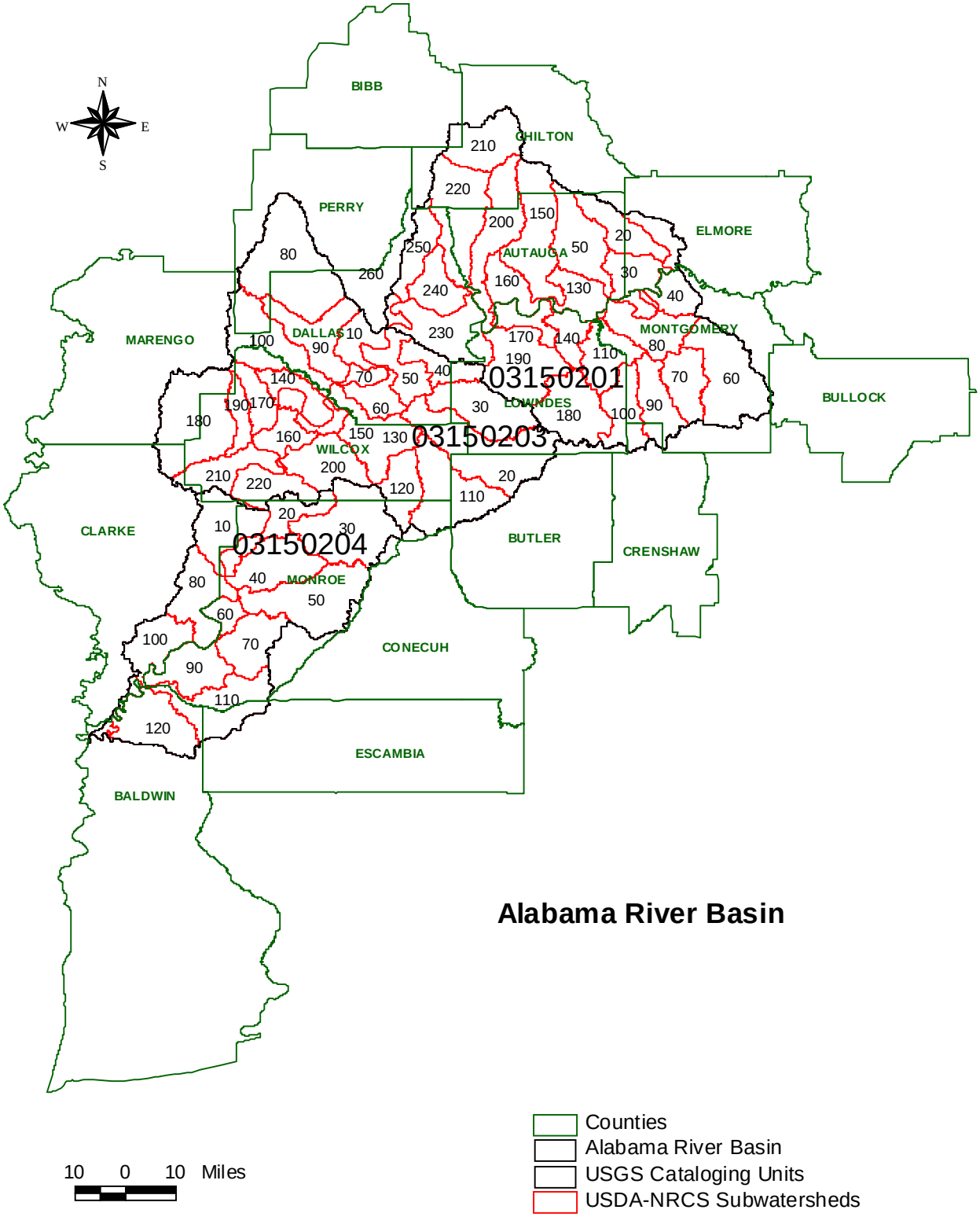
Table 6-2-ALRB

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03150201-Upper Alabama			**2,395.75**
	03150201-010	Callaway Creek	35.31
	03150201-020	Mortar Creek	80.27
	03150201-030	Hudson Creek	71.99
	03150201-040	Galbraith Mill Creek	71.85
	03150201-050	Autauga Creek	121.21
	03150201-060	Upper Catoma Creek	179.99
	03150201-070	Ramer Creek	82.61
	03150201-080	Lower Catoma Creek	97.65
	03150201-090	Upper Pintlalla Creek	86.74
	03150201-100	Pinchony Creek	90.67
	03150201-110	Lower Pintlalla Creek	91.33
	03150201-120	Alabama River	1.82
	03150201-130	Noland Creek	64.24
	03150201-140	Tallawessee Creek	54.21
	03150201-150	Swift Creek	161.3
	03150201-160	Ivy Creek	69.51
	03150201-170	Cypress Creek	44.97
	03150201-180	Upper Big Swamp Creek	129.96
	03150201-190	Lower Big Swamp Creek	167.19
	03150201-200	Little Mulberry Creek	138.01
	03150201-210	Upper Mulberry Creek	109.32
	03150201-220	Lower Mulberry Creek	168.11
	03150201-230	Soapstone Creek	125.05
	03150201-240	Blue Girth-Beech Creek	73.21
	03150201-250	Valley Creek	67.41
	03150201-260	Beaver Dam Branch	11.82

Table 6-2-ALRB (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq.
03150203-Middle Alabama			**2,097.92**
	03150203-010	Big Swamp Creek	55.66
	03150203-020	Upper Cedar Creek	215.85
	03150203-030	Dry Cedar Creek	128.52
	03150203-040	Mush Creek	60.26
	03150203-050	Lower Cedar Creek	72.88
	03150203-060	Rum Creek	57.15
	03150203-070	Alabama River	21.83
	03150203-080	Upper Bogue Chitto Creek	113.89
	03150203-090	Lower Bogue Chitto Creek	113.89
	03150203-100	Chilatchee Creek	153.68
	03150203-110	Upper Pine Barren Creek	163.43
	03150203-120	Bear Creek	77.24
	03150203-130	Lower Pine Barren Creek	128.68
	03150203-140	Foster Creek	57.19
	03150203-150	Alabama River/Dannelly Reservoir	37.95
	03150203-160	Rockwest Creek	56.18
	03150203-170	Dixon Creek	54.27
	03150203-180	Beaver Creek	217.79
	03150203-190	Red Creek	41.96
	03150203-200	Pursley Creek	106.04
	03150203-210	Bear Creek	87.22
	03150203-220	McCall Creek	76.36
03150204-Lower Alabama			**1,399.69**
	03150204-010	Silver Creek	115.21
	03150204-020	Tallatchee Creek	84.92
	03150204-030	Upper Big Flat Creek	188.06
	03150204-040	Lower Big Flat Creek	116.02
	03150204-050	Limestone Creek	179.1
	03150204-060	Marshall Creek	32.15
	03150204-070	Randons Creek	94.94
	03150204-080	Pigeon Creek	112.36
	03150204-090	Wallers Creek	94.66
	03150204-100	Reedy Creek	88.71
	03150204-110	Little River	148.05
	03150204-120	Pine Log Creek	125.94
	03150204-130	Alabama River	19.57

Figure 6-2a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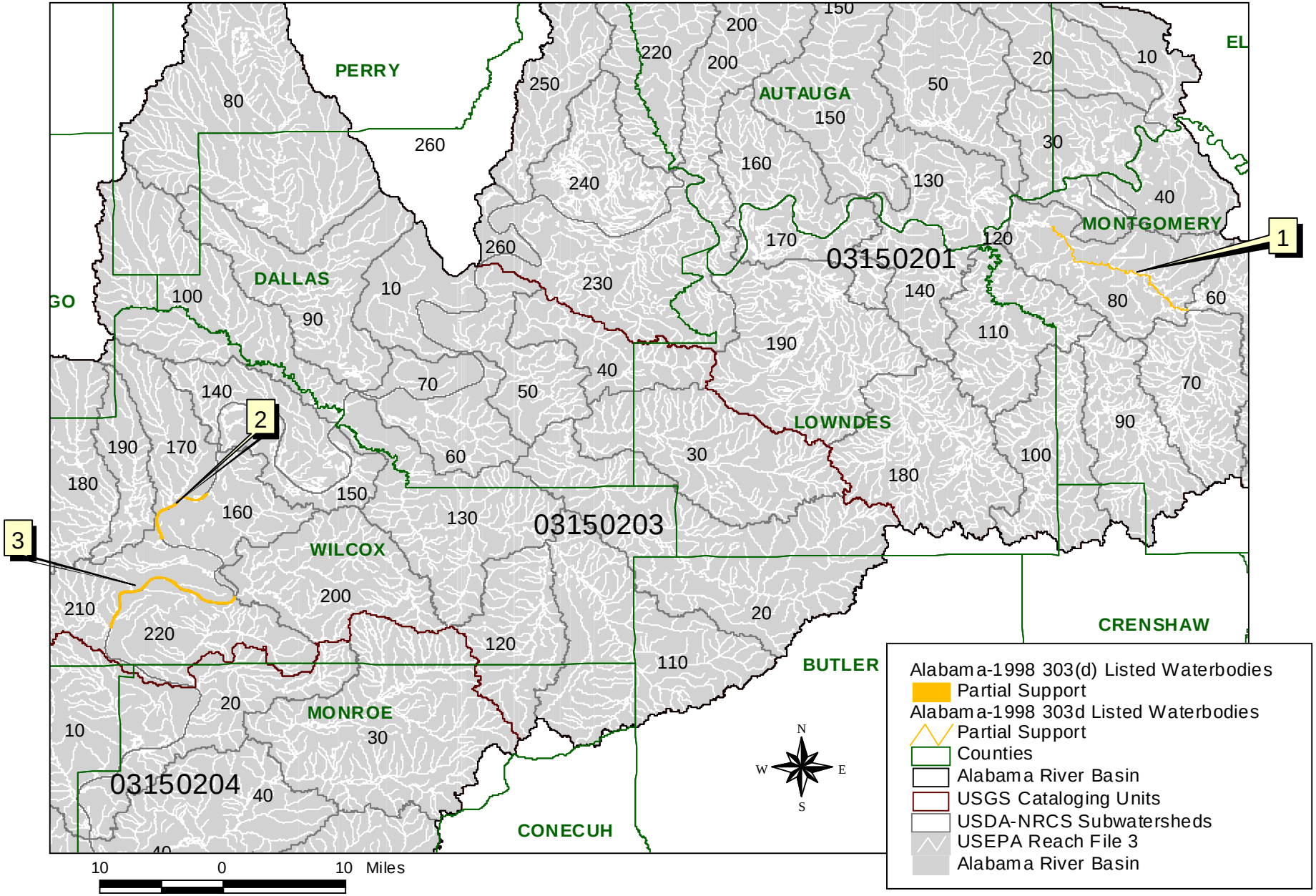
BIBB
CHILTON
PERRY
ELMORE
AUTAUGA
MARENGO
DALLAS
MONTGOMERY
BULLOCK
LOWNDES
WILCOX
CLARKE
BUTLER
CRENSHAW
MONROE
CONECUH
ESCAMBIA
BALDWIN
03150201
03150203
03150204
Alabama River Basin
10 0 10 Miles
Counties
Alabama River Basin
USGS Cataloging Units
USDA-NRCS Subwatersheds

Table 6-3-ALRB
Alabama River Basin 1998 303(d) List Waterbodies

Map Index	Waterbody ID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03150201-080-01	Partial	Catoma Creek	Alabama	Montgomery	F&W	OE/DO	Urban runoff/Storm sewers	1990-91	23.2 miles	Alabama River / Ramer Creek
								Pasture Grazing	1996-97		
2	AL/03150203-230-01	Partial	Alabama River	Alabama	Wilcox	PWS	Nutrients	Industrial	1991	12.6 miles	Bear Creek / Pursley Creek
							OE/DO	Nonirrigated Crop Production			
								Pasture Grazing			
3	AL/03150203-230-02	Partial	Alabama River	Alabama	Wilcox	PWS	Nutrients	Dam construction	1991	5.0 miles	Beaver Creek / Rockwest Creek
							OE/DO	Flow reg/mod			

Figure 6-2b

Alabama's 1998 303(d) Listed Waterbodies
Alabama River Basin



ADEM-Water Quality Section 1999

Table 6-BWRB-1

Black Warrior River Basin Land Use	
1.72%	Water
2.39%	Developed
2.06%	Barren
72.83%	Natural Forested Upland
17.48%	Herbaceous Planted/Cultivated
3.53%	Wetlands

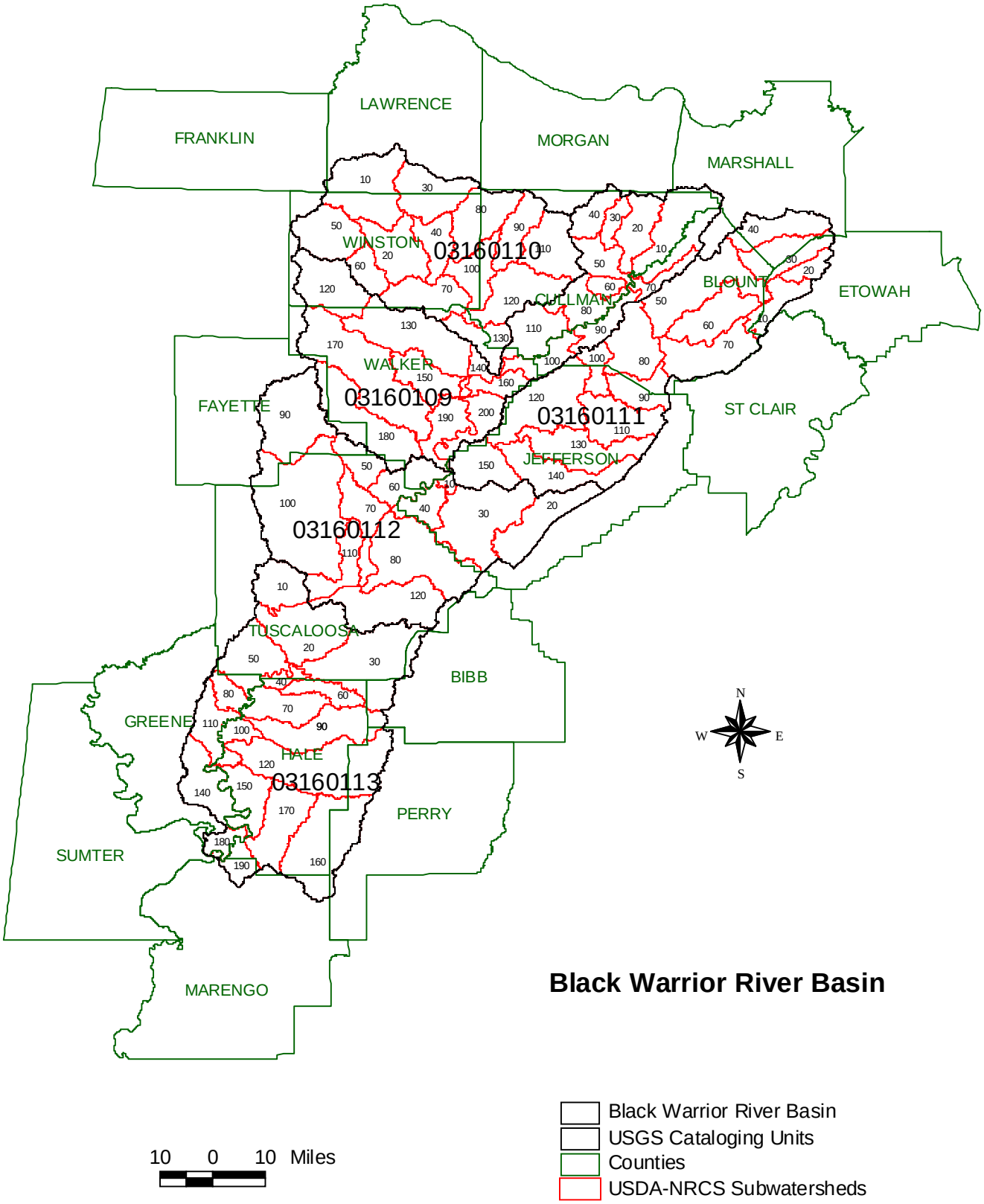
Table 6-BWRB-2
Black Warrior River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03160109-Mulberry Fork			**1,370.48**
	03160109-010	Mulberry Fork	129.97
	03160109-020	Duck River	63.39
	03160109-030	Brindley Creek	24.52
	03160109-040	Eightmile Creek	42.93
	03160109-050	Broglen River	44.81
	03160109-060	Blue Springs Creek	22.74
	03160109-070	Mud Creek	17.89
	03160109-080	Thacker Creek	57.43
	03160109-090	Mill Creek	40.46
	03160109-100	Sloan Creek	45.25
	03160109-110	Dorsey Creek	73.77
	03160109-120	Splunge Creek	96.44
	03160109-130	Blackwater Creek	142.64
	03160109-140	Little Blackwater Creek	19.6
	03160109-150	Cane Creek	63.8
	03160109-160	Old Town Creek	32.19
	03160109-170	Lost Creek	203.63
	03160109-180	Wolf Creek	135.32
	03160109-190	Baker Creek	57.74
	03160109-200	Bluff Creek	55.96
03160110-Sipsey Fork			**996.25**
	03160110-010	Sipsey Fork of the Black Warrior River	130.36
	03160110-020	Sipsey Fork of the Black Warrior River	86.19
	03160110-030	Upper Brushy Creek	87.84
	03160110-040	Lower Brushy Creek	51.45
	03160110-050	Right Fork of Clear Creek	83.55
	03160110-060	Clear Creek	37.07
	03160110-070	Sipsey Fork of the Black Warrior River	78.48
	03160110-080	Upper Rock Creek	87.46
	03160110-090	Crooked Creek	58.07
	03160110-100	Lower Rock Creek	61.8
	03160110-110	Upper Ryan Creek	84.6
	03160110-120	Lower Ryan Creek	96.83
	03160110-130	Sipsey Fork of the Black Warrior River	52.55

Table 6-BWRB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03160112-Upper Black Warrior			**1,255.25**
	03160112-010	Big Branch	6.97
	03160112-020	Upper Valley Creek	95.99
	03160112-030	Lower Valley Creek	154.21
	03160112-040	Little Shoal Creek	45.72
	03160112-050	Upper Big Yellow Creek	45.72
	03160112-060	Lower Big Yellow Creek	61.18
	03160112-070	Blue Creek	67.78
	03160112-080	Davis Creek	170.51
	03160112-090	Upper North River	140.38
	03160112-100	Lower North River	284.33
	03160112-110	Yellow Creek	54.66
	03160112-120	Hurricane Creek	127.8
03160111 Locust Fork			**1210.92**
	03160111-010	Upper Locust Fork	47.34
	03160111-020	Bristows Creek	25.14
	03160111-030	Clear Creek	73.16
	03160111-040	Slab Creek	69.65
	03160111-050	Middle Locust Fork	138.45
	03160111-060	Calvert Prong	87.01
	03160111-070	Blackburn Fork	100.91
	03160111-080	Sugar Creek	87.62
	03160111-090	Gurley Creek	56.2
	03160111-100	Hogeland Creek	32.61
	03160111-110	Turkey Creek	85.52
	03160111-120	Cane Creek	139.46
	03160111-130	Five Mile Creek	101.16
	03160111-140	Village Creek	94.53
	03160111-150	Lower Locust Fork	72.16
03160113-Lower Black Warrior			**1,457.79**
	03160113-010	Big Creek	62.23
	03160113-020	Cypress Creek	119.12
	03160113-030	Big Sandy Creek	174.94
	03160113-040	Keaton Lake	16.89
	03160113-050	Grant Creek	89.74
	03160113-060	Elliotts Creek	36.82
	03160113-070	Gabriel Creek	68.28
	03160113-080	Davis Creek	29.53
	03160113-090	Fivemile Creek	110.03
	03160113-100	Coleman Branch	18.12
	03160113-110	Minter Creek	52.14
	03160113-120	Big Brush Creek	201.32
	03160113-130	Wrights Creek	9.46
	03160113-140	Dollarhide Creek	85.77
	03160113-150	Hines Creek	69.62
	03160113-160	Big Prairie Creek	162.44
	03160113-170	Little Prairie Creek	95.86
	03160113-180	Backbone Creek	22.42
	03160113-190	French Creek	33.06

Figure 6-3a


LAWRENCE
FRANKLIN
MORGAN
MARSHALL
WINSTON
03160110
BLOUNT
ETOWAH
CULLMAN
WALKER
03160109
FAYETTE
03160111
ST CLAIR
JEFFERSON
03160112
TUSCALOOSA
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GREENE
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Black Warrior River Basin
Black Warrior River Basin
USGS Cataloging Units
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USDA-NRCS Subwatersheds
10 0 10 Miles

Table 6-3-BWRB
Black Warrior Basin 1998 303(d) List Waterbodies

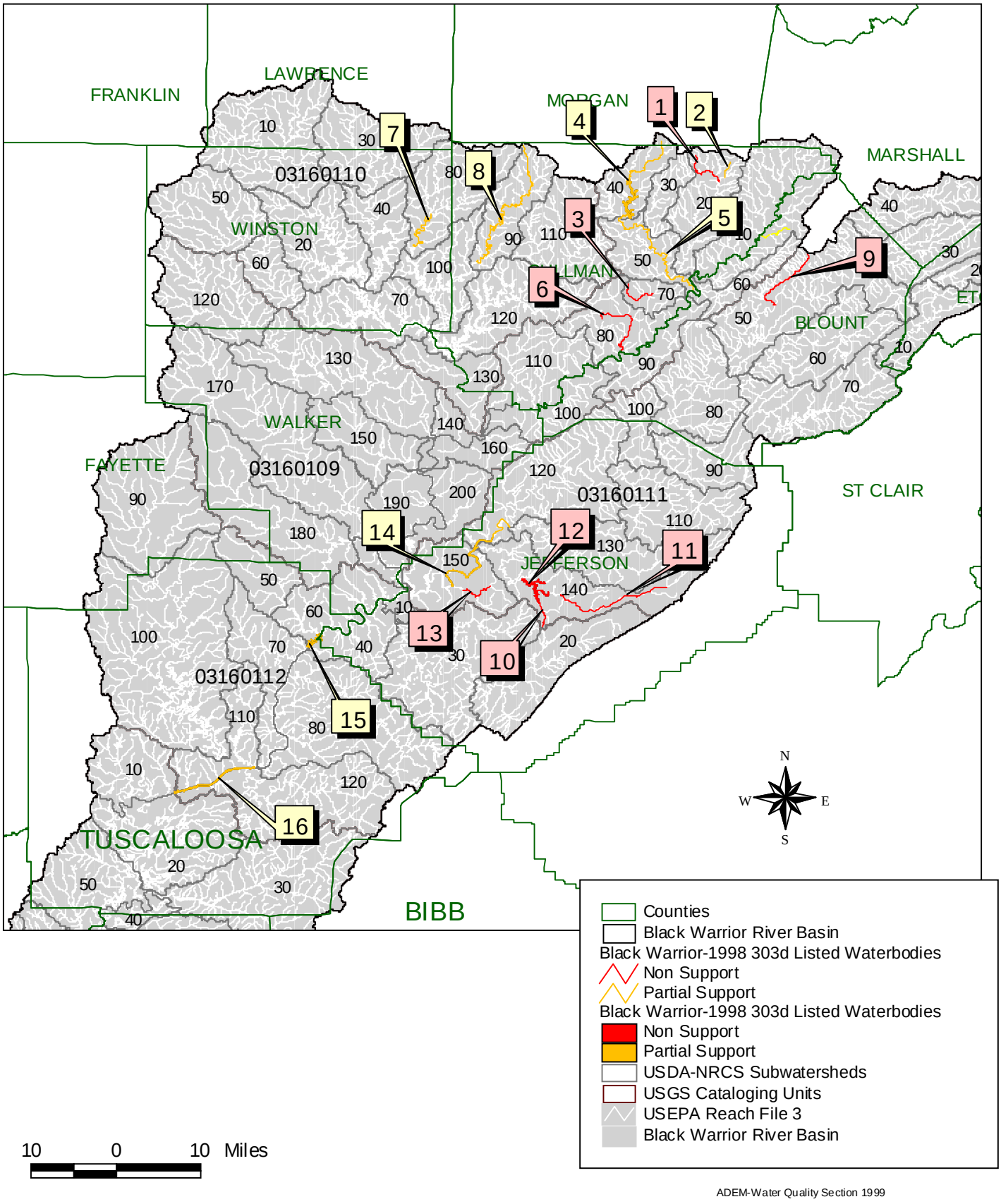
Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03160109-020-01	Non	Duck Creek	Black Warrior	Cullman	F&W	pH OE/DO	Pasture Grazing Int. animal feeding operations	1991 1997	6.4 miles	Duck River / Its Source
2	AL/03160109-020-02	Partial	Long Branch	Black Warrior	Cullman	F&W	Ammonia OE/DO Pathogens	Int. animal feeding operations Pasture Grazing	1990 1997	2.0 miles	Duck Creek / Its Source
3	AL/03160109-070-01	Non	Mud Creek	Black Warrior	Cullman	F&W	OE/DO	Urban runoff/Storm sewers	1996	4.4 miles	AL Hwy. 31 / Its Source
4	AL/03160109-040-01	Partial	Eightmile Creek	Black Warrior	Cullman	F&W	Pathogens	Urban runoff Pasture Grazing	1991 1996	23.0 miles	Broglen River / Its Source
5	AL/03160109-050-01	Partial	Broglen River	Black Warrior	Cullman	F&W	Pathogens	Urban runoff Pasture Grazing	1991 1996	12.0 miles	Mulberry Fork / Brindley Creek
6	AL/03160109-080-01	Non	Thacker Creek	Black Warrior	Cullman	F&W	Ammonia, OE/DO Pathogens	Pasture Grazing	1991 1997	9.5 miles	Mulberry Fork / Its Source
7	AL/03160110-080-01	Partial	Rock Creek	Black Warrior	Winston	F&W	OE/DO Pathogens	Pasture Grazing Int. animal feeding operations	1990-91 1997	5.0 miles	Smith Lake / Blevins Creek
8	AL/03160110-090-01	Partial	Crooked Creek	Black Warrior	Cullman	F&W	Ammonia OE/DO Pathogens	Int. animal feeding operations Pasture Grazing	1991 1997	28.0 miles	Smith Lake / Its Source
9	AL/03160111-050-01	Non	Graves Creek	Black Warrior	Blount	F&W	OE/DO	Pasture Grazing Industrial	1991	9.6 miles	Locust Fork / Its Source
10	AL/03160111-140-01	Non	Camp Branch	Black Warrior	Jefferson	F&W	Metals pH Siltation Other habitat alteration	Surface mining-abandoned Subsurface mining-abandoned Mill tailings-abandoned Mine tailings-abandoned Landfills	1991	10.0 miles	Bayview Lake / Its Source

Table 6-3 BWRB (cont.)

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
11	AL/03160111-140-02	Non	Village Creek	Black Warrior	Jefferson	A&I	Nonpriority organics Metals Ammonia pH Siltation OE/DO	Industrial Municipal Urban runoff/Storm sewers Surface mining-abandoned Subsurface mining-abandoned Mill tailings-abandoned Mine tailings-abandoned	1990-91 1997	12.6 miles	Jefferson Co. Rd. 65 / Woodlawn Bridge
12	AL/03160111-140-03	Non	Bayview Lake	Black Warrior	Jefferson	A&I	Ammonia OE/DO Siltation Pesticides	Municipal Urban runoff/Storm sewers Industrial Spills Surface mining-abandoned	1991 1997	440 acres	Bayview Lake Dam / Village Creek
13	AL/03160111-150-01	Non	Short Creek	Black Warrior	Jefferson	F&W	Metals pH OE/DO	Subsurface mining-abandoned Mine tailings-abandoned	1990-91 1997	3.0 miles	Jefferson Co. Rd. 39 / 3 miles upstream
14	AL/03160111-150-02	Partial	Locust Fork	Black Warrior	Jefferson	F&W	OE/DO	Urban runoff/Storm sewers	1990-91 1997	16.3 miles	Short Creek / Fivemile Creek
15	AL/03160112-060-01	Partial	Black Warrior River	Black Warrior	Tuscaloosa	PWS/S/F&W	OE/DO	Dam construction	1991	2.0 miles	Bankhead Dam / Big Yellow Creek
16	AL/03160112-110-01	Partial	Black Warrior River	Black Warrior	Tuscaloosa	F&W/S	OE/DO	Dam construction Flow reg/mod	1991	6.0 miles	Oliver Dam / Holt L&D

Figure 6-3b

Alabama's 1998 303(d) Listed Waterbodies
Black Warrior River Basin



ADEM-Water Quality Section 1999

Table 6-CARB-1

Cahaba River Basin Land Use	
0.66%	Water
2.64%	Developed
2.33%	Barren
76.97%	Natural Forested Upland
11.34%	Herbaceous Planted/Cultivated
6.07%	Wetlands

Table 6-CARB-2
Cahaba River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03150202-Cahaba			**1,743.78**
	03150202-010	Big Black Creek	93.53
	03150202-020	Little Cahaba River	42.52
	03150202-030	Cahaba River	121.83
	03150202-040	Cahaba Valley Creek	72.87
	03150202-050	Cahaba River	86.42
	03150202-060	Shades Creek	138.65
	03150202-070	Cahaba River	93.49
	03150202-080	Shoal Creek	145.1
	03150202-090	Sixmile Creek	119.54
	03150202-100	Little Shultz Creek	7.95
	03150202-110	Shultz Creek	0
	03150202-120	Haysop Creek	151.3
	03150202-130	Rocky Branch	91.59
	03150202-140	Cahaba River	142.33
	03150202-150	Cahaba River	124.98
	03150202-160	Oakmulgee Creek	233.85
	03150202-170	Cahaba River	77.83

Figure 6-4a

ST CLAIR
JEFFERSON
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USGS Cataloging Unit 03150202 Cahaba River Basin
USDA-NRCS Subwatersheds

Table 6-3-CARB
Cahaba River Basin 1998 303(d) List Waterbodies

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03150202-030-01	Partial	Mill Creek	Cahaba	Jefferson	F&W	Pathogens	Pasture Grazing	1996	5.4 miles	Mud Creek / Its Source
2	AL/03150202-030-02	Partial	Mud Creek	Cahaba	Jefferson	F&W	Pathogens	Pasture Grazing	1996	3.7 miles	Tannehill Iron Works / Its Source
3	AL/03150202-030-03	Partial	Cooley Creek	Cahaba	Jefferson	F&W	Pathogens	Pasture Grazing Onsite wastewater systems	1996	3.8 miles	Mill Creek / Its Source
4	AL/03150202-030-04	Partial	Cahaba River	Cahaba	Shelby	F&W/ OAW	Pathogens Nutrients	Urban runoff/Storm sewers	1993-97	26.5 miles	Shades Creek / Buck Creek
5	AL/03150202-030-05	Non	Little Shades Creek	Cahaba	Jefferson	F&W	Priority Organics Nonpriority Organics OE/DO	Urban runoff/Storm sewers	1993	7.0 miles	Cahaba River / Its Source
6	AL/03150202-030-06	Partial	Patton Creek	Cahaba	Jefferson	F&W	OE/DO	Urban runoff/Storm sewers	1995 1997	5.0 miles	Cahaba River / Its Source
7	AL/03150202-060-01	Non	Shades Creek	Cahaba	Jefferson	F&W	Siltation OE/DO Other habitat alteration Pathogens Turbidity	Collection system failure Hwy/road/bridge construction Land development Urban runoff/Storm sewers Removal of riparian veg. Bank/shoreline modification	1990-93 1997	55.0 miles	Cahaba River / Its Source
8	AL/03150202-170-01	Non	Dry Creek	Cahaba	Dallas	F&W	Pathogens	Pasture Grazing	1996	4.5 miles	Dallas Co. Rd. 201 / Its Source

Figure 6-4b

Alabama's 1998 303(d) Listed Waterbodies
Cahaba River Basin

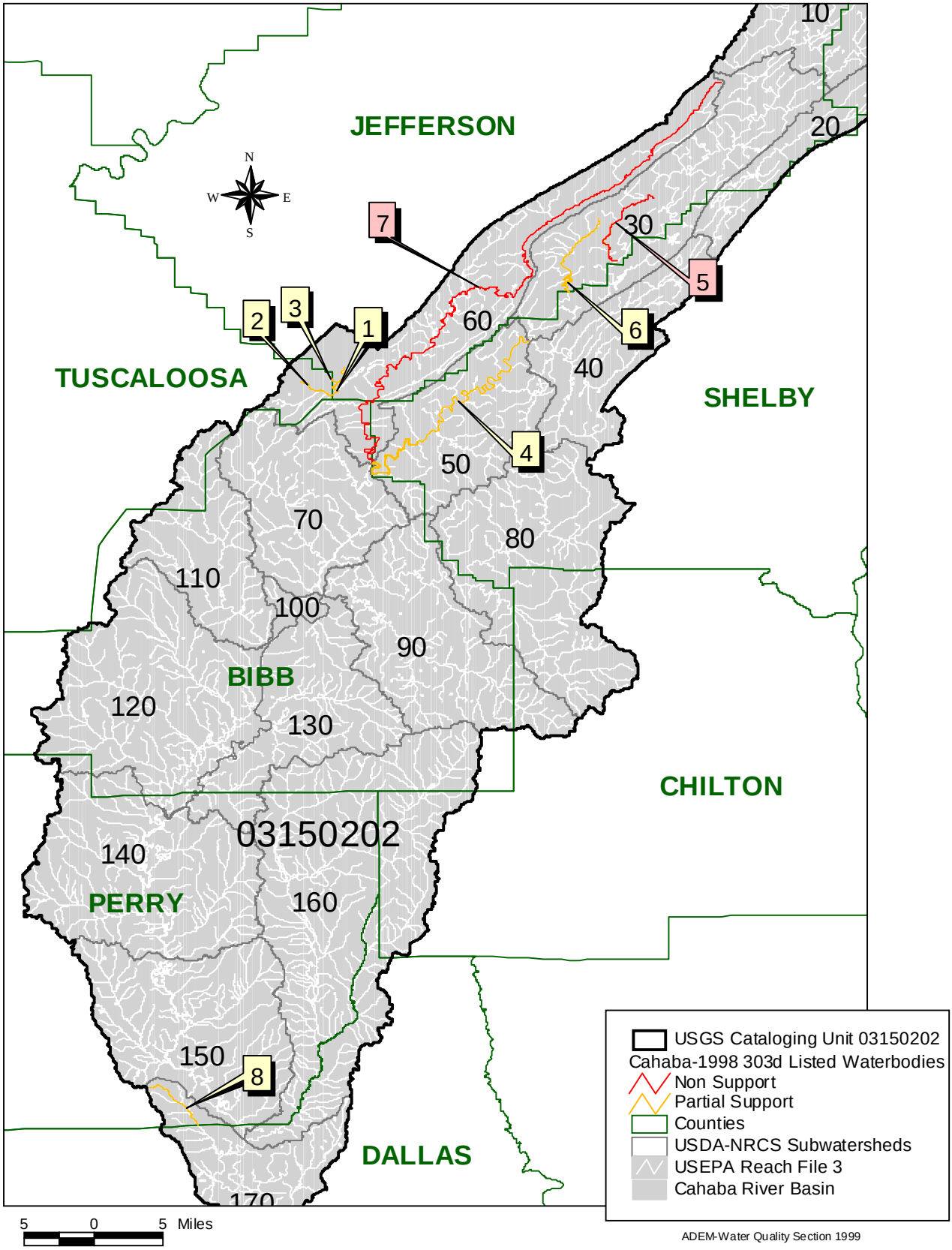


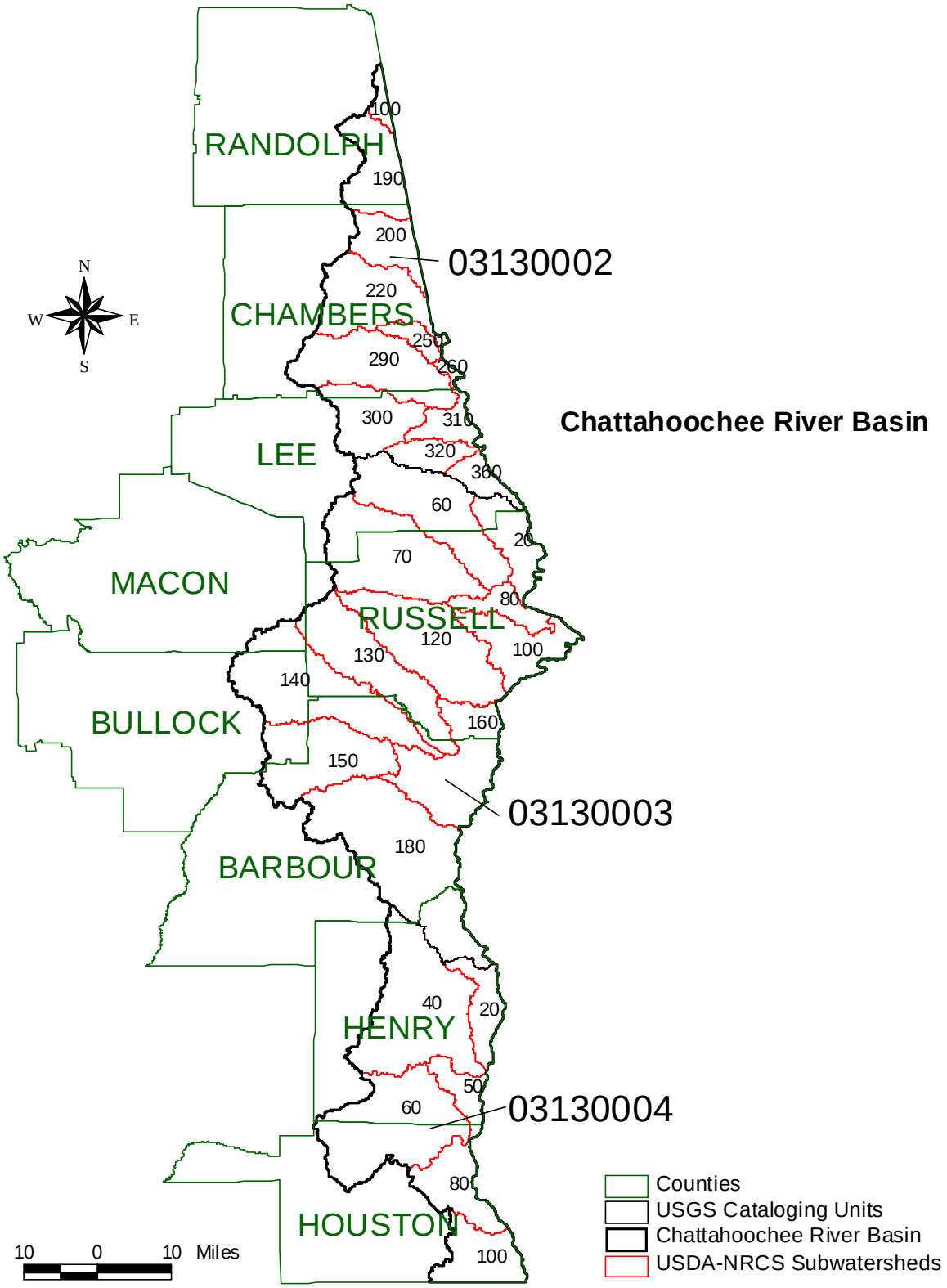
Table 6-CHARB-1

Chattahoochee River Basin Land Use	
1.73%	Water
1.23%	Developed
1.98%	Barren
72.47%	Natural Forested Upland
18.25%	Herbaceous Planted/Cultivated
4.34%	Wetlands

Table 6-CHARB-2
Chattahoochee River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03130002-Middle Chattahoochee-Lake Harding			**562.85**
	03130002-100	Hillabahatchee Creek	12.8
	03130002-190	Wehadkee Creek	76.01
	03130002-200	Stroud Creek	53.32
	03130002-220	Oseligee Creek	104.35
	03130002-250	Moores Creek	18.67
	03130002-260	Lake Harding Tributaries	5.84
	03130002-290	Osanippa Creek	123.56
	03130002-300	Upper Halawakee Creek	78.4
	03130002-310	Lower Halawakee Creek	31.25
	03130002-320	Wacoochee Creek	32.76
	03130002-360	Soap Creek	25.89
03130003-Middle Chattahoochee-W.F. George Reservoir			**1,424.53**
	03130003-020	Mill Creek	59.06
	03130003-060	Little Uchee Creek	134.81
	03130003-070	Upper Uchee Creek	165.46
	03130003-080	Lower Uchee Creek	33.46
	03130003-100	Ihagee Creek	72.07
	03130003-120	Hatchechubbee Creek	151.08
	03130003-130	North Fork of Cowikee Creek	129.01
	03130003-140	Middle Fork of Cowikee Creek	177.21
	03130003-150	South Fork of Cowikee Creek	125.02
	03130003-160	Lower Cowikee Creek	131.72
	03130003-180	Barbour Creek	245.63
03130004-Lower Chattahoochee			**586.09**
	03130004-020	McRay Mill Creek	44.8
	03130004-040	Abbie Creek	199.14
	03130004-050	Foster Creek	33.26
	03130004-060	Omussee Creek	176.53
	03130004-080	Cedar Creek	65.88
	03130004-100	Bryans Creek	66.48

Figure 6-5a


RANDOLPH
CHAMBERS
LEE
MACON
RUSSELL
BULLOCK
BARBOUR
HENRY
HOUSTON
100
190
200
220
250
260
290
300
310
320
360
60
20
70
80
120
130
100
140
160
150
180
40
20
50
60
80
100
03130002
03130003
03130004
N
W
E
S
Chattahoochee River Basin
10
0
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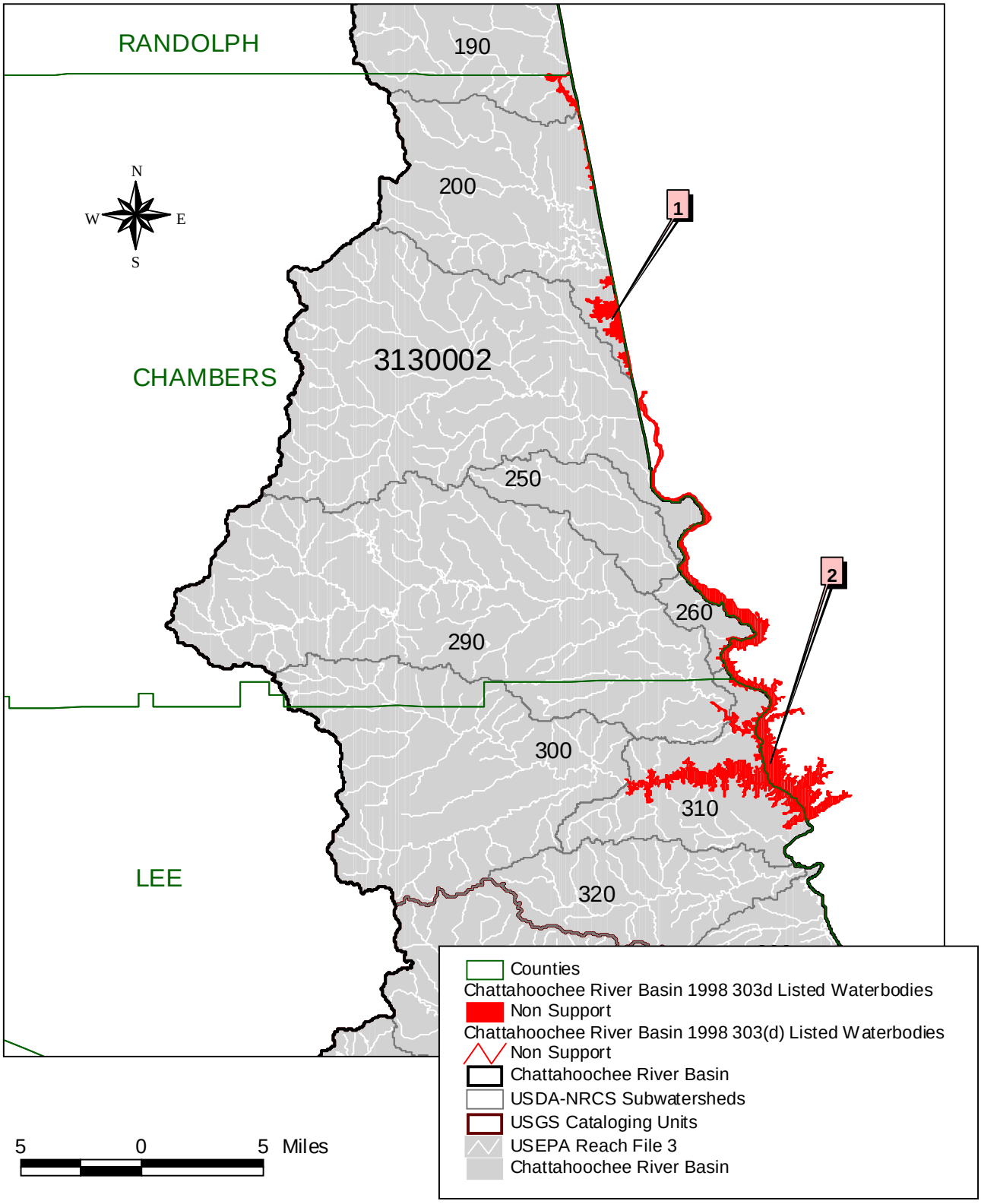
Miles
Counties
USGS Cataloging Units
Chattahoochee River Basin
USDA-NRCS Subwatersheds

Table 6-3-CHARB
Chattahoochee River Basin 1998 303(d) List Waterbodies

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03130002-200-01	Non	West Point Lake	Chattahoochee	Chambers	F&W/S	Pesticides	Contaminated sediments	1993	2304 acres	West Point Dam / Randolf Co. Line
2	AL/03130002-310-01	Non	Lake Harding	Chattahoochee	Lee	PWS/S/F&W	Pesticides	Contaminated sediments	1993	2176 acres	Bartlette Ferry Dam / West Point Dam

Figure 6-5b

Alabama's 1998 303(d) Listed Waterbodies
Chattahoochee River Basin



ADEM-Water Quality Section 1999

Table 6-CHIRB-1

Chipola River Basin Land Use	
0.50%	Water
1.08%	Developed
0.06%	Barren
28.90%	Natural Forested Upland
55.51%	Herbaceous Planted/Cultivated
13.95%	Wetlands

Table 6-CHIRB-2
Chipola River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03130012-Chipola			**258.35**
	03130012-010	Cowarts Creek	113.88
	03130012-030	Big Creek	144.47

Figure 6-6

Alabama's 1998 303(d) Listed Waterbodies
No Chipola River Basin 303(d) Segments/Waterbodies

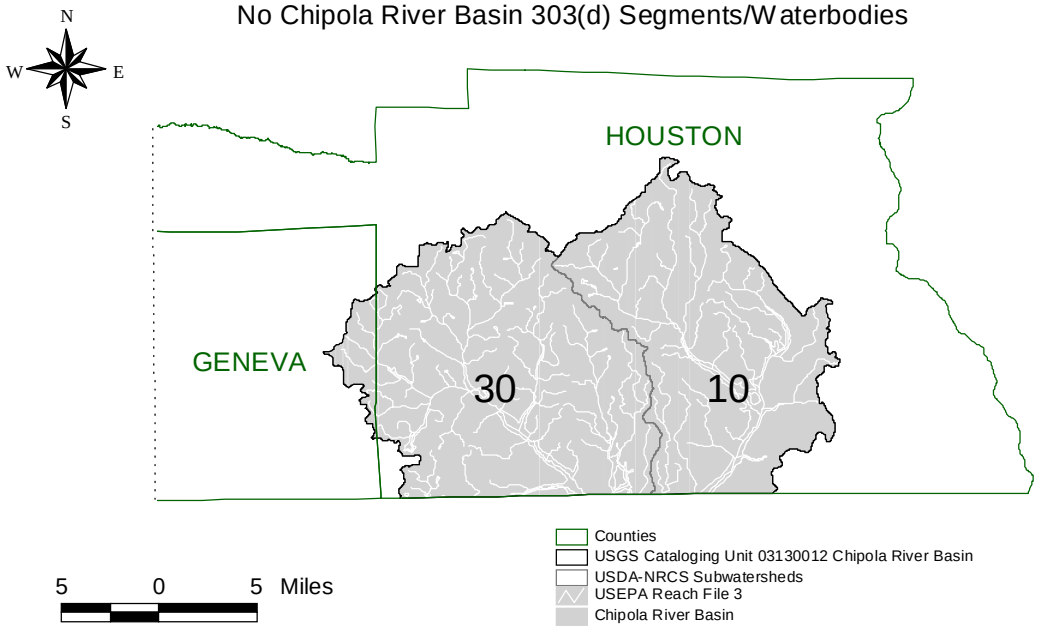


Table 6-CHORB-1

Choctawhatchee River Basin Land Use	
0.57%	Water
1.04%	Developed
0.86%	Barren
59.54%	Natural Forested Upland
31.67%	Herbaceous Planted/Cultivated
6.33%	Wetlands

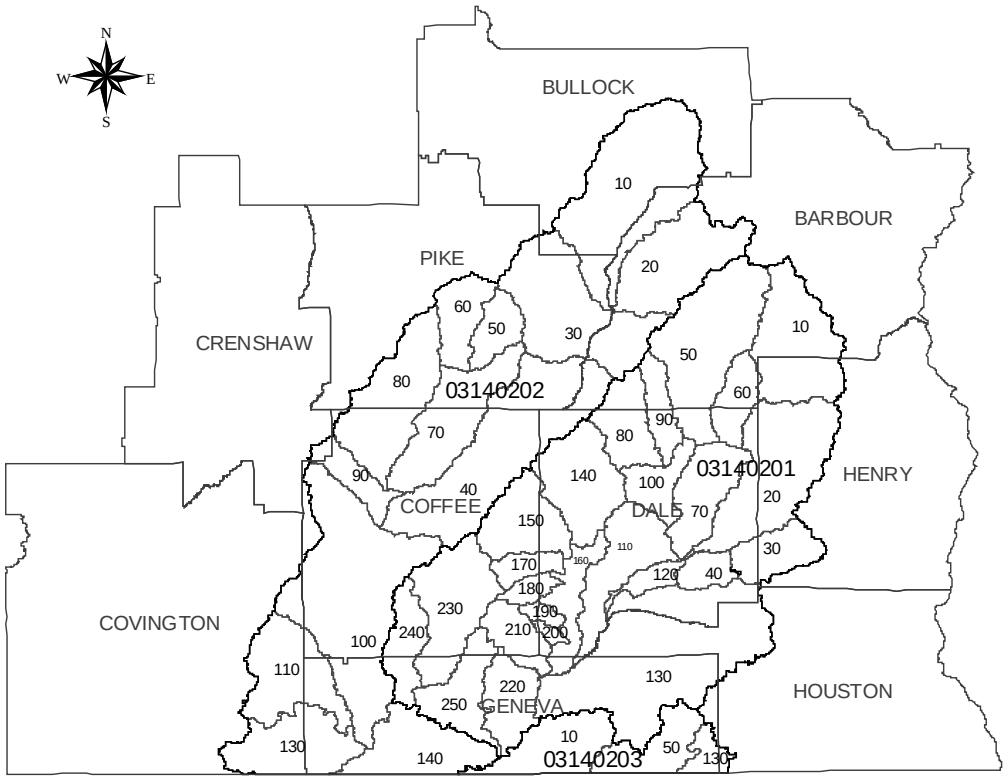
Table 6-CHORB-2
Choctawhathcee River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03140201-Upper Choctawhatchee			**1,542.44**
	03140201-010	Upper East Fork of the Choctawhatchee River	110.86
	03140201-020	Lower East Fork of the Choctawhatchee River	139.55
	03140201-030	Blackwood Creek	43.99
	03140201-040	Kelly Creek	21.53
	03140201-050	Upper West Fork of the Choctawhatchee River	141.63
	03140201-060	Bear Creek	35.25
	03140201-070	Lower West Fork of the Choctawhatchee River	61.82
	03140201-080	Upper Judy Creek	51.06
	03140201-090	Little Judy Creek	30.44
	03140201-100	Lower Judy Creek	35.45
	03140201-110	Sconyers Creek	75.14
	03140201-120	Kilibrew Mill Creek	16.44
	03140201-130	Little Choctawhatchee River	261.02
	03140201-140	Upper Claybank Creek	84.18
	03140201-150	Steep Head Creek	64.19
	03140201-160	Lower Claybank Creek	42.23
	03140201-170	Harrand Creek	20.45
	03140201-180	Cowpen Creek	13.98
	03140201-190	Line Creek	8.22
	03140201-200	Brackin Mill Creek	5.23
	03140201-210	Wilkerson Creek	36.02
	03140201-220	Choctawhatchee River	49.95
	03140201-230	Upper Double Bridges Creek	94.45
	03140201-240	Tight Eye Creek	43.2
	03140201-250	Lower Double Bridges Creek	56.16
03140202-Pea			**1,538.09**
	03140202-010	Pea River	193.77
	03140202-020	Pea Creek	104.67
	03140202-030	Buckhorn Creek	143.42
	03140202-040	Pea River	199
	03140202-050	Whitewater Creek	31.95
	03140202-060	Walnut Creek	44.29
	03140202-070	Whitewater Creek	96.07
	03140202-080	Big Creek	113.61
	03140202-090	Whitewater Creek	33.11
	03140202-100	Pea River	235.78
	03140202-110	Flat Creek	180.59
	03140202-130	Corner Creek	81.47
	03140202-140	Pea River	80.36

Table 6-CHORB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03140203-Lower Choctawhatchee			**135.26**
	03140203-010	Spring Creek	67.67
	03140203-050	Wrights Creek	49.6
	03140203-130	Holmes Creek	17.99

Figure 6-7



Choctawhatchee River Basin

10 0 10 Miles

Counties
USGS Cataloging Units
Choctawhatchee River Basin
USDA-NRCS Subwatersheds

Table 6-CORB-1

Coosa River Basin Land Use	
2.48%	Water
1.52%	Developed
1.41%	Barren
78.09%	Natural Forested Upland
15.15%	Herbaceous Planted/Cultivated
1.34%	Wetlands

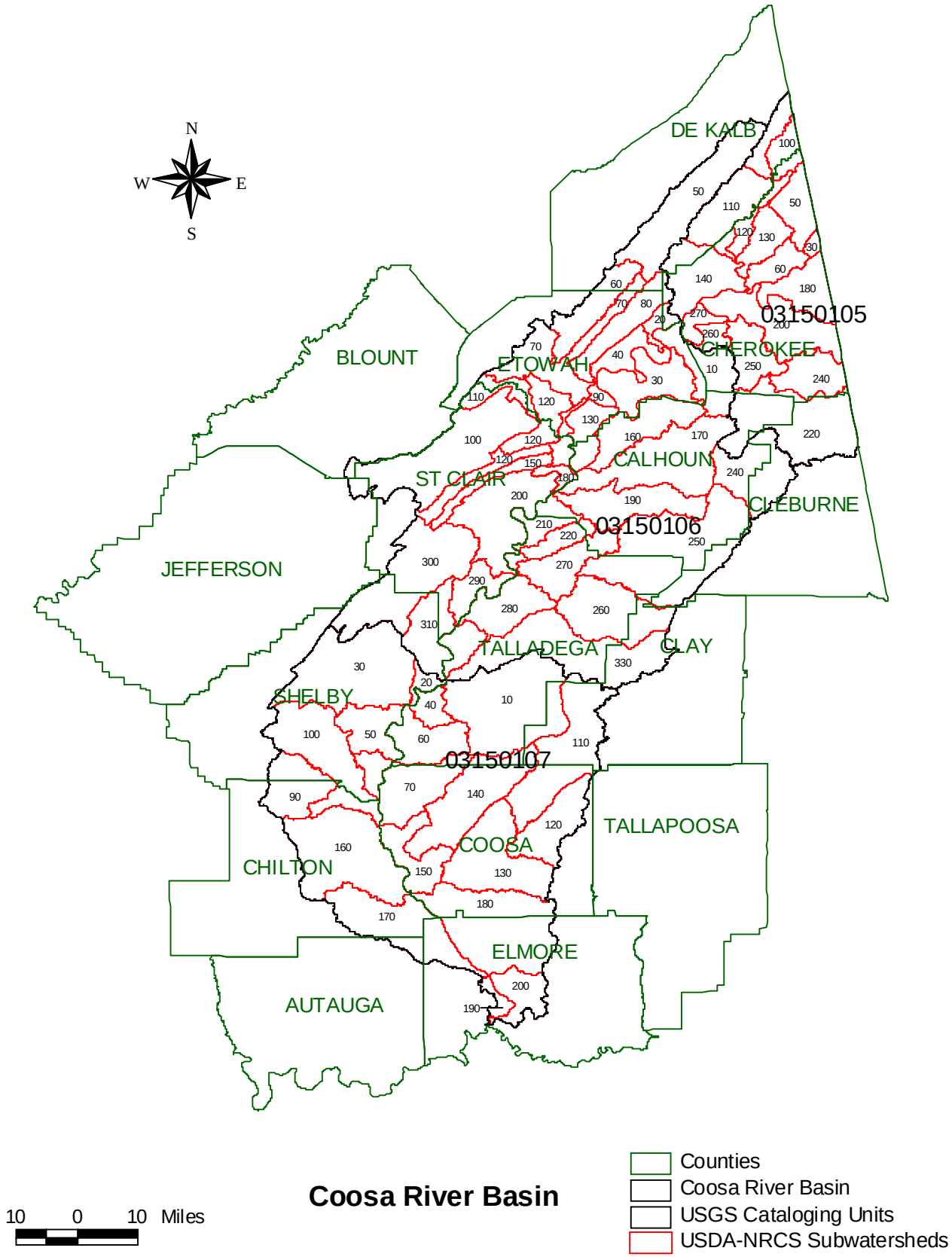
Table 6-CORB-2
Coosa River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq.
03150105-Upper Coosa			**851.95**
	03150105-030	Upper Chattooga River	6.48
	03150105-050	Mills Creek	46.26
	03150105-060	Lower Chattooga River	33.96
	03150105-080	West Fork of the Little River	28.99
	03150105-100	East Fork of the Little River	29.22
	03150105-110	Bear Creek	79.7
	03150105-120	Little River	22.38
	03150105-130	Spring Creek	40.94
	03150105-140	Yellow Creek	86.15
	03150105-180	Coosa River	59.87
	03150105-200	Spring Creek	107.45
	03150105-220	Upper Terrapin Creek	165.25
	03150105-240	Hurricane Creek	55.91
	03150105-250	Lower Terrapin Creek	54.07
	03150105-260	Sugar Creek	17.14
	03150105-270	Coosa River	18.18
03150106-Middle Coosa			**2,599.74**
	03150106-010	Ballplay Creek	72.67
	03150106-020	Coosa River	16.29
	03150106-030	Big Cove Creek	80
	03150106-040	Town Creek	38
	03150106-050	Upper Big Wills Creek	140.77
	03150106-060	Middle Big Wills Creek	65.21
	03150106-070	Lower Big Wills Creek	97.4
	03150106-080	Black Creek	64.06
	03150106-090	Coosa River/Neely Henry Reservoir	27.12
	03150106-100	Upper Big Canoe Creek	195.19
	03150106-110	Little Canoe Creek	32.02
	03150106-120	Lower Big Canoe Creek	50.83
	03150106-130	Greens Creek	42.04
	03150106-140	Beaver Creek	36.34
	03150106-150	Shoal Creek	28.39
	03150106-160	Ohatchee Creek	80.22
	03150106-170	Tallasseehatchee Creek	153.35
	03150106-180	Bridge Creek	11.49
	03150106-190	Cane Creek	93.33
	03150106-200	Dye Creek	124.5

Table 6-CORB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq.
03150106-Middle Coosa			**2,599.74**
	03150106-210	Acker Creek	36.91
	03150106-220	Blue Eye Creek	29.48
	03150106-230	Coosa River	5.64
	03150106-240	Upper Choccolocco Creek	92.79
	03150106-250	Middle Choccolocco Creek	250
	03150106-260	Cheaha Creek	113.17
	03150106-270	Lower Choccolocco Creek	66.37
	03150106-280	Clear Creek	70.73
	03150106-290	Easonville Creek	38.47
	03150106-300	Upper Kelly Creek	174.32
	03150106-310	Lower Kelly Creek	68.66
	03150106-320	Flipper Creek	30.11
	03150106-330	Talladega Creek	173.87
03150107-Lower Coosa			**1,963.29**
	03150107-010	Tallasseehatchee Creek	200.23
	03150107-020	Walthall Branch	13.45
	03150107-030	Yellowleaf Creek	185.13
	03150107-040	Kahatchee Creek	24.74
	03150107-050	Beeswax Creek	56.83
	03150107-060	Cedar Creek	64.99
	03150107-070	Peckerwood Creek	83.02
	03150107-080	Spring Creek	22.67
	03150107-090	Buxahatchee Creek	69.61
	03150107-100	Waxahatchee Creek	136.51
	03150107-110	Upper Hatchet Creek	154.37
	03150107-120	Socapatoy Creek	76.11
	03150107-130	Middle Hatchet Creek	131.54
	03150107-140	Weogufka Creek	128.63
	03150107-150	Lower Hatchet Creek	60.69
	03150107-160	Walnut Creek	176.05
	03150107-170	Chestnut Creek	126.51
	03150107-180	Weoka Creek	189.39
	03150107-190	Pigeon Roost Creek	17.64
	03150107-200	Taylor Creek	45.18

Figure 6-8a



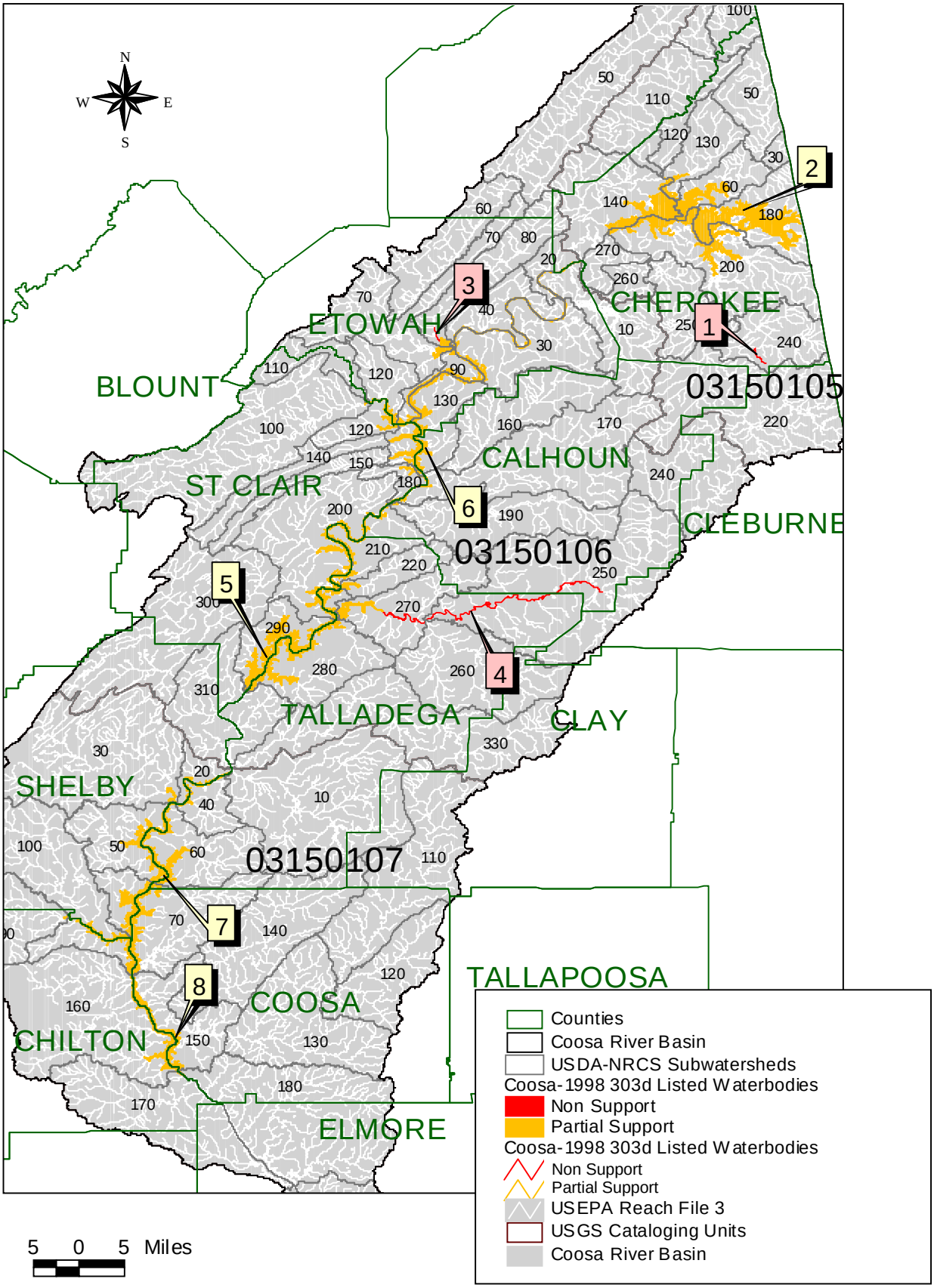
Coosa River Basin

Table 6-3-CORB
Coosa River Basin 1998 303(d) List Waterbodies

Map Index	Waterbody ID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03150105-240-01	Non	Wolf Branch (UT to Hurricane Cr.)	Coosa	Cherokee	F&W	Ammonia OE/DO	Int. animal feeding operations	1994	2.0 miles	Hurricane Creek / Its Source
2	AL/03150105-280-01	Partial	Weiss Lake	Coosa	Cherokee	PWS/S/F&W	Priority Organics Nutrients pH OE/DO	Sources outside state Flow reg/mod	1992-94	30200 acres	Weiss Dam / AL-GA State Line
3	AL/03150106-080-01	Non	Black Creek	Coosa	Etowah	A&I	Priority Organics Ammonia OE/DO	Industrial Urban runoff/Storm sewers Contaminated sediments	1994 1997	3.0 miles	Big Wills Creek / Forest Avenue
4	AL/03150106-250-01	Non	Choccolocco Creek	Coosa	Talladega	F&W	Priority Organics	Contaminated sediments	1993-97	34.2 miles	Lake Logan Martin / Hillabee Creek
5	AL/03150106-340-01	Partial	Lake Logan Martin	Coosa	St. Clair	F&W/S	Nutrients OE/DO Priority Organics	Urban runoff/Storm sewers Flow reg/mod Contaminated sediments	1991-93 1994-97 1995-97	15263 acres	Logan Martin Dam / Neely Henry Dam
6	AL/03150106-340-02	Partial	Lake Neely Henry	Coosa	Etowah	PWS/S/F&W	Priority Organics Nutrients pH OE/DO	Industrial Municipal Flow reg/mod Upstream sources	1992-95 1994-97	11235 acres	Neely Henry Dam / Weiss Dam
7	AL/03150107-190-01	Partial	Lay Lake	Coosa	Talladega	PWS/S/F&W	Priority Organics Nutrients OE/DO Flow alteration	Flow reg/mod Contaminated sediments Upstream sources	1990-91 1992-97	12000 acres	Lay Dam / Logan Martin Dam
8	AL/03150107-190-02	Partial	Lake Mitchell	Coosa	Coosa	PWS/S/F&W	Nutrients OE/DO	Urban runoff/Storm sewers Flow reg/mod	1991-93 1994-97	5850 acres	Mitchell Dam / Lay Dam

Figure 6-8b

Alabama's 1998 303(d) Listed Waterbodies
Coosa River Basin



ADEM-Water Quality Section 1999

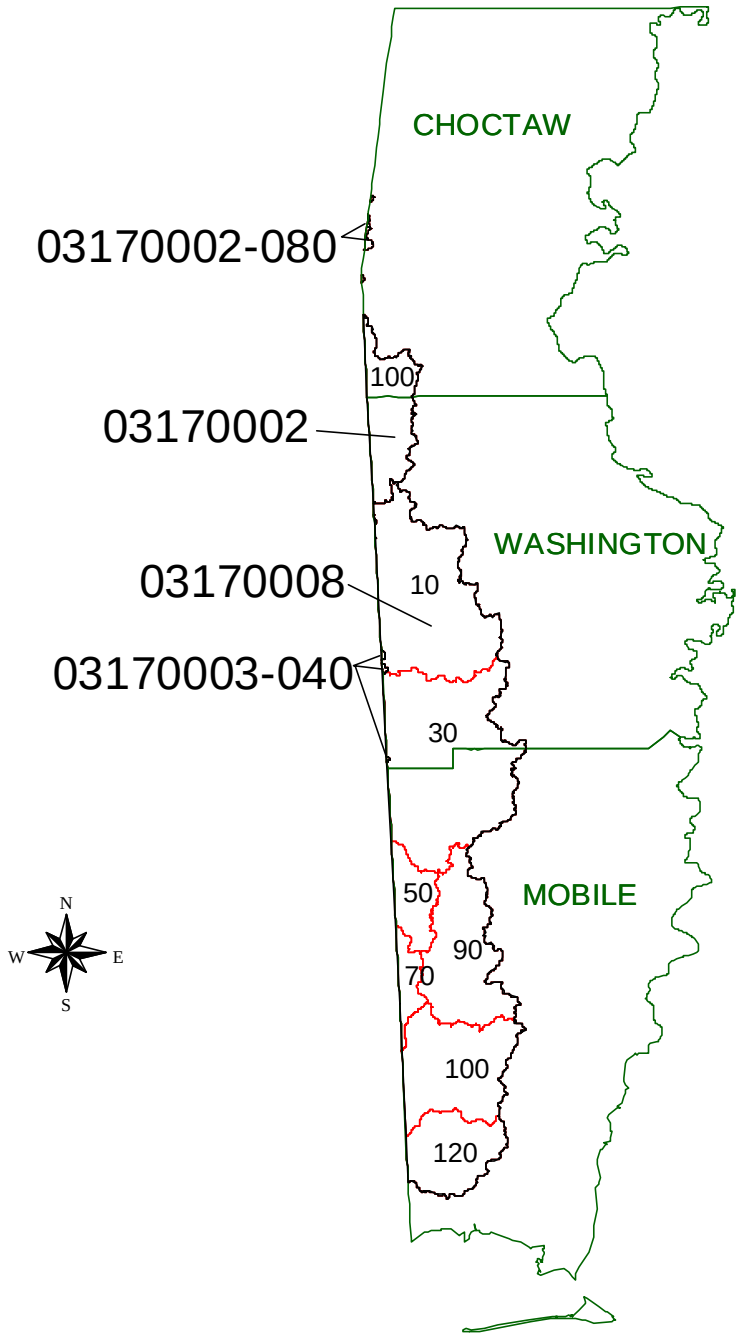
Table 6-ESRB-1

Escatawpa River Basin Land Use	
15.11%	Water
0.55%	Developed
2.01%	Barren
54.98%	Natural Forested Upland
0.14%	Herbaceous Upland Natural/Semi-Natural Vegetation
18.69%	Herbaceous Planted/Cultivated
8.51%	Wetlands

Table 6-BWRB-2
Escatawpa River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03170002-Upper Chickasawhay			**65.4**
	03170002-080	Buckatunna Creek	1.34
	03170002-100	Red Creek	64.06
03170003-Lower Chickasawhay			**0.68999**
	03170003-040	Chickasawhay River	0.68999
03170008-Escatawpa			**700.82**
	03170008-010	Escatawpa River	163.1
	03170008-030	Escatawpa River	214.37
	03170008-050	Escatawpa River	33.67
	03170008-070	Escatawpa River	13.44
	03170008-090	Upper Big Creek	105.35
	03170008-100	Lower Big Creek	105.65
	03170008-120	Jackson Creek	65.24

Figure 6-9a



Escatawpa River Basin

10 0 10 Miles

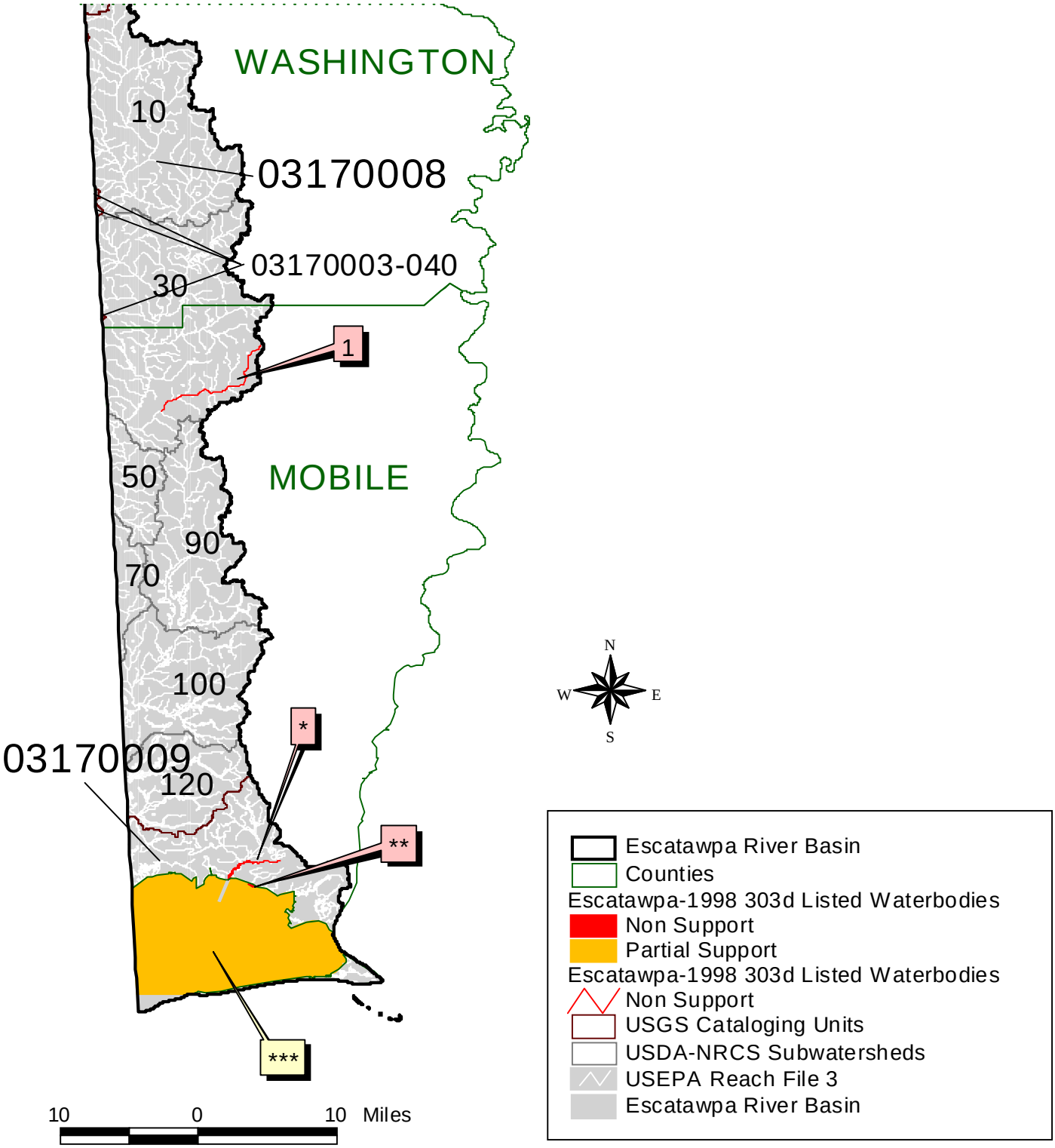
Counties
Escatawpa River Basin
USGS Cataloging Units
USDA-NRCS Subwatersheds

Table 6-3-ESRB
Escatawpa River Basin 1998 303(d) List Waterbodies

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03170008-030-01	Non	Puppy Creek	Escatawpa	Mobile	F&W	Pathogens	Urban runoff/ Storm sewers	1991	10.0 miles	Alabama Hwy. 217 / Its Source

Figure 6-9b

Alabama's 1998 303(d) Listed Waterbodies
Escatawpa River Basin



ADEM-Water Quality Section 1999

* Bayou La Batre River, ** Portersville Bay, & *** Mississippi Sound listed in Mobile River Basin's 303(d) table

Table 6-LTRB-1

Lower Tombigbee River Basin Land Use	
0.85%	Water
0.35%	Developed
3.36%	Barren
73.40%	Natural Forested Upland
9.71%	Herbaceous Planted/Cultivated
12.33%	Wetlands

Table 6-LTRB-2
Lower Tombigbee River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03160201-Middle Tombigbee-Chickasaw			**2,039.62**
	03160201-010	Spring Creek	52.9
	03160201-020	Cotohaga Creek	49.73
	03160201-030	Double Creek	121.21
	03160201-040	Dry Creek	39.83
	03160201-050	Powell Creek	68.2
	03160201-060	Upper Chickasaw Bogue Creek	141.32
	03160201-070	Lower Chickasaw Bogue	94.44
	03160201-080	Tombigbee River Tributaries	23.37
	03160201-100	Kinterbish Creek	157.9
	03160201-110	Beaver Creek	100.1
	03160201-130	Upper Tuckabum Creek	110.41
	03160201-150	Yantley Creek	84.31
	03160201-160	Lower Tuckabum Creek	47.14
	03160201-170	Landrums Creek	31.23
	03160201-180	Horse Creek	149.18
	03160201-190	Wahalak Creek	149.97
	03160201-200	Big Bunny Creek	35.48
	03160201-210	Bashi Creek	127.33
	03160201-220	Big Tallawampa Creek	67.49
	03160201-230	Witch Creek	38.06
	03160201-250	Upper Okatuppa Creek	65.82
	03160201-270	Puss Cuss Creek	52.6
	03160201-280	Lower Okatuppa Creek	169.01
	03160201-290	Turkey Creek	62.59
03160202-Sucarnoochee			**383.3**
	03160202-040	Upper Sucarnoochee River	1.74
	03160202-060	Ponta Creek	6.57
	03160202-080	Lower Sucarnoochee River	140.34
	03160202-100	Alamuchee Creek	119.35
	03160202-110	Ponkabia Creek	115.3

Table 6-LTRB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03160203-Lower Tombigbee			**1,706.06**
	03160203-010	Ulcanush Creek	39.53
	03160203-020	Seyouyah Creek	25.14
	03160203-030	Santa Bogue Creek	181.37
	03160203-040	Satilpa Creek	212.63
	03160203-050	Tauler Creek	77.46
	03160203-060	Salt Gut Slough	15.57
	03160203-070	Jackson Creek	112.86
	03160203-080	Stave Creek	112.86
	03160203-090	East Bassetts Creek	265.07
	03160203-100	West Bassetts Creek	214.1
	03160203-110	Salt Creek	50.26
	03160203-120	Lewis Creek	114.16
	03160203-130	Bilbo Creek	219.46
	03160203-140	Sand Hill Creek	65.59

Figure 6-10a

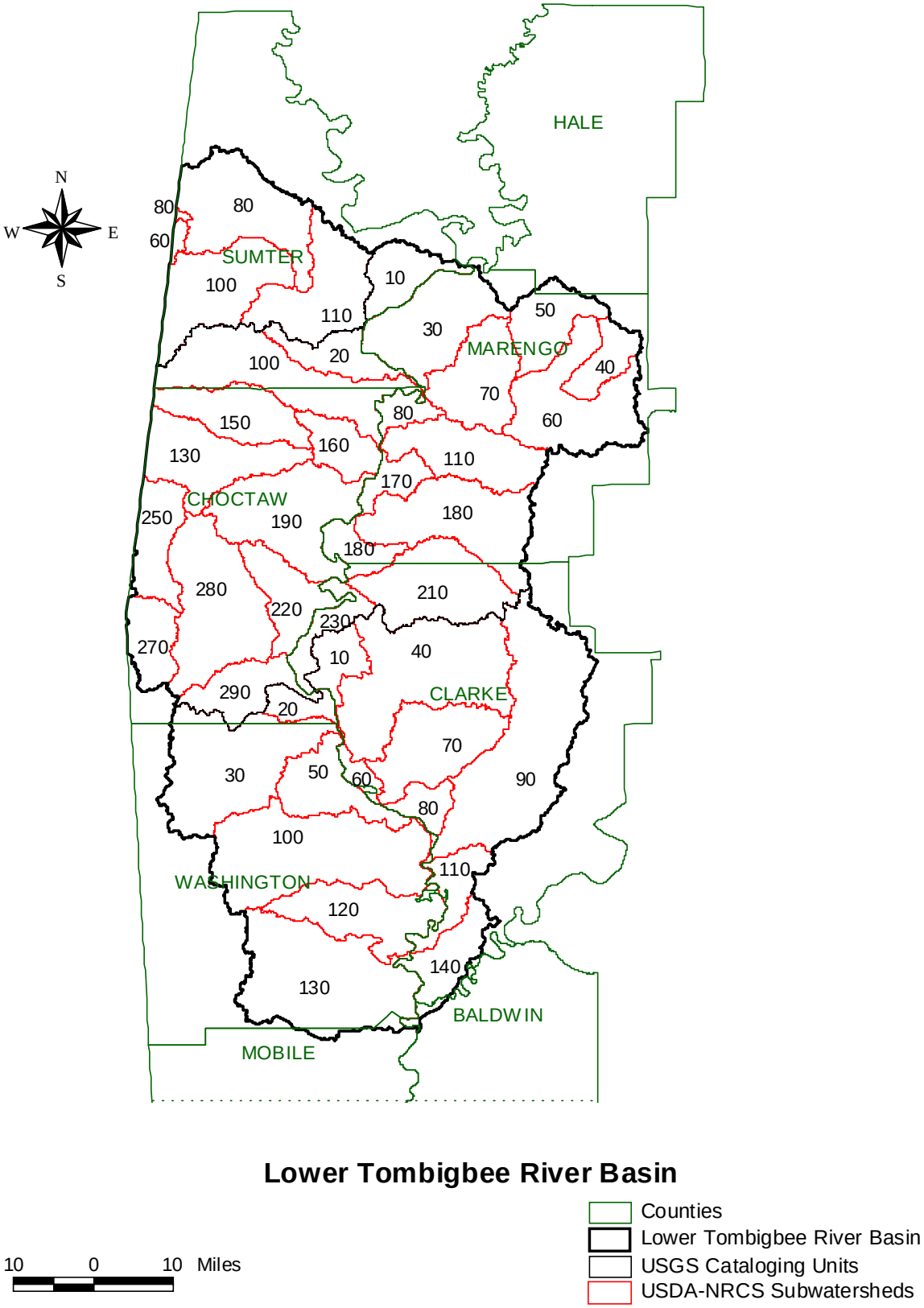
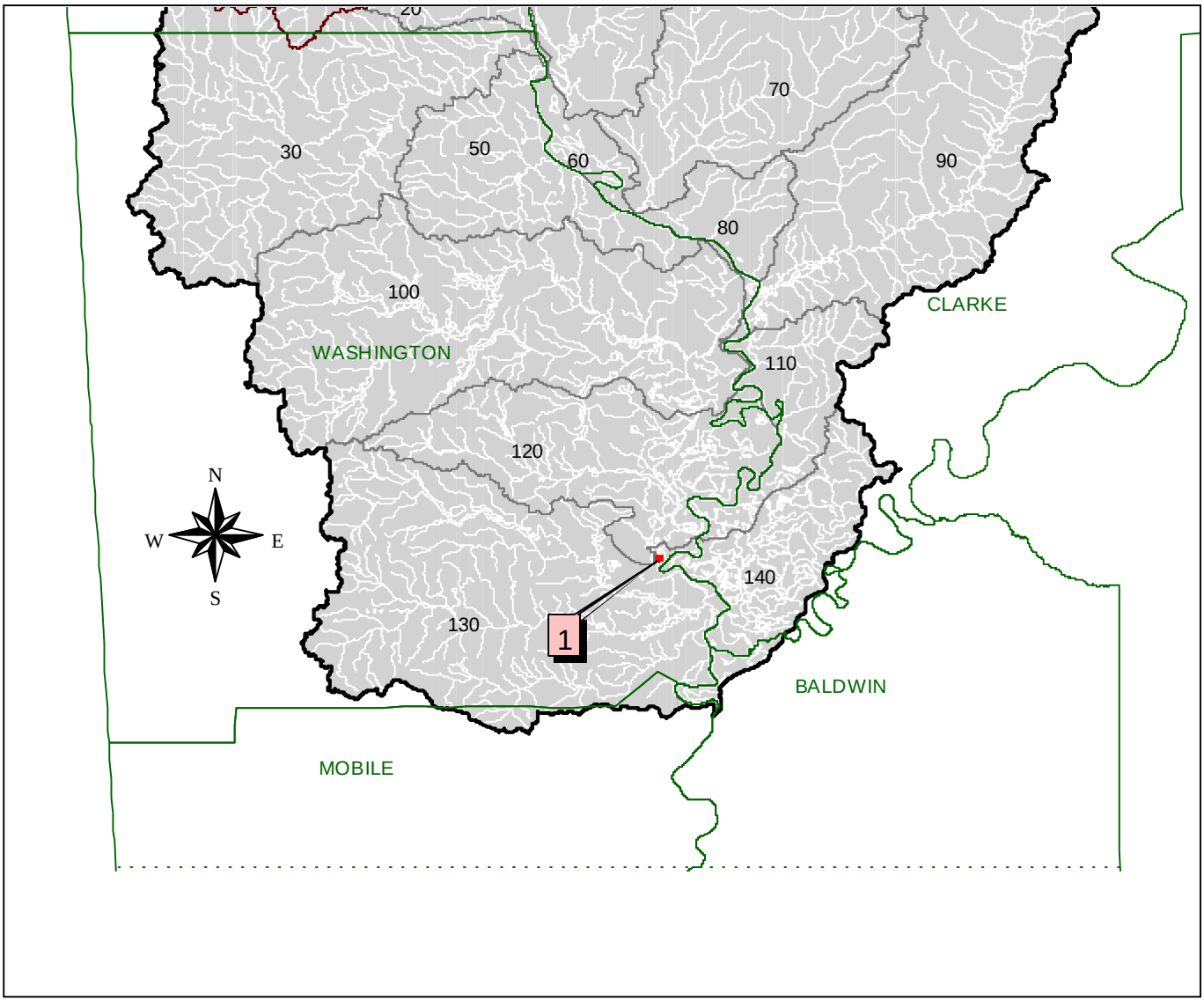

N
W
E
S
HALE
SUMTER
MARENGO
CHOCTAW
CLARKE
WASHINGTON
BALDWIN
MOBILE
80
80
60
100
10
110
30
50
100
20
40
70
80
60
150
160
130
110
170
250
190
180
180
280
210
220
230
270
10
40
290
20
70
30
50
60
90
80
100
110
120
140
130
Lower Tombigbee River Basin
Counties
Lower Tombigbee River Basin
USGS Cataloging Units
USDA-NRCS Subwatersheds
10 0 10 Miles

Table 6-3-LTRB
Lower Tombigbee River Basin 1998 303(d) List Waterbodies

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03160203-130-01	Non	Olin Basin	Lower Tombigbee	Washington	F&W	Pesticides Metals	Contaminated sediments	1993	65 acres	All of Olin Basin

Figure 6-10b

Alabama's 1998 303(d) Listed Waterbodies
Lower Tombigbee River Basin



Lower Tombigbee-1998 303d Listed Waterbodies
- Non Support
- Counties
- Lower Tombigbee River Basin
- USGS Cataloging Units
- USDA-NRCS Subwatersheds
- USEPA Reach File 3
- Lower Tombigbee River Basin

5 0 5 Miles

ADEM-Water Quality Section 1999

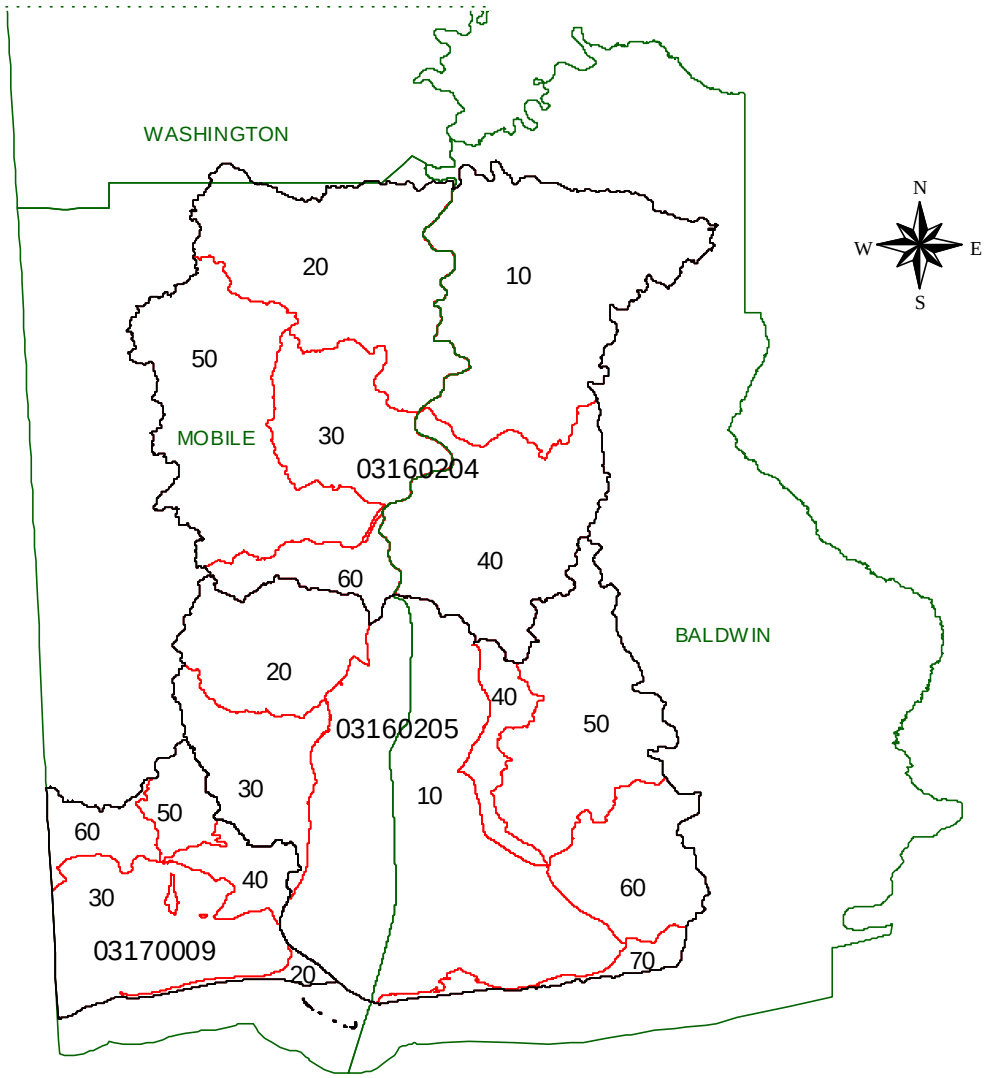
Table 6-MORB-1

Mobile River Basin Land Use	
24.06%	Water
3.84%	Developed
1.37%	Barren
39.62%	Natural Forested Upland
0.04%	Herbaceous Upland Natural/Semi-Natural Vegetation
15.19%	Herbaceous Planted/Cultivated
15.87%	Wetlands

Table 6-MORB-2
Mobile River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03160204-Mobile-Tensaw			**961.85**
	03160204-010	Upper Tensaw River	244.78
	03160204-020	Cedar Creek	199.77
	03160204-030	Bayou Sara	101.58
	03160204-040	Lower Tensaw River	176.22
	03160204-050	Chickasaw Creek	196.23
	03160204-060	Three Mile Creek	43.27
03160205-Mobile Bay			**875.03**
	03160205-010	Mobile Bay	384.22
	03160205-020	Hall Mill Creek	102.03
	03160205-030	Fowl River	82.47
	03160205-040	Fly Creek	36.77
	03160205-050	Fish River	153.42
	03160205-060	Magnolia River	88.86
	03160205-070	Bon Secour Bay	27.26
03170009-Mississippi Coastal			**241.19**
	03170009-010	Pelican Bay	10.25
	03170009-020	Dauphin Island	0
	03170009-030	Mississippi Sound	132.16
	03170009-040	West Fowl River	35.02
	03170009-050	Bayou La Batre	30.51
	03170009-060	Little River	33.25

Figure 6-11a



Mobile River Basin

0 10 Miles

Mobile River Basin and Cataloging Unit 03170009 Mississippi Coastal
USGS Cataloging Units
Counties
USDA-NRCS Subwatersheds

Table 6-3-MORB
Mobile River Basin 1998 303(d) List Waterbodies

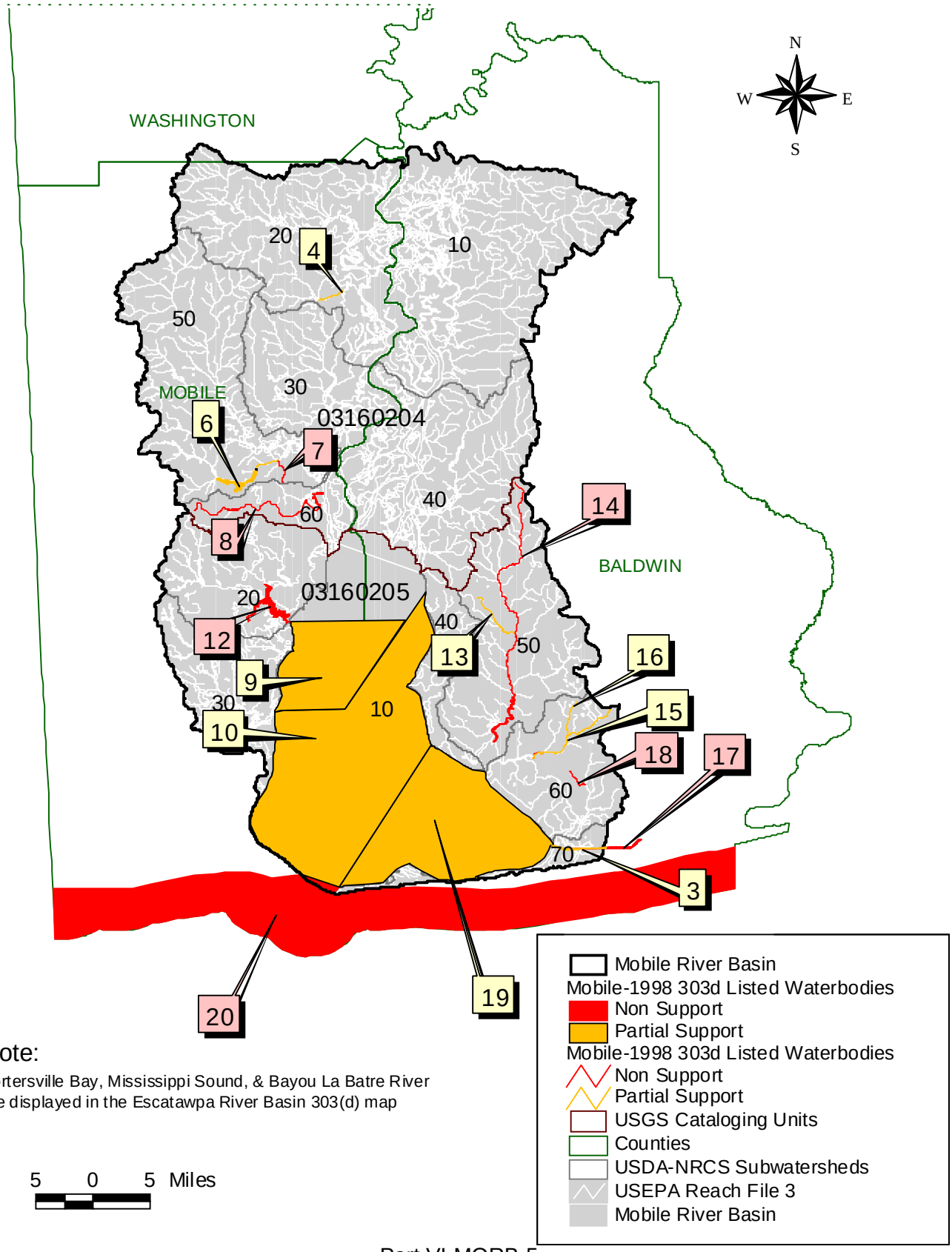
Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03170009-030-01	Non	Portersville Bay	Mobile	Mobile	SH/F&W/S	Pathogens	Municipal Industrial	1996	0.04 mi2	1000 ft. West of outfall / Bayou La Batre Utilities Outfall
2	AL/03170009-030-02	Partial	Mississippi Sound	Mobile	Mobile	SH/F&W/S	Pathogens	Urban runoff/ Storm sewers	1994-97	39.5 mi2	Segment classified for shellfish harvsting
3	AL/03140107-040-01	Partial	Intracoastal Waterway	Mobile	Baldwin	F&W	OE/DO Temp./thermal mod.	Unknown sources	1992-93	5.0 miles	Alabama Hwy. 59 / Wolf Bay
4	AL/03160204-020-01	Partial	Cold Creek Swamp	Mobile	Mobile	F&W	Metals	Contaminated sediments Flow reg/mod	1993	1.0 mi2	
5	AL/0317009-030-01	Non	Bayou La Batre River	Mobile	Mobile	F&W	pH OE/DO	Urban runoff/Storm sewers	1990-91	4.0 miles	Portersville Bay / Its Source
6	AL/03160204-050-01	Partial	Eightmile Creek	Mobile	Mobile	PWS/F&W	Pathogens	Urban runoff/Storm sewers Collection system failure	1996-97	3.2 miles	AL Hwy 45 / Highpoint Blvd.
7	AL/03160204-050-02	Non	Gum Tree Branch	Mobile	Mobile	F&W	Pathogens	Collection system failure Urban runoff/Storm sewers	1998	2.2 miles	Eightmile Creek / Its Source
8	AL/03160204-060-01	Non	Threemile Creek	Mobile	Mobile	A&I	pH OE/DO	Municipal Collection system failure Hwy/road/bridge construction Land development	1990-95 1997	17.4 miles	Mobile River / Its Source
9	AL/03160205-010-01	Partial	Mobile Bay	Mobile	Mobile	SH/F&W/S	OE/DO	Urban runoff/Storm sewers	1990-91	50.0 mi2	Southwest bay
10	AL/03160205-010-02	Partial	Mobile Bay	Mobile	Mobile	SH/F&W	Pathogens	Urban runoff/Storm sewers	1994-97	198.5 mi2	Segment classified for shellfish harvsting
11	AL/03160205-020-01	Non	Rabbit Creek	Mobile	Mobile	F&W	OE/DO Pathogens	Urban runoff/Storm sewers Onsite wastewater systems	1991	3.0 miles	Dog River / Alabama Hwy. 163

Table 6-3-MORB (cont.)

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
12	AL/03160205-020-02	Non	Dog River	Mobile	Mobile	F&W/S	pH OE/DO	Land development Urban runoff/Storm sewers Onsite wastewater systems	1990-91 1993-95	4.0 miles	Mobile River / 4 miles upstream
13	AL/03160205-050-01	Partial	Caney Branch	Mobile	Baldwin	F&W	Pathogens	Pasture grazing - riparian	1995-97	5.0 miles	Fish River / Its Source
14	AL/03160205-050-02	Non	Fish River	Mobile	Baldwin	F&W/S	Mercury	Unknown source	1996	31.5 miles	Weeks Bay / Its Source
15	AL/03160205-060-01	Partial	Magnolia River	Mobile	Baldwin	F&W/S	OE/DO	Land development Onsite wastewater systems	1994-97	6.3 miles	Baldwin Co. Rd. 49 / Baldwin Co. Rd. 24
16	AL/03160205-060-02	Partial	UT to Magnolia River	Mobile	Baldwin	F&W	Pathogens	Agriculture	1994-97	3.0 miles	Baldwin Co. Rd. 24 / Its Source
17	AL/03160205-070-01	Non	Intracoastal Waterway	Mobile	Baldwin	F&W	OE/DO	Urban runoff/Storm sewers Natural sources	1990-91	2.2 miles	Oyster Bay / Alabama Hwy. 59
18	AL/03160205-060-03	Non	UT to Bon Secour R.	Mobile	Baldwin	F&W	Pathogens	Urban runoff/Storm sewers Pasture grazing	1995	2.3 miles	Baldwin Co. Rd. 65 / Its Source
19	AL/03160205-070-02	Partial	Bon Secour Bay	Mobile	Baldwin	SH/F&W/S	Pathogens	Urban runoff/Storm sewers Onsite wastewater systems	1994-97	121.3 mi2	Segment classified for shellfish harvsting
20	AL/03160205-111-01	Non	Gulf of Mexico	Mobile	Mobile	SH/F&W/S	Mercury	Unkown source	1996-97	238 mi2	Mississippi / Florida

Figure 6-11b

Alabama's 1998 303(d) Listed Waterbodies
Mobile River Basin



Note:

Portersville Bay, Mississippi Sound, & Bayou La Batre River are displayed in the Escatawpa River Basin 303(d) map

ADEM-Water Quality Section 1999

Table 6-PERB-1

Perdido-Escambia River Basin Land Use	
0.96%	Water
0.54%	Developed
2.68%	Barren
72.18%	Natural Forested Upland
0.06%	Herbaceous Upland Natural/Semi-Natural Vegetation
17.39%	Herbaceous Planted/Cultivated
6.18%	Wetlands

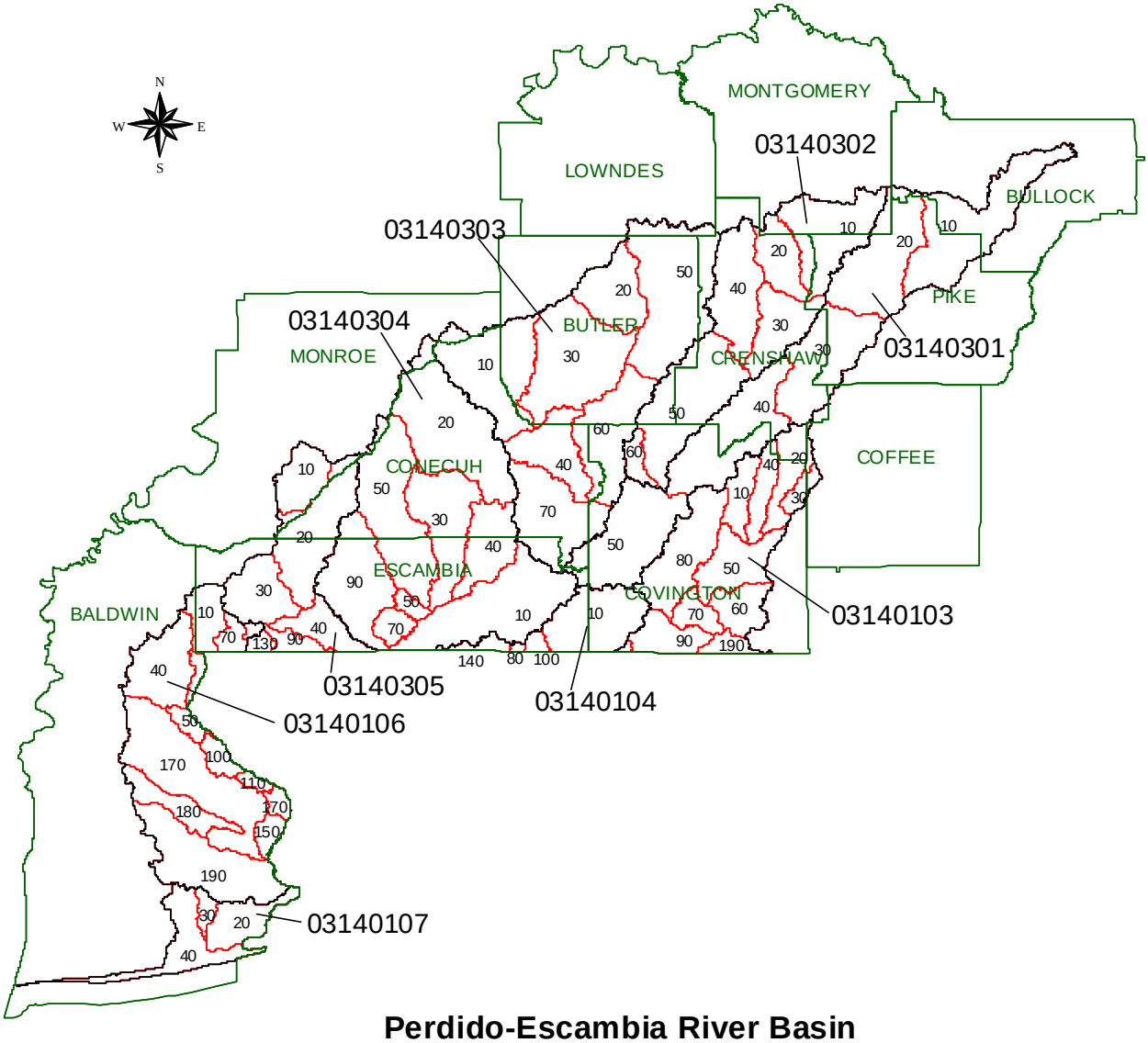
Table 6-PERB-2
Perdido-Escambia River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03140103-Yellow			**511.99**
	03140103-010	Yellow River	40.68
	03140103-020	Lightwood Knot Creek	57.25
	03140103-030	Pond Creek	19.6
	03140103-040	Poley Creek	40.59
	03140103-050	Yellow River	81.03
	03140103-060	Clear Creek	50.56
	03140103-070	North Creek	30.09
	03140103-080	Five Runs Creek	122.5
	03140103-090	Yellow River	48.54
	03140103-110	Big Horse Creek	2.63
	03140103-190	Horsehead Creek	18.52
03140104-Blackwater			**147.78**
	03140104-010	Blackwater River	121.19
	03140104-040	Panther Creek	0.08
	03140104-080	Big Juniper Creek	2.69
	03140104-100	Sweetwater Creek	8.76
	03140104-140	East Fork of Big Coldwater Creek	14.33
	03140104-140	West Fork of Big Coldwater Creek	0.73
03140106-Perdido			**598.61**
	03140106-010	Perdido River	41.92
	03140106-020	Perdido River	11.23
	03140106-040	Dyas Creek	11.23
	03140106-050	Indian Creek	16.33
	03140106-060	Upper Brushy Creek	18.72
	03140106-070	Brushy Creek	18.72
	03140106-100	Nelson Branch	22.41
	03140106-110	Loggerhead Creek	9.37
	03140106-140	Perdido River	13.15
	03140106-150	Rices Branch	19.11
	03140106-170	Styx River	205.99
	03140106-180	Cowpen Creek	51.92
	03140106-190	Blackwater River	158.51
03140107-Perdido Bay			**171.33**
	03140107-020	Soldier Creek	59.24
	03140107-030	Miflin Creek	14.53
	03140107-040	Wolf Creek	97.56

Table 6-PERB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03140301-Upper Conecuh			**839.3**
	03140301-010	Conecuh River	195.53
	03140301-020	Mannings Creek	159.82
	03140301-030	Conecuh River	148.07
	03140301-040	Conecuh River	172.22
	03140301-050	Conecuh River	163.66
03140302-Patsaliga			**601.66**
	03140302-010	Olustee Creek	135.16
	03140302-020	Blue Creek	61.29
	03140302-030	Upper Patsaliga Creek	83.73
	03140302-040	Little Patsaliga Creek	105.09
	03140302-050	Lower Patsaliga Creek	195.53
	03140302-060	Buck Creek	20.86
03140303-Sepulga			**1,049.43**
	03140303-010	Sepulga River	170.88
	03140303-020	Upper Persimmon Creek	87.6
	03140303-030	Lower Persimmon Creek	193.39
	03140303-040	Sepulga River	103.7
	03140303-050	Upper Pigeon Creek	216.97
	03140303-060	Lower Pigeon Creek	135.43
	03140303-070	Sepulga River	141.46
03140304-Lower Conecuh			**995.52**
	03140304-010	Conecuh River	197.24
	03140304-020	Upper Murder Creek	219.56
	03140304-030	Lower Murder Creek	129.23
	03140304-040	Cedar Creek	84.92
	03140304-050	Burnt Corn Creek	185.87
	03140304-060	Frankllin Mill Creek	14.14
	03140304-070	Jernigan Mill Creek	25.03
	03140304-090	Little Escambia Creek	139.53
03140305-Escambia			**362.64**
	03140305-010	Big Escambia Creek	58.84
	03140305-020	Big Escambia Creek	139.53
	03140305-030	Sizemore Creek	81.36
	03140305-040	Big Escambia Creek	53.54
	03140305-070	Pritchetts Mill Branch	0.6
	03140305-090	Canoe Creek	19.09
	03140305-130	Pine Barren Creek	9.68

Figure 6-12a



Perdido-Escambia River Basin

10 0 10 Miles

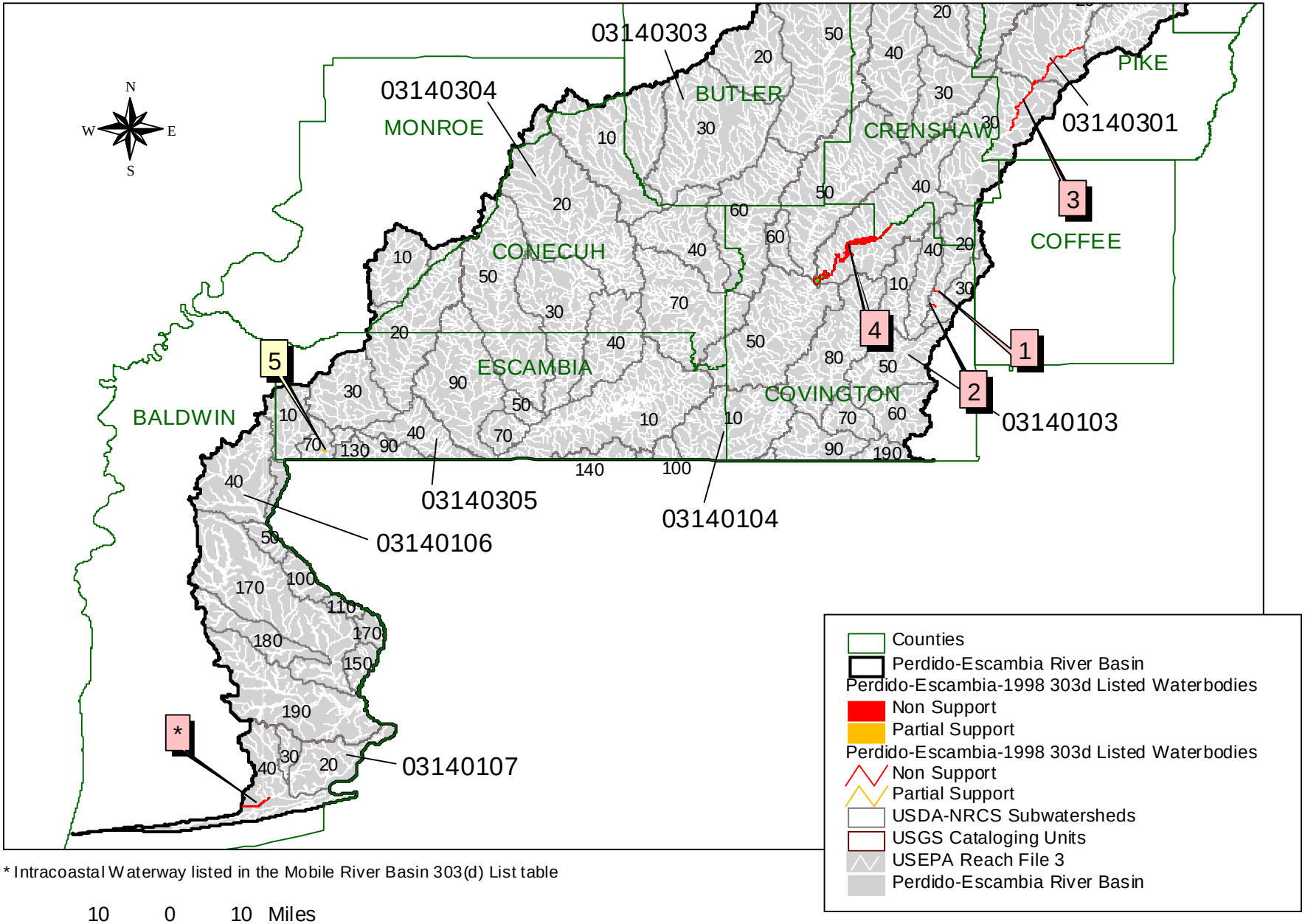
Counties
USGS Cataloging Units
USDA-NRCS Subwatersheds
Perdido-Escambia River Basin

Table 6-3-PERB
Perdido-Escambia River Basin 1998 303(d) List Waterbodies

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03140103-020-01	Non	UT to Jackson Lake 2-S	Perdido-Escambia	Covington	F&W	OE/DO Pathogens	Int. animal feeding operations Pasture grazing	1996-97	1.3 miles	W.F. Jackson Lake / Its Source
2	AL/03140103-020-02	Non	UT to Jackson Lake 3-C	Perdido-Escambia	Covington	F&W	OE/DO Pathogens	Int. animal feeding operations Pasture grazing	1996-97	0.2 miles	W.F. Jackson Lake / Its Source
3	AL/03140301-030-01	Non	Conecuh River	Perdido-Escambia	Pike	F&W	Siltation OE/DO	Nonirrigated crop production Pasture grazing	1991	24.7 miles	Broadhead Creek / Mannings Creek
4	AL/03140301-040-01	Non	Conecuh River	Perdido-Escambia	Covington	F&W/S	Siltation OE/DO Pathogens	Nonirrigated crop production Flow reg/mod Pasture grazing	1991	18.0 miles	Point A Dam / Hornet Creek
5	AL/03140106-070-01	Partial	Boggy Branch	Perdido-Escambia	Escambia	F&W	OE/DO Zinc Chlorides	Industrial	1996,97	0.2 miles	Atmore WWTP / Masland Carpets WWTP

Figure 6-12b

Alabama's 1998 303(d) Listed Waterbodies
Perdido-Escambia River Basin



* Intracoastal Waterway listed in the Mobile River Basin 303(d) List table

ADEM-Water Quality Section 1999

Table 6-TARB-1

Tallapoosa River Basin Land Use	
2.29%	Water
0.94%	Developed
1.08%	Barren
76.95%	Natural Forested Upland
14.74%	Herbaceous Planted/Cultivated
4.00%	Wetlands

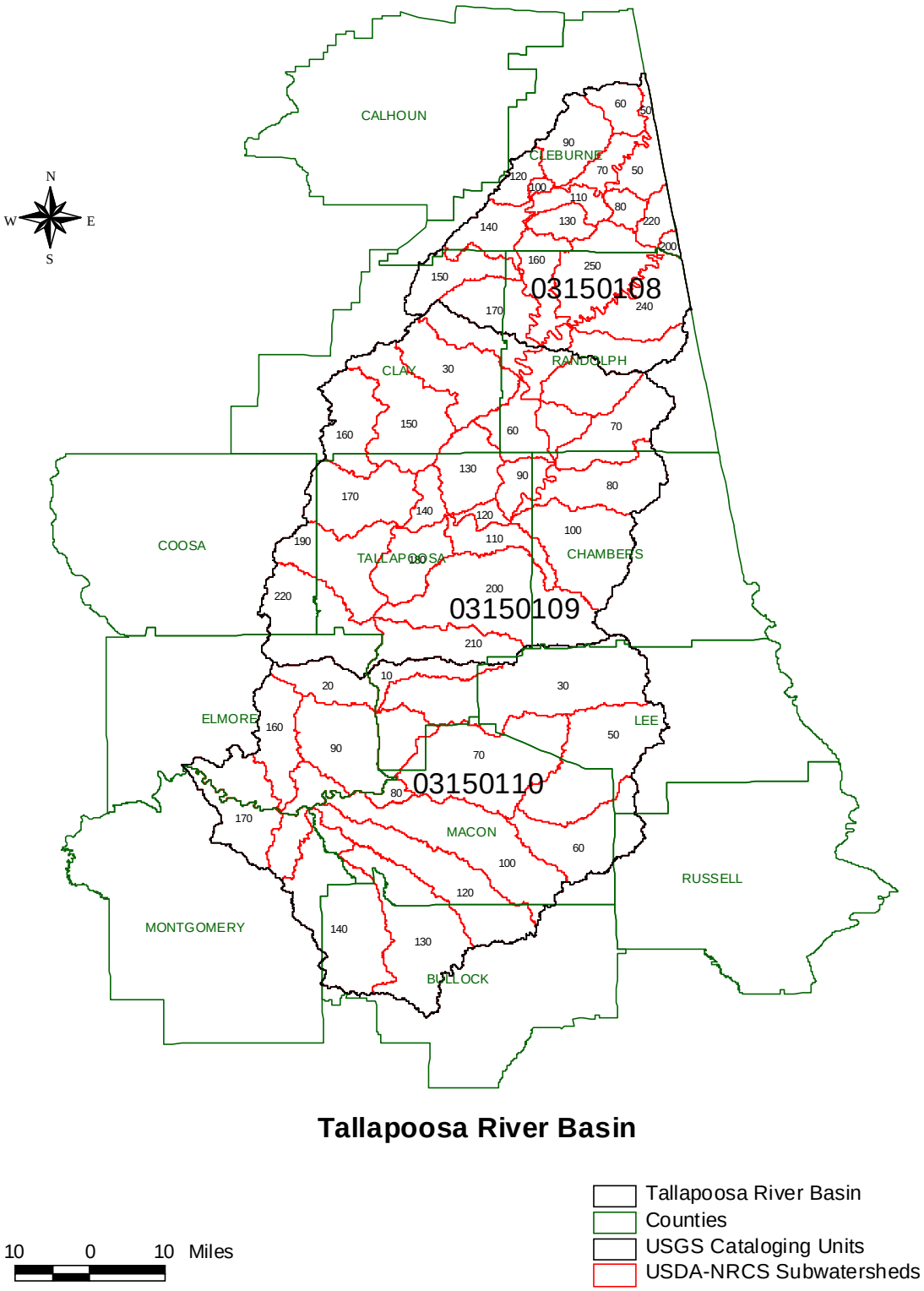
Table 6-BWRB-2
Tallapoosa River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03150108-Upper			**742.15**
	03150108-050	Upper Tallapoosa River	40.1
	03150108-060	Muscadine Creek	31.86
	03150108-070	Tallapoosa River	29.24
	03150108-080	Silas Creek	18.27
	03150108-090	Cane Creek	62.21
	03150108-100	Tallapoosa River	4.83
	03150108-110	Tallapoosa River	26.31
	03150108-120	Cahulga Creek	25.05
	03150108-130	Dynne Creek	25.5
	03150108-140	Chulafinnee Creek	48.67
	03150108-150	Ketchepedrakee Creek	54.31
	03150108-160	Tallapoosa River	52.29
	03150108-170	Mad Indian Creek	60.58
	03150108-200	Farmer Creek	5.81
	03150108-220	Lost Creek	22.08
	03150108-240	Upper Little Tallapoosa River	80.78
	03150108-250	Cohobadiah Creek	95.88
	03150108-260	Wedowee Creek	51.28
	03150108-270	Lower Little Tallapoosa River	7.1
03150109-Middle Tallapoosa			**1,520.76**
	03150109-010	Fox Creek	44.46
	03150109-020	Tallapoosa River	21.93
	03150109-030	Crooked Creek	98.77
	03150109-040	Cornhouse Creek	55.84
	03150109-050	Beaverdam Creek	26.22
	03150109-060	Hurricane Creek	48.06
	03150109-070	High Pine Creek	78.58
	03150109-080	Chikasanoxee Creek	85.14
	03150109-090	Hodnett Mill Creek	32.02
	03150109-100	Chatahospee Creek	118.26
	03150109-110	County Line Creek	43.74
	03150109-120	Sweetwater Creek	12.52
	03150109-130	Emuckfaw Creek	0
	03150109-140	Timbergut Creek	24.83
	03150109-150	Enitachopco Creek	114.51
	03150109-160	Little Hillabee Creek	70.89

Table 6-TARB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03150109-Middle Tallapoosa			**1,520.76**
	03150109-170	Hillabee Creek	94.27
	03150109-180	Tallapoosa River	61.39
	03150109-190	Elkahatchee Creek	96.71
	03150109-200	Sandy Creek	192.54
	03150109-210	Blue Creek	72.85
	03150109-220	Oakachoy Creek	127.23
03150110-Lower			**1,689.92**
	03150110-010	Wind Creek	34.88
	03150110-020	Channahahatchee Creek	46.1
	03150110-030	Sougahatchee Creek	217.66
	03150110-040	Stone Creek	36.43
	03150110-050	Chewacla Creek	148.04
	03150110-060	Opintlocco Creek	101.38
	03150110-070	Uphapee Creek	172.31
	03150110-080	Tallapoosa River	11.9
	03150110-090	Tumkeehatchee Creek	96.33
	03150110-100	Calebee Creek	160.66
	03150110-110	Goodwater Creek	24.84
	03150110-120	Cubahatchee Creek	129.94
	03150110-130	Old Town Creek	146.11
	03150110-140	Line Creek	170.89
	03150110-150	Miller Creek	30.26
	03150110-160	Chubbehatchee Creek	65.59
	03150110-170	Jenkins Creek	52.2
	03150110-180	Harwells Mill Creek	44.4

Figure 6-13a



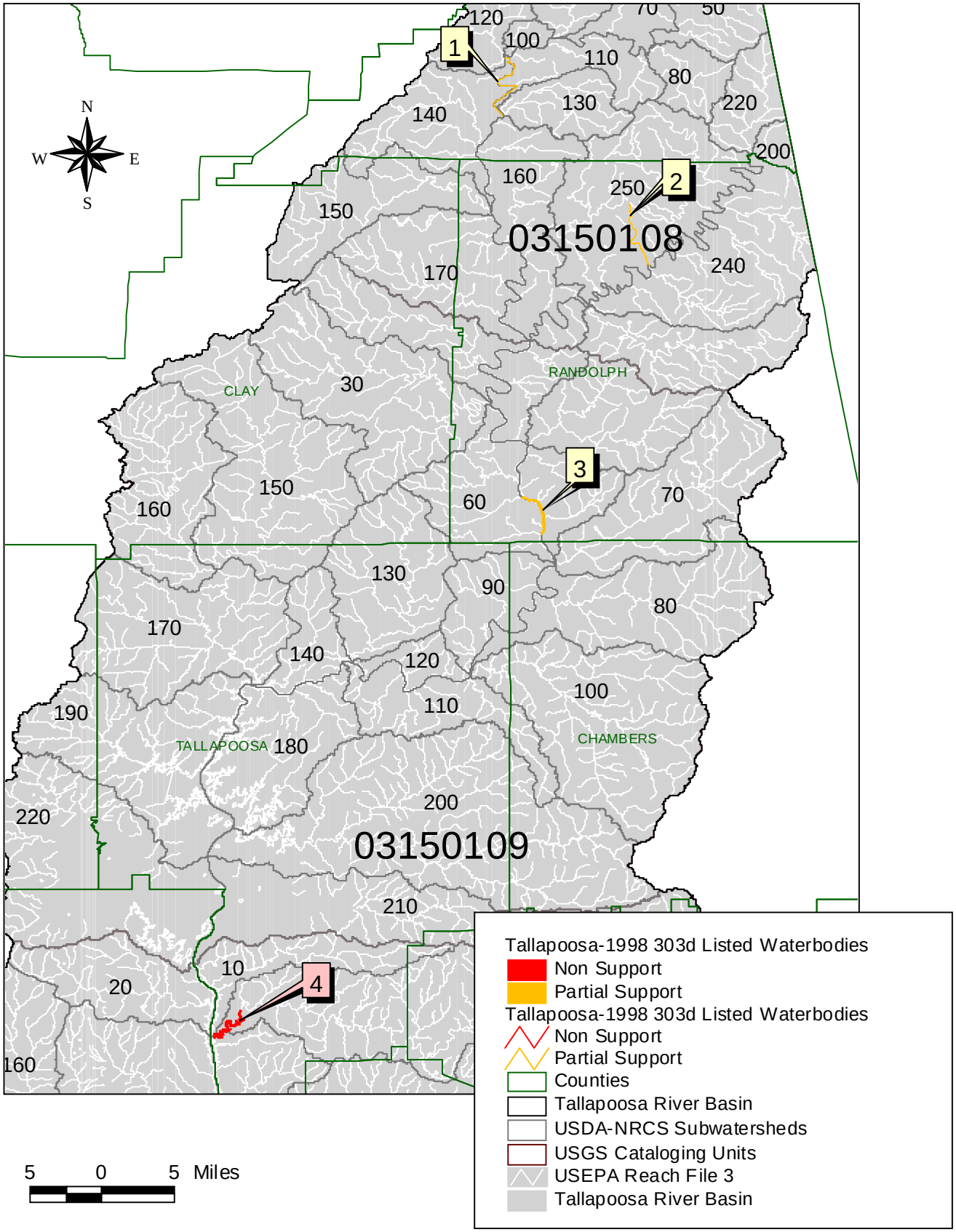
Tallapoosa River Basin

Table 6-3-TARB
Tallapoosa River Basin 1998 303(d) List Waterbodies

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03150108-110-01	Partial	Tallapoosa River	Tallapoosa	Cleburne	F&W	OE/DO	Industrial Municipal Nonirrigated crop production Pasture grazing Flow reg/mod	1992	4.3 miles	Dam Cleburne Co. Rd. 36 / Cleburne Co. Rd. 19
2	AL/03150108-250-01	Partial	Wolf Creek	Tallapoosa	Randolph	F&W	Ammonia Pathogens OE/DO	Int. animal feeding operations	1990	4.0 miles	Little Tallapoosa River / Its Source
3	AL/03150109-050-01	Partial	Tallapoosa River	Tallapoosa	Randolph	F&W	Flow alteration	Dam construction Flow reg/mod	1991	3.0 miles	Alabama Hwy. 77 / Cedar Creek
4	AL/03150110-190-01	Non	Yates Reservoir	Tallapoosa	Tallapoosa	PWS/S/F&W	Nutrients OE/DO	Industrial Municipal Nonirrigated crop production Pasture grazing	1994-97	224 acres	Sougahatchee Creek Embayment / NW1/4, Section 21, T19N, R22E

Figure 6-13b

Alabama's 1998 303(d) Listed Waterbodies
Tallapoosa River Basin



ADEM-Water Quality Section 1999

Table 6-TNRB-1

Tennessee River Basin Land Use	
4.37%	Water
1.85%	Developed
0.99%	Barren
53.64%	Natural Forested Upland
35.61%	Herbaceous Planted/Cultivated
3.54%	Wetlands

Table 6-TNRB-2
Tennessee River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
06020001-Middle Tennessee-Chickamauga			**52.88**
	06020001-290	Lookout Creek	44.37
	06020001-350	Warren Creek	8.51
06030001-Guntersville Lake			**1,645.22**
	06030001-060	**Widows Creek**	76.36
	06030001-080	Long Island Creek	96.93
	06030001-100	Crow Creek	41.15
	06030001-120	Little Coon Creek	25.4
	06030001-140	Big Coon Creek	43.39
	06030001-150	Lower Crow Creek	22.22
	06030001-160	Coon Creek	95.86
	06030001-170	Mud Creek	105.13
	06030001-180	Jones Creek	85.43
	06030001-190	Roseberry Creek	102.4
	06030001-200	Chisenhall Spring Branch	18.13
	06030001-210	North Sauty Creek	83.84
	06030001-220	South Sauty Creek	126.18
	06030001-230	Dry Creek	25.64
	06030001-240	Boshart Creek	37.54
	06030001-250	Town Creek	202.89
	06030001-260	Lower Town Creek	46.95
	06030001-270	Scarham Creek	90.55
	06030001-280	Short Creek	113.46
	06030001-290	Lower Short Creek	20.65
	06030001-300	Big Spring Creek	71.65
	06030001-310	Browns Creek	73.41
	06030001-320	Honeycomb Creek	40.06

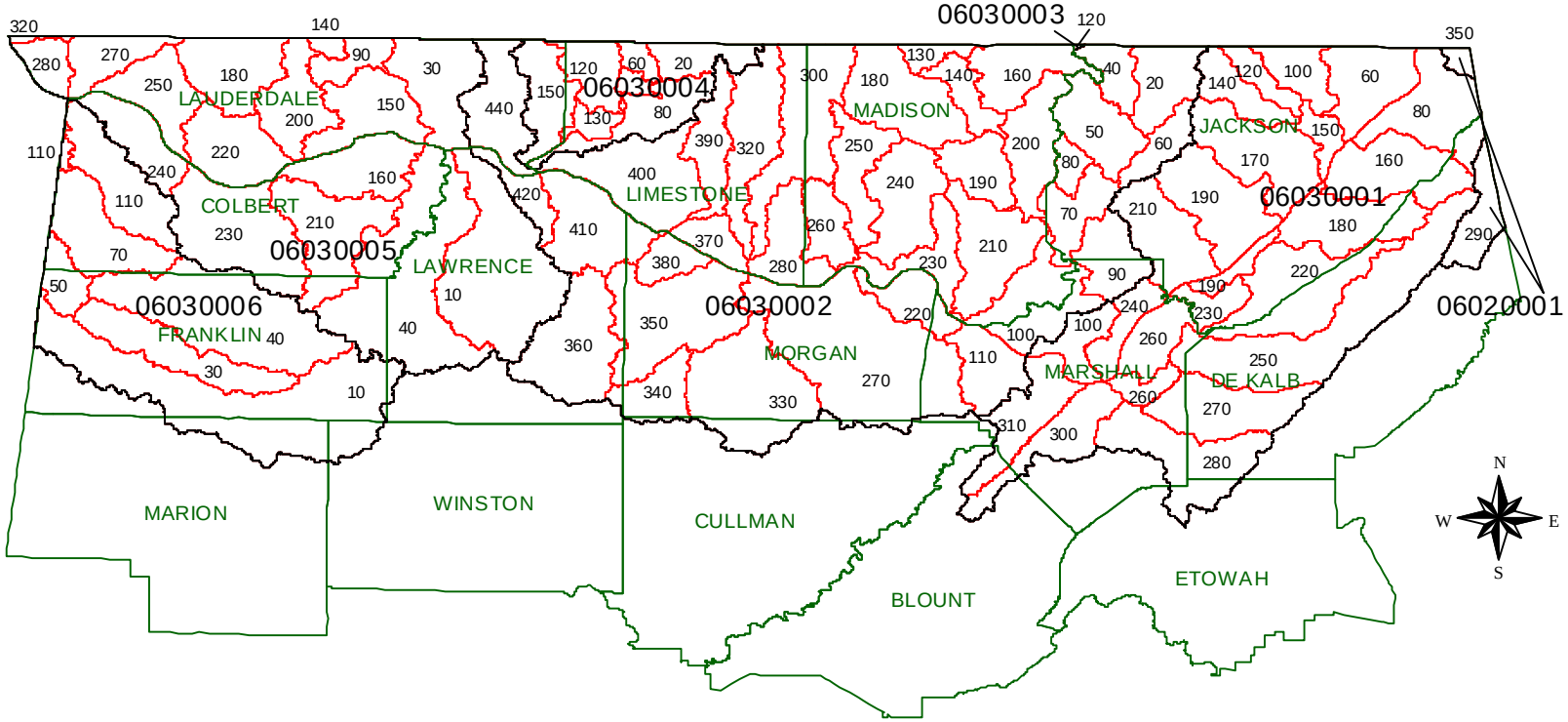
Table 6-TNRB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
06030002-Wheeler Lake			**2,696.98**
	06030002-020	Estill Fork	58.26
	06030002-040	Larkin Fork	32.51
	06030002-050	Lick Fork	69.78
	06030002-060	Guess Creek	34.45
	06030002-070	Upper Paint Rock River	51.77
	06030002-080	Clear Creek	17.9
	06030002-090	Little Paint Creek	57.05
	06030002-100	Lower Paint Rock River	93.78
	06030002-110	Shoal Creek	58.67
	06030002-130	West Fork of Flint River	15.63
	06030002-140	Upper Flint River	34.85
	06030002-160	Mountain Fork of the Flint River	65.5
	06030002-180	Brier Fork of the Flint River	104.48
	06030002-190	Middle Flint River	50.63
	06030002-200	Hurricane Creek	73.73
	06030002-210	Lower Flint River	94.05
	06030002-220	Dry Creek	46.65
	06030002-230	Aldridge Creek	53.57
	06030002-240	Huntsville Spring Branch	91.06
	06030002-250	Indian Creek	63.96
	06030002-260	Barren Fork Creek	42.75
	06030002-270	Cotaco Creek	275.58
	06030002-280	Beaverdam Creek	60.48
	06030002-300	Limestone Creek	126.47
	06030002-320	Piney Creek	92.15
	06030002-330	Upper Flint Creek	152.74
	06030002-340	Crowdabout Creek	48.75
	06030002-350	Lower Flint Creek	145.35
	06030002-360	West Flint Creek	145.35
	06030002-370	Prior Branch	31.8
	06030002-380	Baker Creek	28.85
	06030002-390	Swan Creek	56.08
	06030002-400	Round Island Creek	115.7
	06030002-410	Mallard Creek	95.51
	06030002-420	Spring Creek	31.2
	06030002-440	Second Creek	79.94
06030003-Upper Elk			**0.4**
	06030003-120	Martin Branch	0.4

Table 6-TNRB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
06030004-Lower Elk			**247.38**
	06030004-020	North Elk River	37.79
	06030004-060	Shoal Creek	13.71
	06030004-070	Baptizing Branch	10.33
	06030004-080	Big Creek	62.11
	06030004-120	Sugar Creek	43.21
	06030004-130	Maple Swamp Branch	17.4
	06030004-150	Anderson Creek	62.83
06030005-Pickwick Lake			**1,413.93**
	06030005-010	Big Nance Creek	200.06
	06030005-030	Bluewater Creek	89.22
	06030005-040	Town Creek	250.38
	06030005-090	Upper Shoal Creek	30.22
	06030005-140	Butler Creek	7.93
	06030005-150	Lower Shoal Creek	80.07
	06030005-160	Pond Creek	73.76
	06030005-180	Upper Cypress Creek	80.32
	06030005-200	Lower Cypress Creek	69.8
	06030005-210	Spring Creek	107.71
	06030005-220	Sinking Creek	73.89
	06030005-230	Cane Creek	141.91
	06030005-240	Colbert Creek	60.68
	06030005-250	Brush Creek	68.03
	06030005-270	Second Creek	46.72
	06030005-280	Panther Creek	29.71
	06030005-320	Hitchcock Branch	3.52
06030006-Bear			**706.25**
	06030006-010	Upper Bear Creek	291.39
	06030006-030	Little Bear Creek	0
	06030006-030	Upper Cedar Creek	199.96
	06030006-050	Lower Cedar Creek	29.41
	06030006-030	Rock Creek	89.31
	06030006-100	Lower Bear Creek	4.97
	06030006-110	Buzzard Roost Creek	91.21

Figure 6-14a



Tennessee River Basin

10 0 10 Miles

Tennessee River Basin
Counties
USGS Cataloging Units
USDA-NRCS Subwatersheds

Table 6-3-TNRB
Tennessee River Basin 1998 303(d) List Waterbodies

Map Index	Waterbody ID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/06030001-170-01	Partial	Mud Creek	Tennessee	Jackson	F&W	OE/DO	Nonirrigated crop production Pasture grazing	1991	21.0 miles	Tennessee River / Its Source
2	AL/06030001-160-01	Partial	Coon/Flat Rock Creek	Tennessee	Jackson	F&W	Metals pH Siltation	Surface mining-abandoned Mine tailings-abandoned	1991	20.0 miles	Tennessee River / Its Source
3	AL/06030001-250-01	Non	Rocky Branch	Tennessee	Jackson	F&W	pH Siltation	Surface mining-abandoned Mine tailings-abandoned	1991	4.0 miles	Coon Creek / Its Source
4	AL/06030001-270-01	Non	Scarham Creek	Tennessee	Marshall	F&W	Pesticides Ammonia Siltation OE/DO Pathogens	Nonirrigated crop production Specialty crop production Int. animal feeding operations Pasture grazing	1991 1993-95	12.0 miles	Short Creek / Its Source
5	AL/06030002-070-01	Partial	Cole Spring Branch	Tennessee	Jackson	F&W	Siltation OE/DO	Pasture grazing	1994, 1995	2.1 miles	Bridge at GW Jones Farm / Jeep Trail Crossing
6	AL/06030002-090-01	Partial	L. Paint Rock Creek	Tennessee	Marshall	F&W	Siltation OE/DO	Pasture grazing	1994, 1995	2.0 miles	Merrill Road Bridge / Jeep Trail Crossing
7	AL/06030002-160-01	Non	Mountain Fork	Tennessee	Madison	F&W	Siltation Pathogens OE/DO	Pasture grazing	1994, 1995 1997	14.5 miles	Flint River / Its Source
8	AL/06030002-180-01	Partial	Brier Fork	Tennessee	Madison	F&W	Unknown toxicity	Nonirrigated crop production	1994, 1995	3.9 miles	Flint River / Ka-Lea Park
9	AL/06030002-190-01	Partial	Chase Creek	Tennessee	Madison	F&W	Siltation OE/DO	Agriculture Urban runoff/Storm sewers	1994, 1995	2.7 miles	Blackwell/McMillan Property / Madison Co. Rd.Bridge
10	AL/06030002-210-01	Non	Goose Creek	Tennessee	Madison	F&W	OE/DO	Agriculture	1997	7.7 miles	Flint River / Its Source

Table 6-3-TNRB (cont.)

Map Index	Waterbody ID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
11	AL/06030002-220-01	Non	Cane Creek	Tennessee	Madison	F&W	Siltation OE/DO	Agriculture	1994, 1995	5.1 miles	Tennessee River / Elevation 764
12	AL/06030002-230-01	Partial	Aldridge Creek	Tennessee	Madison	F&W	Siltation OE/DO	Urban runoff/Storm sewers Pasture grazing	1994, 1995	7.1 miles	Its Mouth / Its Source
13	AL/06030002-240-01	Non	Huntsville Spring Br.	Tennessee	Madison	F&W	Priority Organics	Contaminated sediments	1993	5.0 miles	Indian Creek / Huntsville Field
14	AL/06030002-240-02	Partial	Huntsville Spring Br.	Tennessee	Madison	F&W	Metals	Urban runoff/Storm sewers	1994, 1995	4.4 miles	River Mile 10.2 / AL Hwy. 53 Bridge
15	AL/06030002-250-01	Non	Indian Creek	Tennessee	Madison	F&W	Priority Organics	Contaminated sediments	1991-91, 93	3.6 miles	Tennessee River / Huntsville Spring Br.
16	AL/06030002-250-02	Partial	Indian Creek	Tennessee	Madison	F&W	Siltation OE/DO	Nonirrigated crop production Land development Urban runoff/Storm sewers	1994, 1995	6.9 miles	AL Hwy. 72 / Its Source
17	AL/06030002-270-01	Non	Town Creek	Tennessee	Morgan	F&W	OE/DO	Agriculture	1997	8.4 miles	Cotaco Creek / Its Source
18	AL/06030002-270-02	Non	Cotaco Creek	Tennessee	Morgan	F&W	Pathogens	Agriculture	1997	11.8 miles	Morgan Co. Rd. 73 / W. Fork Cotaco Cr.
19	AL/06030002-270-03	Partial	West Fork Cotaco Cr.	Tennessee	Morgan	F&W	Pathogens	Agriculture	1997	7.8 miles	AL Hwy 67 / Morgan Co. Rd NE1/4, Sec.10, T8S, R2W
20	AL/06030002-300-01	Non	Limestone Creek	Tennessee	Limestone	F&W	Siltation OE/DO	Nonirrigated crop production Pasture grazing	1994, 1995	8.7 miles	AL Hwy 72 / Co. Rd. Section 26
21	AL/06030002-320-01	Partial	Piney Creek	Tennessee	Limestone	F&W	Pesticides Siltation, OE/DO	Nonirrigated crop production Pasture grazing	1994, 1995	11.5 miles	Church Site / Pepper Road Bridge

Table 6-3-TNRB (cont.)

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
22	AL/06030002-330-01	Non	Flint Creek	Tennessee	Morgan	PWS/F&W/ A&I	Siltation OE/DO Pathogens	Municipal Nonirrigated crop production Pasture grazing Int. animal feeding operations Urban runoff/Storm sewers	1992-95 1997	40.0 miles	Alabama Hwy. 67 / East Fork Flint Cr.
23	AL/06030002-330-02	Non	Shoal Creek	Tennessee	Morgan	F&W	OE/DO Pathogens	Urban runoff/Storm sewers Agriculture	1994, 1995 1997	2.7 miles	Flint Creek / Its Source
24	AL/06030002-330-03	Non	Town Branch (Nasty Branch)	Tennessee	Morgan	F&W	OE/DO	Urban runoff/Storm sewers	1994, 1995	1.9 miles	Shoal Creek / Its Source
25	AL/06030002-330-04	Partial	Mack Creek	Tennessee	Morgan	F&W	Siltation OE/DO	Pasture grazing	1994, 1995	4.3 miles	Hwy 55 Bridge / Its Source
26	AL/06030002-330-05	Non	Robinson Creek	Tennessee	Morgan	F&W	Siltation OE/DO	Agriculture	1994, 1995 1997	5.6 miles	Flint Creek / Its Source
27	AL/06030002-330-06	Non	Cedar Creek	Tennessee	Morgan	F&W	OE/DO Pathogens	Agriculture	1997	23.4 miles	Flint Creek / Its Source
28	AL/06030002-340-01	Non	Crowdabout Creek	Tennessee	Morgan	F&W	Siltation Pathogens OE/DO	Nonirrigated crop production Pasture grazing Int. animal feeding operations	1992-95 1997	15.0 miles	Flint Creek / Its Source
29	AL/06030002-350-01	Non	No Business Creek	Tennessee	Morgan	F&W	OE/DO Pathogens	Nonirrigated crop production Pasture grazing	1994, 1995 1997	5.7 miles	Flint Creek / Bridge,Sec 15, T7S, R5W
30	AL/06030002-350-02	Partial	West Flint Creek	Tennessee	Morgan	F&W	Siltation Pathogens OE/DO	Nonirrigated crop production Pasture grazing Int. animal feeding operations	1993-95 1997	19.4 miles	Flint Creek / Lawrence Co. Rd. 72
31	AL/06030002-350-03	Partial	Village Branch	Tennessee	Morgan	F&W	Siltation OE/DO	Agriculture	1994, 1995	2.2 miles	Co. Rd. Bridge / 2.2 miles upstream
32	AL/06030002-360-01	Partial	Big Shoal Creek	Tennessee	Lawrence	F&W	OE/DO	Pasture grazing	1996-97	9.3 miles	West Flint Creek / Its Source

Table 6-3-TNRB (cont.)

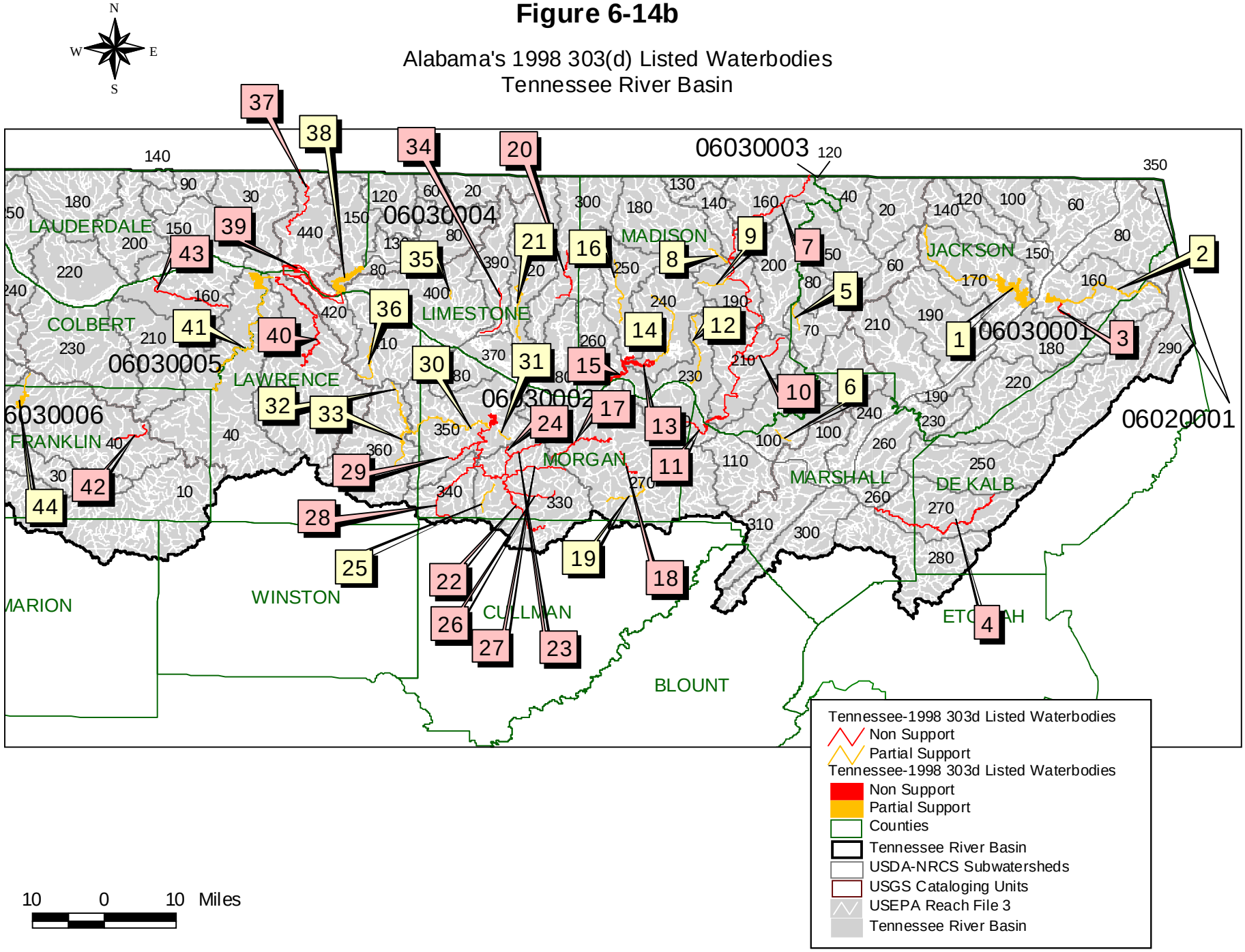
Map Index	Waterbody ID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
33	AL/06030002-360-02	Partial	McDaniel Creek	Tennessee	Lawrence	F&W	Siltation OE/DO	Agriculture	1994, 1995	3.9 miles	West Flint Creek / AL Hwy. 36 bridge
34	AL/06030002-390-01	Non	Swan Creek	Tennessee	Limestone	A&I/F&W	Siltation OE/DO	Nonirrigated crop production Urban runoff/Storm sewers Pasture grazing	1994, 1995	8.4 miles	Tennessee River / Town Creek
35	AL/06030002-400-01	Partial	Round Island Creek	Tennessee	Limestone	F&W	Siltation OE/DO	Agriculture	1994, 1995	3.8 miles	Browns Ferry Road / 3.8 miles upstream
36	AL/06030002-410-01	Partial	Mallard Creek	Tennessee	Lawrence	F&W	Siltation OE/DO	Agriculture	1994, 1995	11.5 miles	Wheeler Reservoir / 11.5 miles upstream
37	AL/06030002-440-02	Non	Second Creek	Tennessee	Lauderdale	F&W	Pathogens	Agriculture	1997	11.6 miles	Lauderdale Co. Rd. 76 / AL/TN State Line
38	AL/06030004-150-01	Partial	Elk River	Tennessee	Limestone	F&W/S	pH OE/DO	Pasture grazing Nonirrigated crop production	1990-91	6.0 miles	Wheeler Reservoir / Anderson Creek
39	AL/06030002-440-01	Partial	Tennessee River	Tennessee	Lawrence	PWS/S/ F&W	pH Temp./ thermal mod.	Industrial Flow reg/mod Dam construction Unknown source	1990-91 1993-97	10.0 miles	Wheeler Dam / Elk River
40	AL/06030005-010-01	Non	Big Nance Creek	Tennessee	Lawrence	F&W	Pesticides Ammonia Siltation OE/DO Pathogens	Nonirrigated crop production Int. animal feeding operations Landfills Pasture grazing	1991, 1995	24.0 miles	Wilson Lake / Clear & Muddy Fork
41	AL/06030005-040-01	Partial	Town Creek	Tennessee	Lawrence	F&W	pH OE/DO	Nonirrigated crop production Pasture grazing	1991	43.0 miles	Wheeler Reservoir / Its Source
42	AL/06030006-040-02	Non	Harris Creek	Tennessee	Franklin	F&W	Siltation OE/DO	Pasture grazing	1995	5.9 miles	Mud Creek / Its Source

Table 6-3-TNRB (cont.)

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
43	AL/06030005-160-01	Non	Pond Creek	Tennessee	Colbert	A&I	Metals OE/DO	Nonirrigated crop production Urban runoff/Storm sewers Natural sources	1991	12.0 miles	Tennessee River / Its Source
44	AL/06030006-040-01	Partial	Lost Creek	Tennessee	Franklin	F&W	pH	Unknown source	1991	4.0 miles	Cedar Creek / Its Source

Figure 6-14b

Alabama's 1998 303(d) Listed Waterbodies
Tennessee River Basin



ADEM-Water Quality Section 1999

Table 6-UTRB-1

Upper Tombigbee River Basin Land Use	
0.86%	Water
0.39%	Developed
3.53%	Barren
66.98%	Natural Forested Upland
16.47%	Herbaceous Planted/Cultivated
11.77%	Wetlands

Table 6-UTRB-2
Upper Tombigbee River Basin USGS Cataloging Units and USDA-NRCS Subwatersheds

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03160101-Upper Tombigbee			**123.9**
	03160101-060	Bull Mountain Creek	109.26
	03160101-070	Gum Creek	14.64
03160103-Buttahatchee			**689.44**
	03160103-010	Upper Buttahatchee River	233.02
	03160103-020	Buttahatchee River	131.17
	03160103-030	Beaver Creek	88.45
	03160103-040	Bogue Creek	88.45
	03160103-050	Upper Sipsey Creek	79.53
	03160103-070	Sipsey Creek	68.82
03160105-Luxapallila			**662.47**
	03160105-010	Upper Luxapallila Creek	122.57
	03160105-020	Doden-Langston Creek	14.44
	03160105-030	Lower Luxapallila Creek	163.43
	03160105-040	Hells Creek	158.47
	03160105-050	Yellow Creek	98.62
	03160105-060	Wilson Creek	65.19
	03160105-100	Magby Creek	37.13
	03160105-120	McCrary Creek	2.62
03160106-Middle Tombigbee-Lubbub			**1,270.31**
	03160106-020	Ellis Creek	12.3
	03160106-040	Kincaide Creek	47.83
	03160106-060	Coal Fire Creek	133.69
	03160106-070	Big Creek	130.56
	03160106-090	Boguechitto Creek	53.71
	03160106-100	Upper Lubbub Creek	147.89
	03160106-110	Bear Creek	133.59
	03160106-120	Lower Lubbub Creek	59.22
	03160106-130	Fenache Creek	34.33
	03160106-140	Wilkes Creek	70.7
	03160106-150	Cypress Swamp	12.59
	03160106-160	Trussells Creek	143.66
	03160106-170	Factory Creek	88.1
	03160106-180	Twelve Mile Bend Tribs	59.83
	03160106-190	Taylor Creek	142.31

Table 6-UTRB-2 (cont.)

CU	Subwatershed No.	Subwatershed Name	Sq. Miles
03160107-Sipsey			**788.67**
	03160107-010	New River	76.77
	03160107-020	Little New River	51.11
	03160107-030	Studhorse Creek	72.54
	03160107-040	Sipsey River	180.59
	03160107-050	Dunn Creek	95.25
	03160107-060	Malone Mill Creek	98.31
	03160107-070	Brush Creek	141.3
	03160107-080	Sipsey River	72.8
03160108-Noxubee			**139.9**
	03160108-090	Noxubee River	46.78
	03160108-110	Woodward Creek	28.92
	03160108-140	Bodka Creek	64.2

Figure 6-15a

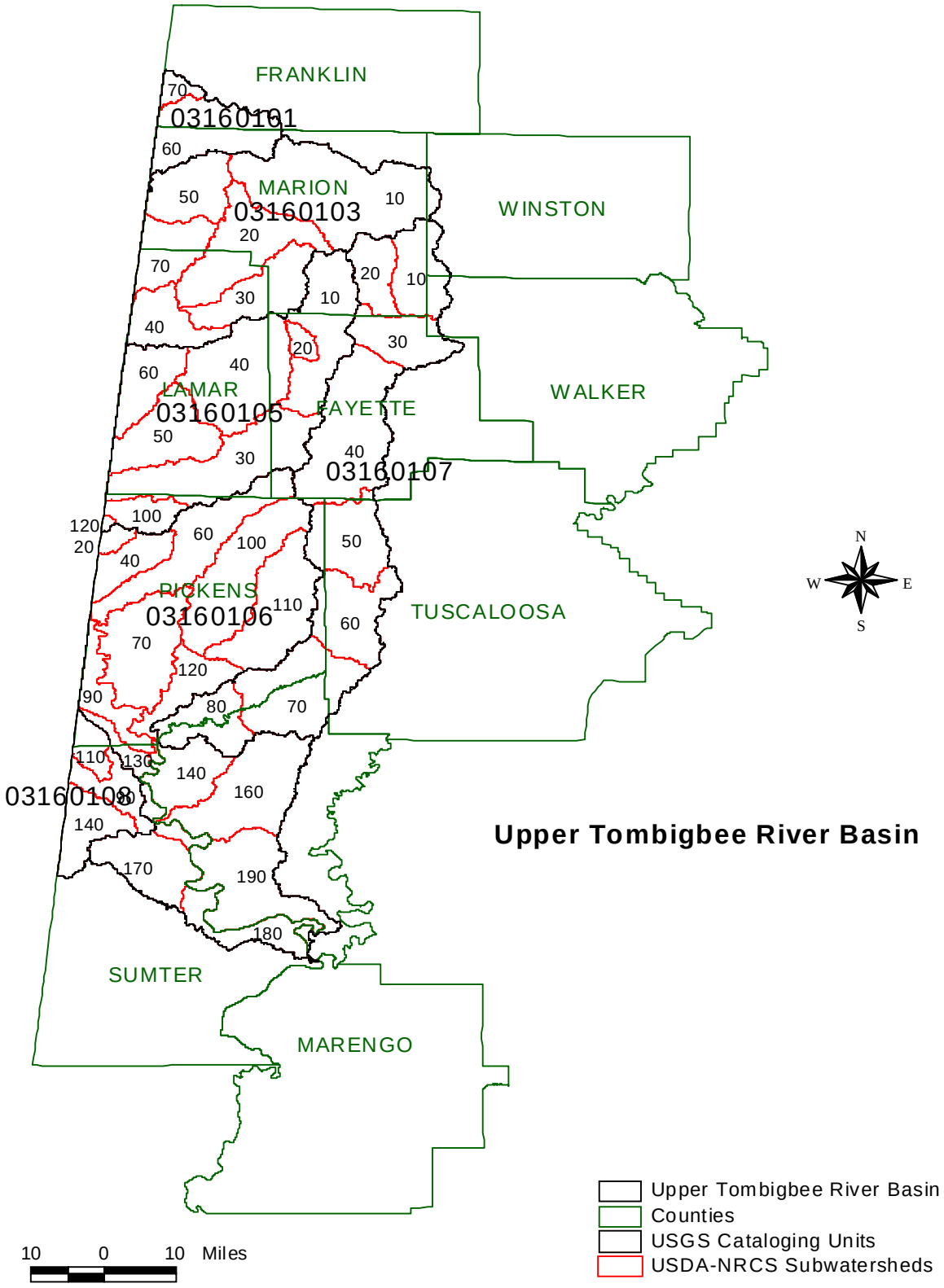
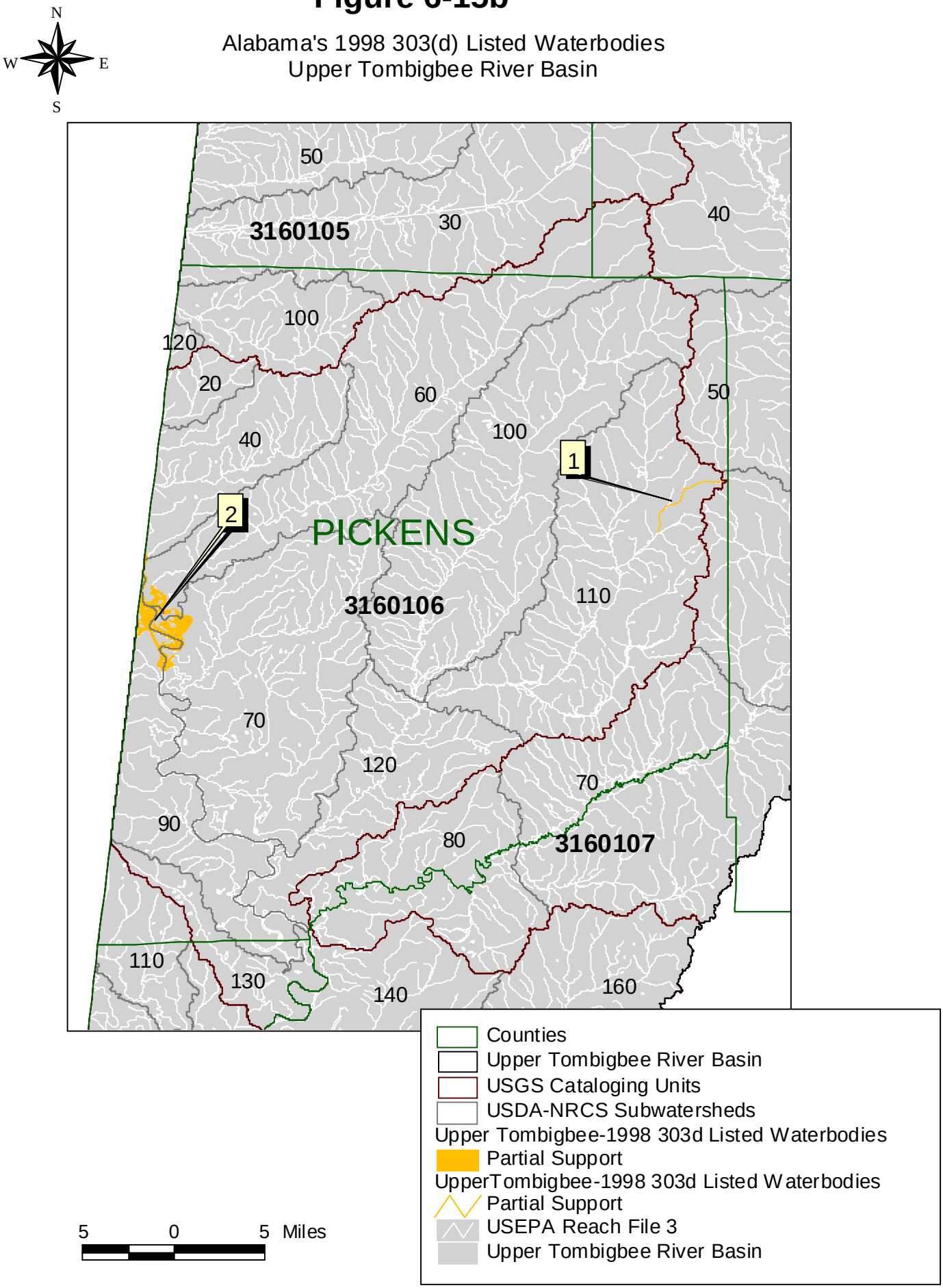

FRANKLIN
03160101
MARION
03160103
WINSTON
LAMAR
03160105
FAYETTE
03160107
WALKER
PICKENS
03160106
TUSCALOOSA
03160108
SUMTER
MARENGO
N
W
E
S
Upper Tombigbee River Basin
Upper Tombigbee River Basin
Counties
USGS Cataloging Units
USDA-NRCS Subwatersheds
10 0 10 Miles

Table 6-3-UTRB
Upper Tombigbee River Basin 303(d) List Waterbodies

Map Index	WaterbodyID	Support Status	Waterbody Name	River Basin	County	Uses	Causes	Sources	Date of Data	Size	Downstream / Upstream Locations
1	AL/03160106-110-01	Partial	Little Bear Creek	Upper Tombigbee	Pickens	F&W	OE/DO	Unknown	1996	3.9 miles	Pickens Co. Rd. 4 / Its Source
2	AL/03160106-200-01	Partial	Tombigbee River	Upper Tombigbee	Pickens	F&W/S	OE/DO Flow alteration	Dam construction Flow reg/mod	1991	5.0 miles	Beville Dam / AL-MS State Line

Figure 6-15b

Alabama's 1998 303(d) Listed Waterbodies
Upper Tombigbee River Basin



1996 Stream Models

	Stream	Discharger	No. of Modeling Events	Miles Modeled
1st Qtr/FY96	Big Wills Creek	Cagles Inc	4	36.4
	Bear Creek	Gerald Metals/Permit?	1	5.1
	UT to Beaverdam Creek	Sparkman HS	1	5.7
	UT to Leslie Branch	Harvest School	1	5
	Luxapallila Creek	Fayette WWTP	4	8.6
	Mud Creek	Holly Pond WWTP	1	5.3
	Six Mile Creek	Albert P. Brewer School	1	4.7
	Mill Creek	West Jefferson- East Tuscaloosa WWTP	1	9.9
	Mud Creek	Tannehill State Park West Jefferson- East Tuscaloosa WWTP	1	23.51

	Stream	Discharger	No. of Modeling Events	Miles Modeled
2nd Qtr/FY96	Cahaba River	Hoover-Inverness WWTP	2	*
	Big Wills Creek	Ft. Payne WWTP	4	*
	Mulberry Fork	Alabama Feed Products	2	42.1
	Mud Creek	Russellville WWTP	2	11.5
	Tallapoosa River	Conagra	1	8.9
	Black Warrior River	Brookwood WWTP	1	0.5
	Bayou Sara	Saraland WWTP	2	2.8

	Stream	Discharger	No. of Modeling Events	Miles Modeled
3rd Qtr/FY96	Trout Creek	Ragland WWTP	1	4.8
	Little Canoe Creek	Odenville WWTP	1	*
	Rock Creek	Robertsdale WWTP	1	3.1
	Buxahatchee Creek	Calera WWTP	1	10
	Puppy Creek	Citronelle WWTP	1	*
	Little Wills Creek	Collinsville WWTP	1	*
	Eightmile Creek/ Broglen River	Cullman WWTP\ Golden Rod Broilers	1	*
	Pepperell Branch	West Point Stevens	2	*
	Buck Creek	Pelham WWTP	2	*
	Lubbub Creek	Aliceville WWTP	1	5.1
	Little River	DeSoto State Park WWTP	2	9.8
	Mill Creek	Mill Pond Subdivision	1	5.3
	Black Warrior River	Brookwood WWTP	1	4

Table Stream Models 1996 (cont.)

	Stream	Discharger	No. of Modeling Events	Miles Modeled
4th Qtr/FY96	Little Canoe Creek	St. Clair Co. School\ Odenville WWTP\ Springville WWTP	1	16.8
	Rock Creek	Robertsdale WWTP	1	3.1
	Town Creek	Hudson Foods	1	7.15
	Buxahatchee Creek	Calera WWTP	1	10
	Puppy Creek	Citronelle WWTP	1	9.6
	Little Wills Creek	Collinsville WWTP	1	36.4
	Eightmile Creek\ Broglen River	Cullman WWTP\ Golden Rod Broilers	1	20.5
	Pepperell Branch	West Point Stevens	2	12.1
	Campbell Creek	Southeast School	1	2
	Valley Creek	USX	1	25.7
	Pine Creek	Pine Creek WWTP	3	**
	Byrd Creek	Maplesville WWTP	1	4.9
				323.1

* miles previously counted as evaluated full support for respective use classification

** included in AL River model length

1 RF3 estimate from ds3 files

1997 Stream Models

	Stream	Discharger	No. of Modeling Events	Miles Modeled
1st Qtr/FY97	Village Creek	Stormwater	6	*
	Roans Creek	Steelwood Development	1	7
	Hurricane Creek	Gurley WWTP	3	2.9
	Mill Creek	Bowden WWTP	3	5.3
	Tombigbee River	Forkland Lagoon	1	7.6
	Lost Creek	Carbon Hill	4	*
	Valley Creek	5 dischargers	2	*
	Town Creek	Jasper WWTP	2	*
	Bayou Sara/Norton Creek	TMDL	2	*
	UT to Dry Branch	TMDL	2	*
	Boggy Creek	TMDL	2	*
	Crowdabout Creek	TMDL	2	*
	Thacker Creek	TMDL	2	*
	Duck Creek	TMDL	2	3.6
	Graves Creek	TMDL	2	*
	Harris Creek	TMDL	2	*
	Big Nance Creek	TMDL	2	*
	Cane Creek	Oakman	4	*
	Alabama River	Union Camp	3	*

	Stream	Discharger	No. of Modeling Events	Miles Modeled
2nd Qtr/FY97	Mack Creek	TMDL	1	5.3
	Robinson Creek	TMDL	1	6.7
	Elk River	TMDL	2	5.5
	Short Creek	TMDL	2	8.8
	Rabbit Creek	TMDL	2	2.3
	Conecuh River	TMDL	2	24
	Little Paint Rock Creek	TMDL	2	5.3
	Cane Creek	TMDL	2	7.45
	Turkey Creek	Morris Manor Apartments	1	16.2
	Cedar Creek	Berry WWTP	1	6.2
	Alabama River	IP	2	63.1
	Cane Creek	Winston HS	2	5.5
	Tombigbee River	Aliceville WWTP	1	39.5
	Sucaarnoochee River	Georgia Pacific	1	4.9
	UT to East Fk to Flint Creek	Vinemont HS	2	13.8
	UT to Crooked Cree	West Point HS	2	20.8
	UT to Dismal Creek	Meek HS	2	2.56
	Little Canoe Creek	Odenville	1	*
	Hurricane Creek	Brookwood	1	17.3
	Pond Creek	Muscle Shoals WWTP	1	2.2
	Wolf Branch	Cherokee Co.	1	4.1
	Swan Creek	Athens WWTP	2	8.3
	South Sauty Creek	TMDL	1	30.2
	Yates Reservoir	TMDL	1	44.7

Table Stream Models 1997 (cont.)

	Stream	Discharger	No. of Modeling Events	Miles Modeled
2nd Qtr/FY97	Town Creek	Hudson Foods/Geraldine	1	*
	Dog River	TMDL	1	4.9
	Bayou La Batre	TMDL	1	4
	Mortar Creek	Merry Woods Nursing Lodge	2	3
	UT to Big Branch to Coon Creek	Cold Springs School	2	2.61
	Duck Creek	Fairview School	2	*
	UT to Splunge Creek	Lynn HS	2	7.29
	Pea Creek	Louisville WWTP	2	*
	UT to Little New River	Brilliant WWTP	2	5.9
	Weogufka Creek	Stewartville School	2	6.24
	Village Creek	Birmingham Hide and Tallow	4	*
	Alabama River	Prattville	2	*
	UT to Boone Creek	Addison HS	2	**
	Mobile River	Courtaulds	1	**
	Pickwick Reservoir	Florence WWTP	2	**
	Mobile River	Hoechst Celanese Corp	1	**
	Mobile River	International Paper Co	1	**
	Portersville Bay	Bayou La Batre Utilities Board	1	6
	Baker Creek	Goodwater WWTP	3	**
	Coosa River	APCO Gadsden Steam Plant	1	6.2
	Cedar Creek	HCR		

	Stream	Discharger	No. of Modeling Events	Miles Modeled
3rd Qtr/FY97	Camp Branch	TMDL	2	5
	Coon-Flat Rock Creeks	TMDL	2	20
	Mud Creek	TMDL	2	14.3
	UT to Lake Jordon	Holley Trailer Park	2	0.4
	Calebee Creek	South Macon HS	2	15.4
	UT to UT to Silver Run Creek	Russell Co. Jr. High	2	1.1
	UT to Chattahoochee River	Blessed Trinity Retreat	2	0.8
	Clear Creek	Double Springs WWTP	2	5.1
	Fivemile Creek	ABC & Sloss Inc.	2	35.9
	Shirtee	Assisted EPA	2	*
	Tallaseehatchee	Assisted EPA	2	*
	Fivemile Creek	Numerous dischargers	2	*
	Village Creek	Numerous dischargers	2	*
	UT to Muddy Creek	Piney Chapel School	6	5.7
	Big Shoals Creek	East Lawrence School	3	3.7
	Branch Spring Creek	Vincent HS	3	3.1
	Kemp Creek	I-20 Welcome Center	3	3.3
	Conecuh River	Hornet Creek to Point A Dam	2	21
	Alternate Discharge location	Henagar WWTP		*
	Tennessee River	Florence WWTP	1	**
	Graves Creek	Tyson Foods	2	*
	Mobile River	Hoechst Celanese Corp.	2	**

Table Stream Models 1997 (cont.)

	Stream	Discharger	No. of Modeling Events	Miles Modeled
4th Qtr/FY97	UT to Hillabee Creek	Cheaha State Park	2	4.9
	Caney Creek	Sylvania Industrial Park WWTP	2	5.9
	UT to Beech Creek	Valley Grande School	2	1.9
	Scarham Creek	Marshall Co.	2	22.3
	Short Creek	Sardis City WWTP	2	7.3
	Hogeland Creek	West Blount WWTP	2	2.8
	UT to Sleepy Hollow Creek	Big Oak Coin Laundry	2	1.6
	UT to South Fk to Scarham Creek	Crossville Healthcare	2	4.5
	Fivemile Creek	Sharron Heights MHP	2	35.9
	Fivemile Creek	Forestdale MHP	2	*
	UT to Round Island Branch	Reid School	2	2.8
	UT to Grant Creek	Myrtlewood Elementary School	2	10.1
	Black Warrior River	Hunt Oil	5	**
	Tallapoosa River	Heflin	1	*
	Tallapoosa River	Cleburne Co.	1	*
	Conecuh River	Covington Co.	1	*
	Long Branch	Cullman Co.	1	1.5
	Alabama River	Millbrook WWTP	1	*
	UT to Bear Creek	Phillips Elementary	2	2.93
	UT to Mud Creek	Tanner HS	2	3.6
	UT to Big Creek	Owens School	2	3.1
	Moore Creek	Ider HS	2	4.9
	UT to Rutherford Creek	Hatton Schools	2	5.9
	Koger Creek	Ider WWTP	2	*
	Rock Springs Branch	Mt. Hope School	2	7.4
	UT to Hurricane Creek	Holt Elementary School	2	4.3
				685.7

* miles previously counted as evaluated full support for respective use classification

** included in AL River model length

1 RF3 estimate from ds3 files

1998 Stream Models

	Stream	Discharger	No. of Modeling Events	Miles Modeled
1st Qtr/FY98	Tallapoosa River	Tallassee Lagoon	2	8.5
	UT to Barbee Creek	Northside HS	2	2.8
	UT to Tarver Creek	Southside HS	2	6
	UT to Tarver Creek	Rosehaven Trailer Park	2	6
	Prudes Creek	Bottenfield Jr. HS	2	3.8
	UT to Six Mile Creek	Brooks Elementary	2	0.5
	UT to Mill Creek	Lexington HS	2	2.2
	Anderson Creek	Anderson Jr. HS	2	6.9
	UT to Second Creek	Waterloo HS	2	0.2
	Tombigbee River	Aliceville WWTP	1	39
	Dusty Branch	Keith HS	2	4.9
	Alabama River	Southern Company	1	53.5
	King Mill Creek	Shiloh Elementary	2	2.6
	Chattahoochee River	Phenix City WWTP	4	53
	Tennessee River	Proposed Papermill	4	47.8
	Pond Creek	Muscle Shoals WWTP	2	2.3
	Shoal & Flint Creek	Hartselle	3	10
	Mulberry Fork	Cullman	2	27.9
	Graves Creek	Tyson Food	4	3.6

	Stream	Discharger	No. of Modeling Events	Miles Modeled
2nd Qtr/FY98	Prudes Creek	Prudes Creek WWTP	1	12.3
	UT to Self Creek	Johnson Elementary	2	5.9
	Pond Creek	Muscle Shoals	3	2.3
	Omussee Creek	Omussee Creek WWTP (Dothan)	2	10.4
	Harris Branch	Dallas County HS	2	2.5
	UT to King Mill Creek	Shiloh Elementary	2	2.6
	Town Creek	Jasper	1	1.1
	Lost Creek	Carbon Hill	1	16.8
	Cane Creek	Oakman	1	10.2
	Abes Creek	Eastwood MHP	2	2.8
	Valley Creek	Valley Creek WWTP	4	41.5
	Martin Branch	Bay Minette	12	1.6
	Rabbit Creek	Mobile Co. W, S, & FPA	2	2.8
	Buck Creek	Alabaster	2	11.1
	UT to Sleepy Hollow	Brookville Elementary	2	1.2
	Prudes Creek	Bottenfield Jr. HS	2	3.8
	Miller Creek	Pike Road WWTP	2	5.5
	Bush Creek	Indian Oaks Apt.	2	6.7

Table Stream Models 1998 (cont.)

	Stream	Discharger	No. of Modeling Events	Miles Modeled
3rd Qtr/FY98	Tombigbee River	Aliceville WWTP	1	39
	UT to Sleepy Hollow	Brookville Elementary	2	1.2
	Tate Branch	Sparks Park Lagoon	2	3.7
	UT to Sougahatchee	Collony Apartments	2	14.6
	UT to Choctafaula Ck	Loachapoka HS	2	2.3
	Boggy Branch	Masland Carpets	2	4.7
	Buck Creek	Pelham WWTP	2	7.5
	Caffee Creek	West Blocton	2	7.3
	UT to Sipsey River	Hubbertville HS	4	6.2
	Deakle Creek	Mobile County	2	5.8
	Fivemile Creek	Prudes Creek WWTP	1	35.9

	Stream	Discharger	No. of Modeling Events	Miles Modeled
4th Qtr/FY98	Turkey Creek	T&M Realty-Riverbend T.	1	16.2
	Turkey Creek	Morris Mobile Home Park	1	16.2
	Turkey Creek	Willis Laundromat	1	16.2
	Gilliam Creek	Arab Gilliam Creek WWTP	2	17.2
	Flint River	Owens Crossroads WWTP	2	22.6
	Limestone Creek	Dothan WWTP	2	6.2
	UT Mill Creek	Smith Station HS	2	9.6
	UT Halawakee Creek	Beulah HS	2	1.3
	Murder Creek	Trus Joist Macmillian	2	9.4
	Conecuh River	JSC/CCA	2	30
	Franklin Creek	near Grand Bay	2	7
	Bear Creek	Philips Elementary School	2	3.2
	Rice Creek	Marion WWTP	2	4.9
	Mulbery Fork	Jaser WWTP	4	19

Table 6-1T

Totals of Use Support for the
1998 305(b) Reporting Cycle Studies for Rivers & Streams (miles)

Use Support	**Evaluated**	**Monitored**	**Monitored**	**Evaluations**	**Totals**
Study	*CWS96*	*CWS96*	*TVA97*	WQ Modeling	
Full Support	164.2	1110.2	1492.4	1008.8	3775.6
Partial Support	21.2	59.8	4.5		85.5
Non Support	97.4	14	22.8		134.2
Totals	282.8	1184	1519.6	1008.8	**3995.3**

* The two totals in Table VI-2 are from the 1998 list of 114 303(d) (430.2/Partial & 508.5/Non) segments as listed in each river basin's section.
The data indicating partial or non use support for these waterbodies have been collected throughout the years (more than CWS96 and TVA97 data set time periods-1998 305(b)).
The 303(d) totals are not included in the **Table VI-2** because of these facts. (Apple vs OrangesTheory)
The EPA and Congress should consider reauthorizing the Clean Water Act so that it legalizes a 5 year reporting cycle for 305(b) reporting as suggested in the first issuance of **"The FINAL EPA guidelines for the 1998 Water Quality Report to Congress"**.
This would alleviate many current reporting problems that presently exist with the 2 year cycle.

Table 6-2T
Totals of Non & Partial Support 1998 303(d) Segments

Monitored Impacted Waterbodies from the *1998 303(d) List (river miles)**		**Source of Mileage**
430.2	Partial Support	Part VI
508.5	Non Support	114 Waterbodies
108.4	Partial Support	Appendix VIII
199	Non Support	41 Waterbodies

Table 6-3T
1996-7 Field Work/Data Collections

Agency	Study/Model Type	Waterbody	River Basin
ADEM	TMDL	Duck Creek	Black Warrior
ADEM	TMDL	Crowdabout Creek	Tennessee
EPA	TMDL	Shirtee Creek	Coosa
ADEM	TMDL	Crooked Creek	Black Warrior
ADEM	TMDL	Rock Creek	Black Warrior
ADEM	TMDL	Locust Fork	Black Warrior
ADEM	TMDL	Shades	Cahaba
ADEM	TMDL	Village	Black Warrior
ADEM	TMDL	Brushy	Black Warrior
ADEM/GSA	NPS Study	Choccolocco Creek	Coosa
ADEM	Cal	Mulberry Fork	Black Warrior
ADEM	Cal/Ver	Cahaba Valley Creek	Cahaba
GSA	Watershed Study	Lower Cahaba River	Cahaba
ADEM	TMDl	Little Shades Creek	Cahaba
ADEM	WLA	Fivemile Creek	Black Warrior
ADEM/MFO	WQDS	Persimmon Creek	Perdido-Escambia
EPA	UAA	Town/Cane Creeks	Black Warrior
ADEM	TMDL/WLA	Pond Creek	Tennessee
ADEM	TMDL	Piney Creek	Tennessee
ADEM	Cal/Ver	Boggy/Brushy Creeks	Perdido-Escambia
ADEM/MFO	Watershed Study	Paint Rock River	Tennessee
ADEM/MFO	Watershed Study	Black Warrior WQ Study	Black Warrior
ADEM/EPA	UAA	Valley	Black Warrior

Note: Due to possible double counting/timeframe this list has not been added/counted in the preceding two tables

Acronyms
Cal/Ver – Calibrated/Verified Stream Model
MFO – Montgomery Field Office
NPS – Nonpoint Source
TMDL – Total Maximum Daily Load
UAA – Use Attainability Analysis
WLA – Wasteload Allocation
WQDS – Water Quality Demonstration Study

After a recent training workshop held by Research Triangle Institute (RTI) in Montgomery, staff will be using tools such as the Reach Indexing Tool (RIT) developed by RTI under contract from the USEPA-Office of Water. This Arcview tool will be used in conjunction with the EPA's newly developed Assess database (Adb) to index information related specifically to assessments of data to the EPA's Reach File 3 GIS layer (future National Hydrography GIS data layer). Combined with the Department's new Water Quality database, the Adb, the EPA's new STORET X database, and the LIMS software, overall efficiency in tracking assessment information using GIS will increase significantly and will improve management capabilities related to Alabama's water quality.

Part VII Watershed Projects within Alabama

The Watershed Approach

During the 1996-97 reporting period, Alabama has continued or initiated a number of holistic community based watershed protection and planning projects throughout the state. Some of these Section 319 funded projects include the Flint Creek Watershed Project, the Weeks Bay Watershed Project, Sand Mountain/Lake Guntersville Watershed Project, Paint Rock River Watershed Project, the Choccolocco Creek Watershed Project, the Lower Cahaba and Black Warrior River Basin studies, as well as numerous other projects as listed in Table 7-1. The ADEM Water Division is planning to implement a rotating basin approach to permitting and management of NPDES permits. The Cahaba/Black Warrior River Basins were the first large river basin/watersheds assessed. As a result of these two Section 319 NPS funded assessments, FY99 Section 319 funds will be utilized to target high priority impacted watersheds within those basins. Also, FY98 Section 319 funds are being utilized to assess NPS impacts in the Tennessee River basin, with partial FY2000 Section 319 funding to be utilized to address NPS pollution in high priority watersheds in that basin. It is expected that the rotational river basin approach will continue within the context of the proposed Clean Water Action Plan and Unified Watershed Assessments, as applicable and as resources allow.

In addition, discussions between the ADEM and the Natural Resources Conservation Service indicate that the Big Nance Creek and Piney Creek Watersheds (Tennessee River Basin) and the Duck Creek Watershed (Black Warrior Basin) will be priority federal and state cost-share and Section 319 priority areas for Clean Water Action Plan efforts beginning FY99-2000. These watersheds are 1998 303(d) listed watersheds.

- **Choctawhatchee-Pea Rivers Watershed Study**

Results from the Choctawhatchee-Pea Rivers Watershed Management Authority monitoring efforts are presented in Appendix II ***Alabama's Clean Water Strategy 1996*** with additional information pertaining to the Double Bridges Creek Watershed Area. The twenty (20) quarterly sampling sites were selected to allow for adequate coverage of both the Choctawhatchee and Pea River watersheds. Additional field measurement sites were selected for smaller headwater streams in order to detect any possible problems with dissolved oxygen (DO) during low flow conditions. Concerns within the watershed include fairly high turbidities, and suspended and dissolved solids. Use of remote sensing would be helpful in locating the contributing nonpoint sources within the watersheds. A final comprehensive watershed report was scheduled for production in 1997 following the third year of monitoring.

Table 7-1
Alabama Watershed Projects Since 1986

Cataloguing Unit	Watershed Project	Initiation Date
Tri-State Region	ACT/ACF Study	1994
06030006	Bear Creek	1986
03160111	Bayview Lake	1988
03150202	Buck Creek	1995
03150201	Catoma Creek	1995
03150106	Choccolocco Creek	1996
03140202	Choctawhatchee-Pea Rivers	1991
03140203		
03160205	Dog River	1993
03160205	Fish River/Weeks Bay	1993
06030002	Flint Creek	1992
03140103	Lightwood Knot Creek	1995
03150105	Little River	1996
03150202	Lower Cahaba River	1995
06030002	Paint Rock River	1996
03160110	Ryan-Crooked-Rock Creek	1991
06030001	Sand Mountain/Lake Guntersville	1986
03140303	Sepulga River Watershed Project	1998

*** Catoma Creek**

This effort is a Montgomery Water Works Board project. The Board designated $500,000 to develop a plan for the watershed, while EPA granted another $100,000 for the innovative local project. Steering committee and technical committees have been established. Later in 1996, an educational committee will begin implementing a program for the city of Montgomery. The stormwater NPDES permitting program has requirements for monitoring and education, but this has not yet been implemented or interfaced with this watershed project.

*** Lightwood Knot Creek**

This is a National Monitoring Project which has just been finalized for funding through the 319 Program and will be coordinated by the Geological Survey of Alabama (GSA). Baseline monitoring data is being collected at this time, and BMPs will be installed in 1997. A paired watershed study will be used to illustrate water quality improvement in this tiny water basin. Agricultural practices are the main issue of concern in this watershed study, and implementation of educational programs will be very important to the success of this program.

*** Little River**

The Little River watershed plan will be the by-product of the Little River National Reserve program which requires some planning and an advanced program protection plan. The methods the director plans to use fit parallel to the watershed planning program. A technical committee has been formed to assist the director in her larger Plan. A monitoring program is required by the Reserve and will be implemented through

suggestion of the technical committee. The director plans to follow a "watershed plan" development program, and funding will be derived from federal funds for the Reserve.

*** Sepulga Watershed**

Project activities will focus on two nonpoint source pollution control areas: educational activities and the establishment of riparian area buffer zones. The types of water quality problems to be addressed are all the result of human activities. There is a significant project already underway in this watershed which is supported by industry, EPA and other stakeholders. The purpose of the related project, entitled the*, "Forest Watershed Management Projec*t" is twofold. The first objective is relate indices of water quality (including macroinvertebrates) to surrounding land uses through a combination of water quality sampling and GIS applications. The second objective is to conduct a survey which will evaluate forest landowner knowledge of: 1) BMPs, 2) water quality, and, 3) nonpoint source pollution. The Sepulga River Watershed Project will build upon these on-going efforts. It is anticipated that this two year project will increase communication between the numerous parties active in environmental education within these three counties

*** Other Watershed Projects**

The tri-state (AL/GA/FL) project originated in the early 1990's and is called the Alabama-Coosa-Tallapoosa/Apalachicola-Chattahoochee-Flint (ACT/ACF) Rivers Study will hopefully result in a compact between the three states allowing mutual use of the shared river systems for the benefit of water quality and the local economies. The Flint Creek Watershed Project is an on-going watershed project, one of the first of its kind initiated in Alabama involving multi-agency from local, state and federal levels of government in addition to citizen involvement. Information pertaining to watershed activities is also contained in the Part IV The Nonpoint Source Management Program.

Part VIII: Wetlands Assessment
A. Coastal Wetlands

Alabama's coastal wetlands are managed primarily through the regulatory authorities provided by ADEM Administrative Code R.335-8 (Coastal Program) promulgated pursuant to the Environmental Management Act and the Alabama Coastal Management Act, and through its authority to issue Section 401 certification under the Clean Water Act. Within the Coastal Program regulations, wetlands and submersed grassbeds are identified as coastal resources for which impacts from any regulated uses must be considered, and for which impacts from unregulated uses may be considered. This involves review of all state and federal permitting activities in the coastal zone. Section 404 dredge and fill permits and Section 10 navigable water permits are issued through the Mobile District of the US Army Corps of Engineers (USACE).

Information on the quality and extent of coastal wetlands for Alabama is generally nonexistent. Historical conditions (pre-1970) are poorly documented, and comparisons of recent inventories are often difficult, due to variations in classification schemes, survey methodology, and/or geographical coverage. EPA's Gulf of Mexico Program funded a wetland demonstration project to be completed by the USGS that will compare acreage of wetlands in 1955, 1979, and 1988. ADEM and others still await the results of this demonstration project. The project is using National Wetland Inventory (NWI) methodology.

There is currently no coastal wetlands monitoring strategy in place and the Department is largely dependent on the work of the EPA, the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Fish and Wildlife Service.

Table 8-1
Extent of Coastal Wetlands

Wetland Type	Historical Extent (acres)	1992 Reported Acreage	Most Recent Acreage	% Change From 1992 to Most Recent
Tidal Wetlands	N/A	27,600	N/A	N/A

Source: **Coastal Wetlands of the United States** (NOAA, 1991)

During 1993 the ADEM proposed to the EPA the Alabama Coastal Wetlands Initiative (ACWI). A grant application was submitted for this project and approved by the EPA. The main objective of the ACWI is to develop and implement a coastal wetlands functional assessment methodology for use in program management decisions. This methodology will provide greater predictability and consistency in permit decisions for property owners or applicants. It will also provide justification for preservation of highly functional coastal wetlands as well as a rational wetland impact analysis which will complement existing management activities in the coastal area.

The main goals of the three (3) year ACWI are to develop and implement a wetlands functional assessment methodology and to incorporate a functional assessment database. This database will be used with other databases in a geographical information system (GIS) environment. With a wetlands layer within a GIS, ADEM personnel will be able to provide consistent and environmentally sound

determinations regarding impacts to wetlands in the coastal area. The GIS, combined with the functional assessment methodology, will enhance ADEM Mobile Branch staff capability by streamlining staff permit request review, providing ranking of wetlands by functional value, improving consistency of permit conditions, improving consistency of assessment of mitigation requirements, and identifying potential sites for restoration-type mitigation (altered wetlands of "low" functional value).

The project will also provide greater predictability and consistency in permit decisions for property owners or applicants through the potential for "advanced identification" of wetland areas, increased justification for preservation of highly functional wetlands, a rational wetlands analysis process which will complement existing management activities in the coastal zone, and a model methodology for other coastal areas.

The wetland inventory/mapping digitization of NWI and other related maps using GIS is integral to the success of this project. The wetland resource database must be fully defined and characterized for the functional assessment methodology to be developed. When this database is complete involved agencies will fully utilize the methodology. GIS is the most effective and comprehensive method for mapping. Several agencies are currently using GIS technology to manage the resource on a limited basis. GIS capability in conjunction with an accepted functional assessment methodology will directly improve wetland management efforts and enhance wetland conservation efforts on a regional scale.

B. Freshwater Wetland Protection and Management Program

Dredge and fill activities in wetlands that are not regulated by the Alabama Coastal Area Management Program in the Mobile and Baldwin County coastal zone are regulated solely through the ADEM's authority to issue 401 Water Quality Certification under the Clean Water Act. Other activities that might impact wetlands (such as draining or logging operations) which do not result in significant wetland fill are not currently regulated by the state for their potential impacts to wetlands. Waters within wetlands are, by definition, waters of the State in the Alabama Water Pollution Control Act (AWPCA), but wetlands are not defined for their inherent values such as function, rareness, type, habitat, or value.

Applications for USACE CWA Section 404 Individual permits which affect wetlands are reviewed for water quality consistency. The permitting process is initiated through a joint public notice with the USACE. During this time, on-site inspections may be performed. The project is reviewed to ensure protection of State waters through enforcement of applicable water quality standards pursuant to Division VI of the Department's Administrative Code and the AWPCA. Certain Section 404 activities which affect wetlands meet the criteria for issuance of Nationwide or General USACE permits. Following a comprehensive review of the proposed project and related materials including public comments and interagency coordination, a determination relative to water quality certification is issued. During this process many proposed projects are altered significantly and impacts to wetlands are minimized.

Wetland dredge and fill projects typically involve activities related to commercial developments, highway construction, marinas, dams, resource transmission right-of-ways, resource extraction, and stream alteration. The number of projects which impact

wetlands increases substantially with growing populations and expanding resource extraction operations.

The National Wetlands Policy Forum has recommended that all states prepare wetland conservation plans (SWCPs). The EPA has established a goal to assist the states, on a voluntary basis, in developing SWCPs by the year 2000. The purpose of the conservation plan is to improve the efficiency of government and private efforts to protect, restore, and create wetlands. The plan should incorporate both regulatory and nonregulatory approaches to wetlands protection.

As a result of interest by many groups in developing a SWCP for Alabama, ADEM has been facilitating a Wetlands Conservation and Wetlands Management Initiative (WCAMI). A technical advisory committee has been formed to help guide the initiative. Participating in the committee are ADEM staff, environmental groups, wetland research scientists, and representatives of State and federal agriculture, forestry, mining, construction, and development agencies. Prior to this effort wetlands conservation and management in Alabama was uncoordinated and fragmented. Compounding this confusion has been the disagreement at the federal level as to what constitutes a wetland. Alabama has been hampered along with other states by a lack of incentives and funding to manage wetlands, as well as restraints, definitions, and conditions under which wetlands must currently be managed.

An effort to reach a consensus regarding wetlands is essential if Alabama is to avoid the legacy of other states where less than half of historical wetlands still exist. As a result, very conservative regulations have been enacted to preserve those that remain. The primary goal of the advisory committee is to provide informational and technical development of the management initiative. To accomplish this, the Advisory Committee has:

1. initiated discussions with public and private organizations to seek their involvement and support;
2. assessed wetland issues, such as categorization, delineation, role of mitigation banking, etc. as they affect Alabama;
3. identified and described Alabama's wetland resources based on available or easily obtainable information;
4. summarized wetland definitions currently in use as well as those for potential use in a future plan;
5. summarized information on wetland location, types, functions, abundance, and condition, etc.;
6. summarized available information on status and trends, including gains and losses of wetland types and functions, causes of alteration, extent to which wetlands are now protected, and the effects of losses;
7. identified and described major governmental and private efforts that affect Alabama wetlands;
8. identified existing public and private laws, programs, institutions, and mechanisms available to conserve and manage wetland resources;
9. assessed the various wetland classification systems and methodologies to determine their suitability for use in Alabama; and
10. assessed the efforts of states that have completed or are in the process of completing, aesthetic and/or biological narrative criteria for wetlands and their suitability for use in Alabama.

These efforts are now substantially complete. Final reports have been prepared, reviewed, and edited and are awaiting final review and approval. The WCAMI Report, Appendix V of the 1998 Water Quality Report to Congress will be available from the Department and the Geological Survey of Alabama in hard copy format.

Most recently, Alabama has secured funding for the development of digitized land cover data sets and land use maps for a region of the state. The data sets and maps will provide information essential for sound decision making and long-term planning as part of the State's Wetlands Program. Although Alabama had received preliminary approval for implementation of the project on a statewide basis, an EPA mandated reduction in the grant award resulted in a significant reduction in the geographic scope of the project.

Despite an increasing concern regarding the future of Alabama's wetlands, recent cuts in state and federal funding threaten to undermine the development of a more comprehensive wetlands program. The recent reduction in funding for the FY95 wetlands grant and uncertainty of funding for future program development and implementation makes growth unlikely and limits the possibility of developing a State Wetland Conservation Plan in the foreseeable future.

Appendix V contains the Executive Summary from ***Wetlands Conservation and Management Initiative Volume I***

Appendix I
Alabama 1998 305(b)

A S S E S S

ADEM's Strategy for Sampling Environmental indicators of Surface water quality Status

April, 1997

Field Operations Division
Alabama Department of Environmental Management

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I. INTRODUCTION

Pursuant to the Clean Water Act, the Alabama Department of Environmental Management (ADEM) is charged with monitoring the status of the State's water quality. The ADEM has maintained a fixed ambient monitoring station network located on most of the State's major drainage basins since 1974. With the passage of the Clean Water Act and the implementation of surface water quality monitoring programs by state and federal agencies, the emphasis was placed on the chemical contamination of the nation's waters. (National Research Council 1992). Therefore, most ambient monitoring networks, including Alabama's, were established to monitor trends in water quality below point sources of pollution (ADEM 1994c, ADEM 1996c). These programs have been successful in controlling and reducing certain kinds of chemical pollution from point source discharges (National Research Council 1992), however, ambient water quality monitoring data from fixed stations often does not provide adequate information for watershed planning purposes. A watershed monitoring program should: 1) identify other impacts present within the watershed; 2) provide water quality data from a larger number of water bodies within each basin throughout the state; 3) reflect the overall water quality within the state; and 4) provide the management and regulatory branches of water pollution control agencies with an assessment tool for prioritizing or targeting watersheds and/or sub-watersheds most in need of remedial action.

During the 1980's, the ADEM implemented a multi-faceted approach to monitor the surface waters of the state. This approach included a fixed-station ambient monitoring network, a reservoir water quality monitoring program, intensive and/or special waterbody specific water quality studies, a fish tissue monitoring program, and the compliance monitoring of point source discharges utilizing both chemical monitoring and toxicity screening with aquatic organisms. This monitoring strategy addresses many of the EPA's expanded monitoring goals and incorporates many environmental indicators identified by the EPA as pertaining to the national water quality objectives, but still does not reflect the overall water quality within the state or provide an assessment tool for prioritizing or targeting watersheds most in need of remedial action.

ASSESS is designed to meet the goals of the EPA's Section 106 Monitoring Guidance (EPA 1994a), as well as the goals of the Intergovernmental Task Force on Monitoring Water Quality published in The Strategy for Improving Water Quality Monitoring in the United States (EPA 1995). ASSESS links monitoring data generated by the various Field Operations Division

(FOD) surface water quality monitoring programs to defined water quality objectives and their associated environmental indicators. An integral part of this strategy will be the incorporation of watershed monitoring by basin (Attachment 1). While most surface water monitoring conducted by the FOD will be focused within the targeted river basins, priority sub-watersheds identified by the regulatory branches of the ADEM will be monitored on a more frequent basis. This type of intensive monitoring is necessary to evaluate trends in water quality within these sub-basins. This "watershed" monitoring strategy will allow the synchronization of monitoring activities with inspections and permitting in order to support water quality protection activities on a geographic basis. By defining the major point and/or nonpoint source impacts within each basin, ASSESS will enable the permitting entities of the ADEM to make consistent and integrated decisions related to water resource issues within priority river basins.

The objective of ASSESS is to improve monitoring coverage within river basins, to improve spatial detail of water quality assessments, and to increase total stream miles monitored over the 5 year rotation period. Select historical ambient monitoring stations throughout the state will be monitored in June, August and October in order to provide data adequate for trend analysis. Specific objectives of ASSESS are as follows:

1. Implement a more efficient strategy to utilize and direct the water quality monitoring resources available to the ADEM by using a coordinated approach;
2. Document the water quality status of additional waterbodies within the State's river basins, thereby increasing the cumulative percentage of Alabama waters assessed year to year;
3. Implement a monitoring strategy that can be applied to all river basins and continue on the rotational cycle;
4. Identify existing major point and non-point pollution sources within each river basin;
5. Evaluate chemical, physical, biological, and habitat conditions of waterbodies within the targeted watershed using environmental indicators identified by the EPA as an appropriate assessment tool (EPA 1996b);
6. Identify watersheds impacted or impaired by point and non-point source pollution on a statewide basis;

7. Prioritize watersheds in greatest need of management and identify major sources of pollution within these watersheds;

8. Estimate the status and trends in ecological condition of priority watersheds and historical ambient monitoring stations;

9. Establish a basis of comparison through regular monitoring of least-impacted reference stations within each watershed and ecoregion; and,

10. Provide data that will assist in the implementation of a strategy to maintain and/or improve the status of the State's water resources and their associated use classifications.

This document describes the overall Field Operations Division (FOD) water quality monitoring strategy as well as the programs and program components utilized to meet the ASSESS objectives. The following summary of the FOD programs gives a brief description of each program and the types of information provided. The summary of the FOD program components providing data in support of EPA environmental indicators ties each component of a program to specific EPA water quality objectives and indicators to determine the status of each objective. (EPA 1996b)

II. SUMMARY OF FIELD OPERATIONS DIVISION PROGRAMS

Alabama Monitoring and Assessment Program (ALAMAP)

The Alabama Monitoring and Assessment Program is a statewide monitoring effort under development to provide data that can be used to estimate the current status of all streams and coastal/estuarine waters within the state using environmental indicators. Although the objectives are the same, the strategies used to provide the data are slightly different between the Coastal and Upland region of the state.

Upland ALAMAP

The Upland ALAMAP program (ADEM 1996d) is designed to enhance the current ambient monitoring program developed during the 1970's. First, stations in the historical ambient monitoring program were generally selected to monitor trends in water quality downstream of specific existing point sources. Therefore, the data collected at each of these sites represents only the area sampled and cannot be extrapolated to predict water quality at other similar size streams with any known level of uncertainty. To augment this type of monitoring, 50 stations will be selected statewide each year by EPA-Gulf Breeze using a probabilistic (random) design (Summers and Engle 1996). The data collected at these stations will statistically represent all upland stream miles and the level of uncertainty in the water quality estimates can be quantified. (Summers and Engle 1996). This type of assessment will be used in the 305(b) Water Quality Report to Congress to address overall State water quality.

Second, the historical ambient monitoring program required collection of water quality samples on a monthly basis at each of the stations in addition to water column metals samples on a quarterly basis. Statistical analysis of historical data by FOD and EPA Gulf Breeze suggests that sampling of water quality parameters on a quarterly schedule would have shown the same trends in water quality over time (ADEM 1996e, Summers and Engle 1996). Historically, water samples have been collected and analyzed for metal content. Metals have not been detected in the water column samples at ambient monitoring locations where metals have been detected in fish tissue or sediment samples. The modification of the historical ambient monitoring sampling schedule to a June/August/October Schedule for water quality and an annual sediment sample, where appropriate, will allow additional locations to be assessed with little additional

expenditure of resources. Data from the historical ambient monitoring stations can be used to update the CWA 303(d) list and to monitor site specific trends in water quality.

Third, many of the stations in the historical ambient monitoring program were chosen in the 1970's to monitor specific pollution sources. These stations are generally concentrated in watersheds in the Birmingham area. An evaluation of each site was conducted to determine if the rational for monitoring the site is still applicable and if the information generated is of use to the Department. After this re-evaluation of each of the historical stations, only those stations of value to the Department were retained in the historical network.

And Fourth, EPA-Gulf Breeze is statistically analyzing the parameters at each historical ambient monitoring station to evaluate and select those that are most useful in determining status and trends and the least redundant (Summers and Engle 1996). A minimum core set of environmental indicator parameters (EPA 1996b) will be collected as well as others specific to each station.

Coastal ALAMAP

The Field Operations Division-Mobile Field Office implemented a probabilistic design for the coastal ambient monitoring program in 1993. The coastal monitoring program focuses on the larger, mostly estuarine receiving water bodies within Alabama's coastal area, including Mobile Bay, Bon Secour Bay, Mississippi Sound, Wolf Bay, Bay La Launch, Perdido Bay, Bayou St. John, Little lagoon, and the Mobile-Tensaw River Delta. River stations and stations from these larger waterbodies were chosen with consideration given to sub-areas having different Water-Use-Classifications. (ADEM 1993b) The coastal assessments are conducted annually at each randomly chosen site. This data was used to assess trends in the water quality of estuarine/coastal waters and was included in the 1996 305(b) report in order to assess 100% of the coastal waters.

The existing 'core' historical ambient monitoring stations were maintained and are sampled monthly for the same parameters traditionally monitored. Several of the historical 'non-core' ambient monitoring sites were reintroduced to the program in 1996 to continue monitoring the trends at those select locations.

Coastal Watershed Survey Program

Beginning with Fiscal Year 1993, the Field Operations Division-Mobile Field Office initiated a program for assessing the condition of the small sub-basins located in Baldwin and Mobile Counties. The Coastal Watershed Survey utilizes a comprehensive, broad spectrum approach for assessing the "health" of a basin. This methodology was described in Water Quality and Natural Resource Monitoring Strategy for Coastal Alabama (ADEM 1993b) and incorporates a variety of information from multiple disciplines. Data are generated from water column and sediment samples as well as benthic macroinvertebrate fauna collections. Additional information is gathered and integrated into the survey including: land use, topography, soil characteristics, wetlands locations, and projected growth and development in the watershed.

The strategy employed for monitoring and sampling the coastal area waters follows a more varied regime than inland waters because of the high degree of seasonal variability of precipitation and water salinity. In order to accurately determine the effects of non-point sources on a watershed, it is necessary to collect samples and measure *insitu* field parameters with respect to meteorological events and seasonal conditions rather than on a routine schedule (National Research Council 1990; U.S. Environmental Protection Agency 1991; U.S. Fish and Wildlife Service 1991). Many of the problems related to non-point sources occur on an acute and irregular basis (i.e., fecal coliforms, oil sheens and turbidity) and are tied to stormwater runoff. These types of problems are often best investigated during and immediately following a storm event. Other forms of degradation manifest themselves on a more regular schedule, are often more chronic in duration (i.e., hypoxia, fish kills and phytoplankton blooms) and are best studied during times of stream low flows, salinity stratification and warm temperatures (National Research Council 1990). A sampling regime that accounts for these variations is essential (ADEM 1993b).

The tendency for estuarine water column metals to adsord to suspended particulates and settle to the bottom sediments makes the investigation of sediment contaminants a vital part of the watershed survey (Baudau and Muntau 1990; Delfino et al. 1991; Long and Morgan 1990; National Research Council 1990; NOAA 1989; Windom et al. 1989). To date, the evaluation of sediment quality in these surveys has delt solely with metal enrichment although analyses for organics might be included if the activities within a watershed have the potential for causing such contamination.

Nonpoint Source Assessment Program (NPSAP)

Basin Screening

Nonpoint Source Assessments are conducted at the request of the Nonpoint Source Unit of the Office of Education and Outreach as part of selected watershed projects. Intensive surveys conducted at nonpoint source priority stations are resource intensive. They are necessary, however, to assess subtle differences in water quality, to detect trends in water quality and to identify sources of impairment. Because these methods are resource intensive, an assessment tool is needed to identify sub-watersheds most impacted by point and nonpoint sources of pollution. The Department's regulating programs and the Nonpoint Source Unit can then use resources more effectively by targeting these basins for implementation of water pollution controls, total maximum daily load studies and intensive surveys. The objectives of the basin wide screening assessments developed by the FOD are to rank and prioritize sub-watersheds most in need of remedial action and to identify major pollution sources present in each sub-basin.

Intensive Watershed Assessment

Intensive nonpoint source watershed assessments generally consist of physical/chemical and bacteriological sample collection and analysis, instream community assessments (macroinvertebrate/fish/periphyton) and assessments of habitat quality. Assessments are conducted before and after implementation of Best Management Practices (BMPs) to evaluate trends in water quality and physical habitat due to BMPs implementation. This assessment method relies upon baseline data collected at reference stations to accurately assess trends in water quality.

Information generated during the basin screening and watershed assessments can be used to assess percent impaired waters within each major basin and will increase the miles monitored within each basin. This information can be used to update the CWA 303(d) list, the Alabama NPS Assessment Report and the 305(b) Report to Congress.

Point Source Assessment Program (PSAP)

Point Source Assessments, such as Water Quality Demonstration (WQD) studies are requested by the Municipal Branch of the Water Division. These studies are conducted on selected streams that receive treated waste from municipal wastewater treatment facilities that have been newly constructed or have been renovated using partial funding through the Alabama

Revolving Loan Program. A WQD study typically includes upstream and downstream monitoring during a period before construction or renovation has begun, and during a period after construction or renovation is complete. Stream monitoring of WQD studies includes collection of physical and chemical data, biological assessments, and stream flow determinations. The data is typically collected during the low flow period of the year, thereby documenting the greatest potential adverse impact attributable to discharge activity. The data collected serves to document improvement of stream water quality resulting from the implementation of improved wastewater treatment.

Intensive surveys such as Waste Load Allocation (WLA) and Total Maximum Daily Load (TMDL) studies are conducted at the request of the Water Quality Section of the Water Division. These studies are conducted to obtain the information to develop water quality models used in determining the allowable wasteload (permit limits) for each point source. These studies typically involve time-of-travel studies, flow determination, and intensive sampling of the waterbody and point sources for various water quality parameters over a three or four day period. Nonpoint sources are also considered and sampled if necessary.

In 1992, the Environmental Indicators Section and the Bioassay Unit began to integrate toxicity testing into selected stream assessment studies. These types of surveys are generally conducted when there is concern for a particular discharge and its effects on a receiving stream. In addition to chemical/physical water quality measurements and macroinvertebrate biological assessments, the potential toxicity of the effluent is surveyed. The facility discharge is tested at the permitted receiving water concentration (RWC) and the stream stations are tested at a concentration of one hundred percent (100%). Short-term (7-day) chronic toxicity tests are conducted on the samples utilizing Pimephales promelas and Ceriodaphnia dubia. At the end of the test period a statistical determination is made relative to the effluent's toxicity and whether or not that toxicity, if present, is transferred to the receiving stream.

Compliance Monitoring Program

The compliance monitoring program conducted by FOD includes a compliance monitoring inspection (CSI). During the CSI, representative samples required by the facilities' National Pollutant Discharge Elimination System (NPDES) permit are obtained. Chemical and bacteriological analyses are performed, and the results are forwarded to the appropriate

Departmental permitting entity, where they are used to verify the accuracy of the permittee's self-monitoring program and reports, determine compliance with discharge limitations, determine the quantity and quality of effluents, develop permits, and provide evidence for enforcement proceedings where appropriate.

Reservoir Water Quality Monitoring Program (RWQMP)

With the exception of reservoirs in the Tennessee River system which are assessed by the TVA, the Reservoir Water Quality Monitoring Program assesses the water quality and trophic status of all publicly accessible lakes and reservoirs in the State. Monitoring takes place during the algal growing season at least once every two years with many lakes/reservoirs being monitored every year. This routine reservoir monitoring is supplemented with information gained from more intensive studies conducted on selected reservoirs as funding becomes available. RWQMP studies typically include vertical profiles of select physical/chemical parameters, chemical and bacteriological sample collection, chlorophyll *a* and phytoplankton analysis. Objectives of the program are: a) to develop an adequate water quality database for all publicly owned lakes in the state; b) to establish trends in lake trophic status that are only established through long-term monitoring efforts; and, c) to satisfy Section 314 (a)(1) of the Water Quality act of 1987.

Fish Tissue Monitoring Program (FTMP)

The ADEM Fish Tissue Monitoring Program was initiated in 1991 as a cooperative agreement with the Alabama Department of Public Health (ADPH), the Alabama Department of Conservation and Natural Resources (ADCNR) and the Tennessee Valley Authority (TVA) to monitor fish tissue throughout the state for bioaccumulative contaminants that can pose a risk to human health. Twenty-eight (28) major reservoirs, 26 stream locations and 19 ADCNR-managed public fishing lakes are sampled on a five-year rotational basis. Additional water bodies are also monitored based on identified need. Each year's sampling locations are determined based upon information available to the ADEM and input from the cooperative agencies. Water bodies that have been identified as having elevated concentrations of bioaccumulative fish tissue contaminates, or greater potential for contamination, are more closely monitored.

At each location, a composite sample of six individuals (same species) from both the predator and the omnivore/bottom feeding groups is collected (usually six bass and six catfish). Skinless-fillet composite samples are screened for a select list of organo-chlorine pesticides, metals and PCBs. Screening results will normally dictate the need for additional sampling trips and analyses. Most contaminants are stored/concentrated primarily in fatty tissue. Therefore, sampling is conducted in the fall of the year when fatty tissue is accumulated for over-wintering. The results of these analyses are provided to the ADPH for their consideration. If data warrants, the ADPH will issue consumption advisories as appropriate.

The physical condition of important sport and/or commercial fish species collected for tissue monitoring is also evaluated using relative weights. Relative weight is a condition indicator used by fishery biologists to compare individual fish or a group of fish with a standardized norm. Using this system a fish that scores 80 to 100 would be considered in good-to-excellent condition while a fish that scores 79 or below would be considered fair-to-poor. These same fish are also examined for any external anomalies such as lesions (sores), tumors, parasites and deformities. This relative weight condition indicator is used to evaluate the trends in the health of a fish community.

III. SUMMARY OF FOD PROGRAM COMPONENTS PROVIDING DATA IN SUPPORT OF NATIONAL ENVIRONMENTAL GOALS FOR WATER

In 1996, EPA published Environmental Indicators of Water Quality in the United States (EPA 1996b). This document outlined two National Environmental Goals for Water, the objectives to meet these goals, and the environmental indicators used to measure the successful attainment of the objectives (Table 1). FOD programs and program components provide valuable data supporting at least one environmental indicator for each of the five objectives (Table 2). Figure 1 (modified from EPA 1996b) illustrates how each FOD program provides information for multiple objectives. 'These objectives are like the building blocks in a pyramid, where success in reaching the goals at the top is dependent on successful attainment of those lower in the pyramid' (EPA 1996b). The following section describes each of the FOD program components and how it provides data to support environmental indicator(s) and water objective(s).

GOAL NO. 1: CLEAN WATERS

GOAL NO. 2: SAFE DRINKING WATER

Water Quality Objective I: Conserve and enhance public health

Indicator: Fish consumption advisories -- Percentage of rivers and lakes with fish that states have determined should not be eaten, or should be eaten only in limited quantities.

FOD Program: Fish Tissue Monitoring Program

Program Component(s): Fish Tissue Analysis

Fish Tissue Analysis

At each sampling location, a composite sample of six individuals (same species) from both the predator and the omnivore/bottom feeding groups is collected (usually six bass and six catfish). Skinless-fillet composite samples are

screened for a select list of organo-chlorine pesticides, metals and PCBs. Sampling is conducted in the fall of the year when contaminants, if present, would most likely be stored in fatty tissue. The results of these analyses are provided to the ADPH for their consideration. If data warrants, the ADPH will issue consumption advisories as appropriate.

Water Quality Objective II: Conserve and Enhance Aquatic Ecosystems

Indicator: Biological Integrity -- Percentage of rivers and estuaries with healthy aquatic communities

FOD Program(s): Alabama Monitoring and Assessment Program (ALAMAP) - Upland and Coastal; Nonpoint Source Assessment Program (NPSAP); Point Source Assessment Program (PSAP); Coastal Watershed Survey Program (CWSP); Reservoir Water Quality Monitoring Program (RWQMP); Fish Tissue Monitoring Program(FTMP)

Program Component(s): Macroinvertebrate/Fish/Periphyton Community Bioassessments (ALAMAP, NPSAP, PSAP, CWSP); Trophic State Determinations (RWQMP); Fish Health Analysis (FTMP)

Macroinvertebrate Community Bioassessment

The FOD benthic macroinvertebrate assessment program is an integral part of the Department's biological monitoring effort. The use of the benthic macroinvertebrate community has proven to be a cost-effective water quality monitoring tool that reflects overall ecological integrity; i.e., chemical, physical, and biological integrity of the survey sites. These results, therefore, directly assess the status of a water body relative to the primary goal of the Clean Water Act (Plafkin et al. 1989). A Multihabitat Bioassessment Protocol is currently utilized to sample wadeable and nonwadeable streams (Lenat 1988, Plafkin et al. 1989). All methods utilized are documented in the Department's Standard Operating Procedures and Quality Control Assurance Manual, Volume II (ADEM 1996a).

The Biological Condition Scoring Criteria (BCSC) as outlined in Rapid Bioassessment Protocols for Use in Streams and Rivers: Macroinvertebrates and Fish (Plafkin et al. 1989) is currently utilized to evaluate the biotic integrity of each wadeable stream sampled in relation to the ecoregional reference site determined to be most comparable. These assessments are then used to determine the Aquatic Life Use Designations. These comparisons have aided the Department in evaluating the "best attainable biotic community" within an ecoregion.

The FOD Coastal Watershed Survey Program incorporates macroinvertebrate community bioassessments. In the absence of well defined scoring criteria applicable to estuarine species, such as the protocols of Plafkin et al. (1989), communities are evaluated relative to the presence and/or absence of tolerant-intolerant taxa.

Fish Community/Periphyton Community Bioassessment

At present, the macroinvertebrate community is the only biological indicator used by the Department to assess water quality. The EPA recommends biological assessments include more than one taxonomic group (EPA 1996b). Including more than one taxonomic group encompasses more than one trophic level, providing data than can assist investigators in evaluating the extent of impairment, the type of impairment, and degree of recovery (KDEP 1993, EPA 1996b). It is recommended that, as resources allow, fish and periphyton community collections be incorporated into the intensive biological assessments.

Trophic State Determinations

The extent of reservoir eutrophication is determined by trophic state determinations. The concern about eutrophication from a water quality standpoint is primarily due to cultural eutrophication. Cultural eutrophication negatively affects biological communities of water bodies through changes in water quality variables such as dissolved oxygen, pH, water temperature and light availability.

Chlorophyll a concentrations are used to calculate Carlson's Trophic State Index (TSI). Carlson's TSI provides limnologists and the public with a single number that serves as an indicator of a lake's trophic status. The Trophic State classification scale is used as follows:

Oligotrophic	TSI <40
Mesotrophic	TSI 40-49
Eutrophic	TSI 50-70
Hypereutrophic	TSI > 70

Fish Condition Analysis

The physical condition of important sport and/or commercial fish species collected for tissue monitoring is evaluated using relative weights. Relative weight is a condition indicator used by fishery biologists to compare individual fish or a group of fish with a standardized norm. Using this system, a fish that scores 80 to 100 would be considered in good-to-excellent condition while a fish that scores 79 or below would be considered fair-to-poor. These same fish are also examined for any external anomalies such as lesions (sores), tumors, parasites and deformities.

Water Quality Objective III: Support Uses Designated by States in their water quality standards.

Indicator: Designated uses in state and tribal water quality standards

a) *Aquatic life designated use* -- Percentage of assessed waterbodies that can support healthy aquatic life, as designated by the states and tribes.
b) *Drinking water supply designated use* -- Percentage of assessed waterbodies that can support safe drinking water supply use, as designated by the states and tribes.
c) *Fish and shellfish consumption designated use* -- Percentage of assessed waterbodies that can support fish and shellfish consumption, as designated by the states and tribes.
d) *Recreational designated use* -- Percentage of assessed waterbodies that can support safe recreation, as designated by the states and tribes.

FOD Program(s): Point Source Assessment Program (PSAP); Nonpoint Source Assessment Program (NPSAP); Reservoir Water Quality Monitoring Program (RWQMP); Alabama Monitoring and Assessment Program (ALAMAP) - Upland and Coastal; Coastal Watershed Survey Program (CWSP).

Program Component(s): Chlorophyll a, Fecal Coliform, Physical/Chemical *(RWQMP, NPSAP, PSAP);* Fecal Coliform, Physical/ Chemical *(ALAMAP; CWSP);* Toxicity Testing *(PSAP, NPSAP)*

Water quality studies of differing types are conducted each year at various locations throughout Alabama in response to identified informational needs. These studies typically include several monitoring locations and a frequency of sampling specific to the objectives of a particular study. Studies may include chemical, physical, and biological parameters.

Chlorophyll a

The RWQMP uses Carlson's trophic state index (TSI) for determination of the trophic state of Alabama lakes. Using chlorophyll *a* concentrations to determine trophic state is considered to give the best estimate of the biotic response of lakes to nutrient enrichment when phytoplankton is the dominant plant community. The TSI is a single number that serves as an indicator of trophic status of a lake but does not necessarily define it. Lakes with a TSI of 70 or greater are generally considered to be hypereutrophic and in need of regulatory

action appropriate for protection and restoration. A TSI of 50 - 70 indicates eutrophic conditions in a lake. Trophic state index values of 40 to 50 indicate mesotrophic conditions while oligotrophic conditions are indicated by TSI values less than 40.

Fecal Coliform

Bacteriological samples for Fecal Coliform analysis are routinely collected as a part of most field studies. Single samples from each station are used for screening purposes to determine if there is a potential problem. More intensive sample collection methods are used to determine if a segment warrants upgrade to a use classification of *Swimming and other whole body water-contact sports*.

Physical / Chemical

Water samples for analysis of Physical/Chemical parameters are collected as a part of most Departmental monitoring efforts. These samples are analyzed and the data made available to the Department through reports and/or storage in the EPA STORET database. The following parameters are routinely analyzed: Dissolved Oxygen, pH, Water Temperature, Conductivity, Turbidity, (Fecal Coliform - see above) as well as others that may be specific to a particular study.

Toxicity Testing

Water samples are collected from effluent sources, when appropriate, and analyzed for indications of toxic effects. At the conclusion of the tests, the results are included in any reports and forwarded to the Departmental entity responsible for regulating the effluent sources.

Water Quality Objective IV: Conserve and Improve Ambient conditions

Indicator: Surface water pollutants -- Trends of selected pollutants found in surface water

Indicator: Contaminated sediments -- Percentage of sites with sediment contamination that might pose a risk to humans and aquatic life

Indicator: Habitat Assessment (Suggested as a regional indicator and future national indicator)

FOD Program: *ALAMAP - upland and coastal, Point Source Assessment Program (PSAP); Nonpoint Source Assessment Program (NPSAP); Reservoir Water Quality Monitoring Program (RWQMP); Coastal Watershed Survey Program (CWSP).*

Program Component(s): Physical/Chemical, Fecal Coliform (ALAMAP - upland and coastal, PSAP, NPSAP, RWQMP, CWSP), Sediment Analysis (ALAMAP - upland and coastal, NPSAP, CWSP), Habitat Assessment (ALAMAP - upland, NPSAP, PSAP)

Habitat Assessment and Physical Characterization

Biological integrity and water quality are directly affected by physical habitat. In addition, the assessment of habitat quality is an important step in documenting the adverse impacts of NPS pollution. The Department utilizes the Habitat Assessment Matrices developed by EPA (Plafkin et al. 1989) and Barbour and Stribling (1994) in conjunction with physical characteristics and water quality parameters to evaluate and document habitat quality of each wadeable bioassessment sampling site.

Sediment Analysis

"Certain types of chemicals in water tend to bind to particles and collect in sediment. Chemicals often persist longer in sediment than in water because conditions might not favor natural degradation. When present at elevated concentrations in sediment, pollutants can be released back to water. Pollutants can also accumulate in bottom dwelling organisms and in fish and shellfish and move up the food chain. In both cases, excessive levels of chemicals in sediment might become hazardous to aquatic life and humans." (EPA 1996b) Sediment samples are collected annually, where appropriate, as part of the ALAMAP historical ambient monitoring program as well as select NPSAP and CWSP assessments.

Physical / Chemical

Water samples for analysis of Physical/Chemical parameters are collected as a part of most Departmental monitoring efforts. These samples are analyzed and the data made available to the Department through reports and/or storage in the EPA STORET database. A routine suite of parameters includes those chosen by EPA and its partners (EPA 1996b) to have significant effects on our surface waters (Total Suspended Solids (TSS), Total Phosphorus, Nitrogen (and Nitrate), Total Dissolved Solids (TDS), and Dissolved Oxygen (Fecal Coliform - see below) as well as others that are specific to a particular study.

Fecal Coliform

Bacteriological samples for Fecal Coliform analysis are routinely collected as a part of most field studies. Single samples from each station are used for screening purposes to determine if there is a potential problem. More intensive sample collection methods are used to determine if a segment warrants upgrade to a use classification of *Swimming and other whole body water-contact sports.*

Water Quality Objective V: Reduce or prevent pollutant loadings and other stressors

Indicator: Selected point source loadings to (a) surface water and (b) ground water -- Trends for selected pollutants discharged from point sources into surface water, and underground injection control wells that are sources of point source loading into ground water.

FOD Program*: Point Source Assessment Program (PSAP)*

Program Component(s): Physical/Chemical, Toxicity Testing, Time-of-Travel, AGPT

Physical / Chemical

Water samples for analysis of Physical/Chemical parameters are collected as a part of most Departmental monitoring efforts. Composite samplers are used to collect 24 hour composite samples from effluent sources. These samples are

analyzed and the data made available to the Department through reports. In the future these data will be available through the Departmental Surface Water Quality Database currently under development.

EPA and its partners have chosen a suite of toxic and conventional pollutants to track as *environmental indicators* of progress toward reducing point source pollution: Cadmium, Copper, Lead, Mercury, Phenol, Total Residual Chlorine, Total Suspended Solids (TSS), Total Phosphorus, Nitrogen (and Nitrate), Pathogens, BOD and Ammonia (EPA 1996b). In order to make the Department's monitoring parameters also consistent with EPA's 'Index of Watershed Indicators' (EPA 1997), Hexavalent Chromium, Nickel, and Zinc are also collected as part of the effluent monitoring effort. These 'ASSESS' parameters will be collected, in addition to the permitted parameters, at all Industrial and Municipal point source discharges to surface waters. The usefulness of each of these parameters will be re-evaluated at regular intervals.

Toxicity Testing

Water samples are collected from effluent sources, when appropriate and analyzed for indications of toxic effects. At the conclusion of the tests, the results are included in any reports and forwarded to the Departmental entity responsible for regulating the effluent sources.

Time-of-travel

The use of fluorescent dyes and tracing techniques provides a means for measuring the time-of-travel and dispersion characteristics of steady and gradually varied flow in streams. Measurements of the dispersion and concentration of dyes give insight into the behavior of soluble contaminants that may be introduced into a stream. (Hubbard 1982) This information can be used by Departmental staff to determine NPDES permit limits.

AGPT

More specialized types of biological monitoring such as algal growth potential testing (AGPT) are also increasingly utilized in the surface water monitoring program. AGPT provides valuable information such as the estimation of limiting nutrients that is useful in waste load modeling efforts, non-point source monitoring, and reservoir trophic status determinations.

The Algal Growth Potential Test was developed 24 years ago as a standard, inexpensive, reproducible, and interpretable method to determine the potential of natural waters, wastewater effluent, and various compounds to support or inhibit algal growth. The assay is based on the premise that the maximum yield is proportional to the amount of the limiting nutrient present and biologically available with respect to the growth requirements of the alga. It is intended that the test be used: 1) to identify algal growth-limiting constituents; 2) to determine biologically the availability of algal growth-limiting nutrients; and 3) to quantify the biological response to changes in concentrations of algal growth-limiting constituents. These measurements are made by adding the test alga to the test water and determining algal growth at appropriate intervals (Raschke and Schultz 1987).

IV. DATA MANAGEMENT/STORAGE

The FOD utilizes EPA's national STORET database for the storage, analysis, and retrieval of physical, chemical, and some biological surface water data collected throughout the State.

The Environmental Indicators Section of FOD has several databases housed on the Department's mini-mainframe computer: The macroinvertebrate database created in 1991 and updated in 1995, the fish tissue database created in 1993, and the toxicity testing database added to the mainframe computer system in 1995. All data entered into the mainframe databases are checked for accuracy. The macroinvertebrate database facilitates the management and analysis of data by both calculating the biometrics and creating the standardized reports used in macroinvertebrate studies. Accuracy of the biometric results is hand verified for 10% of the sampling events each year. The toxicity testing database is used in evaluation of toxicity effects of wastewater discharges and allows users to view facility test results in a standardized and accessible format. Historical toxicity data are currently being incorporated into this database. The fish tissue database is used in evaluation of fish health as related to human fish tissue consumption. The database allows compilation of data for reports and easy access to almost twenty years of data. Manuals for the use of these databases regarding data entry and analysis are currently being developed.

V. QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

Laboratory Analytical Support for the Department is provided by the ADEM Central Laboratory in Montgomery, the Birmingham Branch Laboratory, and the Mobile Branch Laboratory. These laboratories are responsible for organic, inorganic, and radiochemical analyses for the Department's Surface Water Monitoring Program. Analyses are performed utilizing the protocols found in the Standard Methods for the Examination of Water and Wastewater, 18th edition (APHA 1992), and the EPA's Methods for Chemical Analysis of Water and Wastes (EPA 1983) manuals. In addition, the Central Laboratory is fully certified by EPA Region IV for the analysis of Phase II and Phase V drinking water parameters.

As a regulatory agency, it is necessary to document the methodologies used in the monitoring programs conducted by the FOD to ensure the accuracy, comparability, and representativeness of the data collected (Plafkin et al. 1989). Quality assurance and quality

control programs have therefore been established as an integral part of each of the monitoring programs conducted by FOD. Each program is fully documented in one of the FOD Standard Operating Procedures Manuals. As recommended by the EPA (Plafkin et al. 1989, EPA 1993, EPA 1994b), these programs include the development of standard operating procedures manuals, quality assurance of both field and laboratory procedures, as well as the management and analysis of data.

Standard Operating Procedures Manuals

Written protocols of methodologies utilized by the FOD have been developed and updated in conjunction with each of the monitoring programs.

The Field Operations Division Standard Operating Procedures and Quality Control Assurance Manual, Volume I - Physical Chemical (SOP) (ADEM 1994a) is a comprehensive document covering safety, sample collection and field measurements, microbiological analysis, QA/QC, and other information necessary to conduct quality field and laboratory work.

The Field Operations Division Standard Operating Procedures and Quality Control Assurance Manual, Volume II - Freshwater Macroinvertebrate Biological Assessment (SOP) (ADEM 1996a) documents all methodologies currently utilized by the Department to collect and analyze freshwater macroinvertebrate samples and to conduct site assessments of habitat quality and characterization of the physical attributes.

The Field Operations Division also has in effect a Fish Tissue Monitoring SOP (Standard Operating Procedures and Quality Control Assurance Manual, Volume III - Fish Sampling and Tissue Preparation for Bioaccumulative Contaminants) (ADEM 1996b). This latest revision includes many of the most recent changes recommended by EPA.

In 1994, a comprehensive standard operating procedures manual documenting all methodologies used by the Bioassay Unit was developed (Standard Operating Procedures and Quality Control Assurance Manual, Volume IV - Toxicity Testing Procedures) (ADEM 1994b). A standardized effluent toxicity test report format was also created for the submission of self-monitoring test results.

A manual, developed in 1993 and finalized in 1997, documents the procedures used in the Algal Growth Potential bioassay currently used by the Field Operations Division (Standard

Operating Procedures and Quality Control Assurance Manual, Volume V - Algal Growth Potential Bioassay Methods) (ADEM 1997).

QA/QC Field Procedures

Duplicate water samples and field parameters are collected at 10 percent of the sampling events during each study.

Every individual that will be involved in stream bioassessments during the year participates in a joint bioassessment conducted prior to the sampling season. Crews of two conduct simultaneous intensive multihabitat bioassessments (MB-I) of the site, including the physical characterization and habitat assessment to ensure comparability of macroinvertebrate bioassessment techniques between sampling events and collectors. In addition, during the sampling year duplicate macroinvertebrate samples are taken at 10% of the stations to ensure that results obtained can be duplicated and are representative of the stream site.

Reservoir monitoring completed as part of the Clean Lakes Program also incorporates duplicate and "blank" samples. Field duplicate samples are obtained by completely duplicating the collection process of both field parameters and each sample type at 10% of the sampling sites. Blank samples are also collected at the same frequency as duplicates by processing distilled water through the collection and filtration equipment in the same manner as regular samples. This procedure documents that the procedures used to rinse equipment prevent contamination between samples and stations.

QA/QC Laboratory Procedures

The laboratory QA procedures for the bioassay program encompass all activities that affect the quality of effluent toxicity data. Quality control in the bioassay laboratory is a day-to-day routine that incorporates every aspect of organism culturing, general lab maintenance, and toxicity testing. Quality control is also measured with monthly bioassay reference tests to ensure comparability of test organisms. New procedures are currently being developed to integrate chronic toxicity tests to the QA/QC program.

The Environmental Indicators Section assesses comparability of macroinvertebrate identifications between investigators for 10% of the sampling stations. In addition, a specimen of each macroinvertebrate taxon identified is maintained in a reference collection.

VI. REPORTING

All data collected by the FOD are provided to the requesting Division or incorporated into reports by FOD for circulation. Table 3 lists all of the reports generated by the various organizational units of the FOD since 1989. The following are a list of reports routinely generated by FOD or that FOD provides a substantial amount of data.

Biennial Water Quality Report to Congress (305B)

ADEM Fish Tissue Monitoring Report

ADEM Reservoir Water Quality Monitoring Report

ALAMAP (Coastal) - Annual Data Summary

Coastal Watershed Survey Reports

Various special studies reports as projects are completed

Table 1. EPA Water Quality Objectives and Indicators (EPA 1996b)

Objective I: Conserve and Enhance Public Health

1. *Population served by community drinking water systems violating health-based requirements*---Population served by drinking water systems with one or more violations of health-based requirements.
2. *Population served by unfiltered surface water systems at risk from microbiological pollution*---Population served by, and number of, systems that have not met the requirements to filter their water to remove microbiological contaminants.
3. *Population served by drinking water systems exceeding lead action levels*---Population served by, and number of, systems with lead levels in drinking water exceeding the regulatory threshold.
4. *Source water protection*---Number of community drinking water systems using ground water that have programs to protect them from pollution.
5. *Fish Consumption advisories*---Percentage of rivers and lakes with fish that states have determined should not be eaten, or should be eaten in only limited quantities.
6. *Shellfish growing water classification*---Percentage of estuarine and coastal shellfish growing waters approved for harvest for human consumption.

Objective II: Conserve and Enhance Aquatic Ecosystems

7. *Biological integrity*---Percentage of rivers and estuaries with healthy aquatic communities.
8. *Species at risk*---Percentage of aquatic and wetland species currently at risk of extinction.
9. *Wetland acreage*---Rate of wetland acreage loss.

Objective III: Support Uses Designated by the States and Tribes in Their Water Quality Standards

10. *Designated uses in state and tribal water quality standards*
    a. *Drinking water supply designated use*---Percentage of assessed waterbodies that can support safe drinking water supply use, as designated by the states and tribes.
    b. *Fish and shellfish consumption designated use*---Percentage of assessed waterbodies that can support fish and shellfish consumption, as designated by the states and tribes.
    c. *Recreational designated use*---Percentage of assessed waterbodies that can support safe recreation, as designated by the states and tribes.
    d. *Aquatic life designated use*---Percentage of assessed waterbodies that can support healthy aquatic life, as designated by the states and tribes.

Objective IV: Conserve and Improve Ambient Conditions

11. *Ground water pollutants*---Population exposed to nitrate in drinking water. In the future, the indicator will report the presence of other chemical pollutants in ground water.
12. *Surface water pollutants*---Trends of selected pollutants found in surface water.
13. *Selected coastal surface water pollutants in shellfish*---The concentration levels of selected pollutants in oysters and mussels.
14. *Estuarine eutrophication conditions*---Trends in estuarine eutrophication conditions.
15. *Contaminated sediments*---Percentage of sites with sediment contamination that might pose a risk to humans and aquatic life.

Objective V: Reduce or Prevent Pollutant Loadings and Other Stressors

16. *Selected point source loadings to (a) surface water and (b) ground water*---Trends for selected pollutants discharged from point sources into surface water, and underground injection control wells that are sources of point source loadings into ground water.
17. *Nonpoint source loadings to surface water*---Amount of soil eroded from cropland that could run into surface waters. Future reports will include additional nonpoint source surface water pollutants as well as sources of nonpoint source ground water pollution.
18. *Marine debris*---Trends and sources of debris monitored in the marine environment.

Table 2. Field Operations Division Programs and Program Components providing Data toward EPA Environmental Indicators for EPA
Water Objectives to Meet National Environmental Goals (EPA 230-D-96-002).

EPA Environmental Objective	***EPA Environmental Indicator***	***FOD Program Component***	***FOD Program***
I. Conserve and Enhance Public Health	Fish consumption advisories	Fish Tissue Analysis	Fish Tissue Monitoring Program (FTMP)
II. Conserve and Enhance Aquatic Ecosystems	Biological integrity	Macroinvertebrate / Fish / Periphyton Community Bioassessment	Alabama Monitoring and Assessment Program (ALAMAP) - upland
	Biological integrity	Macroinvertebrate / Fish Community Bioassessment	Alabama Monitoring and Assessment Program (ALAMAP) - Coastal
	Biological integrity	Macroinvertebrate Community Bioassessment	Coastal Watershed Survey Program (CWSP)
	Biological integrity	Macroinvertebrate / Fish / Periphyton Community Bioassessment	Nonpoint Source Assessment Program (NPSAP)
	Biological integrity	Macroinvertebrate / Fish / Periphyton Community Bioassessment	Point Source Assessment Program (PSAP)
	Biological integrity	Trophic State Determination	Reservoir Water Quality Monitoring Program (RWQMP)

Table 2 (cont.)

EPA Environmental Objective	***EPA Environmental Indicator***	***FOD Program Component***	***FOD Program***
	Biological integrity	Fish Health Analysis	Fish Tissue Monitoring Program (FTMP)
III. Support Uses Designated by the States and Tribes in their Water Quality Standards	Designated uses in state and tribal water quality standards	Chlorophyll *a*	Nonpoint Source Assessment Program (NPSAP)
	Designated uses in state and tribal water quality standards	Chlorophyll *a*	Point Source Assessment Program (PSAP)
	Designated uses in state and tribal water quality standards	Chlorophyll *a*	Reservoir Water Quality Monitoring Program (RWQMP)
	Designated uses in state and tribal water quality standards	Fecal coliform	Alabama Monitoring and Assessment Program (ALAMAP) - upland
	Designated uses in state and tribal water quality standards	Fecal coliform	Coastal Watershed Survey Program (CWSP)
	Designated uses in state and tribal water quality standards	Fecal coliform	Point Source Assessment Program (PSAP)
	Designated uses in state and tribal water quality standards	Fecal coliform	Nonpoint Source Assessment Program (NPSAP)
	Designated uses in state and tribal water quality standards	Fecal coliform	Reservoir Water Quality Monitoring Program (RWQMP)

Table 2 (cont.)

EPA Environmental Objective	***EPA Environmental Indicator***	***FOD Program Component***	***FOD Program***
	Designated uses in state and tribal water quality standards	Physical / Chemical	Alabama Monitoring and Assessment Program (ALAMAP) - upland
	Designated uses in state and tribal water quality standards	Physical / Chemical	Alabama Monitoring and Assessment Program (ALAMAP) - Coastal
	Designated uses in state and tribal water quality standards	Physical / Chemical	Coastal Watershed Survey Program (CWSP)
	Designated uses in state and tribal water quality standards	Physical / Chemical	Reservoir Water Quality Monitoring Program (RWQMP)
	Designated uses in state and tribal water quality standards	Physical / Chemical	Nonpoint Source Assessment Program (NPSAP)
	Designated uses in state and tribal water quality standards	Physical / Chemical	Point Source Assessment Program (PSAP)
	Designated uses in state and tribal water quality standards	Toxicity Testing	Nonpoint Source Assessment Program (NPSAP)
	Designated uses in state and tribal water quality standards	Toxicity Testing	Point Source Assessment Program (PSAP)
IV. Conserve and Improve Ambient Conditions	Habitat quality (suggested as a regional indicator and future national indicator)	Habitat Assessment	Alabama Monitoring and Assessment Program (ALAMAP) - upland

Table 2 (cont.)

EPA Environmental Objective	EPA Environmental Indicator	FOD Program Component	FOD Program
	Habitat quality (suggested as a regional indicator and future national indicator)	Habitat Assessment	Nonpoint Source Assessment Program (NPSAP)
	Habitat quality (suggested as a regional indicator and future national indicator)	Habitat Assessment	Point Source Assessment Program (PSAP)
	Surface water pollutants	Physical / Chemical	Alabama Monitoring and Assessment Program (ALAMAP) - upland
	Surface water pollutants	Physical / Chemical	Alabama Monitoring and Assessment Program (ALAMAP) - coastal
	Surface water pollutants	Physical / Chemical	Coastal Watershed Survey Program (CWSP)
	Surface water pollutants	Physical / Chemical	Point Source Assessment Program (PSAP)
	Surface water pollutants	Physical / Chemical	Nonpoint Source Assessment Program (NPSAP)
	Surface water pollutants	Physical / Chemical	Reservoir Water Quality Monitoring Program (RWQMP)
	Surface water pollutants	Fecal Coliform	Alabama Monitoring and Assessment Program (ALAMAP) - upland
	Surface water pollutants	Fecal Coliform	Alabama Monitoring and Assessment Program (ALAMAP) - coastal

Table 2 (cont.)

EPA Environmental Objective	***EPA Environmental Indicator***	***FOD Program Component***	***FOD Program***
	Surface water pollutants	Fecal Coliform	Coastal Watershed Survey Program (CWSP)
	Surface water pollutants	Fecal Coliform	Point Source Assessment Program (PSAP)
	Surface water pollutants	Fecal Coliform	Nonpoint Source Assessment Program (NPSAP)
	Surface water pollutants	Fecal Coliform	Reservoir Water Quality Monitoring Program (RWQMP)
	Contaminated sediments	Sediment Analysis	Alabama Monitoring and Assessment Program (ALAMAP) - upland
	Contaminated sediments	Sediment Analysis	Alabama Monitoring and Assessment Program (ALAMAP) - coastal
	Contaminated sediments	Sediment Analysis	Coastal Watershed Survey Program (CWSP)
V. Reduce or Prevent Pollutant Loadings and other stressors	Selected point source loadings to surface water	Physical / Chemical	Point Source Assessment Program (PSAP)
	Selected point source loadings to surface water	Toxicity Testing - Ceriodaphnia / Fathead Minnows	Point Source Assessment Program (PSAP)
	Selected point source loadings to surface water	Time of Travel	Point Source Assessment Program (PSAP)

Table 2 (cont.)

EPA Environmental Objective	***EPA Environmental Indicator***	***FOD Program Component***	***FOD Program***
	Selected point source loadings to surface water	AGPT	Point Source Assessment Program (PSAP)

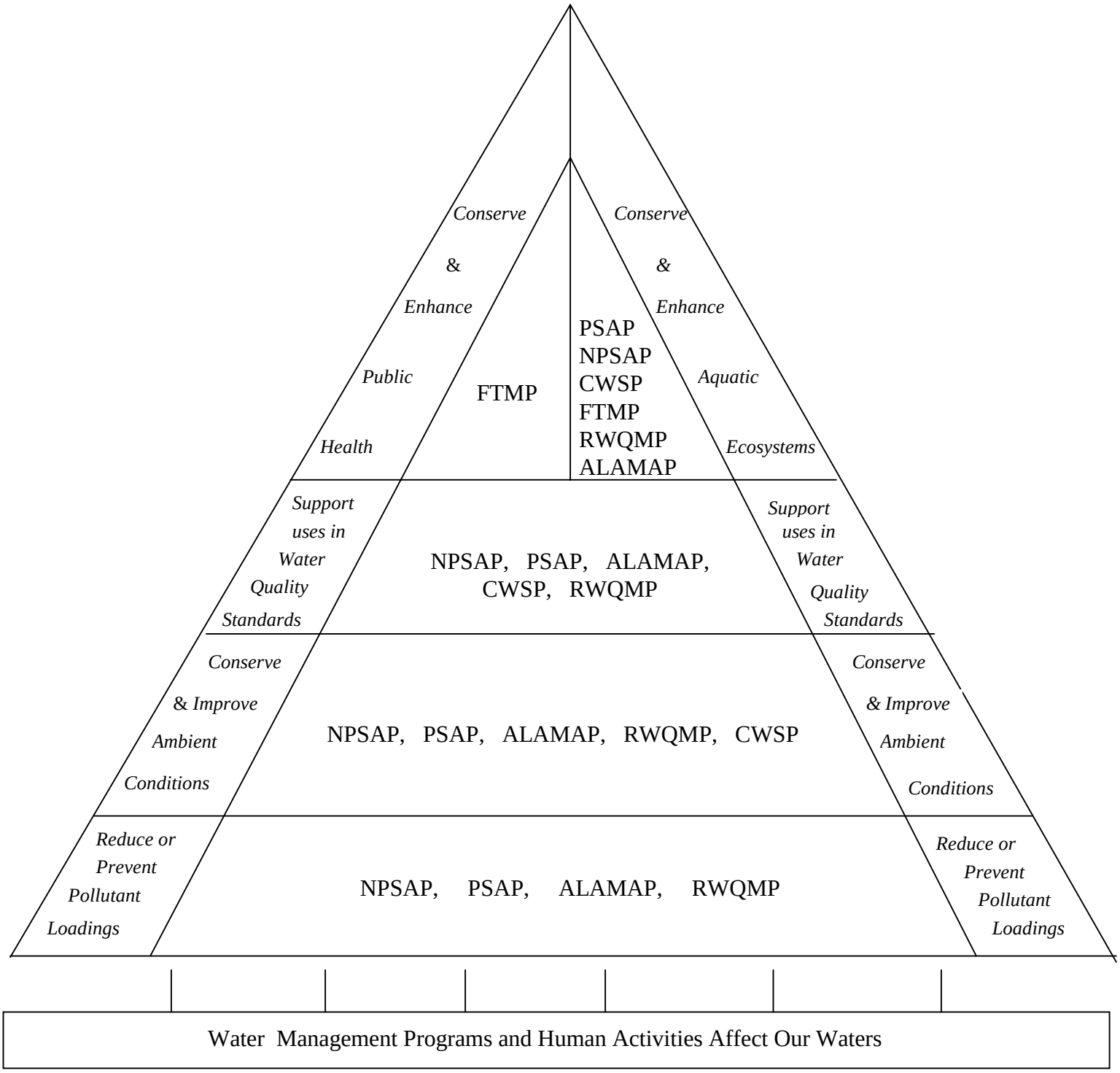
Table 3. Reports Generated by Field Operations Division Since 1990

FY Report Completed	Title	
1990	A Comparison of Direct and Indirect Analyses of Nutrient Concentrations in the Particulate Fraction of Water Samples	Coastal
1990	Choccolocco Creek WQDS- Anniston	
1990	Coastal Program Water Quality Trend Report FY90	Coastal
1990	Mud Creek WQDS - Hanceville	
1990	Town Creek and Swan Creek WQDS - Athens	
1990	Waxahatchee Creek WQDS - Columbiana	
1991	A Sediment Chemistry Baseline Study of Coastal Alabama	Coastal
1991	Alabama Reservoirs - Water Quality Monitoring Program Annual Report: 1990	
1991	Aldridge Creek WQDS -Huntsville	
1991	An Investigation of the Fish Kills Occurring in Lower Fish River, Baldwin County, Alabama	Coastal
1991	Huntsville Spring Branch WQDS- Huntsville	
1991	Moore Creek WQDS- Haleyville	
1991	Patsaliga Creek WQDS - Luverne	
1990 - 1991	Portersville Bay WQDS	Coastal
1991	Riley Maze Creek WQDS - Arab	
1991	Talladega Creek WQDS - Talladega	
1992	A Survey of the Water Quality and Sediment Chemistry of Selected Sites in the Mobile Delta System	Coastal
1992	A Survey of the Water Quality and Sediment Chemistry of Shipyards in Coastal Alabama	Coastal
1992	Alabama Reservoirs - Water Quality Monitoring Program Annual Report: 1991	
1992	Big Wills Creek WQDS - Fort Payne	
1992	Puppy Creek WQDS - Citronelle	
1993	Klondike Creek WQDS - Ozark	
1993	Limestone Creek WQDS - Monroeville	
1993	Pigeon Creek WQDS - Fort Deposit	
1993	Sand Mountain Lake Guntersville Watershed Project: Macroinvertebrate Bioassessment - June 1992	
1993	Sandy Creek WQDS - Camp Hill	
1994	A Survey of the Dog River Watershed: 1st Year's Study. An Overview of Land-Use Practices and the Effects of Development on the Basin.	Coastal
1994	ADEM Reservoir Water Quality and Fish Tissue Monitoring Program Report: 1992 - 1993	
1994	Choccolocco Creek Watershed Study	
1994	Omussee Creek WQDS - Dothan	
1994	Sand Mountain Lake Guntersville Watershed Project: Macroinvertebrate Bioassesssment - June 1993	
1994	Water Quality Trends of Selected Ambient Monitoring Stations in Alabama Utilizing Aquatic Macroinvertebrate Assessments: 1974-1992	
1994	West Point Lake Phase I Diagnostic / Feasibility Study: Final Report (Joint report with Georgia Environmental Protection Division)	
1995	A Survey of the Do[illegible]r's Study. Ongoing Development and Assessment of [illegible]oint Sources on the Aquatic Resources of the Basin. Macroinvertebrate Community and Sediments.	Coastal
1995	Alabama/Mississippi Pilot Reference Site Project: 1990-1994	

Table 3 (cont.)

FY Report Completed	Title	
1990 - 1995	Black Warrior River Water Quality Study 1989 - 1994	
1995	Sand Mountain Lake Guntersville Watershed Project: Macroinvertebrate Bioassesssment - June 1994	
1995	Sugar Creek Water Quality Demonstration Report - Phase I	
1996	A Survey of the Bon Secour River Watershed: An Overview of Land Use Practices and an Examination of the Effects of Development on the Aquatic Resources of the Basin.	Coastal
1996	ADEM Fish Tissue Monitoring Program Report 1991-95	
1996	ADEM Reservoir Water Quality and Fish Tissue Monitoring Program Report: 1994 - 1995	
1996	ADEM Reservoir Water Quality Monitoring Program Report 1990-95	
1996	Alabama Regional Environmental Monitoring and Assessment Program, Data Report for 1993 and 1994 (Coastal)	Coastal
1996	Flint Creek Watershed Project: Macroinvertebrate Bioassessment, 1992 and 1995	
1996	Sand Mountain Lake Guntersville Watershed Project: Macroinvertebrate Bioassesssment - May 1995	
1996	Trends in Water Quality of Ambient Monitoring Stations of the Coosa and Tallapoosa Watersheds: Aquatic Macroinvertebrate Bioassessments, 1980-1995	

Fig. 1. EPA Environmental Objectives and FOD Programs providing indicator data.



FTMP - FISH TISSUE MONITORING PROGRAM
NPSAP - NONPOINT SOURCE ASSESSMENT PROGRAM
PSAP - POINT SOURCE ASSESSMENT PROGRAM
RWQMP - RESERVOIR WATER QUALITY MONITORING PROGRAM
ALAMAP - ALABAMA MONITORING AND ASSESSMENT PROGRAM
CWSP COASTAL WATERSHED SURVEY PROGRAM

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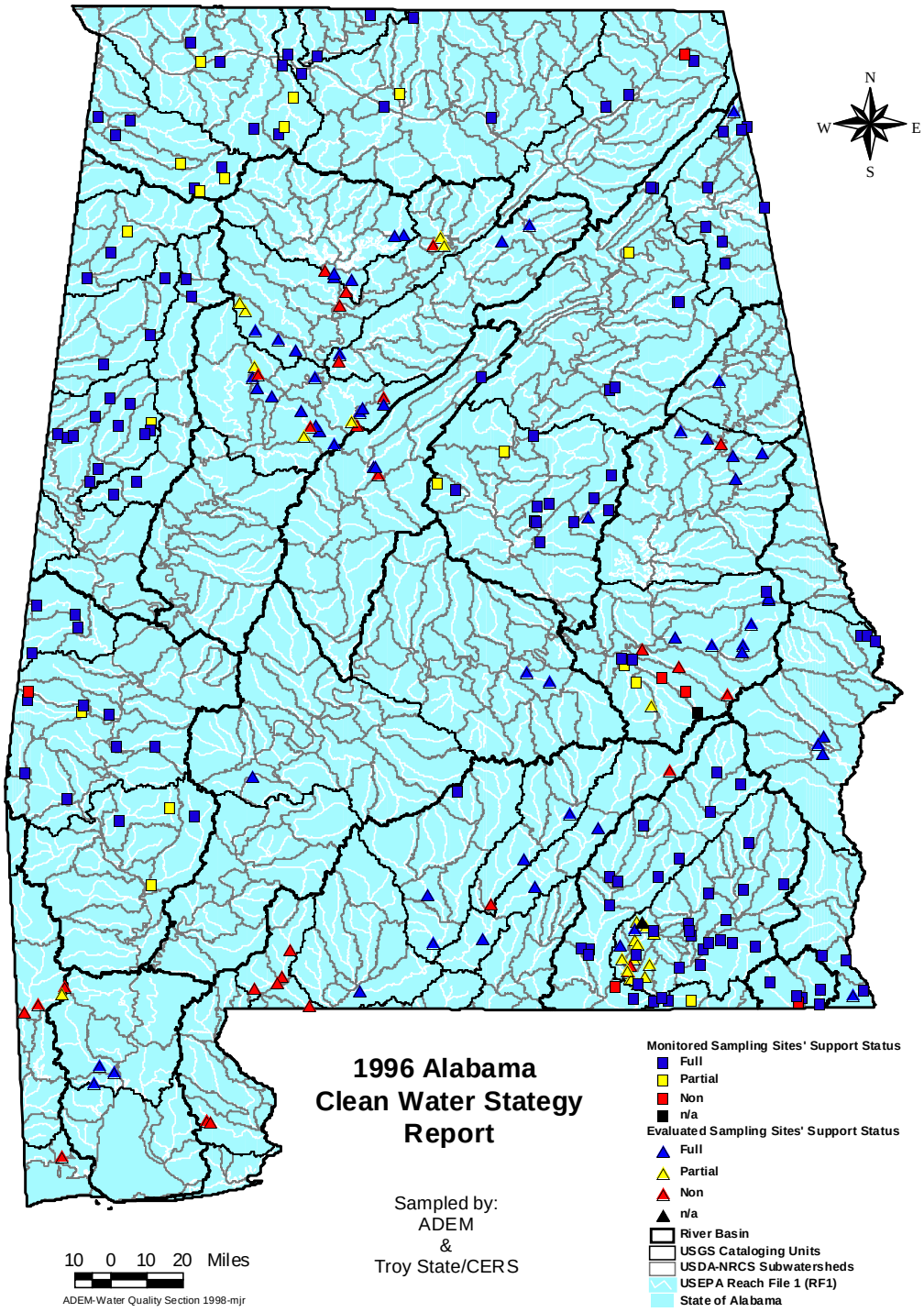
Alabama's 1996 Clean Water Strategy



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PO Box 301463
Montgomery, AL 36130-1463
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Alabama's
1996 Clean Water Strategy
Report

Alabama Department of Environmental Management
PO Box 301463
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in cooperation with

Troy State's Center for Environmental Research and Science

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Introduction

Beginning in June 1996 the Alabama Department of Environmental Management (ADEM or the Department) continued its Clean Water Strategy (CWS) sampling efforts. The initial CWS sampling was conducted during the period 1986 through 1988, reported on during 1989, and addressed the condition of surface waters in Alabama. This effort was undertaken to critically evaluate water quality, identify or confirm problem areas, and to serve as a guide from which to direct emphasis during FY89 through FY92. Sampling stations were selected by the Department or its contractors where problems were known or suspected to exist, or where there was an absence of water quality data. The 1991 study was designed to address waters found to be impacted in the 1986 study and which remained a concern at the initiation of the second study. The 1992 comparative report consisted of selected noncompliant streams from the 1986 to 1988 data set, with the purpose of determining if corrective actions were successful.

Like the 1986-88 study, the 1996 CWS sampling was designed to assess waters for which the Department had concerns regarding either possible point or nonpoint source impairments or for those waters which the Department had no data. Data was collected on a monthly basis during June through October 1996 for the streams listed in first table of each river basin section. Specific parameters sampled for are listed in Table 1 and 2.

Table 1
Sampling Parameters

Field Parameters	Depth of Water (feet) Depth of Sample (feet) Air Temperature {T^A}(°C) Water Temperature {T^W} (°C) pH (standard units-s.u.) Dissolved Oxygen {DO} (mg/L)
Field/Lab Parameters	Conductivity (µmhos/cm) Turbidity (nephelometric turbidity units-ntu)
Lab Parameters	Biochemical Oxygen Demand {BOD_5} (mg/L) Ammonia-Nitrogen {NH_3-N} (mg/L) Total Kjedahl Nitrogen {TKN} (mg/L) Nitrite/Nitrate-Nitrogen {NO_2-NO_3-N} (mg/L) Total Phosphorous {T-PO_4-P} (mg/L)

Additional parameters were selected for a small set of stations to characterize waters near public water supply intakes. Parameters included pesticides and other volatile organic compounds as listed in Table 2.

With the recent purchase of global positioning system (GPS) equipment the Department staff is becoming familiarized with its use for obtaining accurate locational information for sampling locations. A few of the CWS stations have latitude/longitude coordinates which have been obtained and differentially corrected with Trimble™ hardware, software, and the base station. For those stations for which GPS was not used, coordinates were obtained from a 1:24,000 USGS topographic map using latlong.exe, an executable DOS-based program obtained from EPA-Athens.

Mapping was accomplished with the use of the Water Division's ARC/INFO™ geographical information system (GIS) and Arcview™ software. EPA's Reach File 3-Alpha (RF3) was used for the hydrograpy data layer. Importing comma delimited text files containing coordinate information into Arcview produced the sample station data

layer. County boundaries have been added for reference. The water quality data will eventually be linked to the sampling stations for use in the Water Division GIS. STORET stations will also be created for this data at some future time.

Table 2
Public Water Supply Sampling Parameters

	Total Organic Carbon {TOC} (mg/L)
Volatile Organic Compounds (VOCs)	1,2-Dibromo-3-chloropropane (µg/L)
	Ethylene dibromide (µg/L)
	1,1,1,2-Tetrachloroethane (µg/L)
	1,1,1-Trichloroethane (µg/L)
	1,1,2,2-Tetrachloroethane (µg/L)
	1,1,2-Trichloroethane (µg/L)
	1,1-Dichloroethane (µg/L)
	1,1-Dichloroethylene (µg/L)
	1,1-Dichloropropene (µg/L)
	1,2,3-Trichlorobenzene (µg/L)
	1,2,3-Trichloropropane (µg/L)
	1,2,4-Trimethylbenzene (µg/L)
	1,2-Dichloroethane (µg/L)
	1,2-Dichloropropane (µg/L)
	1,3,5-Trimethylbenzene (µg/L)
	1,3-Dichloropropane (µg/L)
	1,3-Dichloropropene (µg/L)
	2,2-Dichloropropane (µg/L)
	Tetrachlorethylene (µg/L)
	Bromobenzene (µg/L)
	Bromochloromethane (µg/L)
	Bromodichloromethane (µg/L)
	Benzene (µg/L)
	Bromomethane (µg/L)
	cis-1,2-Dichloroethylene (µg/L)
	Chlorobenzene (µg/L)
	Chlorodibromomethane (µg/L)
	Chloroethane (µg/L)
	Bromoform (µg/L)
	Chloroform (µg/L)
	Chloromethane (µg/L)
	Carbon tetrachloride (µg/L)
	Dibromomethane (µg/L)
	Dichlorodifluoromethane (µg/L)
	Dichloromethane (µg/L)
	Ethylbenzene (µg/L)
	Fluorotrichloromethane (µg/L)
	Hexachlorobutadiene (µg/L)
	Isopropylbenzene (µg/L)
	m-Dichlorobenzene (µg/L)
	m & p Xylene (µg/L)

Table 2 (cont.)

	Naphthalene (µg/L) n-Butylbenzene (µg/L) n-Propylbenzene (µg/L) o-Chlorotoluene (µg/L) o-Dichlorobenzene (µg/L) o-Xylene (µg/L) p-Chlorotoluene (µg/L) p-Dichlorobenzene (µg/L) p-Isopropyltoluene (µg/L) Secbutylbenzene (µg/L) Styrene (µg/L) t-1,2-Dichloroehtylene (µg/L) Tertbutylbenzene (µg/L) Trichloroethylene (µg/L) Toluene (µg/L) Vinyl Chloride (µg/L)
Pesticides	Diquat (µg/L) 2,4-D (µg/L) Dalapon (µg/L) Dicamba (µg/L) Dinoseb (µg/L) Pentachlorophenol (µg/L) Picloram (µg/L) Silvex (µg/L)

Data Analysis and Use Support Determinations

EPA's 305(b) guidance for conventional pollutant (DO, pH, and temperature) measurements in relation to the waterbody's support status of its classified uses is described below.

Use Support Status	**Criteria Exceedance of Measurements**
Fully supporting	≤ 10 percent
Partially supporting	> 10 but ≤ 25 percent
Not supporting	> 25 percent

Also, the specific numeric criteria in the ADEM Admin. Code R. 335-6-10-.09 for the conventional pollutants, DO and pH, and fecal coliform, in respect to a waterbody's classified use, are summarized below.

Parameter	**S**	**F&W**	**A&I and IO**
DO	5.0 mg/L*	5.0 mg/L*	3.0 mg/L**
pH (freshwater)	6.0 to 8.5 s.u	6.0 to 8.5 s.u.	6.0 to 8.5 s.u.
pH (estuarine)	6.5 to 8.5 s.u.	6.5 to 8.5 s.u.	6.5 to 8.5 s.u

* Only due to extreme natural conditions may DO range between 4.0 and 5.0 mg/L provided that water quality is favorable in all other parameters.

** DO is measured at mid-depth or at 5 feet if water is greater than 10 feet deep.

For the **swimming and other whole body water-contact sports classification (S)**, the fecal coliform density shall not exceed 100 organisms/100 ml in coastal waters nor 200 organisms/100ml in other waters. For the **fish and wildlife use classification (F&W)**, fecal coliform shall not exceed a geometric mean of 1,000 organisms/100ml for a monthly average value nor exceed a maximum of 2,000 organisms/100 ml in any sample. For the months June through September waters classified F&W shall not exceed the geometric mean fecal coliform organism density of 100/100 ml in coastal waters nor 200/100 ml in other waters.

By combining the EPA guidance and ADEM numeric criteria with the data obtained from in-stream sampling a use support determination can be applied to a sampling site and its representative stream segment. This study's sampling design, grab samples taken monthly from June through October, at impacted or previously unassessed streams, introduces certain biases into this assessment. The period of June through October is the usual timeframe for critical low flows, low dissolved oxygen concentrations, and high ambient temperatures in Alabama. A bias towards a worst case scenario is introduced. Grab samples taken during this timeframe also are likely to be obtained from streams experiencing a higher diurnal variation in dissolved oxygen concentrations. Ideally, sampling would take place in the early morning hours when dissolved oxygen concentrations will be low as a result diminished photosynthesis and increased respiration during the night hours.

For this study a sampling set equal to or greater than 5 samples will be used to determine a monitored support status as discussed above. The remainder of the data sets will be examined to determine an evaluated use support and will be targeted for field work during a river basin(s) respective schedule in Table

Table 3
Number of Sampling Sites per River Basin

Alabama	3
Black Warrior	38
Cahaba	4
Chattahoochee	10
Chipola	6
Choctawhatchee	54
Coosa	30
Escatawpa	4
Lower Tombigbee	17
Mobile	4
Perdido-Escambia	18
Tallapoosa	25
Tennessee	28
Upper Tombigbee	22
Total Sites	**263**

Results/Content

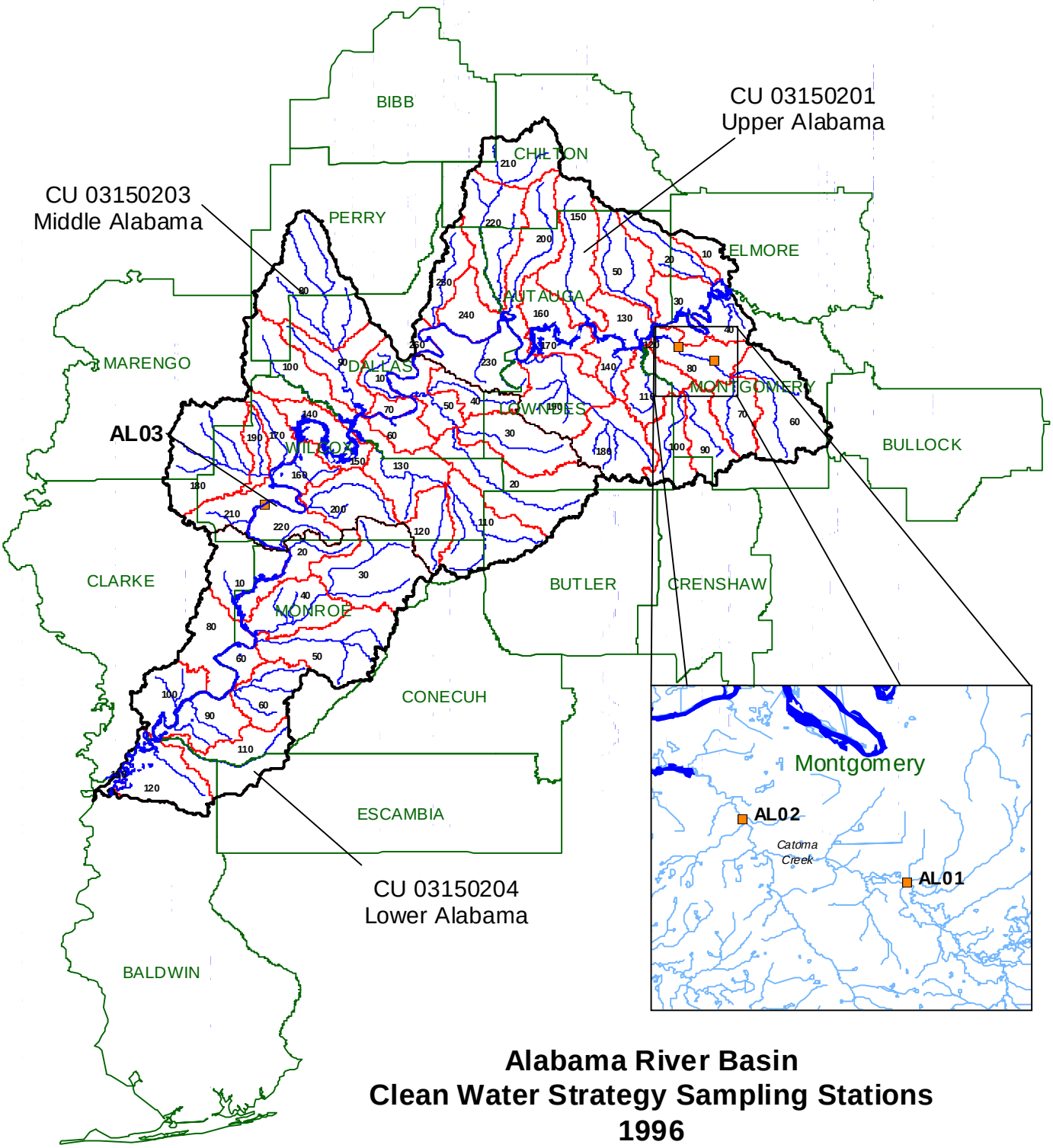
Each basin section contains maps of stations and NPDES dischargers with corresponding tables. The second table of each basin section contains information pertaining to each station's sampling data. Total mileages per station were obtained by tracing (duplicating) USEPA Reach File 3 segments within Arcview 3.0a. Traced segments range from the sampling point to its source, another station, or possibly another significant tributary or dam.

Table 4
Schedule for Rotating Basin Studies

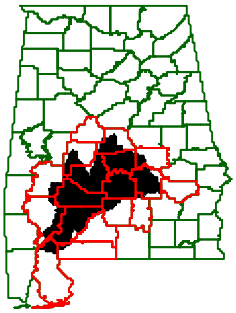
Year	Basin
1997	Cahaba Warrior
1998	Tennessee
1999	Chipola Choctawhatchee Perdido-Escambia Chattahoochee
2000	Coosa Tallapoosa Alabama
2001	Escatawpa Lower Tombigbee Upper Tombigbee Mobile

Alabama River Basin

Figure AL-1



Alabama River Basin
Clean Water Strategy Sampling Stations
1996



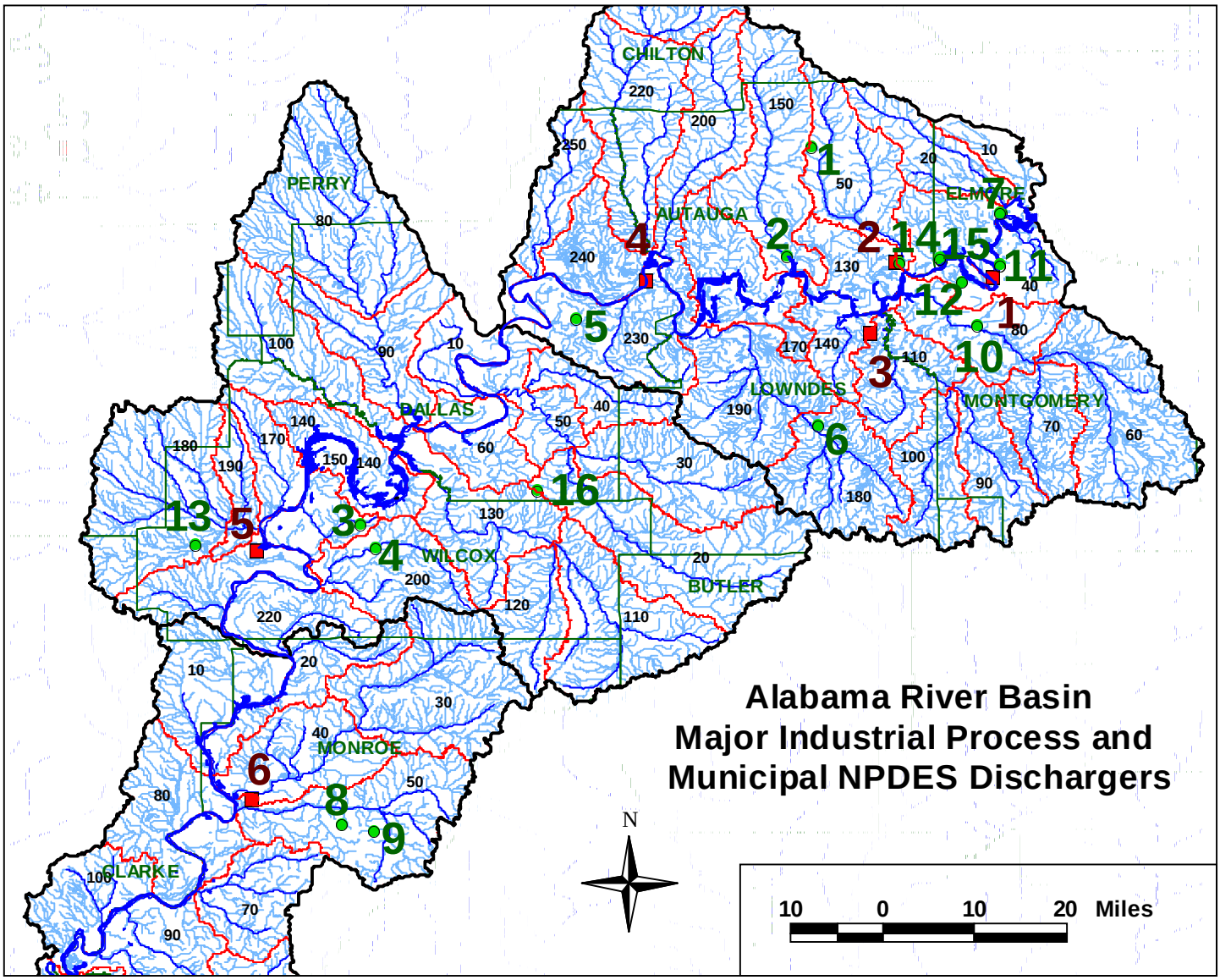
USEPA Reach File 3
CWS Stations
Counties
USDA-NRCS Subwatersheds
USEPA Reach File 1
USGS Cataloging Units

N

10 0 10 20 30 Miles

ADEM-Water Quality Section 1997

Figure AL-2



Major Industrial NPDES Process Wastewater Dischargers

1* Koppers Industries
2 Union Camp
3 General Electric Co.
4 International Paper-Hammermill
5 MacMillan Bloedel Inc.
6 AL River Pulp Co.

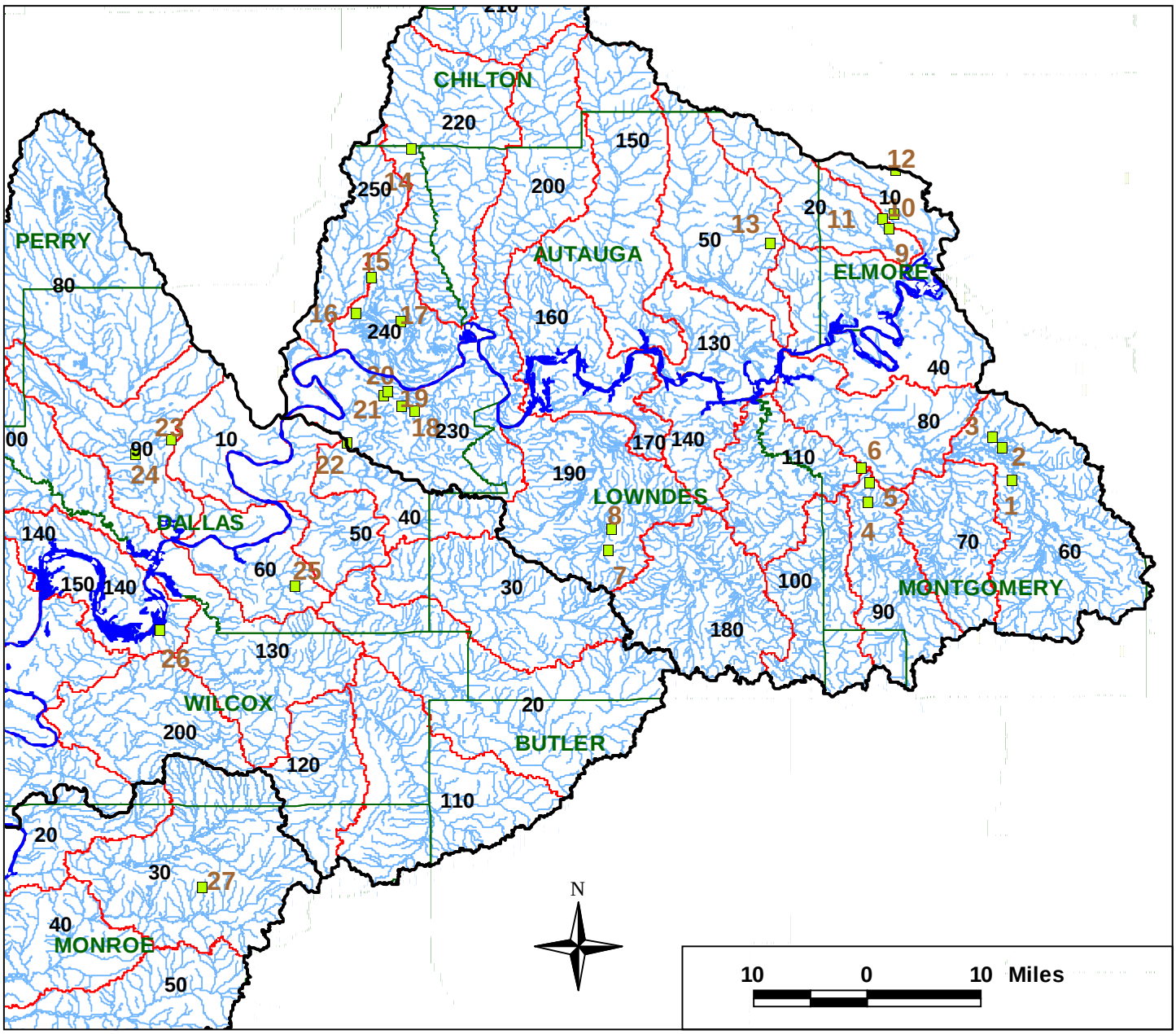
* Not Major Process Wastewater Discharge

Municipal NPDES Dischargers

1 Autaugaville Crystal Lake WWTP
2 Autagaville WWTP
3 Camden North WWTP
4 Camden South WWTP
5 Dallas Co. WWTP
6 Hayneville HCR
7 Millbrook WWTP
8 Monroeville Double Branch WWTP
9 Monroeville Hudson Branch WWTP
10 Montgomery Catoma Creek WWTP
11 Montgomery Econchate WWTP
12 Montgoemry Towassa WWTP
13 Pine Hill Lagoon*
14 Prattville Autaga Creek WWTP
15 Prattville Pine Creek WWTP
16 Selma Valley Creek WWTP

* groundwater discharge

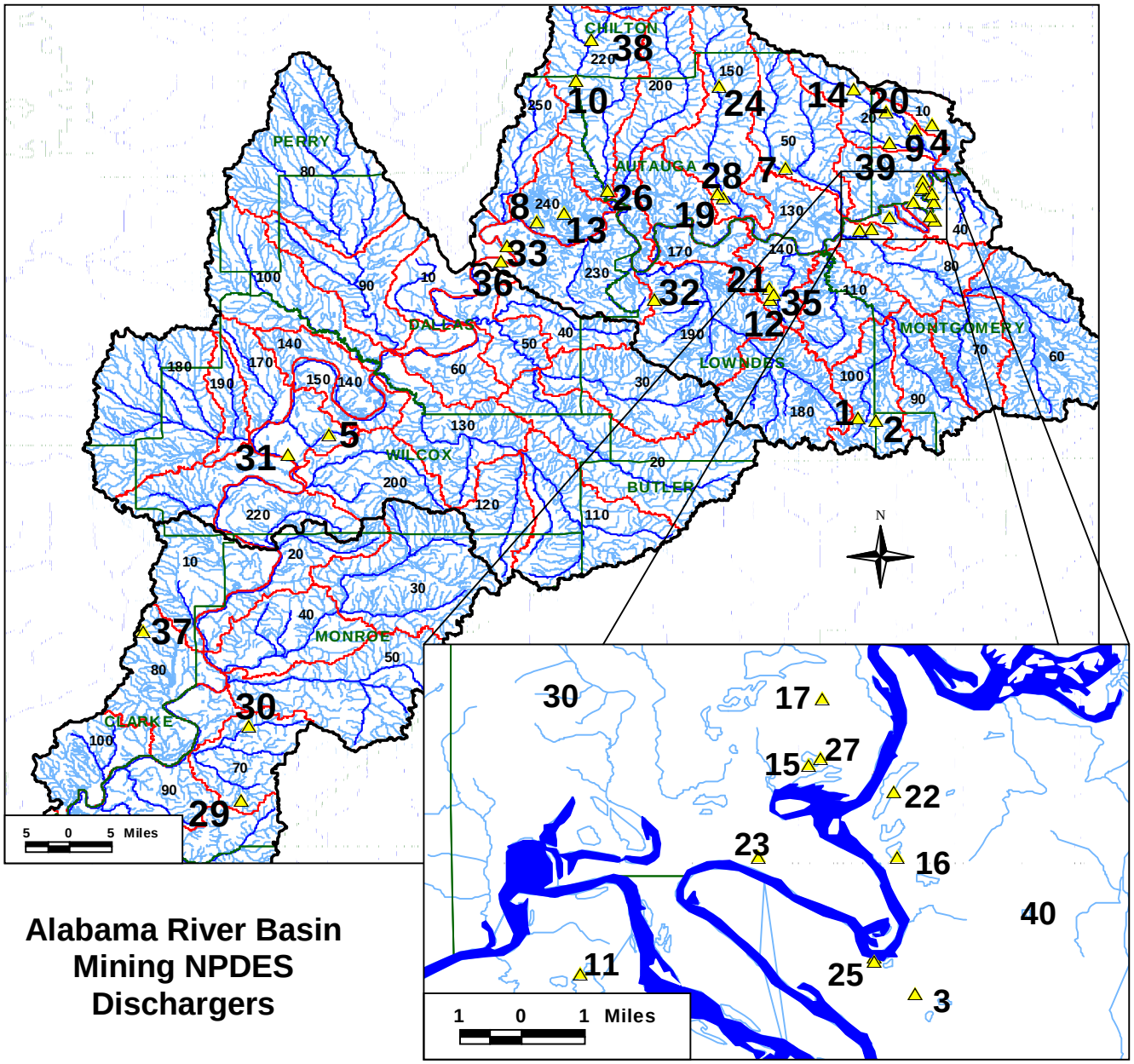
Figure AL-3



Alabama River Basin Semi-Public/Private NPDES Dischargers

1 Oak Hills Water Co.
2 Pike Road Plantation
3 Green Lantern Restaurant
4 Swan Lake MHP Lagoon
5 Stewart-McLean Lagoon
6 Montg. KOA Campground Lagoon
7 Central School
8 Mossess WWTP
9 Merry Wood Nursing Home Lagoon
10 Elmore Correctional Center
11 Draper-Staton Correctional Facility
12 Days Inn-Prattville
13 Dixie MHP
14 Dallas Co. High School
15 Valley Grande Elementary
16 Overlook Hills Subdivision
17 Dallas Co. Jail
18 Southside High School
19 Rose Haven MHP
20 Craig Hill Park
21 Hidden Acres MHP
22 Shiloh Jr. High School
23 Keith High School
24 Delwood Estates
25 Alabama Sheriff's Boys Ranch S
26 Alabama Sheriff's Boys Ranch SW
27 JF Shields High School

Figure AL-4



Alabama River Basin Mining NPDES Dischargers

1	American Colloid Company-McQueen Tract
2	American Colloid Company-Seller-Payne Tract
3	Asphalt Contractors Inc.-Jenkins Pit
4	Belmont Mary Bass-Mary's Dirt Company
5	Bonner W.J.-Bonner Pit #1
6	Capital City Asphalt Division of APAC-AL Inc.-Tocwah Plant
7	Corley Brothers Sand & Gravel
8	Cosby Carmichael Inc.-Cosby Plant #1
9	Elmore Sand & Gravel Inc.-Scott Pit
10	Funnell Mineral Materials Shelby Concrete,Inc.-Plantersville Pit
11	Gentry Sand and Gravel Inc.-Hunter Station Division
12	Hammonds Lukesia
13	Henry Brick Company Inc.-Faulk Mine
14	International Silica Inc.
15	Jenkins Brick Company Inc.-Coosada Plant
16	Jenkins Brick Company Inc.-Mattox Pit
17	Jenkins Brick Company Inc.-Paige Clay Pit
18	Jenkins Brick Company Inc.-Saco Wood Pit
19	John Anderson Enterprises-Pan-Atlantic Minerals Quarry
20	Lewis A. Ingram dba Ingram's Gravel
21	Lowndes Sand & Gravel Inc.-Lowndesboro Pit
22	Martin Marietta Aggregates-Chadbourne Plant
23	Martin Marietta Aggregates-Mangum Pit
24	Martin Marietta Aggregates-Mims Pit
25	Martin Marietta Aggregates-Montgomery Plant/Alabama River
26	Martin Marietta Aggregates-Selma Plant
27	Millbrook Sand & Gravel Inc.
28	O'Dell Construction Company Inc.-Plant No.2
29	P & M Sand & Gravel Inc.-Scott Pit
30	Partin Roy-Partin Sand & Gravel Pit
31	Pine Hill Excavating Company Inc.-Liddell Pit
32	Rogers Sand & Gravel James A. Rodgers dba
33	S & S Materials Lamar Sikes-Beer's Pits #1 & 2
34	S & S Mining Supply Inc.
35	Sadler Frank
36	Selma Gravel Inc.-Cogle Pit
37	South Alabama Materials Inc.-Little River Pit
38	Stanton Sand & Gravel Inc.
39	Thomas & Associates LLC

Table AL-1
1996 Alabama River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
AL01	Catoma Creek	Catoma Creek at Hwy 331	32.30722	-86.3
AL02	Catoma Creek	Catoma Creek at Hwy 54	32.34333	-86.39222
AL03	Alabama River	Alabama River at Burlington Northern RR bridge near Pine Hill	31.926333	-87.488888

Table AL-2
Alabama River Basin CWS96 Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
AL01	Catoma Creek	US Hwy 331	Ramer Cr.	E	Full	5
AL02	Catoma Creek	Co. Rd. 54	US Hwy 331	E	Full	7
AL03	Alabama River	Trend Station AL3	Mac-Blo discharge	E	Full	15

Table AL-3
Alabama River Basin Municipal NPDES Dischargers

Map Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0051900	Autaugaville Crystal Lake WWTP	32.604167	-86.604167
2	AL0057720	Autaugaville WWTP	32.430278	-86.644167
3	AL0023701	Camden North WWTP	32.01	-87.315833
4	AL0023680	Camden South Lagoon	31.972778	-87.290278
5	AL0043176	Dallas County W&S WWTP	32.332222	-86.975833
6	AL0050113	Hayneville HCR Lagoon	32.166944	-86.591667
7	AL0049921	Millbrook WWTP	32.499722	-86.304167
8	AL0027782	Monroeville Double Branch WWTP	31.537778	-87.344444
9	AL0022136	Monroeville Hudson Branch WWTP	31.526111	-87.293889
10	AL0027863	Montgomery Catoma Creek WWTP	32.323611	-86.342222
11	AL0022225	Montgomery Econchate WWTP	32.418889	-86.305833
12	AL0022241	Montgomery Towassa WWTP	32.3925	-86.365833
13	AL0062731	Pine Hill Lagoon	31.977778	-87.575278
14	AL0026654	Prattville Autauga Creek WWTP	32.42	-86.464167
15	AL0027723	Prattville Pine Creek WWTP	32.426667	-86.4
16	AL0022578	Selma Valley Creek WWTP	32.061667	-87.0375

Table AL-4
Alabama River Basin Semi-Public/Private Dischargers

Map Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0059927	OAK HILLS WATER COMPANY	32.242569	-86.169489
2	AL0059731	PIKE ROAD PLANTATION	32.283869	-86.180253
3	AL0059561	GREEN LANTERN RESTAURANT	32.296058	-86.193778
4	AL0047970	SWAN LAKE TRAILER PARK LAGOON	32.213353	-86.352
5	AL0030601	STEWART-MCLEAN LAGOON	32.237194	-86.349953
6	AL0059315	MONTGOMERY KOA CAMPGROUND LAGOON	32.255456	-86.359519
7	AL0051331	CENTRAL SCHOOL	32.152969	-86.682622
8	AL0055883	MOSSESS WWTP	32.179008	-86.677106
9	AL0058823	MERRY WOOD LODGE NURSING HOME WWTP	32.559594	-86.324728
10	AL0043451	ELMORE CORRECTIONAL CENTER	32.578569	-86.319136
11	AL0051349	DRAPER-STATION CORRECTIONAL FACILITY	32.571917	-86.334242
12	AL0048071	DAYS INN-PRATTVILLE	32.540556	-86.476667
13	AL0043478	DIXIE TRAILER PARK	32.633644	-86.316856
14	AL0044342	DALLAS COUNTY HIGH SCHOOL	32.660994	-86.931019
15	AL0044296	VALLEY GRANDE ELEMENTERY SCHOOL	32.497931	-86.982058
16	AL0056677	OVERLOOK HILLS SUBDIVISION	32.450975	-87.000464
17	AL0056669	DALLAS COUNTY JAIL	32.442406	-86.945656
18	AL0044334	SOUTHSIDE HIGH SCHOOL	32.328514	-86.9277
19	AL0048127	ROSE HAVEN TRAILER PARK	32.334289	-86.943247
20	AL0048101	CRAIG HILL PARK	32.348792	-86.966533
21	AL0056880	HIDDEN ACRES MOBILE HOME PARK	32.353117	-86.9626
22	AL0044300	SHILOH JUNIOR HIGH SCHOOL	32.289794	-87.012953
23	AL0044318	KEITH HIGH SCHOOL	32.293183	-87.236997
24	AL0048151	DELWOOD ESTATES SUBDIVISION	32.273697	-87.280703
25	AL0048135	ALABAMA SHERIFF'S BOYS SOUTH RANCH	32.1075	-87.079167
26	AL0049891	ALABAMA SHERIFF'S BOYS RANCH SW	32.1075	-87.079167
27	AL0044407	J F SHIELDS HIGH SCHOOL	31.726389	-87.197222

Table AL-5
Alabama River Basin Major Industrial NPDES Process Wastewater Dischargers

Map Index	NPDES Permit	Facility	Latitude	Longitude
1*	AL0064947	Koppers Industries	32.3959	-86.31932
2	AL0003115	Union Camp	32.42102	-86.47263
3	AL0054704	General Electric Co.	32.30991	-86.51287
4	AL0003018	International Paper-Hammermill	32.391389	-86.865833
5	AL0002674	MacMillian-Bloedel Inc.	31.96607	-87.47898
6	AL0025968	Alabama River Pulp Co.	31.57431	-87.48681

*Not Major NPDES Process Wasterwater Discharger

Table AL-6
Alabama River Basin Mining NPDES Dischargers

Map Index	NPDES Permit	Company Name	Facility	Latitude	Longitude	USDA-NRCS Subwatershed
1	AL0059595	American Colloid Company	McQueen Tract	32.04222	-86.435	03150201 - 100
2	AL0058173	American Colloid Company	Seller-Payne Tract	32.03611	-86.40556	03150201 - 100
3	AL0067474	Asphalt Contractors Inc.	Jenkins Pit	32.40167	-86.30417	03150201 - 040
4	AL0070009	Belmont Mary Bass	Mary's Dirt Company	32.57583	-86.30944	03150201 - 010
5	AL0067806	Bonner W.J.	Bonner Pit #1	32.01139	-87.33889	03150203 - 160
6	AL0063177	Capital City Asphalt Division of APAC-AL Inc.	Tocwah Plant	32.38472	-86.43306	03150201 - 040
7	AL0064505	Corley Brothers Sand & Gravel	Corley Brothers Sand & Gravel	32.49611	-86.56083	03150201 - 050
8	AL0058611	Cosby Carmichael Inc.	Cosby Plant #1	32.40056	-86.98361	03150201 - 240
9	AL0066401	Elmore Sand & Gravel Inc.	Scott Pit	32.56806	-86.33806	03150201 - 020
10	AL0068187	Funnell Mineral Materials Shelby Concrete Inc.	Plantersville Pit	32.65639	-86.91667	03150201 - 220
11	AL0060500	Gentry Sand and Gravel Inc.	Hunter Station Division	32.40667	-86.38194	03150201 - 040
12	AL0070327	Hammonds Lukesia	Lukesia Hammonds Pit	32.25806	-86.58556	03150201 - 140
13	AL0054909	Henry Brick Company Inc.	Faulk Mine	32.41528	-86.93889	03150201 - 240
14	AL0066745	International Silica Inc.	International Silica Plant #1	32.64222	-86.44306	03150201 - 020
15	AL0058084	Jenkins Brick Company Inc.	Coosada Plant	32.45833	-86.32889	03150201 - 010
16	AL0068071	Jenkins Brick Company Inc.	Mattox Pit	32.43583	-86.30833	03150201 - 040
17	AL0066664	Jenkins Brick Company Inc.	Paige Clay Pit	32.47472	-86.32583	03150201 - 030
18	AL0069671	Jenkins Brick Company Inc.	Saco Wood Pit	32.38694	-86.41333	03150201 - 080
19	AL0057622	John Anderson Enterprises	Pan-Atlantic Minerals Quarry	32.44278	-86.66417	03150201 - 150
20	AL0062146	Lewis A. Ingram dba Ingram's Gravel	Ingram Pit No. 1	32.60083	-86.38722	03150201 - 020
21	AL0061344	Lowndes Sand & Gravel Inc.	Lowndesboro Pit	32.27806	-86.5875	03150201 - 140
22	AL0059609	Martin Marietta Aggregates a division of Marti	Chadbourne Plant	32.45167	-86.30917	03150201 - 040
23	AL0068462	Martin Marietta Aggregates a division of Marti	Mangum Pit	32.43583	-86.34056	03150201 - 030
24	AL0061191	Martin Marietta Aggregates a division of Marti	Mims Pit	32.64583	-86.67278	03150201 - 150
25	AL0054534	Martin Marietta Aggregates a division of Marti	Montgomery Plant/Alabama River Faci	32.41083	-86.31361	03150201 - 040
26	AL0061174	Martin Marietta Aggregates a division of Marti	Selma Plant	32.45667	-86.86361	03150201 - 220
27	AL0056154	Millbrook Sand & Gravel Inc.	Millbrook - Pit 1	32.46028	-86.32611	03150201 - 030
28	AL0065943	O'Dell Construction Company Inc.	Plant No.2	32.45194	-86.675	03150201 - 150
29	AL0069981	P & M Sand & Gravel Inc.	Scott Pit	31.34417	-87.4875	03150204 - 070
30	AL0067741	Partin Roy	Partin Sand & Gravel Pit	31.48111	-87.47611	03150204 - 070
31	AL0061336	Pine Hill Excavating Company Inc.	Liddell Pit	31.975	-87.4075	03150203 - 160
32	AL0064513	Rogers Sand & Gravel James A. Rodgers dba	Rogers Sand & Gravel Pit	32.25833	-86.78333	03150201 - 190

Table AL-6 (cont.)

Map Index	NPDES Permit	Company Name	Facility	Latitude	Longitude	NRCS Subwatershed
33	AL0060232	S & S Materials Lamar Sikes dba	Beer's Pits #1 & 2	32.35639	-87.03528	03150201 - 230
34	AL0068349	S & S Mining Supply Inc.	Pit #1	32.65722	-86.71444	03150201 - 150
36	AL0060224	Selma Gravel Inc.	Cogle Pit	32.32861	-87.04667	03150201 - 260
37	AL0067466	South Alabama Materials Inc.	Little River Pit	31.65389	-87.65389	03150204 - 110
38	AL0065536	Stanton Sand & Gravel Inc.	Stanton Plant #1	32.73056	-86.89028	03150201 - 220
39	AL0069434	Thomas & Associates LLC	Thomas Pit	32.54389	-86.38278	03150201 - 020

Table AL-7
Alabama River Basin Data

Station		AL01	AL01	AL01	AL02	AL02	AL02	AL03	AL03	AL03	AL03	AL03
Sampling Date		6/13/96	8/6/96	10/2/96	6/13/96	8/6/96	10/2/96	6/6/96	7/10/96	8/8/96	9/18/96	10/19/95
Sampling Time		9:15 AM	9:06 AM	11:15 AM	9:50 AM	9:40 AM	10:55 AM	12:30 PM	9:50 AM	1:20 PM	1:45 PM	9:55 AM
Total Water Depth	ft		2			9.15						
Depth of Sample	ft		1			5						
Air Temperature	°C		30	24		30	22	31	28	33	27	22
Water Temperature	°C	26.3	29.9	20.8	26.1	27.8	21.2	28	30	31	29	22
pH	s.u.	7.6	7.61	7.51	7.82	7.58	7.51	7.3	6.9	7.5	7.63	7.4
Dissolved Oxygen	mg/L	7.5	5.9	8.1	7	6.4	8.8	6.5	4.8	5.1	5.9	6.2
Conductivity	mmhos	200	215	155	230	210	185	123	155	161	158.3	127
Cond at 25 °C	mmhos	195	197	169	225	199	199	116	141	144	147	135
Turbidity	ntu		46	18		22	18	7.9	6.6	13	7.82	7.4
BOD5	mg/L	2.9	1.5	1.6	1.6	0.8	1.4	1.3	1	1.1	1.1	2
NH3-N	mg/L	0.26	0.015K	0.015K	0.015	0.05	0.02K					
TKN	mg/L	0.67	0.015K	0.21	1.52	0.71	0.74	0.150K	0.150K	0.23	0.27	0.26
NO2+NO3-N	mg/L	0.05	0.21	0.06	0.06	0.2	0.07	0.290	0.140	0.200	0.210	0.210
PO4-P	mg/L	0.12	0.1	0.12	0.14	0.12	0.15	0.030	0.050	0.030	0.030	0.051
TSS	mg/L		60	13		27	15	11	5	15	11	10

Table AL-8
Alabama River Basin Public Water Supply Intake Data

Station	AL3			AL3		
Date	6/6/96			8/8/96		
Time	12:30 PM			1:30 PM		
NH_3-N	0.180	mg/L		-	mg/L	
NO_2-NO_3	0.270	mg/L		0.200	mg/L	
TOC	3.37	mg/L		4.08	mg/L	
Alkalinity	44	mg/L		51	mg/L	
Specific Conductance	-	um/cm		-	um/cm	
Turbidity	-	NTUs		-	NTUs	
1,2-Dibromo-3-chloropropane	0.0200	ug/L	U	0.0200	ug/L	U
Ethylene dibromide	0.0200	ug/L	U	0.0200	ug/L	U
1,1,1,2-Tetrachloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1,1-Trichloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1,2,2-Tetrachloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1,2-Trichloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloropropene	0.5000	ug/L	U	0.5000	ug/L	U
1,2,3-Trichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U
1,2,3-Trichloropropane	0.5000	ug/L	U	0.5000	ug/L	U
1,2,4-Trimethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
1,2-Dichloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,2-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U
1,3,5-Trimethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
1,3-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U
1,3-Dichloropropene	0.5000	ug/L	U	0.5000	ug/L	U
2,2-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U
Tetrachlorethylene	0.5000	ug/L	U	0.5000	ug/L	U
Bromobenzene	0.5000	ug/L	U	0.5000	ug/L	U
Bromochloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Bromodichloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Benzene	0.5000	ug/L	U	0.5000	ug/L	U
Bromomethane	0.5000	ug/L	U	0.5000	ug/L	U
cis-1,2-Dichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U
Chlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U
Chlorodibromomethane	0.5000	ug/L	U	0.5000	ug/L	U
Chloroethane	0.5000	ug/L	U	0.5000	ug/L	U
Bromoform	0.5000	ug/L	U	0.5000	ug/L	U
Chloroform	0.5000	ug/L	U	0.5000	ug/L	U
Chloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Carbon tetrachloride	0.5000	ug/L	U	0.5000	ug/L	U
Dibromomethane	0.5000	ug/L	U	0.5000	ug/L	U
Dichlorodifluoromethane	0.5000	ug/L	U	0.5000	ug/L	U
Dichloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Ethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
Fluorotrichloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Hexachlorobutadiene	0.5000	ug/L	U	0.5000	ug/L	U
Isopropylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
m-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U
m & p Xylene	0.5000	ug/L	U	0.5000	ug/L	U
Naphthalene	0.5000	ug/L	U	0.5000	ug/L	U
n-Butylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
n-Propylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
o-Chlorotoluene	0.5000	ug/L	U	0.5000	ug/L	U
o-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U

Table AL-8 (cont.)

Station	AL3			AL3		
Date	6/6/96			8/6/96		
o-Xylene	0.5000	ug/L	U	0.5000	ug/L	U
p-Chlorotoluene	0.5000	ug/L	U	0.5000	ug/L	U
p-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U
p-Isopropyltoluene	0.5000	ug/L	U	0.5000	ug/L	U
Secbutylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
Styrene	0.5000	ug/L	U	0.5000	ug/L	U
t-1,2-Dichloroehtylene	0.5000	ug/L	U	0.5000	ug/L	U
Tertbutylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
Trichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U
Toluene	0.5000	ug/L	U	0.5000	ug/L	U
Vinyl Chloride	0.5000	ug/L	U	0.5000	ug/L	U
Diquat	0.440	ug/L	U	0.440	ug/L	U
2,4-D	0.0500	ug/L	U	0.0500	ug/L	U
Dalapon	1.3000	ug/L	U	1.3000	ug/L	U
Dicamba	0.8100	ug/L	U	0.8100	ug/L	U
Dinoseb	0.1900	ug/L	U	0.1900	ug/L	U
Pentachlorophenol	0.0760	ug/L	U	0.0760	ug/L	U
Picloram	0.1400	ug/L	U	0.1400	ug/L	U
Silvex	0.0400	ug/L	U	0.0400	ug/L	U

Black Warrior River Basin

Figure BW-1

Figure BW-2

UBWRB

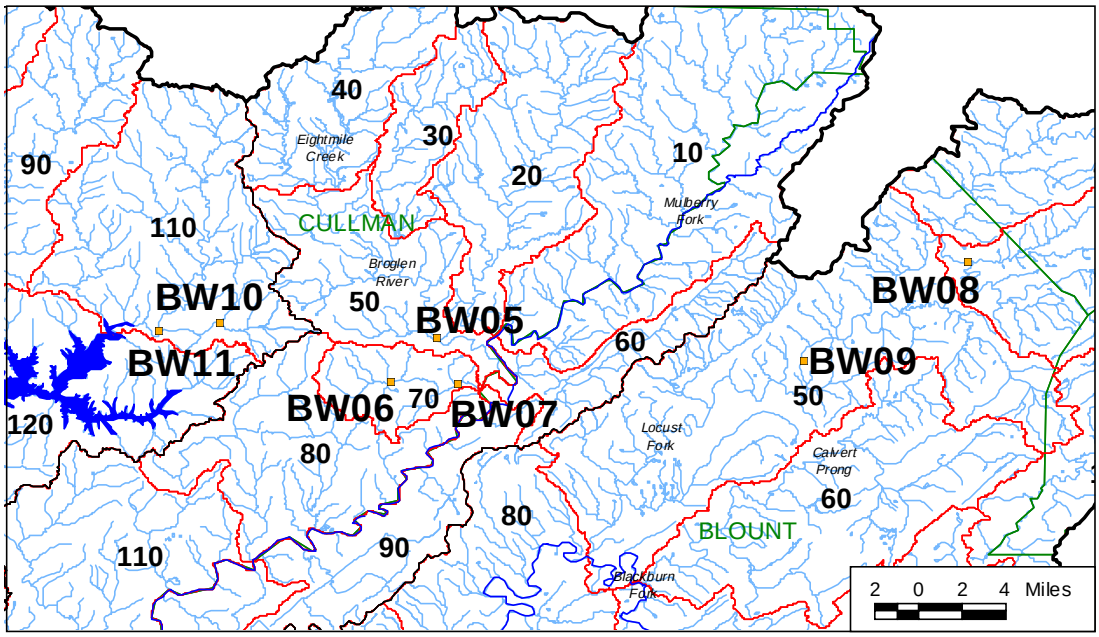


Figure BW-3

MBWRB

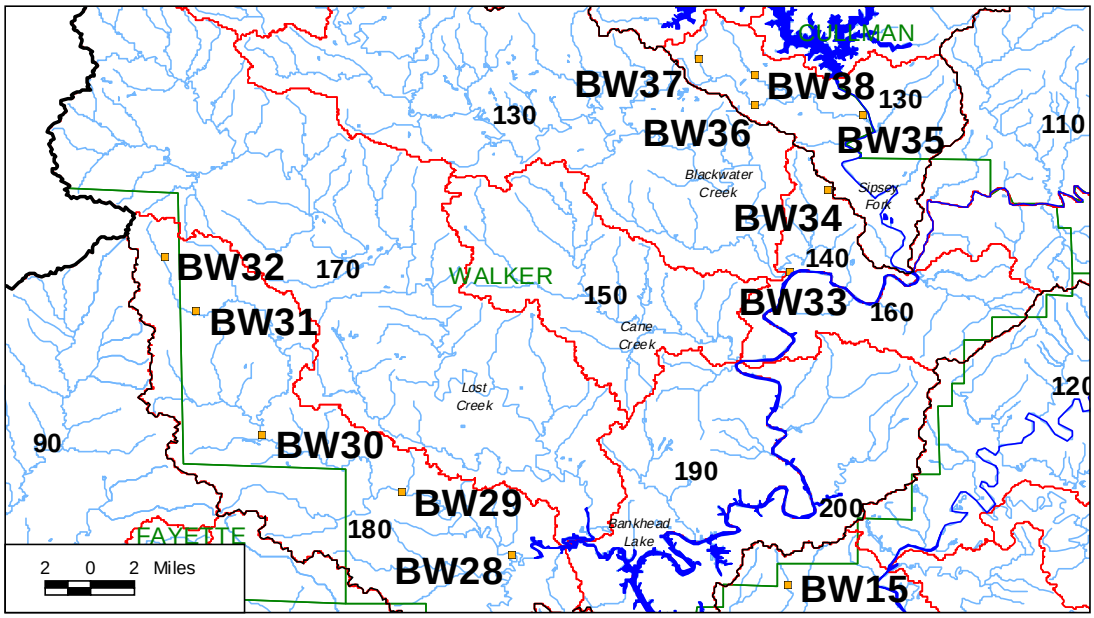


Figure BW-4

LBWRB

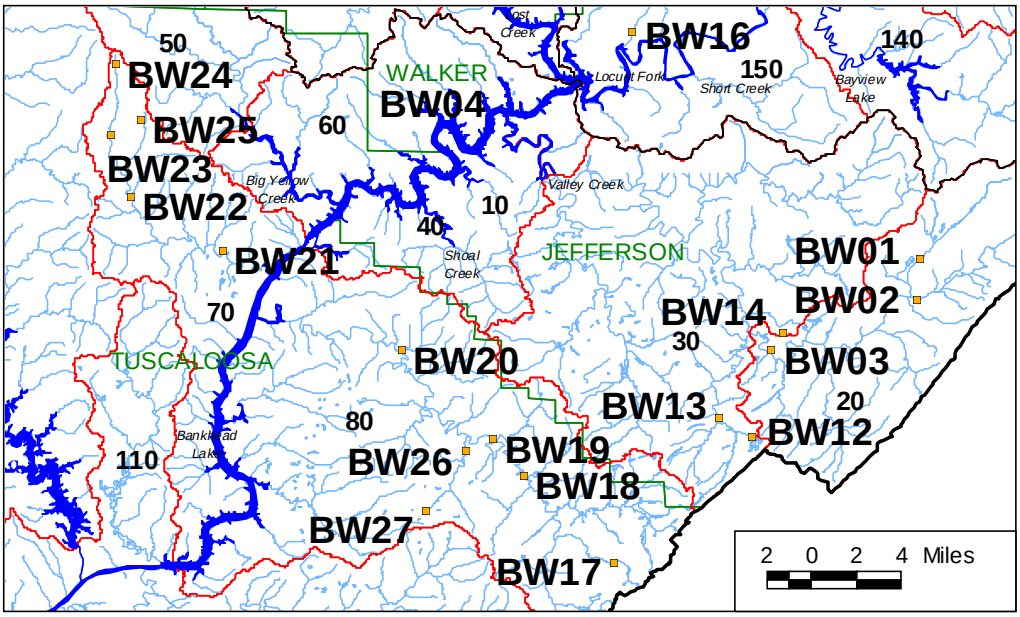


Figure BW-5

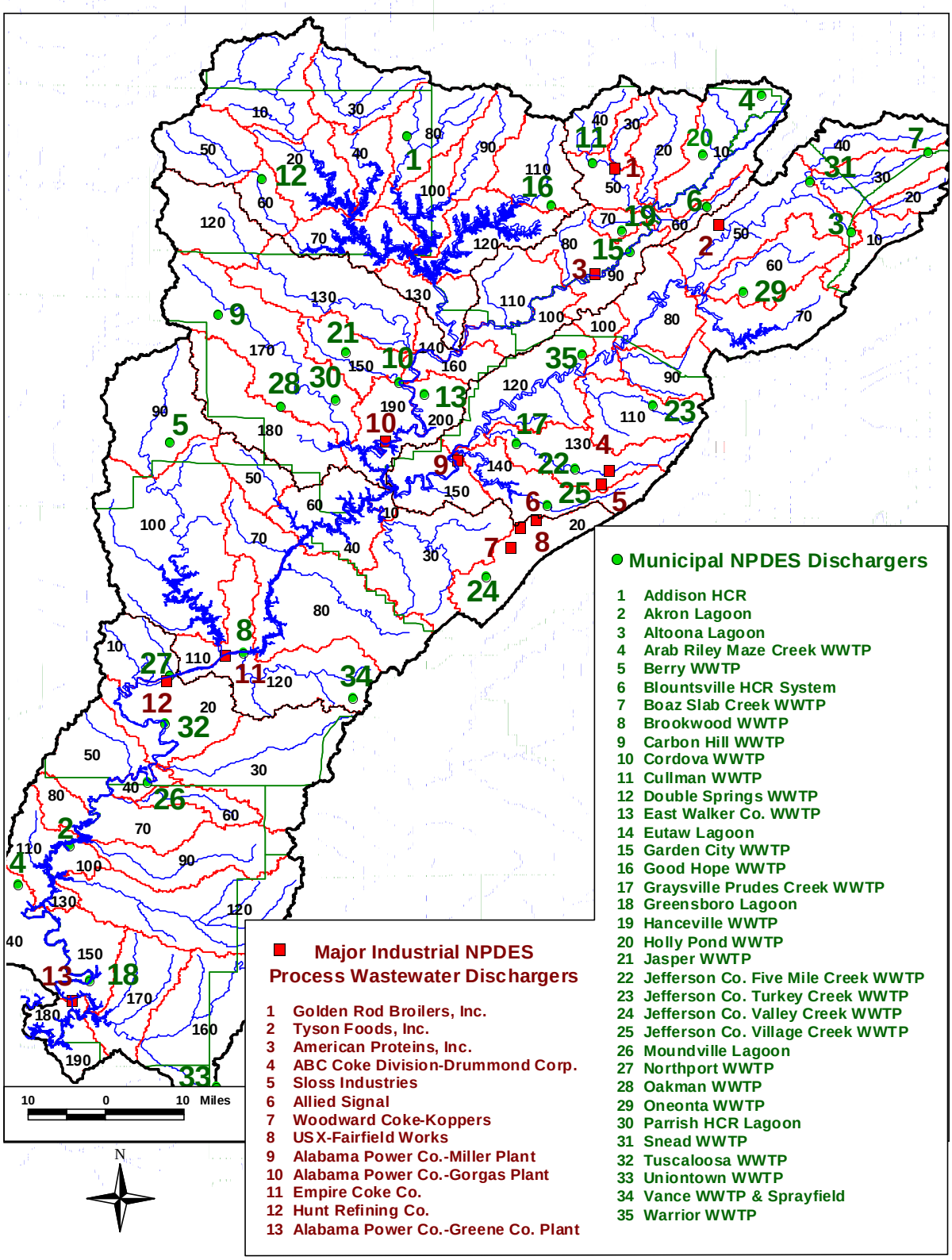
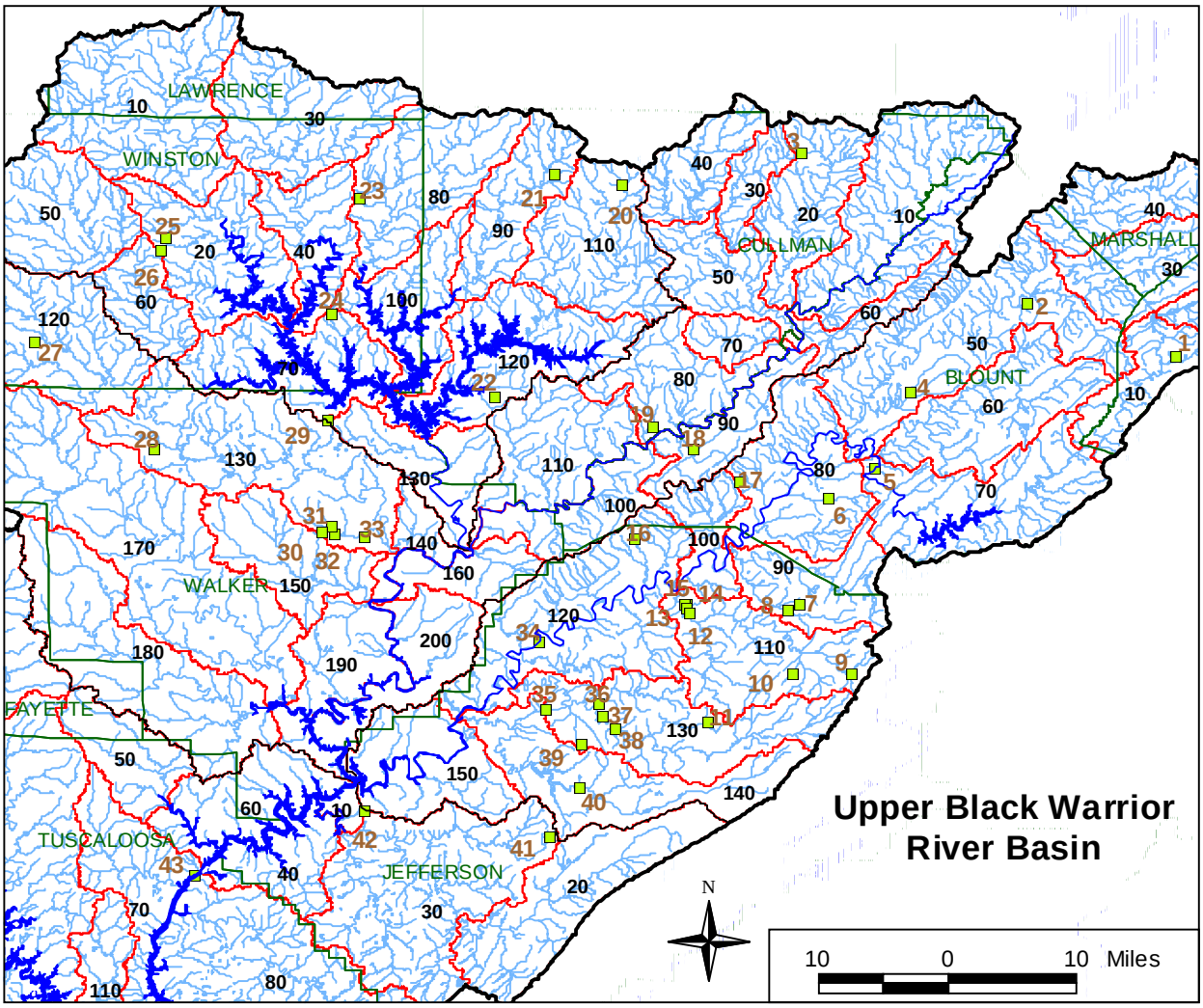

Municipal NPDES Dischargers
1 Addison HCR
2 Akron Lagoon
3 Altoona Lagoon
4 Arab Riley Maze Creek WWTP
5 Berry WWTP
6 Blountsville HCR System
7 Boaz Slab Creek WWTP
8 Brookwood WWTP
9 Carbon Hill WWTP
10 Cordova WWTP
11 Cullman WWTP
12 Double Springs WWTP
13 East Walker Co. WWTP
14 Eutaw Lagoon
15 Garden City WWTP
16 Good Hope WWTP
17 Graysville Prudes Creek WWTP
18 Greensboro Lagoon
19 Hanceville WWTP
20 Holly Pond WWTP
21 Jasper WWTP
22 Jefferson Co. Five Mile Creek WWTP
23 Jefferson Co. Turkey Creek WWTP
24 Jefferson Co. Valley Creek WWTP
25 Jefferson Co. Village Creek WWTP
26 Moundville Lagoon
27 Northport WWTP
28 Oakman WWTP
29 Oneonta WWTP
30 Parrish HCR Lagoon
31 Snead WWTP
32 Tuscaloosa WWTP
33 Uniontown WWTP
34 Vance WWTP & Sprayfield
35 Warrior WWTP
Major Industrial NPDES Process Wastewater Dischargers
1 Golden Rod Broilers, Inc.
2 Tyson Foods, Inc.
3 American Proteins, Inc.
4 ABC Coke Division-Drummond Corp.
5 Sloss Industries
6 Allied Signal
7 Woodward Coke-Koppers
8 USX-Fairfield Works
9 Alabama Power Co.-Miller Plant
10 Alabama Power Co.-Gorgas Plant
11 Empire Coke Co.
12 Hunt Refining Co.
13 Alabama Power Co.-Greene Co. Plant
10 0 10 Miles
N

Figure BW-6



Black Warrior River Basin Semi-Public/Private NPDES Dischargers

1 West End Elementary
2 Susan Moore High School
3 Fairview School
4 Cleveland School
5 Locust Fork High School
6 Honeycutt's Laundry
7 Dixie Manor Apartments
8 Johnson Elementary
9 Chaulkville Campus
10 Mimosa MHP
11 100 Oaks MHP
12 Willis Laundromat
13 River Bend Townhomes
14 Morris Manor Apartments
15 Morris MHP
16 Parkside Lodge
17 Hayden High School
18 Blount Springs Recolonization
19 Country Park Subdivision
20 Southern Pines WWTP
21 West Point School
22 Cold Springs School
23 Addison High School
24 Meek High School
25 Winston County High School
26 Double Springs Elementary
27 Lynn High School
28 Lupton Jr. High School
29 Curry Elementary
30 The Domaine
31 Timmons MHP
32 Shady Acres MHP
33 Valley Jr. High School
34 Sumiton Land Co.
35 Big Oak Coin Laundry
36 Brookside Village
37 Sharon Heights MHP
38 Forestdale MHP
39 Bottenfield Jr. High School
40 Minor Jr. High School
41 Pleasant Grove High School
42 West Jefferson Correctional Facility
43 Bankhead Lock & Dam
44 Northside High School
45 Myrtlewood Elementary
46 Holt Elementary
47 Brookwood High School
48 I-59 Rest Area
49 Brookwood Shell Truck Stop
50 Farquar Cattle Farm

Figure BW-7

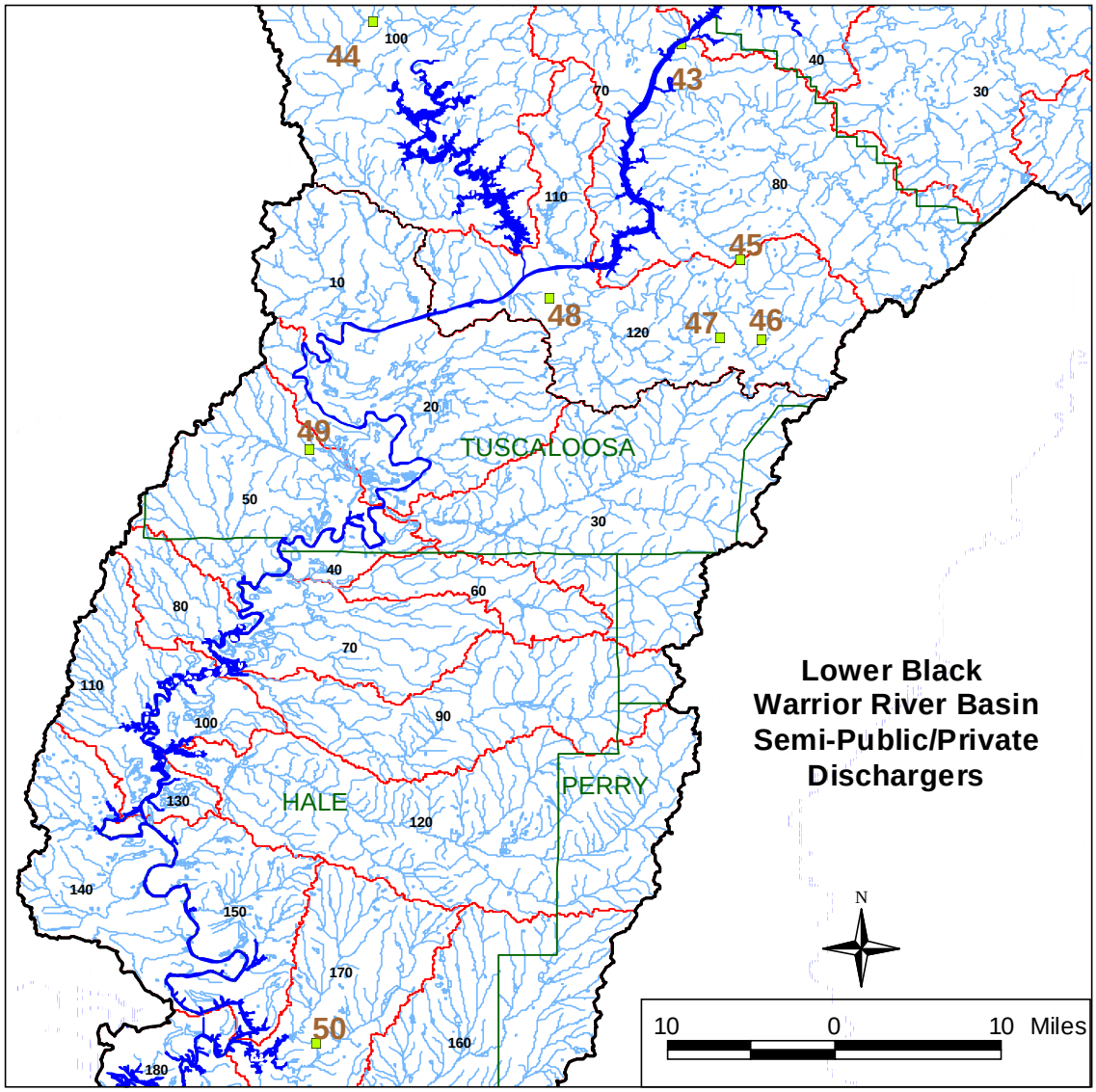

Lower Black
Warrior River Basin
Semi-Public/Private
Dischargers
TUSCALOOSA
HALE
PERRY
44
43
45
46
47
48
49
50
N
10
0
10
Miles

Figure BW-8

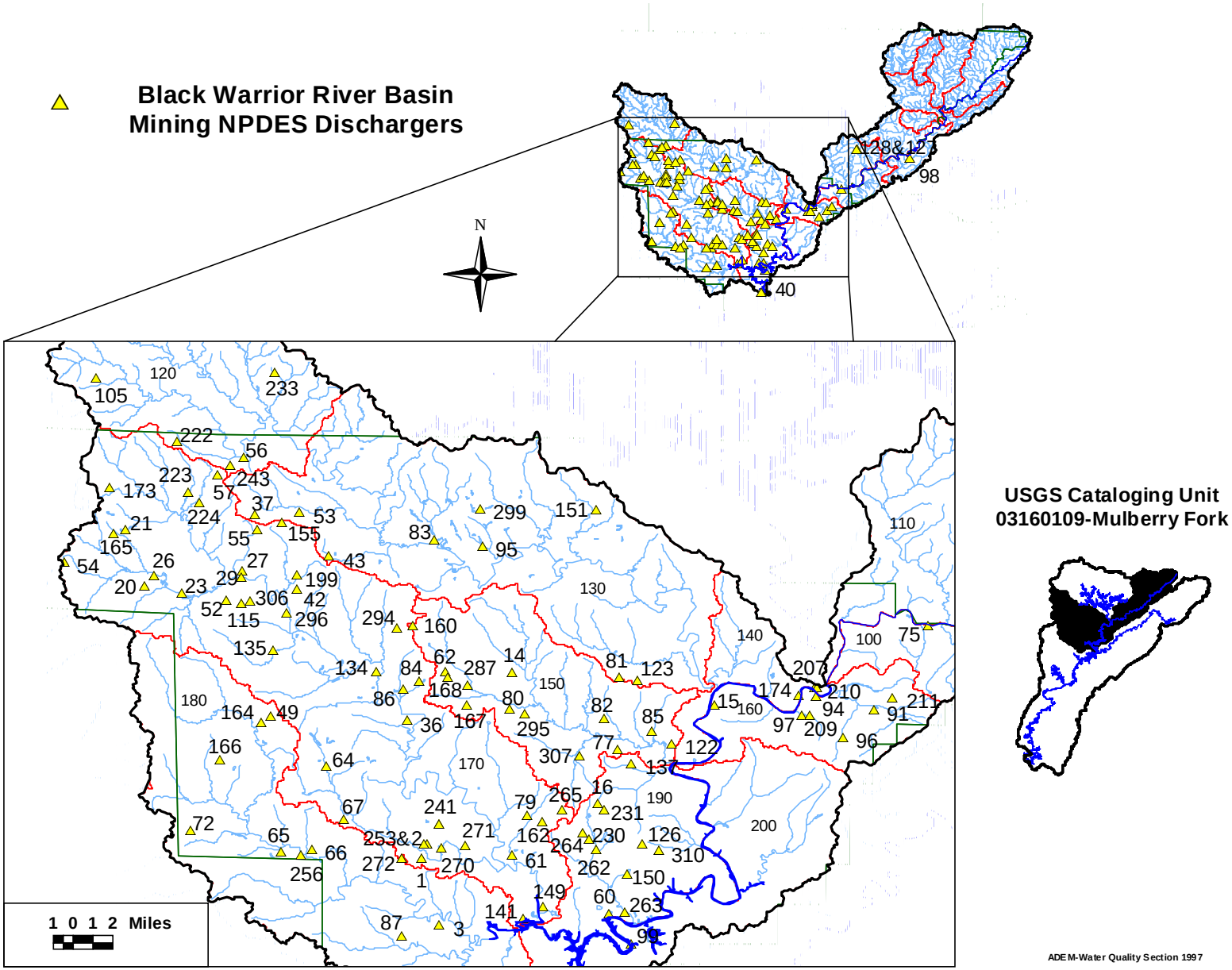

Black Warrior River Basin
Mining NPDES Dischargers
N
128&127
98
40
1 0 1 2 Miles
USGS Cataloging Unit
03160109-Mulberry Fork
ADEM-Water Quality Section 1997

Figure BW-9

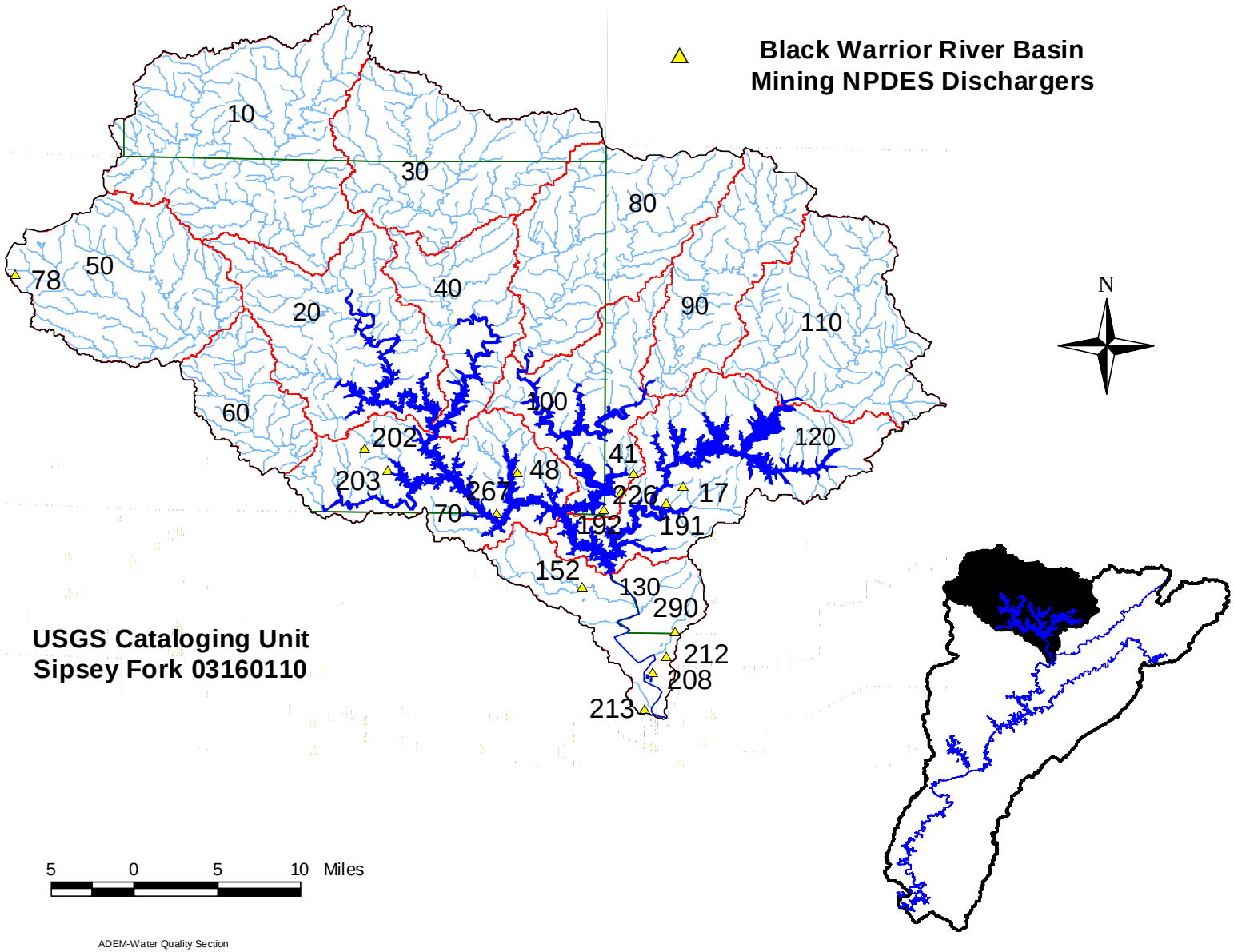

Black Warrior River Basin
Mining NPDES Dischargers
10
30
80
78
50
40
20
90
110
100
60
120
202
41
48
203
267
226
17
70
192
191
152
130
290
212
208
213
USGS Cataloging Unit
Sipsey Fork 03160110
N
5 0 5 10 Miles
ADEM-Water Quality Section

Figure BW-10

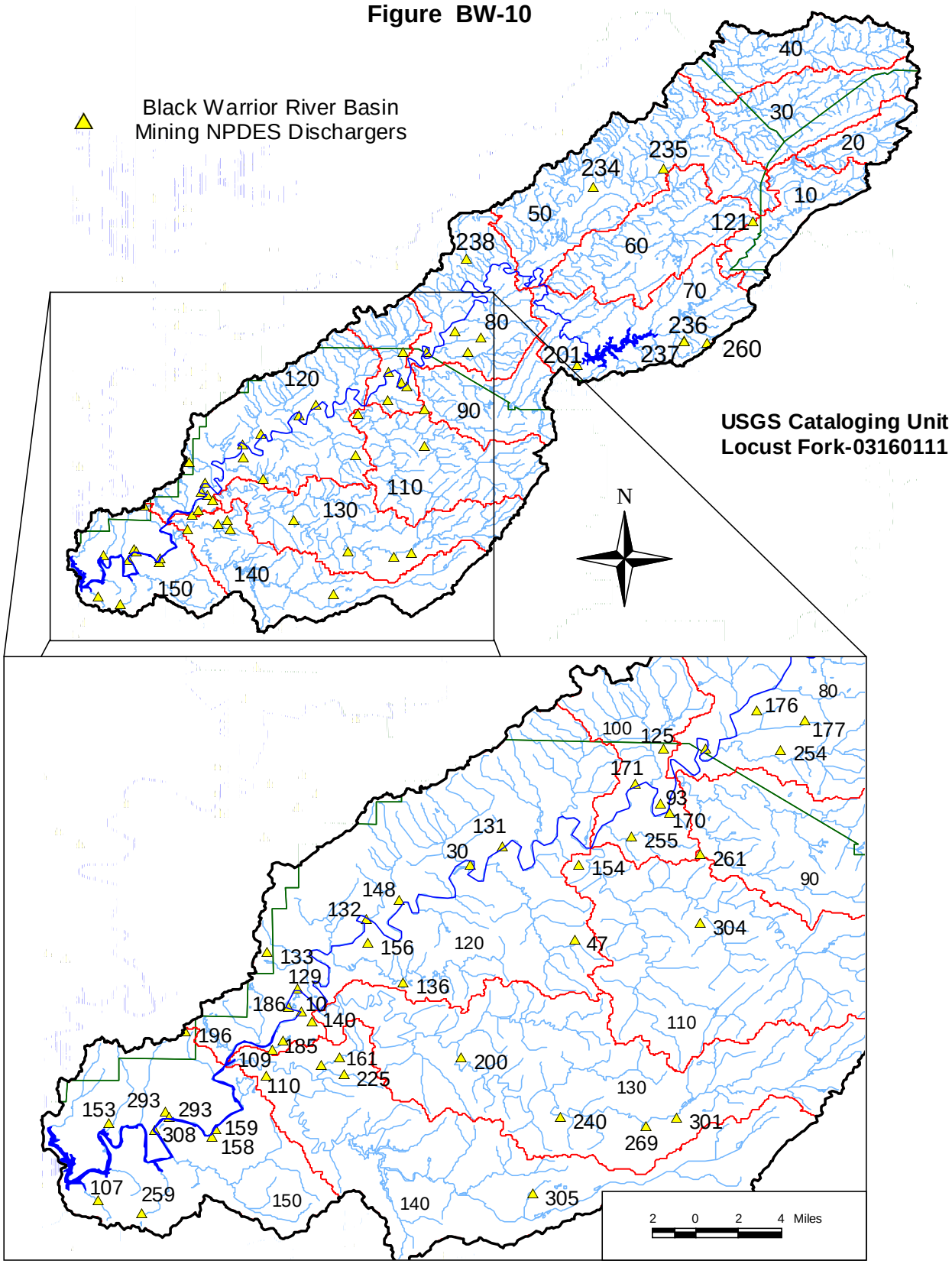

Black Warrior River Basin
Mining NPDES Dischargers
USGS Cataloging Unit
Locust Fork-03160111
N
2 0 2 4 Miles

Figure BW-11

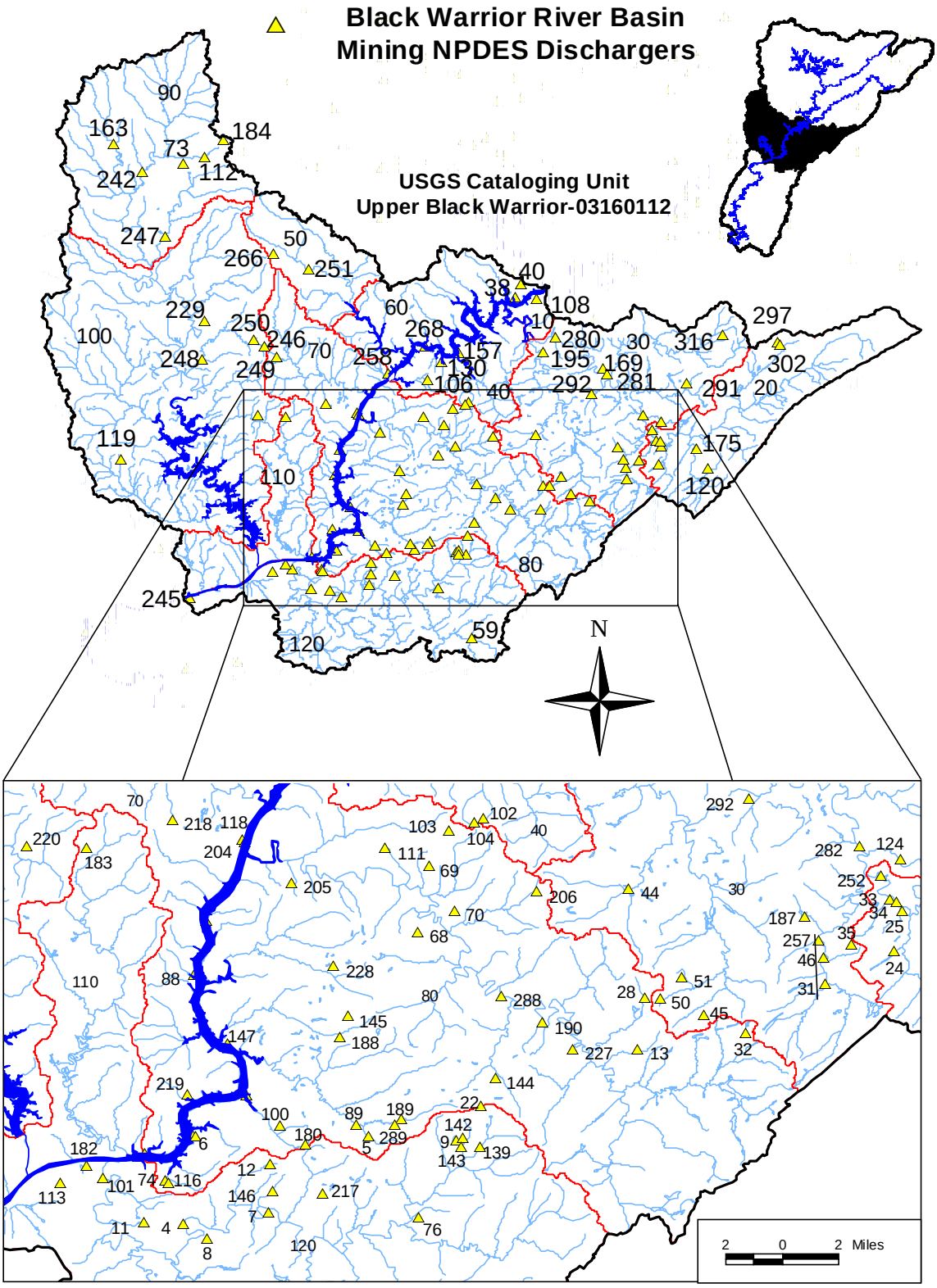
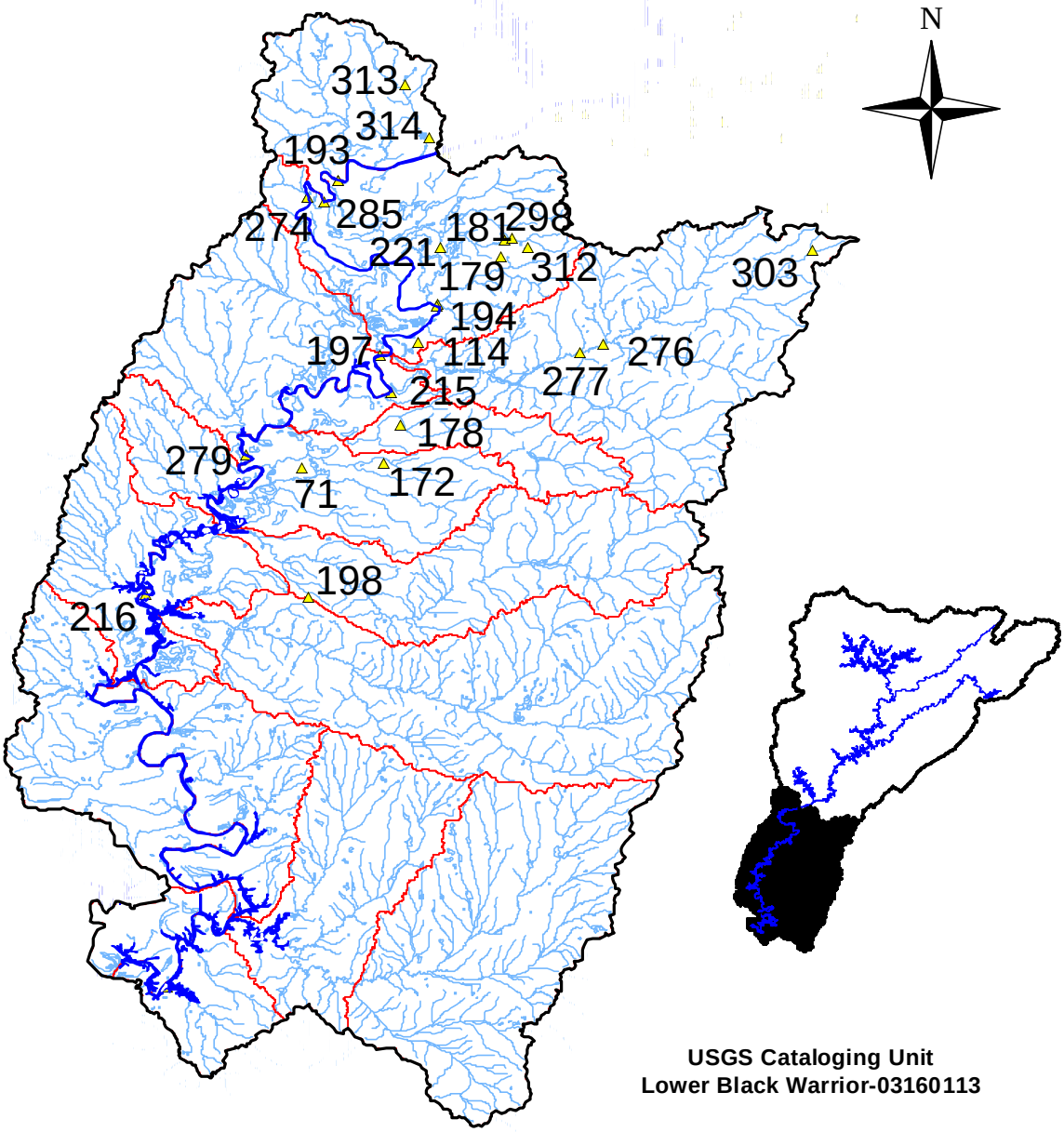
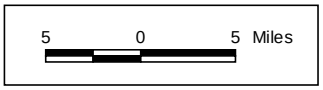

Black Warrior River Basin
Mining NPDES Dischargers
USGS Cataloging Unit
Upper Black Warrior-03160112
N
2 0 2 Miles

Figure BW-12





Black Warrior River Basin Mining NPDES Dischargers

ADEM-Water Quality Section 1998

Table BW-1
1996 Black Warrior River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
BW01	Opossum Creek	Center of bridge on Woodward Ave just past Koppers Coke.	33.444138	-86.963305
BW02	Valley Creek	Center of bridge on 18th Ave just west of US Pipe.	33.420027	-86.964833
BW03	Valley Creek	Co. Rd. 36 bridge.	33.387944	-87.05858
BW04	Black Warrior River	Franklin Ferry Bridge.	33.526667	-87.240278
BW05	Broglen River	Reference point on AL Hwy 91 bridge.	34.082778	-86.737500
BW06	Mud Creek	AL Hwy 31 at Hanceville, US of WWTP.	34.05333	-86.76833
BW07	Mud Creek	From AL Hwy 31 left onto 26th, then left before bridge.	34.05258	-86.72367
BW08	Locust Fork	AL Hwy 75 north of Snead.	34.13411	-86.38428
BW09	Locust Fork	Blount Co. Rd. 26 near Royal.	34.06772	-86.494
BW10	Bavar Creek	Co. Rd. 37 at Good Hope.	34.09306	-86.88244
BW11	Bavar Creek	1/4 mile from bridge on Ryan Cr (at mouth of Bavar Cr).	34.087777	-86.92306
BW12	Blue Creek	Rock Lakes (trib to Blue Cr).	33.33361	-87.0708
BW13	Blue Creek	Abandoned Co. Rd. near Black Diamond.	33.34583	-87.0928
BW14	Blue Creek	Valley Creek.	33.39889	-87.0511
BW15	Coal Creek	AL Hwy 269 (dirt access road at bottom of hollow to creek).	33.612475	-87.13851
BW16	Coal Creek	Small concrete bridge crossing creek on Co. Rd. 81 under water transmission lines.	33.586329	-87.1478
BW17	Davis Creek	Near Woodland Lake.	33.255277	-87.16083
BW18	Davis Creek	Near Davis Cr Church (Co. Rd. 99).	33.308888	-87.218611
BW19	Davis Creek	Near Liberty Church (dirt rd. parallel to Hogsick Cr).	33.331944	-87.238333
BW20	Davis Creek	Thompson's Mill (Co. Rd. 59).	33.388056	-87.29667
BW21	Blue Creek	Near Spencer Hill Church.	33.45	-87.4125
BW22	Blue Creek	Co. Rd. 38 near Windham Springs.	33.483889	-87.47139
BW23	Blue Creek	AL Hwy 69.	33.521667	-87.484722
BW24	Blue Creek	Near Sandtown Cemetary.	33.56694	-87.4811
BW25	McDuff Spring Branch to Blue Creek	Near Wiley.	33.532222	-87.46472
BW26	Hanna Mill Creek	East Brookwood.	33.324444	-87.25556
BW27	Hanna Mill Creek	Liberty Church.	33.2875	-87.28194
BW28	Wolf Creek	Evans Bridge on Co. Rd. 35	33.631635	-87.31638
BW29	Wolf Creek	AL Hwy 69 at Enon.	33.672394	-87.38782
BW30	Wolf Creek	AL Hwy 18 at Corona.	33.709449	-87.47758
BW31	Wolf Creek	AL Hwy 102 near Beech Grove.	33.789778	-87.5204
BW32	Wolf Creek	Co. Rd. 63 near Howard.	33.824746	-87.541264
BW33	Little Blackwater Creek	Co. Rd. 22 near US Hwy 78.	33.814694	-87.137544
BW34	Cow Branch of Little Blackwater Creek	Near Pleasant Hill Church T14S-R6W-S23.	33.867526	-87.11278
BW35	Mill Creek	Lewis Smith Dam Rd. T13S-R5W-S17.	33.915765	-87.09053
BW36	Mill Creek	Co. Rd. 51 north of Burrows Crossing T13S-R6W-S10.	33.923333	-87.16
BW37	Mill Creek	Near Curry School T12S-R6W-S32.	33.9525	-87.19611
BW38	Little Mill Creek	Near Valley Hill Church T13S-R6W-S3.	33.942131	-87.16028

Table BW-2
Black Warrior River Basin Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
BW01	Opossum Creek	Woodward Ave.	Valley Cr	E	Non	1.7
BW02	Valley Creek	18th Ave.	US Hwy 11	E	Full	2
BW03	Valley Creek	Co. Rd. 36	18th Ave	E	Full	10.2
BW04	Black Warrior River	Franklin Ferry Br. (Co. Rd. 21)	Locust Fk	E	Full	4.6
BW05	Broglen River	AL Hwy 91	To AL Feed Prod. discharge	E	Partial	8.2
BW06	Mud Creek	AL Hwy 31	Its source	E	Non	4.4
BW07	Mud Creek	1 mi US mouth	ALHwy 31	E	Partial	3.6
BW08	Locust Fork	AL Hwy 75	Bristow Cr	E	Full	11
BW09	Locust Fork	Co. Rd. 26	AL Hwy 75	E	Full	14.2
BW10	Bavar Creek	Co. Rd. 37	Its source	E	Full	4.1
BW11	Bavar Creek	Bavar Cr mouth	Co. Rd. 37	E	Full	2.9
BW12	Blue Creek	At Rock Lakes	1 mi. US	E	Non	1
BW13	Blue Creek	Abandoned Co. Rd.	Rock Lakes	E	Partial	1.8
BW14	Blue Creek	Valley Cr	BW13	E	Full	6.3
BW15	Coal Creek	AL Hwy 269	Its source	E	Full	1.9
BW16	Coal Creek	Co. Rd. 81	BW15	E	Non	2.2
BW17	Davis Creek	Co. Rd. to W.Blockton	Its source	E	Full	1.7
BW18	Davis Creek	Co. Rd. 99	BW17	E	Full	8.5
BW19	Davis Creek	Dirt rd. parallel to Hogsick Cr	BW18	E	Full	6.9
BW20	Davis Creek	Co. Rd. 59	BW19	E	Full	6.3
BW21	Blue Creek	Near Spencer Hill Church	BW22	E	Full	7.5
BW22	Blue Creek	Co. Rd. 38	BW23	E	Full	3.4
BW23	Blue Creek	AL Hwy 69	BW24	E	Full	3.5
BW24	Blue Creek	Near Sandtown Cemetary	Its source	E	Partial	0.5
BW25	McDuff Spring Branch to Blue Creek	Near Wiley	Blue Creek	E	Non	2.7
BW26	Hanna Mill Creek	BW26	BW27	E	Non	3.8
BW27	Hanna Mill Creek			E	Partial	0
BW28	Wolf Creek	Co. Rd. 35	BW29	E	Full	9.3
BW29	Wolf Creek	AL Hwy 69	BW30	E	Full	9.9
BW30	Wolf Creek	AL Hwy 18	BW31	E	Full	12.8
BW31	Wolf Creek	AL Hwy 102	BW32	E	Partial	3.2
BW32	Wolf Creek	Co. Rd. 63	Its source	E	Partial	1.9
BW33	Little Blackwater Creek	Blackwater Cr	Cow Br	E	Non	5.4
BW34	Cow Branch of Little Blackwater Creek	BW34	Its source	E	Non	0.3
BW35	Mill Creek	Smith Dam Rd.	BW36	E	Full	5.8
BW36	Mill Creek	Co. Rd. 51	BW37	E	Full	4
BW37	Mill Creek	Near Curry School	Its source	E	Non	2
BW38	Little Mill Creek	Near Valley Hill Church	Its source	E	Full	2.8

Table BW-3
Black Warrior River Basin Industrial Process NPDES Dischargers

Index	NPDES Permit No.	Facility	Latitude	Longitude
1	AL0060470	GOLDEN ROD BROILERS INC.	34.153889	-86.771944
2	AL0024856	TYSON FOODS BLOUNTSVILLE	34.049178	-86.576879
3	AL0056634	AMERICAN PROTEINS INC.	33.95831	-86.80856
4	AL003417	ABC COKE DIV. DRUMMOND	33.588611	-86.781389
5	AL0066770	SLOSS INDUSTRIES	33.56484	-86.797
6	AL0002097	ALLIED SIGNAL	33.49762	-86.91777
7	AL0000680	WOODWARD COKE-KOPPERS	33.44609	-86.96408
8	AL0065773	USX-FAIRFIELD WORKS	33.48233	-86.94655
9	AL0027146	APCO MILLER PLT	33.609755	-87.064191
10	AL0002909	APCO GORGAS PLT	33.643333	-87.197778
11	AL0001767	EMPIRE COKE COMPANY	33.24335	-87.49625
12	AL0000973	HUNT REFINING COMPANY	33.19696	-87.60613
13	AL0002917	APCO GREENE CO PLT	32.600556	-87.780556

Table BW-4
Black Warrior River Basin Mining NPDES Dischargers

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
1	AL0042129	A.J. Taft Coal Company Inc.	Dixie Springs Mine	33.689722	-87.351389	03160109 - 170
2	AL0056758	A.J. Taft Coal Company Inc.	Dixie Springs Washer	33.699444	-87.348056	03160109 - 170
3	AL0041556	A.J. Taft Coal Company Inc.	Liberty Hill Mine	33.641389	-87.338611	03160109 - 170
4	AL0054739	Abston Construction Co. Inc.	Alston Mine	33.220556	-87.423056	03160112 - 080
5	AL0055735	Abston Construction Co. Inc.	Averytown Pit	33.265278	-87.328333	03160112 - 080
6	AL0041513	Abston Construction Co. Inc.	Barge Loading Facility	33.266944	-87.418611	03160112 - 080
7	AL0028002	Abston Construction Co. Inc.	Creek Pit	33.226667	-87.378889	03160112 - 080
8	AL0056472	Abston Construction Co. Inc.	Creek Pit #4	33.212778	-87.410278	03160112 - 080
9	AL0053791	Abston Construction Co. Inc.	East Brookwood Pit	33.263056	-87.283056	03160112 - 080
10	AL0060011	Abston Construction Co. Inc.	Mine #6	33.659444	-87.020833	03160111 - 120
11	AL0045730	Abston Construction Co. Inc.	Peterson Pit #1	33.220833	-87.443333	03160112 - 080
12	AL0051250	Abston Construction Co. Inc.	Rail Loading Facility	33.250833	-87.378333	03160112 - 080
13	AL0055298	Alabama Land and Mineral Corp.	Abernant Mine	33.310278	-87.189444	03160112 - 080
14	AL0048208	Alabama Land and Mineral Corp.	Addison Rail Siding	33.823889	-87.286111	03160109 - 150
15	AL0031771	Alabama Land and Mineral Corp.	Barge Loading Facility	33.800556	-87.139444	03160109 - 160
16	AL0041343	Alabama Land and Mineral Corp.	Big Ridge Mine	33.729167	-87.223611	03160109 - 190
17	AL0049417	Alabama Land and Mineral Corp.	Brushy Pond Mine	34.0175	-87.044444	03160110 - 120
18	AL0031461	Alabama Land and Mineral Corp.	Cold Springs Mine	33.976389	-87.016667	03160110 - 120
19	AL0049247	Alabama Land and Mineral Corp.	Cold Springs Mine #2	33.813611	-87.041667	03160110 - 120
20	AL0062782	Alabama Land and Mineral Corp.	Crescent Valley Mine	33.886667	-87.552778	03160109 - 170
21	AL0026646	Alabama Land and Mineral Corp.	Dogtown Mine	33.9275	-87.566111	03160109 - 170
22	AL0055751	Alabama Land and Mineral Corp.	East Brookwood Loading Facility	33.280833	-87.270278	03160112 - 080
23	AL0054224	Alabama Land and Mineral Corp.	Files Bottom Mine	33.881667	-87.526389	03160109 - 170
24	AL0049492	Alabama Land and Mineral Corp.	Getmore #2 Mine	33.360278	-87.058333	03160112 - 020
25	AL0046876	Alabama Land and Mineral Corp.	Getmore Mine	33.381111	-87.054444	03160112 - 020
26	AL0025003	Alabama Land and Mineral Corp.	Hope-Galloway Mine	33.893889	-87.546111	03160109 - 170
27	AL0027804	Alabama Land and Mineral Corp.	Leonard Chapel Mine	33.898056	-87.481667	03160109 - 170
28	AL0058033	Alabama Land and Mineral Corp.	Liberty Mine	33.336667	-87.186389	03160112 - 080
29	AL0059129	Alabama Land and Mineral Corp.	Lost Creek Mine	33.892778	-87.482778	03160109 - 170
30	AL0054186	Alabama Land and Mineral Corp.	Merritt Rogers Mine	33.758056	-86.906389	03160111 - 120
31	AL0041882	Alabama Land and Mineral Corp.	Oswayo #2	33.343333	-87.093333	03160112 - 030

Table BW-4 cont.

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
32	AL0052558	Alabama Land and Mineral Corp.	Oswayo #4 - Area 6 Mine	33.318611	-87.134444	03160112 - 030
33	AL0055905	Alabama Land and Mineral Corp.	Oswayo #7 Mine	33.386944	-87.060278	03160112 - 020
34	AL0060186	Alabama Land and Mineral Corp.	Oswayo #8	33.385556	-87.056944	03160112 - 020
35	AL0060607	Alabama Land and Mineral Corp.	Oswayo #9 Mine	33.363889	-87.08	03160112 - 020
36	AL0051951	Alabama Land and Mineral Corp.	Pleasant Grove Mine	33.789444	-87.362778	03160109 - 170
37	AL0027812	Alabama Land and Mineral Corp.	Prospect Mine	33.938056	-87.472778	03160109 - 170
38	AL0042544	Alabama Land and Mineral Corp.	Riverside Mine #1	33.546389	-87.2175	03160112 - 060
39	AL0049018	Alabama Land and Mineral Corp.	Riverside Mine #2	33.573333	-87.216389	03160112 - 060
40	AL0054194	Alabama Land and Mineral Corp.	Riverside Mine #3	33.56	-87.210556	03160109 - 190
41	AL0049212	Alabama Land and Mineral Corp.	Ryan Creek Mine	34.028889	-87.087222	03160110 - 120
42	AL0024996	Alabama Land and Mineral Corp.	Saragossa Mine	33.884444	-87.442778	03160109 - 170
43	AL0054976	Alabama Land and Mineral Corp.	Saragossa Rail Siding	33.908333	-87.418611	03160109 - 130
44	AL0030406	Alabama Land and Mineral Corp.	Sealy Ann Mountain Mine #2	33.392778	-87.194444	03160112 - 030
45	AL0029432	Alabama Land and Mineral Corp.	Shannon Mine and Preparation Plant	33.327778	-87.155833	03160112 - 030
46	AL0002518	Alabama Land and Mineral Corp.	Taylor Ramp Road	33.357222	-87.094444	03160112 - 030
47	AL0045047	Alabama Land and Mineral Corp.	West Sayre Mine #6 & #8	33.708056	-86.836389	03160111 - 120
48	AL0029751	Alabama Land and Mineral Corp.	Wilson Bend Mine	34.030556	-87.1875	03160110 - 070
49	AL0047872	Alabama Land and Mineral Corp.	Wolf Mountain Mine	33.7925	-87.461389	03160109 - 170
50	AL0048038	Alabama Land and Mineral Corp.	Yolande Mine #2	33.336111	-87.178333	03160112 - 030
51	AL0046329	Alabama Land and Mineral Corp.	Yolande SW Mine #1	33.347222	-87.166944	03160112 - 030
52	AL0051071	Alabama Land and Mineral Corp.	Mine No.1	33.875833	-87.493611	03160109 - 170
53	AL0060437	Alabama Land and Mineral Corp.	Mine No.5	33.940278	-87.440278	03160109 - 130
54	AL0061379	Alabama Land and Mineral Corp.	Mine #6	33.904167	-87.611944	03160109 - 170
55	AL0062880	Alabama Land and Mineral Corp.	Mine #7	33.927222	-87.471389	03160109 - 170
56	AL0062774	Alabama Land and Mineral Corp.	Mine #8	33.979722	-87.481111	03160109 - 130
57	AL0062553	Alabama Land and Mineral Corp.	Mine #9	33.967222	-87.500278	03160109 - 170
58	AL0070424	Alabama Land and Mineral Corporation	Wilburn Site	33.820278	-87.019722	03160110 - 120
59	AL0067245	Alabama Pigments Company	Alabama Hematite Mine	33.166667	-87.265278	03160112 - 120
60	AL0025551	Alabama Power Company	Gorgas Barge Loading Facility #2	33.649722	-87.216111	03160109 - 190
61	AL0003131	Alabama Power Company	Segco Transloader #1	33.691389	-87.286111	03160109 - 170
62	AL0056235	American Olean Tile Company Inc.	Tubbs Hill Mine	33.824444	-87.334722	03160109 - 190

Table BW-4 cont.

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
63	AL0057037	Amoco Production Company	Oak Grove Field	33.376389	-87.411111	03160112 - 010
64	AL0022276	Apogee Coal Company Inc.	Corona Mine	33.756944	-87.420556	03160109 - 170
65	AL0042293	Apogee Coal Company Inc.	Gibson Hill Mine	33.694167	-87.454167	03160109 - 170
66	AL0052761	Apogee Coal Company Inc.	Gibson Hill Mine #2	33.696667	-87.431667	03160109 - 170
67	AL0043079	Apogee Coal Company Inc.	Propst Mountain Mine	33.7175	-87.408333	03160109 - 170
68	AL0061506	ATS Inc.	Antioch Mine	33.370278	-87.302778	03160112 - 080
69	AL0057258	ATS Inc.	Davis Creek Mine	33.404444	-87.296944	03160112 - 080
70	AL0060330	ATS Inc.	Rockhouse Mine	33.381111	-87.283889	03160112 - 080
71	AL0070301	B & R Materials and Services	B & R Pit	32.370833	-86.023333	03150110 - 140
72	AL0061328	Bama Concrete Products Company Inc.	Davis Sand & Gravel/Cypress Pit	32.952778	-87.697222	03160113 - 070
73	AL0066338	Bar Coal Inc.	Frost Creek Mine	33.709444	-87.52	03160109 - 180
74	AL0064297	Bar Coal Inc.	Knight Mine	33.695	-87.585833	03160112 - 090
75	AL0066559	Bar Coal Inc.	Peterson Mine	33.243056	-87.431944	03160112 - 080
76	AL0054607	Baron Coal Company Inc.	McCarne Mountain Mine	33.857778	-86.983611	03160109 - 100
77	AL0045403	Basin Coal Company Inc.	Hurricane Creek Mine	33.223333	-87.301944	03160112 - 080
78	AL0048348	Beaird Mining & Minerals Co. Inc.	Cane Creek Mine	33.768611	-87.209444	03160109 - 150
79	AL0049981	Birmingham Coal & Coke Co. Inc.	Beech Grove Mine	34.202222	-87.623611	03160110 - 050
80	AL0042986	Birmingham Coal & Coke Co. Inc.	Bryant's Creek Mine	33.720556	-87.275	03160109 - 170
81	AL0068357	Birmingham Coal & Coke Co. Inc.	Calumet Mine	33.798056	-87.287778	03160109 - 150
82	AL0060674	Birmingham Coal & Coke Co. Inc.	Chapel Hill Mine	33.820556	-87.208333	03160109 - 150
83	AL0046892	Birmingham Coal & Coke Co. Inc.	Cordova Mine	33.790556	-87.219444	03160109 - 150
84	AL0069698	Birmingham Coal & Coke Co. Inc.	Elk River Mine	33.92	-87.342778	03160109 - 130
85	AL0063525	Birmingham Coal & Coke Co. Inc.	Grace Chapel Mine	33.818056	-87.353056	03160109 - 170
86	AL0066966	Birmingham Coal & Coke Co. Inc.	Mary Lee Mine	33.781667	-87.184722	03160109 - 150
87	AL0049972	Birmingham Coal & Coke Co. Inc.	McCollum Mine	33.8125	-87.364722	03160109 - 150
88	AL0061719	Birmingham Coal & Coke Co. Inc.	Miner Hollow Mine	33.633611	-87.366389	03160109 - 170
89	AL0070483	Black Creek Land & Mineral Inc.	Yacht Club Mine	33.348611	-87.417222	03160112 - 070
90	AL0054062	Black Warrior Methane Corp.	Brookwood Coal Degas Field	33.271389	-87.333889	03160112 - 080
91	AL3963005	Black Warrior Methane Corp. - SID #IU396300526	Brookwood Coal Degas Field	33.286111	-87.390556	03160112 - 080
92	AL0056464	Black Warrior Minerals Inc.	Briceton Mine	33.797222	-87.023611	03160109 - 160
93	AL0068179	Black Warrior Minerals Inc.	D & W Mine #1	33.918333	-86.998889	03160111 - 110

Table BW-4 cont.

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
94	AL0056588	Black Warrior Minerals Inc.	Locust Fork Mine	33.799444	-86.778333	03160111 - 080
95	AL0069655	Black Warrior Minerals Inc.	Magbee Bend Mine	33.806667	-87.065278	03160109 - 160
96	AL0025399	Black Warrior Minerals Inc.	Manchester Mine	33.915556	-87.3075	03160109 - 130
97	AL0060992	Black Warrior Minerals Inc.	Pinhook Mine	33.777222	-87.045833	03160109 - 160
98	AL0063983	Black Warrior Minerals Inc.	T & L Mine	33.793611	-87.075833	03160109 - 140
99	AL0064483	Blount Springs Sand & Gravel Inc.	Duffy Quarry	33.944444	-86.7875	03160109 - 090
100	AL0062081	Bookout Construction Corporation	Joshua Mine	33.628056	-87.2	03160109 - 190
101	AL0064301	Brookwood Sand & Gravel Inc.	Howton Pit	33.270833	-87.373333	03160112 - 080
102	AL0063533	Buddy Jones Excavating Co. Inc. Carl Price dba	Pit No. 1	33.244167	-87.464444	03160112 - 120
103	AL0051942	C & H Mining Company Inc.	Bull City Mine	33.428889	-87.268611	03160112 - 040
104	AL0054160	C & H Mining Company Inc.	Bull City Mine No.2	33.4225	-87.286667	03160112 - 080
105	AL0054755	C & H Mining Company Inc.	Bull City Mine No.3	33.426944	-87.273611	03160112 - 080
106	AL0064696	C & H Mining Company Inc.	Crossroad Mine	34.0375	-87.588333	03160109 - 120
107	AL0055956	C & H Mining Company Inc.	Davis Creek Mine #2	33.454444	-87.314722	03160112 - 080
108	AL0042811	C & H Mining Company Inc.	Gilmore Mine	33.531667	-87.1575	03160111 - 150
109	AL0069370	C & H Mining Company Inc.	Gilmore Mine #2	33.543889	-87.193889	03160111 - 150
110	AL0043958	C & H Mining Company Inc.	Lindbergh Mine	33.633611	-87.040278	03160111 - 120
111	AL0070211	C & H Mining Company Inc.	Lindbergh Mine #2	33.615833	-87.045	03160111 - 140
112	AL0061051	C & H Mining Company Inc.	Poplar Springs Mine	33.413611	-87.319167	03160112 - 080
113	AL0062201	C & H Mining Company Inc.	Star Branch Mine	33.702778	-87.561944	03160112 - 090
114	AL0067415	C.H. and W. Excavating Carl H. Walker dba	Clark Pit	33.241389	-87.486389	03160112 - 120
115	AL0069809	C.H. and W. Excavating Co. Carl H. Walker dba	Hulls Pit	33.055278	-87.601667	03160113 - 020
116	AL0063592	Carbon Hill Coal Company of Alabama Inc.	Pocahontas Mine	33.874444	-87.483056	03160109 - 170
117	AL0069507	Cartee Michael	Pit One	33.241667	-87.430556	03160112 - 080
118	AL0069515	Cartee Michael	River Ramp Mine	33.265	-87.416667	03160112 - 080
119	AL0060267	Chevron USA Production Company	Blue Creek Field	33.418056	-87.3925	03160112 - 070
120	AL0061361	Columbus Brick Company Inc.	Bankston Mine	33.366361	-87.655	03160112 - 090
121	AL0022187	Commercial Land Company Inc.	Mulga Mine	33.356056	-87.003333	03160111 - 140
122	AL0065722	Contract Augering Services Inc.	Altoona Mine	33.999444	-86.340556	03160111 - 010
123	AL0047198	Cordova Clay Company Inc.	Riceton Hill Mine	33.772778	-87.17	03160109 - 150
124	AL0067121	Cordova Clay Company Inc.	Union Chapel Mine	33.818889	-87.195278	03160109 - 190

Table BW-4 cont.

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
125	AL0068276	Crimson Stone Inc.	Crimson Stone Pit	33.407778	-87.054722	03160112 - 030
126	AL0068144	Cupp's Trucking Company	Dad's Hill Clay Mine	33.836667	-86.776389	03160111 - 100
127	AL0054721	Drummond Company Inc.	America Highwall Mine	33.7	-87.191667	03160109 - 190
128	AL0022837	Drummond Company Inc.	Arkadelphia 5761 Mine	33.968056	-86.9375	03160109 - 110
129	AL0022888	Drummond Company Inc.	Arkadelphia Preparation Plant	33.969722	-86.938611	03160109 - 110
130	AL0023931	Drummond Company Inc.	Bagley Bend Mine	33.674444	-87.023333	03160111 - 120
131	AL0041351	Drummond Company Inc.	Barge Loading Facility	33.473333	-87.3	03160112 - 040
132	AL0022900	Drummond Company Inc.	Beltona Mine	33.771111	-86.885	03160111 - 120
133	AL0059145	Drummond Company Inc.	Black Creek Mine #2	33.722222	-86.976944	03160111 - 120
134	AL0043940	Drummond Company Inc.	Bryan Loading Facility	33.699444	-87.043333	03160111 - 120
135	AL0024805	Drummond Company Inc.	Cedrum 2570 Mine	33.825	-87.385278	03160109 - 170
136	AL0026981	Drummond Company Inc.	Cedrum 8750 Mine	33.839722	-87.459444	03160109 - 170
137	AL0003379	Drummond Company Inc.	Chetopa Mine	33.679167	-86.951667	03160111 - 130
138	AL0048267	Drummond Company Inc.	Cordova Loading Facility	33.758333	-87.199444	03160109 - 190
139	AL0050474	Drummond Company Inc.	Dorsey Creek Mine	33.92	-87.014722	03160110 - 110
140	AL0041688	Drummond Company Inc.	East Brookwood Mine	33.259444	-87.270833	03160112 - 120
141	AL0022845	Drummond Company Inc.	Flat Top Mine	33.652222	-87.013056	03160111 - 120
142	AL0003794	Drummond Company Inc.	Gorgas Preparation Plant	33.645556	-87.277778	03160109 - 170
143	AL0061832	Drummond Company Inc.	Kellerman #2 Mine	33.264722	-87.279722	03160112 - 120
144	AL0069833	Drummond Company Inc.	Kellerman #2 Remining Site	33.259444	-87.280556	03160112 - 120
145	AL0057461	Drummond Company Inc.	Kellerman 1570 #2 Mine	33.295278	-87.262778	03160112 - 080
146	AL0022870	Drummond Company Inc.	Kellerman Mines	33.326944	-87.338333	03160112 - 080
147	AL0067059	Drummond Company Inc.	Kellerman No. 2 Mine-Peterson	33.237222	-87.377222	03160112 - 120
148	AL0022861	Drummond Company Inc.	Kellerman Preparation Plant	33.312778	-87.400556	03160112 - 080
149	AL0024287	Drummond Company Inc.	Knob Mine	33.734444	-86.954444	03160111 - 120
150	AL0003387	Drummond Company Inc.	Mary Lee #1 Mine	33.655	-87.263889	03160109 - 170
151	AL0026531	Drummond Company Inc.	Mary Lee #2 Mine	33.678333	-87.201944	03160109 - 190

Table BW-5
Black Warrior River Basin Municipal Dischargers

Index	NPDES Permit No.	Facility	Latitude	Longitude
1	AL0064751	Addison HCR Lagoon	34.214722	-87.154722
2	AL0059714	Akron Lagoon	32.893056	-87.784444
3	AL0021237	Altoona Lagoon	34.036111	-86.327778
4	AL0020303	Arab Riley Maze Creek WWTP	34.291667	-86.495278
5	AL0023922	Berry WWTP	33.645	-87.598333
6	AL0053643	Blountsville HCR System	34.082778	-86.597778
7	AL0049603	Boaz Slab Creek WWTP	34.185833	-86.184722
8	AL0069965	Brookwood WWTP	33.253056	-87.460833
9	AL0024341	Carbon Hill STP	33.8825	-87.508611
10	AL0020427	Cordova WWTP	33.755556	-87.171944
11	AL0050423	Cullman WWTP	34.165278	-86.811389
12	AL0065480	Double Springs WWTP	34.135	-87.425833
13	AL0055409	East Walker County WWTP	33.734444	-87.123611
14	AL0044067	Eutaw Lagoon	32.820278	-87.880833
15	AL0061280	Garden City WWTP	34.000556	-86.74
16	AL0058343	Good Hope WWTP	34.086111	-86.888889
17	AL0056120	Graysville Prudes Creek WWTP	33.641667	-86.952222
18	AL0057193	Greensboro Lagoon	32.641944	-87.746667
19	AL0057029	Hanceville WWTP	34.038333	-86.756667
20	AL0050768	Holly Pond WWTP	34.18	-86.604167
21	AL0023418	Jasper WWTP	33.8125	-87.269444
22	AL0026913	Jefferson Co Five Mile Creek WWTP	33.594444	-86.842222
23	AL0022926	Jefferson Co Turkey Creek WWTP	33.714167	-86.698889
24	AL0023655	Jefferson Co Valley Creek WWTP	33.392778	-87.008333
25	AL0023647	Jefferson Co Village Creek WWTP	33.528333	-86.895
26	AL0058122	Moundville Lagoon	33.010833	-87.639167
27	AL0064394	Northport WWTP	33.209167	-87.598889
28	AL0025348	Oakman WWTP	33.7125	-87.391667
29	AL0049549	Oneonta WWTP	33.925278	-86.529444
30	AL0061158	Parrish HCR Lagoon	33.722778	-87.288889
31	AL0058572	Snead WWTP	34.130833	-86.406111
32	AL0022713	Tuscaloosa WWTP	33.120556	-87.607222
33	AL0063657	Uniontown WWTP	32.383333	-87.508333
34	AL0070254	Vance WWTP & Sprayfield	33.166667	-87.258056
35	AL0050881	Warrior WWTP	33.807222	-86.830556

Table BW-6
Black Warrior River Basin Semi-Public/Private NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	WEST END ELEMENTARY	AL0060089	34.028994	-86.265994
2	SUSAN MOORE HIGH SCHOOL	AL0050563	34.088631	-86.434894
3	FAIRVIEW SCHOOL	AL0051098	34.258056	-86.686667
4	CLEVELAND SCHOOL	AL0047171	33.990833	-86.565833
5	LOCUST FORK HIGH SCHOOL	AL0054348	33.904167	-86.604722
6	HONEYCUTT'S LAUNDRY	AL0059901	33.871389	-86.657222
7	DIXIE MANOR HOUSING PROJECT	AL0032301	33.751389	-86.688889
8	JOHNSON ELEMENTARY SCHOOL	AL0051195	33.744444	-86.701667
9	CHALKVILLE CAMPUS	AL0057967	33.674444	-86.630278
10	MIMOSA MOBILE HOME PARK	AL0059919	33.674167	-86.697222
11	100 OAKS MOBILE HOME PARK	AL0056138	33.619722	-86.7925
12	WILLIS LAUNDROMAT	AL0056693	33.740833	-86.811944
13	RIVER BEND APARTMENTS	AL0027570	33.614808	-86.194808
14	MORRIS MANOR APARTMENTS	AL0053121	33.750556	-86.816667
15	MORRIS MOBILE HOME COURT	AL0056553	33.751667	-86.817222
16	PARKSIDE LODGE	AL0047546	33.824722	-86.873611
17	HAYDEN HIGH SCHOOL	AL0050555	33.888525	-86.756108
18	BLOUNT SPRINGS RECOLONIZATION	AL0060372	33.925278	-86.807222
19	COUNTRY PARK SUBDIVISION	AL0060976	33.950447	-86.853817
20	SOUTHERN PINES WWTP	AL0047767	34.222436	-86.887172
21	WEST POINT SCHOOL	AL0051136	34.234167	-86.963056
22	COLD SPRINGS SCHOOL	AL0051080	33.984444	-87.031111
23	ADDISON HIGH SCHOOL	AL0051811	34.205906	-87.182269
24	MEEK HIGH SCHOOL	AL0051799	34.078333	-87.214167
25	WINSTON COUNTY HIGH SCHOOL	AL0051829	34.163611	-87.399444
26	DOUBLE SPRINGS ELEMENTARY SCHOOL	AL0050458	34.148628	-87.404131
27	LYNN HIGH SCHOOL	AL0051802	34.045892	-87.545658
28	LUPTON JUNIOR HIGH SCHOOL	AL0051420	33.927225	-87.412222
29	CURRY ELEMENTARY & HIGH SCHOOL	AL0041726	33.957339	-87.217156
30	THE DOMAINE	AL0057525	33.832511	-87.223136
31	TIMMONS MOBILE HOME PARK	AL0057533	33.838186	-87.213903
32	SHADY ACRES TRAILER PARK	AL0057185	33.831672	-87.209339
33	VALLEY JUNIOR HIGH SCHOOL	AL0045551	33.826678	-87.175564
34	SUMITON LAND COMPANY	AL0057690	33.710278	-86.981944
35	BIG OAK COIN LAUNDRY	AL0059757	33.634569	-86.9721
36	BROOKSIDE VILLAGE	AL0062251	33.640278	-86.913889
37	SHARON HEIGHTS MOBILE HOME PARK	AL0057827	33.625556	-86.909167
38	FORESTDALE MOBILE HOME PARK	AL0027642	33.6125	-86.895556
39	BOTTENFIELD JUNIOR HIGH SCHOOL	AL0051161	33.595	-86.934167
40	MINOR JR. HIGH SCHOOL	AL0051209	33.546389	-86.935278
41	PLEASANT GROVE HIGH SCHOOL	AL0051217	33.49	-86.97
42	WEST JEFFERSON CORRECTIONAL FACILITY	AL0045560	33.520278	-87.176111
43	BANKHEAD LOCK & DAM	AL0049727	33.447347	-87.36685
44	NORTHSIDE HIGH SCHOOL	AL0050661	33.466625	-87.633733
45	MYRTLEWOOD ELEMENTARY SCHOOL	AL0050679	33.094506	-87.689181
46	HOLT ELEMENTARY SCHOOL	AL0050695	33.226517	-87.481658
47	BROOKWOOD HIGH SCHOOL	AL0050652	33.258919	-87.315956

Table BW-6 cont.

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
48	I-59 WELCOME CENTER	AL0029076	32.449136	-88.398133
49	BROOKWOOD HIGH SCHOOL	AL0050652	33.258919	-87.315956
50	FARQUHAR CATTLE FARM	AL0053180	32.578194	-87.683833

Table BW-7
Black Warrior River Basin Data

Station		BW01	BW01	BW01	BW01	BW02	BW02	BW02	BW02	BW03	BW03	BW03
Sampling Date		6/18/96	8/7/96	9/11/96	10/16/96	6/18/96	8/7/96	9/11/96	10/16/96	6/5/96	7/10/96	8/7/96
Sampling Time		10:30 AM	10:10 AM	9:35 AM	10:10 AM	10:00 AM	9:45 AM	9:05 AM	9:50 AM	9:15 AM	11:10 AM	10:40 AM
Total Water Depth	ft		3	2.8	4.5		2.7	2	3.5			4.25
Depth of Sample	ft		1.5	1.4	2.25		1	1	1.75			2
Air Temperature	°C	29.5	30	24	25	28.8	30	24	25	26	38	30
Water Temperature	°C	30.2	26.3	24.8	27.1	27.2	21.5	23.5	17.8	23.2	26.5	21.7
pH	s.u.	7.61	7.37	7.19	7.11	8.12	7.68	7.49	7.68	7.31	7.43	7.45
Dissolved Oxygen	mg/L	2.8	4.9	3	2.44	7.2	6.9	5.8	7.96	7.7	5.7	5
Flow	cfs*					27.9	27.3	24.1				
Conductivity	mmhos	700	765	932	550	439	487	448	600	465	337	572
Cond at 25 °C	mmhos	637	746	936	529	421	522	461	696	482	328	610
Turbidity	ntu											
BOD5	mg/L		3.8		8.9		0.2		1.5		1.2	2
NH3-N	mg/L		2.451		0.469		0.054		0.1K		0.179	
TKN	mg/L		2.188				0.212				0.479	
NO2+NO3-N	mg/L		0.564		2.9		1.043		1.09		3.168	2.5
PO4-P	ug/L		0.339		0.16		0.051		0.05		0.138	0.149
Fe	ug/L											
Mn	ug/L											
TSS	mg/L											
Fecal Coliform	MPN										900	

Table BW-7 (cont.)

Station		BW03	BW03	BW04	BW04	BW04	BW04	BW04	BW05	BW05	BW05	BW05
Sampling Date		9/11/96	10/16/96	6/5/96	7/10/96	8/7/96	9/11/96	10/16/96	6/4/96	7/9/96	7/9/96	8/6/96
Sampling Time			11:25 AM	10:00 AM	11:50 AM	11:45 AM		12:15 PM	10:15 AM	10:50 AM	10:50 AM	10:40 AM
Total Water Depth	ft	4.6	4.5			40	40	42				1.5
Depth of Sample	ft	2.3	2.25			5	5	5				0.75
Air Temperature	°C	26	27	29	36	31	30	27.5	25	28	28	28
Water Temperature	°C	24.6	20.8	26.5	29.4	27	31.1	21.9	20.1	26.7	26.7	26.9
pH	s.u.	7.38	7.24	7.8	7.65	7.82	7.66	7.42	9.05	7.1	7.13	7.51
Dissolved Oxygen	mg/L	5.6	6.83	7.6	8.8	9.9	5.2	9.26	7	6	6	7.2
Flow	cfs*											
Conductivity	mmhos	753	448	177	223	380	472	235		175.6	175.6	347
Cond at 25 °C	mmhos	759	487	172	206	366	423	250		170	170	335
Turbidity	ntu											
BOD5	mg/L	0.9	0.9									
NH3-N	mg/L											
TKN	mg/L				0.3	0.3	0.1K					
NO2+NO3-N	mg/L	4.96	12.18		0.254	0.456	0.438	1.01			4.406	3.895
PO4-P	ug/L	0.577	0.68		0.05K	0.055	0.004K	0.05K			0.37	0.466
Fe	ug/L											
Mn	ug/L											
TSS	mg/L											
Fecal Coliform	MPN	1020	67		22						1700	

Table BW-7 (cont.)

Station		BW05	BW05	BW06	BW06	BW06	BW06	BW06	BW07	BW07	BW07	BW07
Sampling Date		**9/10/96**	**10/15/96**	**6/17/96**	**7/10/96**	**8/30/96**	**9/25/96**	**10/31/96**	**6/17/96**	**7/10/96**	**8/30/96**	**9/25/96**
Sampling Time		10:10 AM	10:00 AM	10:30 AM	9:45 AM	11:30 AM	12:00 PM	12:20 PM	11:10 AM	10:15 AM	11:00 AM	11:30 AM
Total Water Depth	ft		1			2.4	2.5	2			1	1.2
Depth of Sample	ft		0.5			1	1	1			0.5	0.5
Air Temperature	°C	28	19	32	27	31	30	16.5	34	26.5	29	30
Water Temperature	°C	24.8	13.7	28	21.8	22.1	22.2	18.2	27	20.1	21.5	22
pH	s.u.	6.7	7.34	7.6	6.9	7.13	7.12	7.05	6.96	7.17	7.8	7.29
Dissolved Oxygen	mg/L	6.7	9.33	4.7	2.7	3.2	7.34	5.37	7.8	6.7	9.5	8.53
Flow	cfs*											
Conductivity	mmhos	407	220	160	132	266	143	135	180	133	290	162
Cond at 25 °C	mmhos	409	281	151	141	282	151	155	173	147	311	172
Turbidity	ntu	8.7										
BOD5	mg/L				2.5	1.5		1.4		1.3	0.3	
NH3-N	mg/L				0.228	0.169		0.143		0.042	0.025	
TKN	mg/L				0.691	0.623		0.8		0.466	0.527	
NO2+NO3-N	mg/L	6.915	11.6		0.265	0.117		0.158		1.417	1.505	
PO4-P	ug/L	0.684	0.6		0.05K	0.04K		0.1		0.486	0.226	
Fe	ug/L											
Mn	ug/L											
TSS	mg/L											
Fecal Coliform	MPN	580	62									

Table BW-7 (cont.)

Station		BW07	BW08	BW08	BW08	BW08	BW08	BW09	BW09	BW09	BW09	BW09
Sampling Date		10/31/96	6/17/96	7/23/96	8/21/96	9/12/96	10/24/96	6/17/96	7/23/96	8/21/96	9/12/96	10/24/96
Sampling Time		11:50 AM	7:30 AM	7:30 AM	7:15 AM	7:00 AM	2:00 PM	8:10 AM	8:15 AM	8:00 AM	7:30 AM	1:15 PM
Total Water Depth	ft	1		0.8	0.35	0.33	1.7		0.67	0.55	0.94	1.1
Depth of Sample	ft	0.5	0.5	0	0	0	0.8	0.5	0	0	0	0.5
Air Temperature	°C	17.5	23.1	28	25.5	18	30	23.6	26.5	26	20	29
Water Temperature	°C	18.3	25.1	21.6	19.3	17.1	10.1	25.3	22	20.9	19.4	12.2
pH	s.u.	7.5	7.08	7.71	7.78	7.36	7.36	6.92	7.57	7.48	7.22	7.62
Dissolved Oxygen	mg/L	8.13	7.5	6	7.6	6.6	11.7	6.3	5.8	6.7	6.1	10.6
Flow	cfs*											
Conductivity	mmhos	158	147.7	328	158	324	115	155.4	310	151	291	112
Cond at 25 °C	mmhos	181	147	351	177	382	161	155	329	164	326	148
Turbidity	ntu											
BOD5	mg/L	2.2		0.7	0.6		1		0.3	0.7		1.4
NH3-N	mg/L	0.1K		0.005	0.007		0.1K		0.055	0.005K		0.1K
TKN	mg/L	0.6		0.181	0.179		0.25		0.644	0.217		0.15K
NO2+NO3-N	mg/L	1.3		0.242	0.155		1.59		0.466	0.407		2.4
PO4-P	ug/L	0.36		0.05K	0.043		0.05K		0.05K	0.066		0.05K
Fe	ug/L											
Mn	ug/L											
TSS	mg/L											
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW10	BW10	BW10	BW10	BW10	BW11	BW11	BW11	BW11	BW11	BW12
Sampling Date		6/17/96	7/10/96	8/30/96	9/25/96	10/31/96	6/26/96	7/10/96	8/30/96	9/25/96	10/31/96	6/12/96
Sampling Time		12:30 PM	9:00 AM	10:30 AM	9:30 AM	10:00 AM	2:50 PM	8:20 AM	9:30 AM	9:00 AM	8:30 AM	10:25 AM
Total Water Depth	ft			0.5	1	0.5			2.4	2.8	2.4	
Depth of Sample	ft			0.25	0.5	0.25			1	1	1	
Air Temperature	°C	34	27	28	26	15	32	26	25	26	15	24
Water Temperature	°C	25	18	19.8	15.5	16.5	25.4	19.6	20.02	15.1	16.2	22
pH	s.u.	7.79	7.31	7.13	7.1	6.8	7.55	7.36	7.14	7.59	7.41	7.4
Dissolved Oxygen	mg/L	6.7	6.5	6.3	7.68	5.32	6.8	5.9	6.1	8.08	7.19	10.4
Flow	cfs*											
Conductivity	mmhos	162	221	176	126	125	142	141	205	177	150	699
Cond at 25 °C	mmhos	162	255	195	154	149	141	157	227	218	180	741
Turbidity	ntu											1
BOD5	mg/L		1.3	0.4		1		1.2	2.9		1	
NH3-N	mg/L		0.016	0.02		0.1K		0.178	0.087		0.1K	
TKN	mg/L		0.292	0.414		0.52		0.436	0.723		0.65	
NO2+NO3-N	mg/L		0.165	0.345		0.19		0.394	0.747		1.5	
PO4-P	ug/L		0.05K	0.047		0.05K		0.05K	0.048		0.14	
Fe	ug/L											0.093
Mn	ug/L											0.059
TSS	mg/L											1
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW12	BW12	BW12	BW13	BW13	BW13	BW13	BW13	BW14	BW14	BW14
Sampling Date		8/14/96	9/11/96	10/25/96	6/11/96	8/14/96	9/11/96	9/25/96	10/25/96	6/11/96	8/14/96	9/11/96
Sampling Time		8:10 AM	9:00 AM	9:30 AM	4:14 PM	8:40 AM	8:30 AM	10:45 AM	9:00 AM	3:13 PM	8:25 AM	8:15 AM
Total Water Depth	ft	0.083				0.5	1	1			2	2
Depth of Sample	ft	0.083				0.25	0.5	0.5			1	1
Air Temperature	°C	23			28.3	24	22	26		28.4	21	20
Water Temperature	°C	22			26	23	21	21		23.2	20	20
pH	s.u.	6.32			6.3	4.38	3.82	6.7		7.3	7.87	7.65
Dissolved Oxygen	mg/L	1.7			7.4	4.9	5.5	8.4		8	7.3	6.8
Flow	cfs*	0	0	0					0			
Conductivity	mmhos	50			209	1450	2500	430		535	800	800
Cond at 25 °C	mmhos	53			205	1508	2707	466		554	884	884
Turbidity	ntu	20			90	20				2	2	
BOD5	mg/L	7.8				1.1					0.1	
NH3-N	mg/L	0.015K				0.015K					0.015K	
TKN	mg/L	2.09				0.4					0.15K	
NO2+NO3-N	mg/L	0.006K				0.03					0.17	
PO4-P	ug/L	0.07				0.01					0.01	
Fe	ug/L	15.2			5.7	6.32				0.103	0.105	
Mn	ug/L	14.9			0.689	18.1				0.113	0.214	
TSS	mg/L	89			172	26				1	0	
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW14	BW14	BW15	BW15	BW15	BW15	BW15	BW16	BW16	BW16	BW16
Sampling Date		9/25/96	10/25/96	6/13/96	8/13/96	9/10/96	9/25/96	10/24/96	6/13/96	8/13/96	9/10/96	10/24/96
Sampling Time		11:05 AM	8:30 AM	12:10 PM	3:40 PM	3:00 PM	11:20 AM	3:30 PM	11:35 AM	3:50 PM	3:05 PM	3:45 PM
Total Water Depth	ft	1	1			0.5	0.67	6		3	4	1
Depth of Sample	ft	0.5	0.5			0.25	0.33	3		1.5	2	0.5
Air Temperature	°C	27	16	24	31	30	27	23	23	32	31	24
Water Temperature	°C	21	15	20.1	25	23	21	16	21.1	25	24	17
pH	s.u.	7	7.18	7.1	7.88	8.25	7.2	8.14	6	6.67	6.23	7.09
Dissolved Oxygen	mg/L	7.7	6.8	8.9	8.2	8.1	8.8	9.5	7.8	7.3	6.1	6.8
Flow	cfs*											
Conductivity	mmhos	780	600	87	90	85	550	60	501	500	410	430
Cond at 25 °C	mmhos	845	742	96	90	88	595	72	541	500	418	508
Turbidity	ntu		0	3	1			1	7	10		6
BOD5	mg/L		0.9		0.1K			0.9		0.7		1.6
NH3-N	mg/L		0.015K		0.015K			0.015K		0.015K		0.015K
TKN	mg/L		0.15K		0.15K			0.15K		0.15K		0.15K
NO2+NO3-N	mg/L		0.03		0.01			0.003		0.04		0.03
PO4-P	ug/L		0.046		0.013			0.05		0.01		0.08
Fe	ug/L		0.103	0.232	0.116			0.102	3.06	1.79		3.18
Mn	ug/L		0.072	0.039	0K			0K	0.802	1.14		0.714
TSS	mg/L		0	2	0K			0K	12	12		8
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW17	BW17	BW17	BW17	BW17	BW18	BW18	BW18	BW18	BW18	BW19
Sampling Date		6/11/96	7/22/96	8/8/96	9/25/96	10/30/96	6/11/96	7/22/96	8/9/96	9/25/96	10/30/96	6/11/96
Sampling Time		11:35 AM	3:00 PM	5:00 PM	4:05 PM	3:15 PM	12:40 PM	2:35 PM	10:25 AM	2:50 PM	2:45 PM	1:20 PM
Total Water Depth	ft	2	0.67	1	0.5	0.5	3	0.83	3	2		2.5
Depth of Sample	ft	0	0.33	0	0.25	0.25	0	0.417	1	1		0
Air Temperature	°C		32	25	30	25		35	27	31	25	
Water Temperature	°C	24.9	30	26	23	19	24.3	30	24.4	23	19	25.4
pH	s.u.	6.5	7.59	7.31	7.1	7.62	6.8	7.4	7.11	7.4	7.8	7
Dissolved Oxygen	mg/L	8.4	7.2	6.6	7.8	6.2	7.6	7.4	7.3	8	7	9.1
Flow	cfs*											
Conductivity	mmhos	118	170	90	195	130	801	1400	540	850	520	820
Cond at 25 °C	mmhos	118	155	88	203	147	812	1278	546	884	587	814
Turbidity	ntu	6		440			1		58			5
BOD5	mg/L			2.9		1.5			2		1	
NH3-N	mg/L			0.06		0.015K			0.015K		0.015K	
TKN	mg/L			1.56		0.21			0.15K		0.15K	
NO2+NO3-N	mg/L			0.26		0.003K			0.06		0.006	
PO4-P	ug/L			0.06		0.05			0.04		0.062	
Fe	ug/L	0.534		0.696		0.512	0.705		0.642		0.589	0.393
Mn	ug/L	0.046		0.228		0.07	0.265		0.141		0.213	0.171
TSS	mg/L	2		447		1	5		43		1	2
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW19	BW19	BW19	BW19	BW20	BW20	BW20	BW20	BW20	BW21	BW21
Sampling Date		7/22/96	8/9/96	9/25/96	10/30/96		6/11/96	7/22/96	8/9/96	9/25/96	6/12/96	7/22/96
Sampling Time		2:15 PM	10:50 AM	2:25 PM	2:30 PM		3:35 AM	1:40 PM	11:55 AM	2:00 PM	9:45 AM	10:30 AM
Total Water Depth	ft	1	3	1	1	1.5	2	0.67	4	1		1
Depth of Sample	ft	0.5	1	0.5	1	0.75	0	0.33	1	0.5		0.5
Air Temperature	°C	39	28	32	25	24		35	29	29	21	31
Water Temperature	°C	31	24	24	19	19	26.7	32	27	25	20.8	29
pH	s.u.	7.4	7.21	7.5	8.1	8.12	7.3	7.58	7.57	7.4	6.8	6.78
Dissolved Oxygen	mg/L	8.2	6.7	9	8.5	8.2	9.1	7.8	7.4	8.6	8.1	7.2
Flow	cfs*											
Conductivity	mmhos	1600	290	1100	500	650	1047	1400	430	1150	629	800
Cond at 25 °C	mmhos	1435	296	1121	565	734	1014	1235	414	1150	684	743
Turbidity	ntu		100				1		120		2	
BOD5	mg/L		2.5		1.2	1.3			1.5			
NH3-N	mg/L		0.09		0.015K	0.015K			0.1			
TKN	mg/L		2.76		0.15K	0.15K			0.4			
NO2+NO3-N	mg/L		0.1		0.03	0.04			0.16			
PO4-P	ug/L		0.08		0.046	0.063			0.04			
Fe	ug/L		4.79		0.228	0.135	0.064		1.57		0.262	
Mn	ug/L		0.181		0.457	0.084	0.524		0.371		0.316	
TSS	mg/L		81		4	1	7		145		1	
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW21	BW21	BW22	BW22	BW22	BW22	BW23	BW23	BW23	BW23	BW24
Sampling Date		8/8/96	10/30/96	6/12/96	7/22/96	8/8/96	10/30/96	6/12/96	7/22/96	8/8/96	10/30/96	6/12/96
Sampling Time		11:35 AM	10:30 AM	8:55 AM	10:50 AM	12:30 PM	11:00 AM	8:05 AM	11:10 AM	12:50 PM	11:15 AM	8:05 AM
Total Water Depth	ft	2	2		0.67	0.83	2		0.67	1.5	0.5	
Depth of Sample	ft	1	1		0.33	0	1		0.33	0.5	0.25	
Air Temperature	°C	28	22	20	35	30	25	20	31	30	22	20
Water Temperature	°C	27	19	20.9	28	28	20	19.5	29	27	18	19.5
pH	s.u.	7.97	7.33	7.1	7.06	7.56	7.19	6.2	7.38	7.68	7.48	6.2
Dissolved Oxygen	mg/L	8.1	8.5	7.6	6.1	7.4	6.9	8.7	7	6.9	7.6	8.7
Flow	cfs*											
Conductivity	mmhos	900	330	730	1000	1000	400	18	1010	800	350	18
Cond at 25 °C	mmhos	867	373	792	946	946	442	20	938	771	404	20
Turbidity	ntu	1		1		3		6		2		6
BOD5	mg/L	0.9	1.5			0.9	1.3			1.1	1.5	
NH3-N	mg/L	0.015K	0.015K			0.015K	0.015K			0.015K	0.015K	
TKN	mg/L	0.28	0.15K			0.42	0.15K			0.27	0.15K	
NO2+NO3-N	mg/L	0.003K	0.007			0.02	0.008			0.01	0.003	
PO4-P	ug/L	0.014	0.07			0.014	0.053			0.03	0.057	
Fe	ug/L	0.043	0.273	0.12		0.211	0.243	0.452		0.093	0.267	0.452
Mn	ug/L	0.055	0.033	0.079		0.545	0.164	0.02		0.064	0.039	0.02
TSS	mg/L	2.1	1	1		3	1	1		4	1	1
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW24	BW24	BW24	BW24	BW24	BW25	BW25	BW25	BW25	BW25	BW25
Sampling Date		7/22/96	8/8/96	8/13/96	9/25/96	10/30/96	6/12/96	6/12/96	7/22/96	8/8/96	9/25/96	10/30/96
Sampling Time		11:30 AM	1:25 PM	10:55 AM	11:45 AM	11:40 AM	8:35 AM	8:35 AM	11:15 AM	1:05 PM	11:35 AM	11:30 AM
Total Water Depth	ft		1	0.5		0.1						
Depth of Sample	ft		0.5	0.25		0.1						
Air Temperature	°C		31	26		23	24	24				
Water Temperature	°C		27	21		20	20.4	20.4				
pH	s.u.		7.25	6.59		6.89	5.8	5.8				
Dissolved Oxygen	mg/L		8.1	6.7		7.3	4.4	4.4				
Flow	cfs*	0			0				0	0	0	0
Conductivity	mmhos		40	45		25	75	75				
Cond at 25 °C	mmhos		39	49		28	82	82				
Turbidity	ntu		7	3			18	18				
BOD5	mg/L		1	0.3		2.6						
NH3-N	mg/L		0.04	0.015K		0.015K						
TKN	mg/L		0.24	0.15K		0.15K						
NO2+NO3-N	mg/L		0.01	0.33		0.004						
PO4-P	ug/L		0.02	0.02		0.053						
Fe	ug/L		0.172	0.37		0.464	3.25	3.25				
Mn	ug/L		0.02K	0.067		0.073	2.94	2.94				
TSS	mg/L		4	1		4	12	12				
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW26	BW26	BW26	BW26	BW26	BW27	BW27	BW27	BW27	BW27	BW28
Sampling Date		6/11/96	7/22/96	8/9/96	9/25/96	10/30/96	6/11/96	7/22/96	8/8/96	9/25/96	10/30/96	6/11/96
Sampling Time		1:50 PM	2:05 PM	11:10 AM	2:25 PM	2:15 PM	3:05 PM	1:20 PM	4:20 PM	3:40 PM	1:30 PM	5:25 PM
Total Water Depth	ft	0.5	0.66	0.5	0.5	0.25	1	1	0	0.5	0.5	
Depth of Sample	ft	0	0.33	0	0.25	0	0	0.5	25	0.25	0.25	
Air Temperature	°C		34	30	32	27		34	27	30	26	23.8
Water Temperature	°C	27.7	36	26	24	19		30	6.7	24	19	25.6
pH	s.u.	5.4	5.8	6.4	6.4	7.04	6.8	7.14	6.4	6.88	6.91	6.9
Dissolved Oxygen	mg/L	8.3	6.8	7.5	7.9	7.7	7.2	6.5		7.2	7.7	8.9
Flow	cfs*								190			
Conductivity	mmhos	858	1000	900	850	500	173	230	30	175	130	361
Cond at 25 °C	mmhos	816	826	883	867	565		210	46	178	147	357
Turbidity	ntu	9		8			32		1.5			4
BOD5	mg/L			1.1		1.8			0.11		1.4	
NH3-N	mg/L			0.1		0.015K			0.27		0.015K	
TKN	mg/L			0.3		0.15K			0.58		0.15K	
NO2+NO3-N	mg/L			0.25		0.21			0.017		0.6	
PO4-P	ug/L			0.004K		0.058			6.29		0.055	
Fe	ug/L	4.09		2.28		1.99	7.41		0.95		2.63	0.186
Mn	ug/L	13.21		8.54		8.14	1.18		31		0.601	0.08
TSS	mg/L	12		10		49	31				7	4
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW28	BW28	BW28	BW29	BW29	BW29	BW29	BW30	BW30	BW30	BW30
Sampling Date		8/13/96	9/10/96	10/24/96	6/11/96	8/13/96	9/10/96	10/24/96	6/11/96	8/13/96	9/10/96	10/24/96
Sampling Time		2:55 PM	2:15 PM	2:55 PM	4:55 PM	2:40 PM	2:00 PM	2:30 PM	4:25 PM	2:25 PM	1:48 PM	2:10 PM
Total Water Depth	ft		12	12		4	4	2		1.5	4	10
Depth of Sample	ft		6	6		1	2	1		0.75	2	5
Air Temperature	°C	28	31	21	28	30	33	24	34	30	33	25
Water Temperature	°C	26	25	18	23.1	26	24	16	22.5	26	24	17
pH	s.u.	7.21	7.44	7.77	7.1	7.59	7.54	7.73	7	7.49	7.47	7.51
Dissolved Oxygen	mg/L	5.6	6.6	7.6	7.6	7.1	6.4	7.3	7.3	7.3	7.2	7.3
Flow	cfs*											
Conductivity	mmhos	600	800	350	526	550	550	470	719	550	100	750
Cond at 25 °C	mmhos	589	800	404	546	540	561	568	755	540	102	885
Turbidity	ntu	7		3	4	7		4	6	9		2
BOD5	mg/L	1.4		3.2		0.7		1.1		0.2		2.5
NH3-N	mg/L	0.015K		0.015K		0.015K		0.015K		0.015K		0.015K
TKN	mg/L	0.15K		0.23		0.15K		0.15K		0.15		0.15K
NO2+NO3-N	mg/L	0.15		0.25		0.06		0.005		0.06		0.06
PO4-P	ug/L	0.03		0.06		0.02		0.05		0.02		0.07
Fe	ug/L	0.259		0.101	0.684	0.605		0.298	0.356	0.38		0.161
Mn	ug/L	0.224		0.085	0.103	0.218		0.092	0.075	0		0.058
TSS	mg/L	3		4	4	14		3	3	3		0K
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW31	BW31	BW31	BW31	BW32	BW32	BW32	BW32	BW33	BW33	BW33
Sampling Date		6/11/96	8/13/96	9/10/96	10/24/96	6/11/96	8/13/96	9/10/96	10/24/96	6/11/96	8/13/96	9/10/96
Sampling Time		3:10 PM	1:25 PM	12:43 PM	1:00 PM	2:30 PM	1:45 PM	1:04 PM	1:30 PM	10:15 AM	10:20 AM	10:00 AM
Total Water Depth	ft		0.33	1	3		0.5	0.5	1		14	14
Depth of Sample	ft		0	0.5	1.5		0.25	0.25	0.5		7	7
Air Temperature	°C	25	28	28	24	22	30	32	28	25	25	27
Water Temperature	°C	22.8	25	25	17	22.1	28	28	19	20.9	19	24
pH	s.u.	6.4	7.43	7.17	8.05	5.9	7.25	7.28	7.68	5.9	6.83	6.22
Dissolved Oxygen	mg/L	9.1	7.8	7.1	7.5	8.6	7.5	7.7	8.8	9.2	6.2	7.6
Flow	cfs*											
Conductivity	mmhos	53	50	70	50	49	60	100	80	26	80	290
Cond at 25 °C	mmhos	55	50	70	59	52	57	95	90	28	90	296
Turbidity	ntu	6	14		6	7	3		3	16	4	
BOD5	mg/L		0.1		1.7		0.2		1.3		0.3	
NH3-N	mg/L		0.015K		0.015K		0.015K		0.015K		0.015K	
TKN	mg/L		0.15K		0.15K		0.15K		0.15K		0.15K	
NO2+NO3-N	mg/L		0.02		0.02		0.03		0.01		0.07	
PO4-P	ug/L		0.02		0.08		0.02		0.06		0.02	
Fe	ug/L	0.329	0.279		0.264	0.668	0.102		0.092	0.65	0.493	
Mn	ug/L	0.02	0.023		0.02	0.094	0		0K	0.02	0.074	
TSS	mg/L	1	6		2	5	4		0K	8	1	
Fecal Coliform	MPN											

Table BW-7 (cont.)

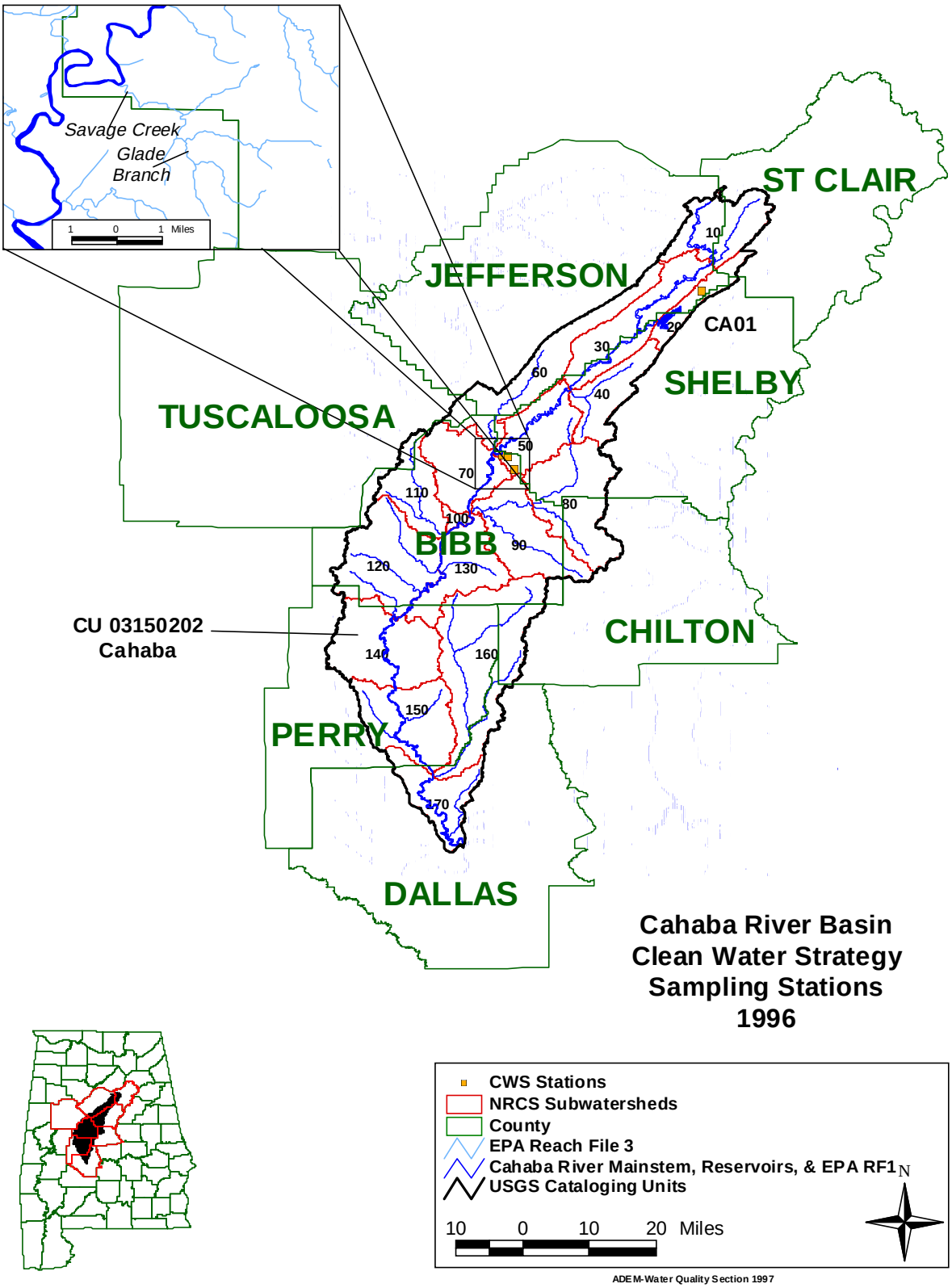
Station		BW33	BW34	BW34	BW34	BW35	BW35	BW35	BW35	BW36	BW36	BW36
Sampling Date		10/24/96	6/11/96	9/10/96	10/24/96	6/11/96	8/13/96	9/10/96	10/24/96	6/11/96	8/13/96	9/10/96
Sampling Time		10:15 AM	11:08 AM	10:20 AM	10:40 AM	11:55 AM	11:10 AM	10:34 AM	11:00 AM	12:35 PM	11:30 AM	10:51 AM
Total Water Depth	ft	14			6		2	2	6		1	1
Depth of Sample	ft	7			3		1	1	3		0.5	0.5
Air Temperature	°C	18	30		16	25	27	27	19	27	26	28
Water Temperature	°C	14	22		14	20.8	23	22	15	21.2	23	24
pH	s.u.	6.55	5.6		7.39	7.8	8.04	8.01	8.16	5.9	7.5	7.81
Dissolved Oxygen	mg/L	9	8.2		8.8	8.7	8.6	8.1	7.8	10.5	7	7.2
Flow	cfs*			0								
Conductivity	mmhos	90	42		190	515	1000	1100	700	54	70	80
Cond at 25 °C	mmhos	114	45		241	560	1040	1167	865	58	73	82
Turbidity	ntu	80	12		6	2	1		1	7	4	
BOD5	mg/L	1.7			1.5		0.4		1.4		0.9	
NH3-N	mg/L	0.015K			0.015K		0.015K		0.015K		0.015K	
TKN	mg/L	0.15K			0.15K		0.31		0.15K		0.38	
NO2+NO3-N	mg/L	0.03			0.006		6.6		4.57		0.14	
PO4-P	ug/L	0.083			0.06		0.02		0.08		0.02	
Fe	ug/L	0.878	0.533		0.288	0.185	0.058		0.086	1.3	0.888	
Mn	ug/L	24	0.035		0.088	0.033	0.022		0.058	0.229	0.217	
TSS	mg/L	0.142	6			2	2		2	1	0	
Fecal Coliform	MPN											

Table BW-7 (cont.)

Station		BW36	BW37	BW37	BW37	BW37	BW38	BW38	BW38	BW38
Sampling Date		10/24/96	6/11/96	8/13/96	9/10/96	10/24/96	6/11/96	8/13/96	9/10/96	10/24/96
Sampling Time		11:25 AM	1:25 PM	11:50 AM	11:22 AM	11:55 AM	12:56 PM	11:34 AM	11:07 AM	11:35 AM
Total Water Depth	ft	2		0.5	1	3		1	4	2
Depth of Sample	ft	1		0.25	0.5	1.5		0.5	2	1
Air Temperature	°C	19	30	28	28	21	30	30	29	24
Water Temperature	°C	14	22.9	25	24	15	25.6	26	25	17
pH	s.u.	8.28	6.1	6.8	6.83	8.05	6.6	7.02	7.18	7.32
Dissolved Oxygen	mg/L		6.2	4.5	2.9	3.4	8.1	6.5	5.1	7.7
Flow	cfs*									
Conductivity	mmhos	50	54	120	120	50	657	900	900	650
Cond at 25 °C	mmhos	63	56	120	122	62	650	883	900	767
Turbidity	ntu	6	18	18		10	3	1		1
BOD5	mg/L	2.5		1.3		2.1				1.3
NH3-N	mg/L	0.015K		0.015K		0.015K		0.015K		0.015K
TKN	mg/L	0.15K		0.88		0.21		0.18		0.15K
NO2+NO3-N	mg/L	0.01		0.1		0.01		0.72		0.52
PO4-P	ug/L	0.044		0.02		0.098		0.02		0.051
Fe	ug/L	0.742	3.38	2.46		1.5	0.267	0.164		0.131
Mn	ug/L	0.086	1.43	7.61		0.578	0.453	0.697		0.382
TSS	mg/L	5	1	2		5	2	0		2
Fecal Coliform	MPN									

Cahaba River Basin

Figure CA-1


Savage Creek
Glade
Branch
1 0 1 Miles
ST CLAIR
JEFFERSON
CA01
SHELBY
TUSCALOOSA
BIBB
CHILTON
PERRY
DALLAS
CU 03150202
Cahaba
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130
140
150
160
170
Cahaba River Basin
Clean Water Strategy
Sampling Stations
1996
CWS Stations
NRCS Subwatersheds
County
EPA Reach File 3
Cahaba River Mainstem, Reservoirs, & EPA RF1
USGS Cataloging Units
N
10 0 10 20 Miles
ADEM-Water Quality Section 1997

Figure CA-2

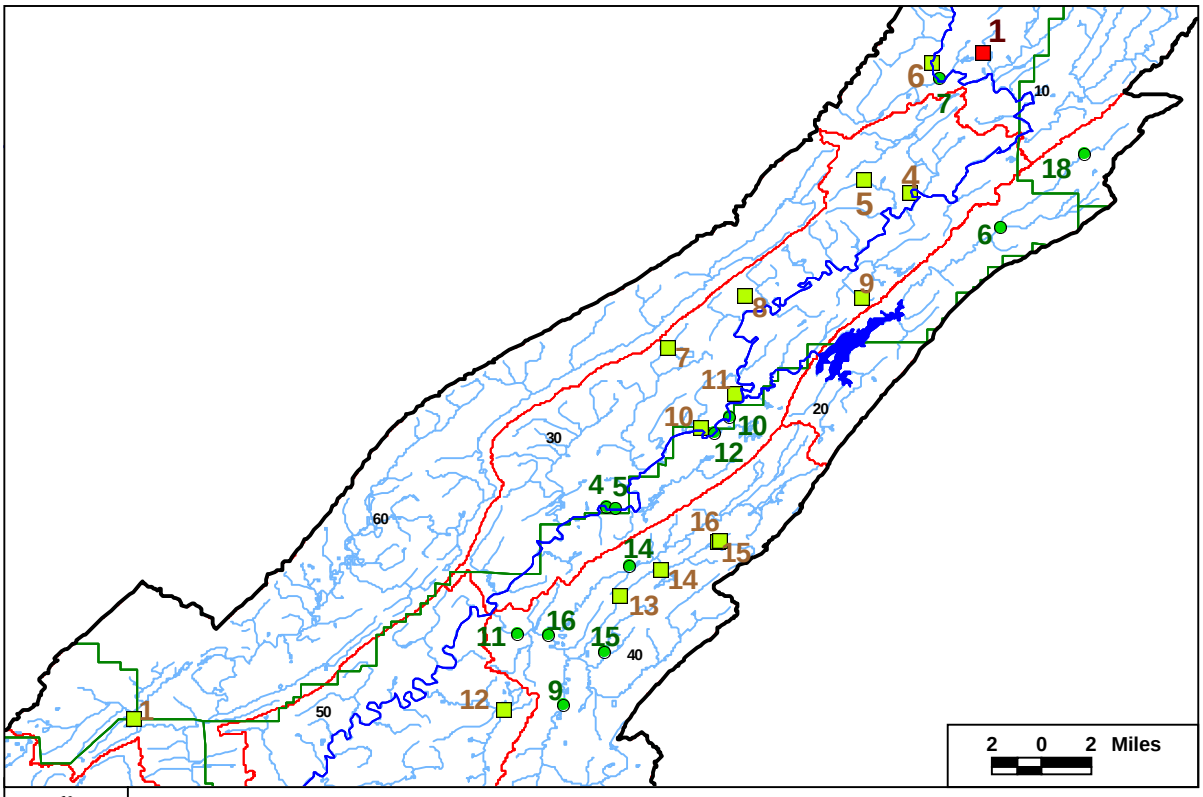
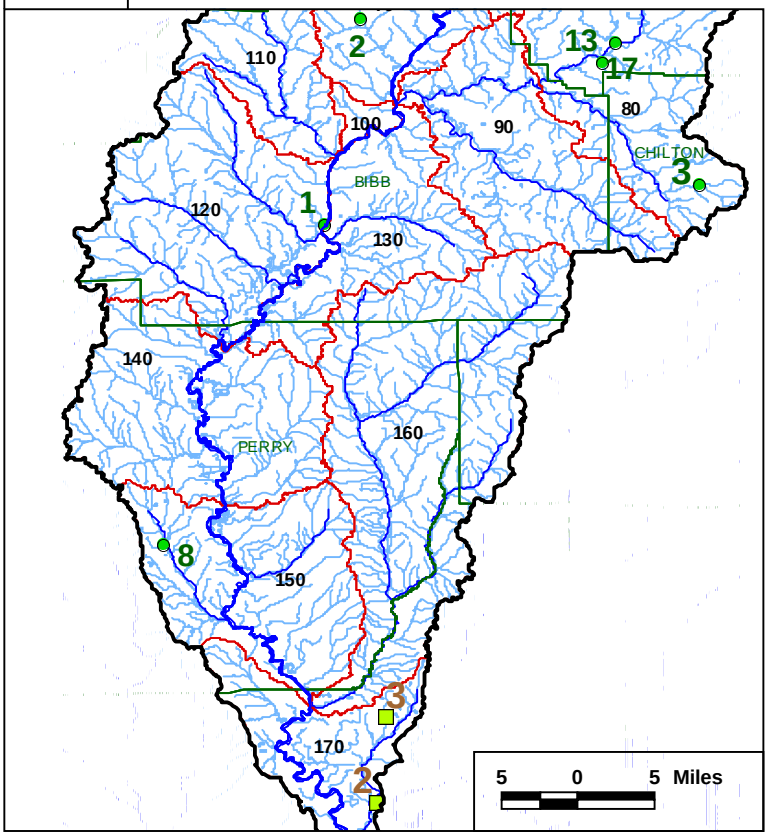


Figure CA-3



Cahaba River Basin

Industrial Process,

Municipal, &

Semi-Public/Private

NPDES Dischargers

Index for Figures CA-2 & CA-3

Major Industrial NPDES Process Wastewater Dischargers

1 Gold Kist Poultry

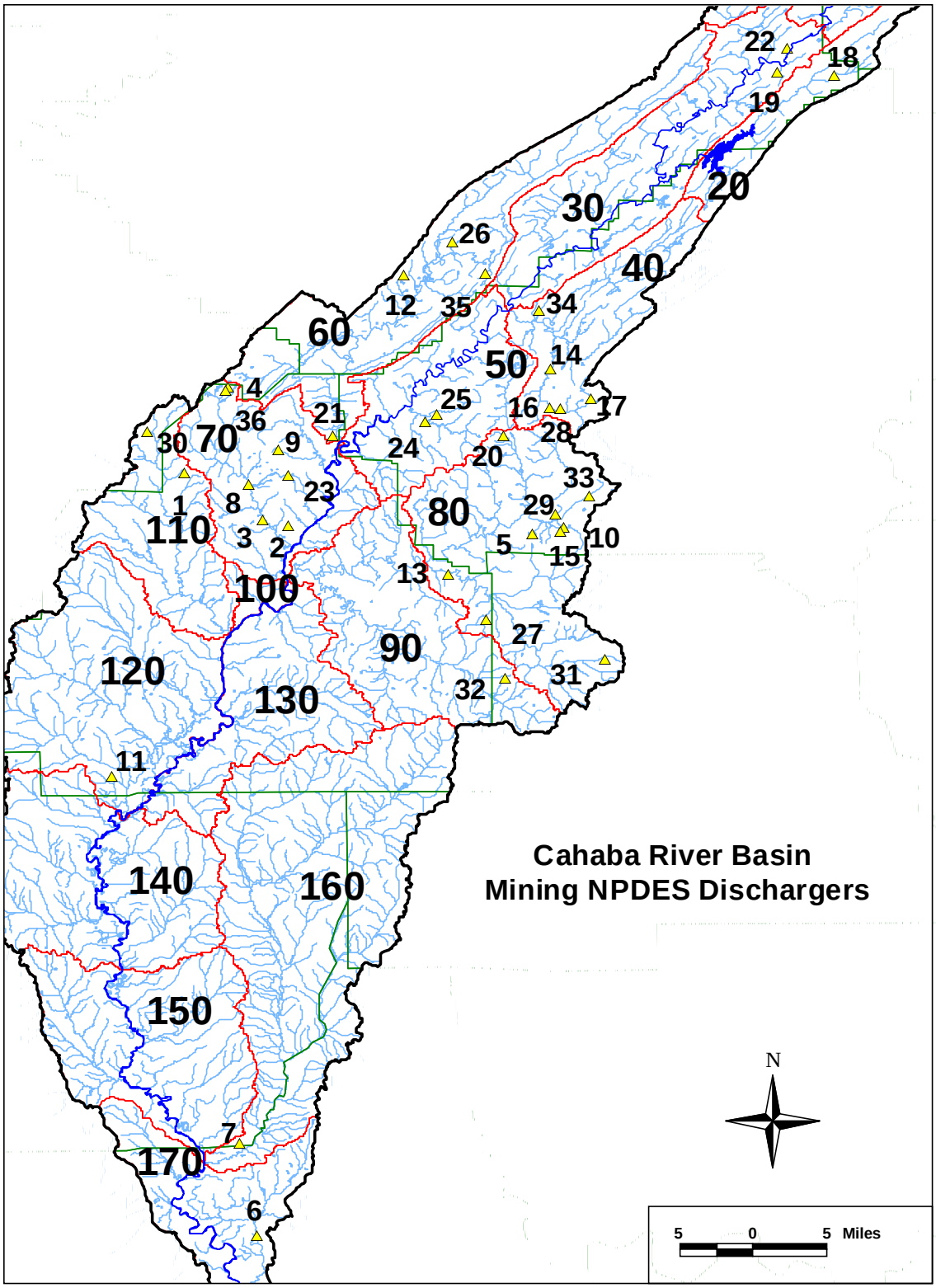
Municipal NPDES Dischargers

1 Centreville-Brent WWTP
2 West Blocton HCR Lagoon
3 Jemison WWTP
4 Hoover (Riverchase) WWTP
5 Jefferson Co. Cahaba R WWTP
6 Norman R. Skinner WWTP
7 Trussville WWTP
8 Marion WWTP
9 Alabaster WWTP
10 BWW&SB Riverview WWTP
11 Helena WWTP
12 Hoover (Inverness) WWTP
13 Montevallo WWTP
14 North Shelby County WWTP
15 Pelham Hunters Glen WWTP
16 Pelham WWTP
17 Wilton WWTP
18 BWW&SB Hwy 411 WWTP

Semi-Public/Private NPDES Dischargers

1 Tannehill State Park
2 Prairie Schooner Place
3 Sparks Park
4 Cahaba Mobile Home Estates
5 Eastwood Mobile Home Village
6 Hewlitt-Trussville High School
7 Lockerbie Subdivision
8 Mountain Brook Senior HS
9 Our Lady of Angels Monastery
10 Riverplace Apartments WWTP
11 Southridge Building
12 Fox Valley Apartments
13 Oak Mountain State Park
14 Oak Mountain State Park
15 Oak Mountain State Park
16 Oak Mountain State Park

Figure CA-4


Cahaba River Basin
Mining NPDES Dischargers
N
5 0 5 Miles
20
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Cahaba River Basin Mining NPDES Dischargers

1 Alabama Land and Mineral Corp.-Woodstock Rail Siding
2 Alabama Land and Mineral Corp.-Yeshic Mine
3 Alabama Land and Mineral Corp.-Yeshic Mine #2
4 Alabama Pigments Company-Alabama Hematite Plant
5 Alabama Refractory Specialties Inc.-Montevallo Pit
6 Asphalt Contractors Inc.-Landline Road Plant
7 Asphalt Contractors Inc.-Oakmulgee Pit
8 Bar Coal Inc.-Caffee Creek Mine
9 Birmingham Coal & Coke Co. Inc.
10 Blue Circle Cement Inc.-Hebron Mine
11 Boral Bricks Inc.-Bibb County Mine
12 Boral Bricks Inc.-Plant #5 Surface Mine
13 Chemical Lime Company-Dolomite Quarry
14 Chemical Lime Company of Alabama Inc.-Alabaster Lime Plant
15 Chemical Lime Company of Alabama Inc.-Montevallo Lime Plant
16 Cheney Lime & Cement Company-Landmark Plant
17 Dravo Lime Company-Longview Division
18 Lehigh Portland Cement Company-Leeds Plant
19 Mann Steel Products Inc.-Henry Ellen Mine #2
20 Martin Marietta Aggregates-Maylene Quarry
21 Nelson Contracting Engineering Inc.-Woodstock Pits 1 & 2
22 Nugget Coal Company Inc.-Peacock Mine
23 Oak Mountain Energy LLC-Coke Mine
24 Oak Mountain Energy LLC-Gholson Mine
25 Oak Mountain Energy LLC-Kodiak No.1 Mine
26 Pyne Rock Corporation-Pyne Rock Reclamation
27 Ray Sisco Construction Company Inc.-Shale Pit
28 Southern Ready Mix Inc.-Alabaster Quarry
29 Southern Ready Mix Inc.-Calera Rock Quarry
30 Southern Ready Mix Inc.-Vance Materials Plant
31 Superior Products Inc.-Jemison Plant
32 Superior Products Inc.-Owens Plant
33 Vulcan Materials Company-Calera Quarry
34 Vulcan Materials Company-Helena Quarry
35 Vulcan Materials Company-Parkwood Plant
36 Woodstock Trucking Company Inc.-Woodstock 2

Table CA-1
1996 Cahaba River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
CA01	Little Cahaba River	Center of bridge at station LC-1.	33.524444	-86.575277
CA02	Savage Creek	Savage Creek at the Cahaba River.	33.16917	-87.0086
CA03	UT to Glade Branch of Savage Creek	Near Eddings Town at Co. Rd. 54.	33.13694	-86.9833
CA04	Savage Creek	Savage Creek at Co. Rd. 10.	33.16472	-86.9956

Table CA-2
Cahaba River Basin CWS96 Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
CA01	Little Cahaba River	LC-1	CA01	M	Full	7.6
CA02	Savage Creek	Cahaba River	CA02	E	Full	1.2
CA03	UT to Glade Branch of Savage Creek	Co. Rd. 54	CA03	E	Non	2.1
CA04	Savage Creek	Co. Rd. 10	CA04	E	Full	0.6

Table CA-3
Cahaba River Mining NPDES Dischargers

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
1	AL0065706	Alabama Land and Mineral Corp.	Woodstock Rail Siding	33.15	-87.178333	03150202-070
2	AL0056219	Alabama Land and Mineral Corp.	Yeshic Mine	33.098056	-87.075833	03150202-070
3	AL0065404	Alabama Land and Mineral Corp.	Yeshic Mine #2	33.103889	-87.101389	03150202-070
4	AL0067253	Alabama Pigments Company	Alabama Hematite Plant	33.233333	-87.134722	03150202-070
5	AL0022543	Alabama Refractory Specialties Inc.	Montevallo Pit	33.09	-86.836667	03150202-080
6	AL0048046	Asphalt Contractors Inc.	Landline Road Plant	32.401111	-87.106111	03150202-170
7	AL0058548	Asphalt Contractors Inc.	Oakmulgee Pit	32.491667	-87.123611	03150202-170
8	AL0067032	Bar Coal Inc.	Caffee Creek Mine	33.137778	-87.115833	03150202-070
9	AL0061808	Birmingham Coal & Coke Co. Inc.	Hebron Mine	33.172222	-87.085556	03150202-070
10	AL0024252	Blue Circle Cement Inc.	Roberta Plant	33.096667	-86.805833	03150202-080
11	AL0062341	Boral Bricks Inc.	Bibb County Mine	32.852222	-87.249167	03150202-120
12	AL0058327	Boral Bricks Inc.	Plant #5 Surface Mine	33.343611	-86.962778	03150202-060
13	AL0067831	Chemical Lime Company	Dolomite Quarry	33.050833	-86.919722	03150202-080
14	AL0024473	Chemical Lime Company of Alabama Inc.	Alabaster Lime Plant	33.251667	-86.818889	03150202-040
15	AL0003336	Chemical Lime Company of Alabama Inc.	Montevallo Lime Plant	33.092222	-86.809167	03150202-080
16	AL0002631	Cheney Lime & Cement Company	Landmark Plant	33.213889	-86.820833	03150202-040
17	AL0024457	Dravo Lime Company	Longview Division	33.221944	-86.779722	03150202-040
18	AL0003638	Lehigh Portland Cement Company	Leeds Plant	33.54	-86.540556	03150202-020
19	AL0055271	Mann Steel Products Inc.	Henry Ellen Mine #2	33.542222	-86.595833	03150202-020
20	AL0024422	Martin Marietta Aggregates a division of Marti	Maylene Quarry	33.186111	-86.865278	03150202-080
21	AL0052752	Nelson Contracting Engineering Inc.	Woodstock Pits 1 & 2	33.186389	-87.033333	03150202-060
22	AL0056952	Nugget Coal Company Inc.	Peacock Mine	33.565833	-86.586389	03150202-010
23	AL0067890	Oak Mountain Energy LLC	Coke Mine	33.146111	-87.075833	03150202-070
24	AL0061786	Oak Mountain Energy LLC	Gholson Mine	33.2	-86.941944	03150202-050
25	AL0069108	Oak Mountain Energy LLC	Kodiak No.1 Mine	33.2075	-86.930278	03150202-050
26	AL0058076	Pyne Rock Corporation	Pyne Rock Reclamation	33.376389	-86.915833	03150202-060
27	AL0057576	Ray Sisco Construction Company Inc.	Shale Pit	33.005556	-86.881389	03150202-090
28	AL0068829	Southern Ready Mix Inc.	Alabaster Quarry	33.2125	-86.808333	03150202-040
29	AL0053601	Southern Ready Mix Inc.	Calera Rock Quarry	33.108333	-86.815	03150202-080

Table CA-3 cont.

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
30	AL0067784	Southern Ready Mix Inc.	Vance Materials Plant	33.189444	-87.215	03150202-110
31	AL0029068	Superior Products Inc.	Jemison Plant	32.966111	-86.765278	03150202-080
32	AL0068217	Superior Products Inc.	Owens Plant	32.9475	-86.863056	03150202-080
33	AL0002046	Vulcan Materials Company	Calera Quarry	33.126667	-86.780833	03150202-080
34	AL0001996	Vulcan Materials Company	Helena Quarry	33.308333	-86.830556	03150202-040
35	AL0052396	Vulcan Materials Company	Parkwood Plant	33.345833	-86.883333	03150202-060
36	AL0062766	Woodstock Trucking Company Inc.	Woodstock 2	33.230556	-87.138056	03150202-070

Table CA-4
Cahaba River Basin Major Industrial NPDES Process Wastewater Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	GOLD KIST POULTRY		33.63441	-86.57295

Table CA-5
Cahaba River Basin Municpal NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	Centreville-Brent WWTP	AL0044857	32.926944	-87.145278
2	West Blocton HCR Lagoon	AL0061531	33.121667	-87.11
3	Jemison WWTP	AL0059331	32.966667	-86.7875
4	Hoover (Riverchase) WWTP	AL0041653	33.408333	-86.777778
5	Jefferson Co Cahaba River WWTP	AL0023027	33.365278	-86.786389
6	Norman R Skinner WWTP	AL0067067	33.533056	-86.561389
7	Trussville WWTP	AL0022934	33.621111	-86.598889
8	Marion WWTP	AL0023809	32.622778	-87.294722
9	Alabaster WWTP	AL0025828	33.253333	-86.816111
10	Birmingham Riverview WWTP (CWRS)	AL0045969	33.424167	-86.716944
11	Helena WWTP	AL0023116	33.213889	-86.843056
12	Hoover (Inverness) WWTP	AL0025852	33.414167	-86.728611
13	Montevallo WWTP	AL0023299	33.0975	-86.870833
14	North Shelby County WWTP	AL0056251	33.3375	-86.791667
15	Pelham Hunters Glen WWTP	AL0055182	33.285	-86.793056
16	Pelham WWTP	AL0054666	33.299167	-86.825556
17	Wilton WWTP	AL0064416	33.08	-86.882222
18	Birmingham Hwy. 411 WWTP	AL0055255	33.577222	-86.512778

Table CA-6
Semi-Public/Private NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	TANNEHILL STATE PARK	AL0056359	33.246811	-87.068739
2	PRAIRIE SCHOONER PLACE	AL0056871	32.378522	-87.095786
3	SPARKS PARK	AL0045861	32.459917	-87.086164
4	CAHABA MOBILE HOMES ESTATES	AL0057487	33.553056	-86.615556
5	EASTWOOD MOBILE HOME VILLAGE	AL0056685	33.560278	-86.6425
6	HEWITT-TRUSSVILLE HIGH SCHOOL	AL0047970	33.629444	-86.603056
7	LOCKERBIE SUBDIVISION	AL0047571	33.4625	-86.756667
8	MOUNTAIN BROOK SENIOR HIGH SCHOOL	AL0050971	33.4925	-86.711389
9	OUR LADY OF ANGELS MONASTERY	AL0057681	33.491667	-86.644167
10	RIVERPLACE APARTMENTS WWTP	AL0063088	33.415833	-86.737222
11	SOUTHRIDGE BUILDING	AL0045225	33.436111	-86.718056
12	FOX VALLEY APARTMENTS	AL0054330	33.249761	-86.850053
13	OAK MOUNTAIN STATE PARK	AL0050831	33.323994	-86.776253
14	OAK MOUNTAIN STATE PARK	AL0050831	33.332878	-86.747347
15	OAK MOUNTAIN STATE PARK	AL0050831	33.349006	-86.726633
16	OAK MOUNTAIN STATE PARK	AL0050831	33.363956	-86.711194

Table CA-7
Cahaba River Basin Data

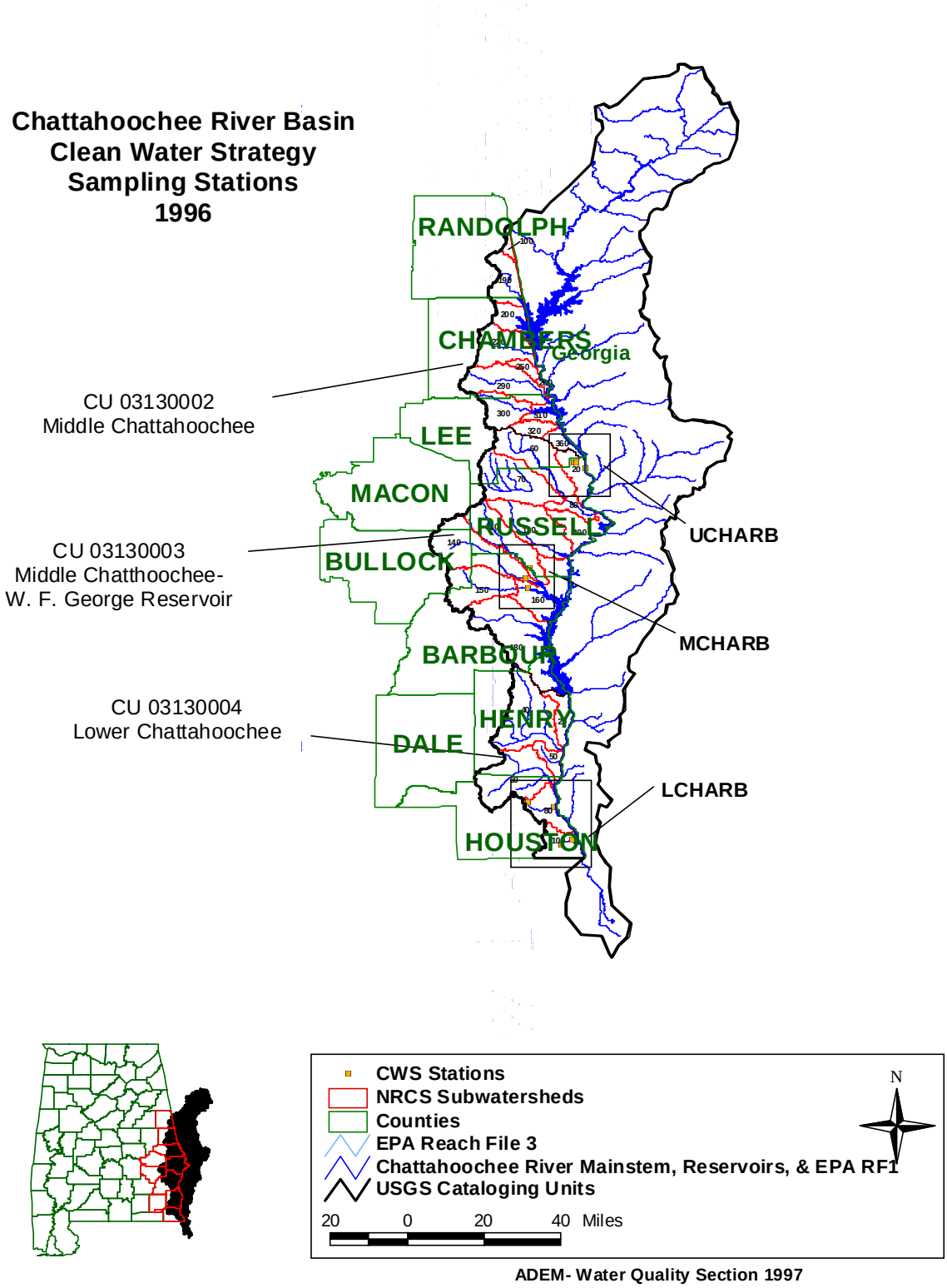
Station		CA01	CA01	CA01	CA01	CA01	CA02	CA02	CA02	CA02	CA03	CA03
Sampling Date		6/4/96	7/9/96	8/6/96	9/10/96	10/15/96	6/11/96	8/14/96	9/11/96	10/25/96	6/11/96	8/14/96
Sampling Time		1:00 PM	1:40 PM	2:00 PM	12:40 PM	12:30 PM	12:14 PM	10:00 AM	10:13 AM	10:50 AM	1:26 PM	10:25 AM
Total Water Depth	ft			1.5		1		4	1	1		2
Depth of Sample	ft			0.75		0.5		2	0.5	0.5		1
Air Temperature	°C	26	30	35	30	25	29.2	25	28	17	27.6	28
Water Temperature	°C	21.1	26.4	26.6	23.3	16.5	24.7	23	22	15	23.9	23
pH	s.u.	7.66	7.65	7.81	7.5	7.23	6.7	6.98	6.89	8.14	6	5.78
Dissolved Oxygen	mg/L	8	7.1	7.7	6.9	7.21	7.8	7.7	6.8	7	7.7	7.1
Flow	cfs*											
Conductivity	mmhos		365	755	461	353	133	80	170	130	25	10
Cond at 25 °C	mmhos		355	733	476	421	134	83	180	161	26	10
Turbidity	ntu						12	6		8		5
Turbidity-KL	ntu											
BOD5	mg/L							0.7		0.2		0.1
NH3-N	mg/L							0.015K		0.015K		0.015K
TKN	mg/L							0.15K		0.15K		0.15K
NO2+NO3-N	mg/L			1.49	1.806	2.95		0.03		0.01		0.006K
PO4-P	mg/L			0.059	0.042	8		0.02		0.08		0.02
Fe	ug/L						0.757	0.445		0.673	0.86	0.127
Mn	ug/L						0.121	0.098		0.111	0.052	0K
TSS	mg/L						25	3		10	15	4
Fecal Coliform	MPN			200	2280	200L						

Table CA-7 (cont.)

Station		CA03	CA03	CA04
Sampling Date		9/11/96	10/25/96	6/11/96
Sampling Time		11:00 AM	11:15 AM	12:52 PM
Total Water Depth	ft	2	2	
Depth of Sample	ft	1	1	
Air Temperature	°C	34	17	27.8
Water Temperature	°C	21	15	24
pH	s.u.	6.16	6.46	6.8
Dissolved Oxygen	mg/L	6.6	7.1	5.4
Flow	cfs*			
Conductivity	mmhos	20	10	156
Cond at 25 °C	mmhos	22	12	159
Turbidity	ntu		6	
Turbidity-KL	ntu			
BOD5	mg/L		0.4	
NH3-N	mg/L		0.015K	
TKN	mg/L		0.15K	
NO2+NO3-N	mg/L		0.01	
PO4-P	mg/L		0.048	
Fe	ug/L		0.136	0.709
Mn	ug/L		0.025	0.152
TSS	mg/L		4	1
Fecal Coliform	MPN			

Chattahoochee River Basin

Figure CHA-1



ADEM- Water Quality Section 1997

Figure CHA-2

UCHARB

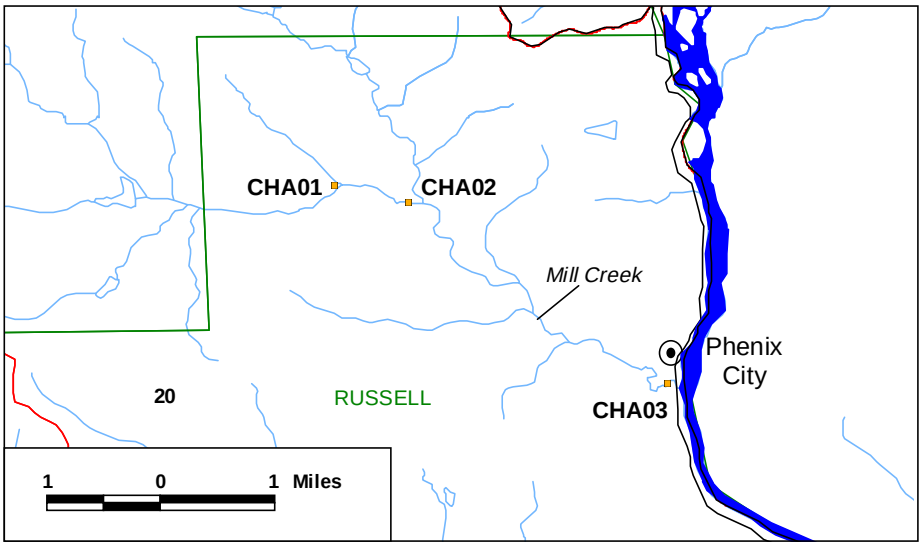


Figure CHA-3

MCHARB

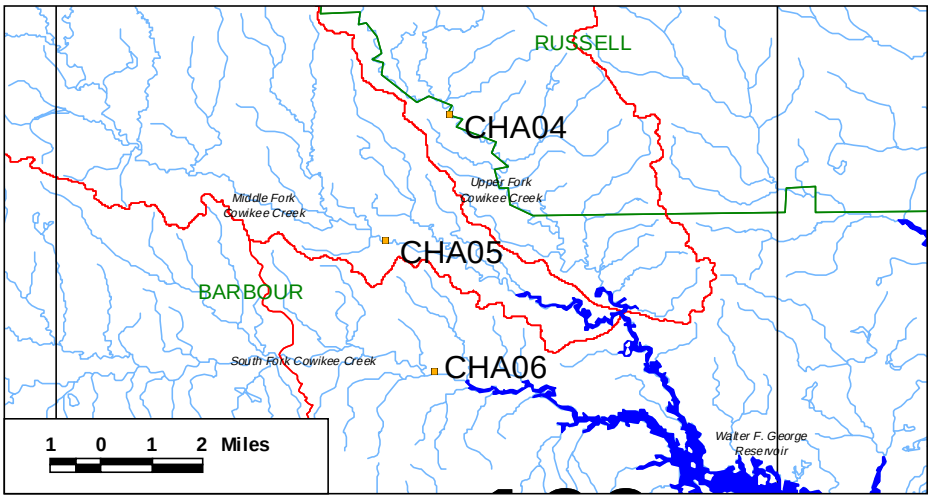


Figure CHA-4

LCHARB

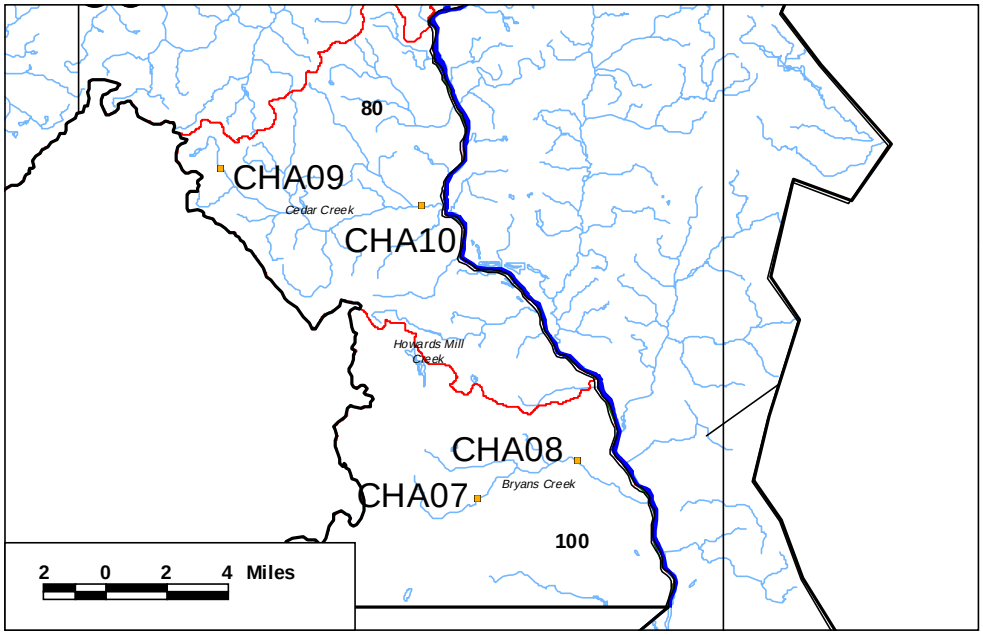
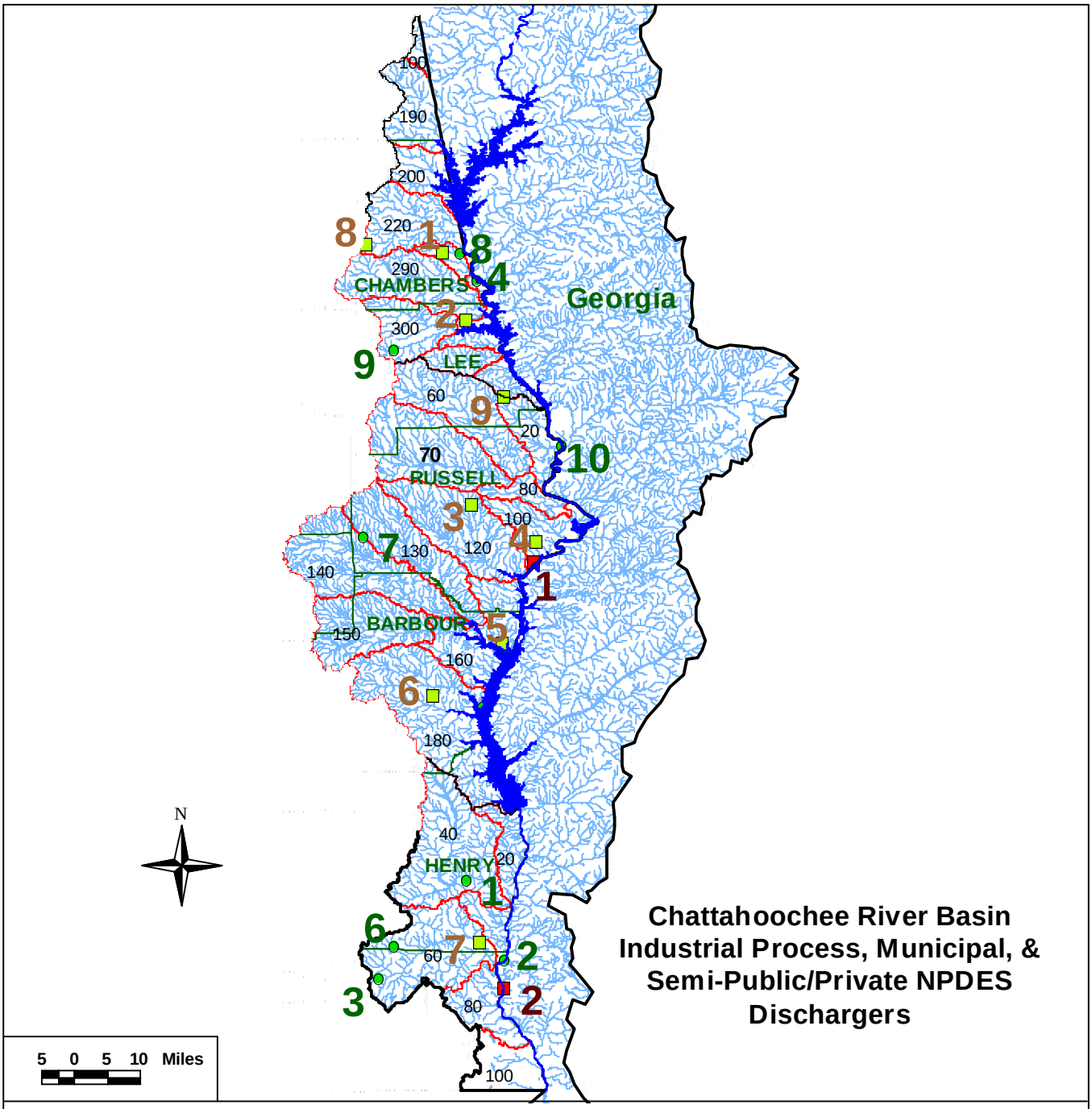


Figure CHA-5



Municipal NPDES Dischargers

1 Abbeville South Lagoon
2 Columbia Lagoon
3 Dothan Omussee Cr WWTP
4 East Alabama WWTP
5 Eufaula WWTP
6 Headland WWTP
7 Hurtsboro WWTP
8 Lanett WWTP
9 Opelika Eastside
10 Phenix City WWTP

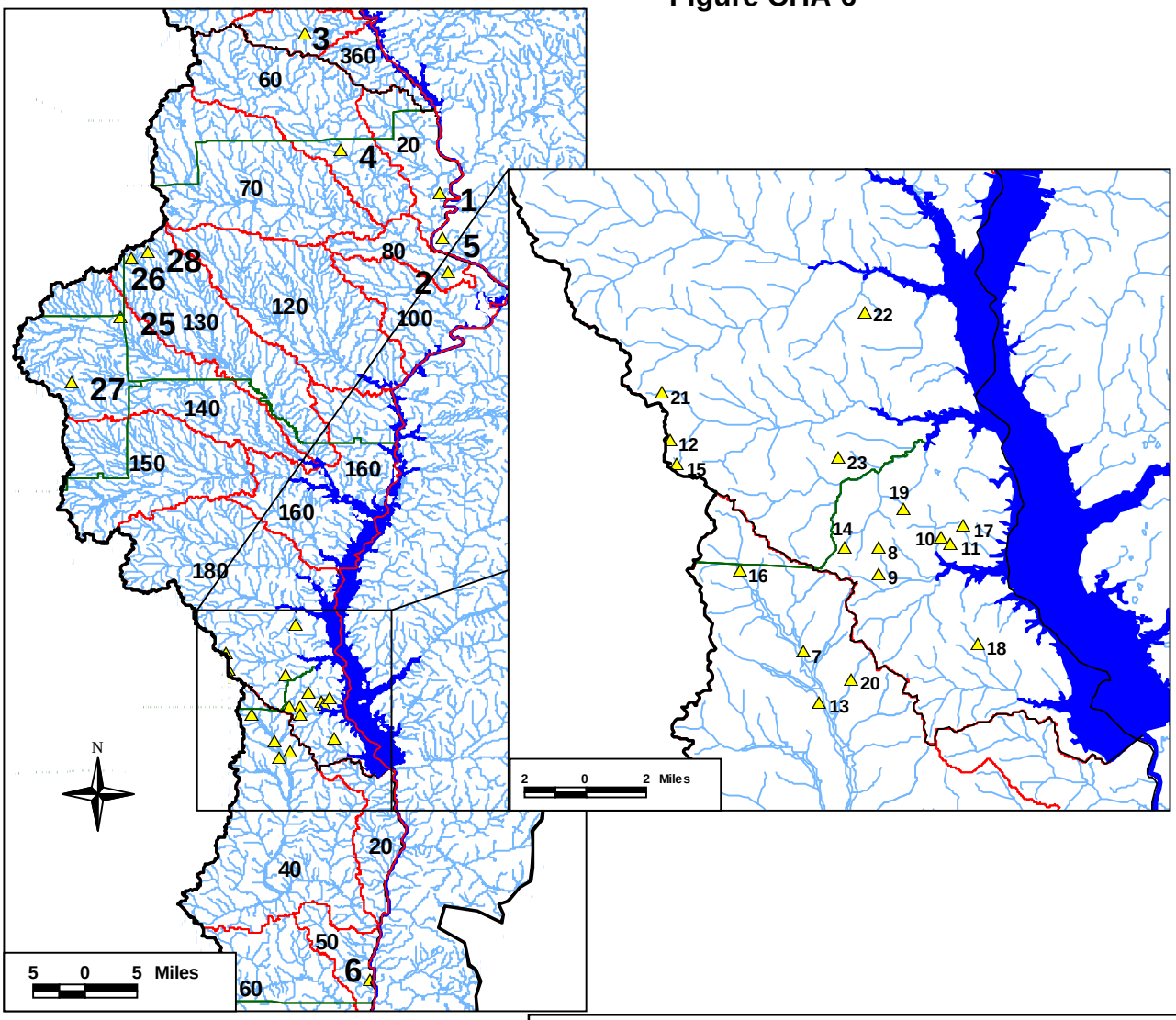
Major Industrial NPDES Process Wastewater Dischargers

1 Mead Coated Board Inc.
2 Southern Co. Farley Nuclear Plant

Semi-Public/Private NPDES Dischargers

1 Ben-Mor Village
2 Beaulah High School
3 Russell Jr. High School
4 Blessed Trinity School
5 Lakepoint Resort
7 Russell Co. High School
8 Chambers Academy
9 Smiths Station High School

Figure CHA-6



Chattahoochee River Basin Mining NPDES Dischargers

INDEX	COMPANY	FACILITY
1	Blue Circle Aggregates Inc.	Brickyard Road Mine Plant #6
2	Blue Circle Aggregates Inc.	Uchee Creek Mine Plant #7
3	Boral Bricks Inc.	Hearn Pit
4	Boral Bricks Inc.	Uchee Property
5	Concrete Company The	Phenix City Plant
6	Couch Inc.	Columbia Sand Pit
7	Eufaula Minerals Mullite Company of America	A.W. Herndon Pit #1
8	Eufaula Minerals Mullite Company of America	Davis Pit #11
9	Eufaula Minerals Mullite Company of America	Davis Pits #1, 3 & 15
10	Eufaula Minerals Mullite Company of America	Davis Pits #12 ,13 ,35 ,& 95
11	Eufaula Minerals Mullite Company of America	Davis Pits #14 & 155
12	Eufaula Minerals Mullite Company of America	Dixon Pit #20
13	Eufaula Minerals Mullite Company of America	Espy Pit
14	Eufaula Minerals Mullite Company of America	Hardwick Pits #1,2 & 3 & Farmer #3
15	Eufaula Minerals Mullite Company of America	Hudspeth-Braddy #5, Dixon #2,5,11
16	Eufaula Minerals Mullite Company of America	Lewis Pit #3
17	Eufaula Minerals Mullite Company of America	Lightner Pit #5
18	Eufaula Minerals Mullite Company of America	Lucas Pits #3,5,& 9
19	Eufaula Minerals Mullite Company of America	Turner Pits #1 ,2 ,& 3
20	Eufaula Minerals Mullite Company of America	Watford-Howerton Pit #1
21	Harbison-Walker Refractories	Dixon-Belcher Pit 3/8
22	Harbison-Walker Refractories	Eufaula Works
23	Harbison-Walker Refractories	Stevenson Pit #5
24	Opelika Materials LLC	Opelika Quarry
25	U.S. Silica Company Inc.	Hurtsboro Plant
26	U.S. Silica Company Inc.	Koon Mine
27	U.S. Silica Company Inc.	Morton Mine
28	U.S. Silica Company Inc.	Townshend Mine

Table CHA-1
1996 Chattahoochee River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
CHA01	Mill Creek	Russell Co. Rd. in SW/SW 1/4, S5, T17N, R30E	32.488056	-85.05917
CHA02	Mill Creek	U.S. Hwy 280	32.48897	-85.034
CHA03	Mill Creek	AL Hwy 1 near mouth	32.465803	-85.00082
CHA04	North Fork Cowikee Creek	Barbour Co. Rd. NE1/4, S27, T13N, R28E	32.09	-85.20917
CHA05	Middle Fork Cowikee Creek	Barbour Co. Rd. NE1/4, S4, T12N, R28E	32.054444	-85.2275
CHA06	South Fork Cowikee Creek	Barbour Co. Rd. 89	32.016666	-85.21361
CHA07	Bryans Creek	Houston Co. Rd. 85 East of Cottonwood (SW 1/4, S13, T1N, R29E)	31.050833	-85.0925
CHA08	Bryans Creek	AL Hwy 95 East of Cottonwood (NW 1/4, S9, T1N, R30E)	31.068888	-85.04556
CHA09	Cedar Creek	Houston Co Rd 33 East of Ashford (SE 1/4, S26, T3N, R28E)	31.206944	-85.21361
CHA10	Cedar Creek	AL Hwy 95 East of Ashford (NE 1/4, S34, T3N, R29E)	31.189722	-85.11889

Table CHA-2
Chattahoochee River Basin Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles Assessed
CHA01	Mill Creek	CHA01	Its source	M	Full	5.4
CHA02	Mill Creek	U.S. Hwy 280	CHA01	M	Full	0.6
CHA03	Mill Creek	AL Hwy 1	CHA02	M	Full	3.3
CHA04	North Fork Cowikee Creek	CHA04	Halliday Cr	E	Full	8.7
CHA05	Middle Fork Cowikee Creek	CHA05	Martin Cr	E	Full	13.5
CHA06	South Fork Cowikee Creek	CHA06	Bear Cr	E	Full	6.7
CHA07	Bryans Creek	Co. Rd. 85	Its source	E	Full	3.3
CHA08	Bryans Creek	AL Hwy 95	CHA07	M	Full	3.8
CHA09	Cedar Creek	Co. Rd. 33	Its source	M	Full	1.7
CHA10	Cedar Creek	AL Hwy 95	CHA09	M	Full	7.1

Table CHA-3
Chattahoochee River Basin Major Industrial NPDES Process Wastewater Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	MEAD CONTAINERBOARD	AL0000817	34.86779	-85.78705
2	SNC FARLEY NUCLEAR PLANT	AL0024619	31.227778	-85.097222

Table CHA-4
Chattahoochee River Basin Municpal NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	ABBEVILLE SOUTH LAGOON	AL0059358	31.50674167	-85.22944444
2	COLUMBIA LAGOON	AL0058335	31.28651111	-85.10693056
3	DOTHAN OMUSSEE CREEK WWTP	AL0022764	31.26216111	-85.32941944
4	EAST ALABAMA WWTP	AL0024724	32.79772778	-85.15698056
5	EUFAULA WWTP	AL0061671	31.87525833	-85.16666667
6	HEADLAND SOUTH WWTP	AL0027014	31.32444444	-85.33731111
7	HURTSBORO HCR LAGOON	AL0020699	32.23293056	-85.40832778
8	LANETT WWTP	AL0023159	32.86226667	-85.18607222
9	OPELIKA EASTSIDE	AL0059218	32.643889	-85.337778
10	PHENIX CITY WWTP	AL0022209	32.43225556	-84.97108056

Table CHA-5
Semi-Public/Private NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	BEN-MOR VILLAGE HOME ESTATES	AL0062391	32.858611	-85.231667
2	BEULAH HIGH SCHOOL	AL0043664	32.71	-85.182222
3	RUSSELL COUNTY HIGH SCHOOL	AL0057088	31.330556	-85.151464
4	BLESSED TRINITY SHRINE RETREAT	AL0059251	32.218611	-85.023611
5	LAKEPOINT RESORT	AL0023906	31.991242	-85.099156
6	EUFAULA YOUTH CENTER	AL0044563	31.878481	-85.252636
7	RUSSELL COUNTY HIGH SCHOOL	AL0057088	31.330556	-85.151464

Table CHA-6
Chattahoochee River Basin Mining NPDES Dischargers

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
1	AL0057274	Blue Circle Aggregates Inc.	Brickyard Road Mine Plant #6	32.401667	-84.994722	03130003-020
2	AL0057266	Blue Circle Aggregates Inc.	Uchee Creek Mine Plant #7	32.295	-84.983333	03130003-080
3	AL0058599	Boral Bricks Inc.	Hearn Pit	32.615278	-85.182222	03130002-320
4	AL0058629	Boral Bricks Inc.	Uchee Property	32.46	-85.1325	03130003-060
5	AL0059137	Concrete Company The	Phenix City Plant	32.340111	-84.989722	03130003-020
6	AL0066541	Couch Inc.	Columbia Sand Pit	31.343056	-85.091667	03130004-050
7	AL0042331	Eufaula Minerals Mullite Company of America	A.W. Herndon Pit #1	31.664167	-85.225	03130003-140
8	AL0058114	Eufaula Minerals Mullite Company of America	Davis Pit #11	31.711667	-85.188889	03130003-180
9	AL0062294	Eufaula Minerals Mullite Company of America	Davis Pits #1, 3 & 15	31.699722	-85.188611	03130003-180
10	AL0064009	Eufaula Minerals Mullite Company of America	Davis Pits #12 ,13 ,35 ,& 95	31.716667	-85.159167	03130003-180
11	AL0062065	Eufaula Minerals Mullite Company of America	Davis Pits #14 & 155	31.713611	-85.154444	03130003-180
12	AL0069213	Eufaula Minerals Mullite Company of America	Dixon Pit #20	31.761389	-85.288056	03130003-140
13	AL0056227	Eufaula Minerals Mullite Company of America	Espy Pit	31.640556	-85.216944	03130004-040
14	AL0062031	Eufaula Minerals Mullite Company of America	Hardwick Pits #1,2 & 3 & Farmer #3	31.711944	-85.204722	03130004-020
15	AL0064017	Eufaula Minerals Mullite Company of America	Hudspeth-Braddy #5, Dixon #2,5,11	31.75	-85.284444	03130003-180
16	AL0065871	Eufaula Minerals Mullite Company of America	Lewis Pit #3	31.700833	-85.255	03130004-040
17	AL0048500	Eufaula Minerals Mullite Company of America	Lightner Pit #5	31.721944	-85.148333	03130003-180
18	AL0068292	Eufaula Minerals Mullite Company of America	Lucas Pits #3,5,& 9	31.6675	-85.141667	03130003-180
19	AL0067521	Eufaula Minerals Mullite Company of America	Turner Pits #1 ,2 ,& 3	31.729722	-85.176667	03130003-180
20	AL0067261	Eufaula Minerals Mullite Company of America	Watford-Howerton Pit #1	31.651389	-85.201944	03130004-040
21	AL0059773	Harbison-Walker Refractories	Dixon-Belcher Pit 3/8	31.783333	-85.291667	03130003-180
22	AL0001848	Harbison-Walker Refractories	Eufaula Works	31.820556	-85.195556	03130003-180
23	AL0068411	Harbison-Walker Refractories	Stevenson Pit #5	31.753056	-85.208056	03130004-040
24	AL0070122	Opelika Materials LLC	Opelika Quarry	32.584167	-85.340278	03130003-060
25	AL0064262	U.S. Silica Company Inc.	Hurtsboro Plant	32.234722	-85.4375	03130003-140
26	AL0064246	U.S. Silica Company Inc.	Koon Mine	32.311944	-85.423056	03130003-130
27	AL0064203	U.S. Silica Company Inc.	Morton Mine	32.147778	-85.505833	03130003-140
28	AL0064289	U.S. Silica Company Inc.	Townshend Mine	32.321111	-85.399722	03130003-130

Table CHA-7
Chattahoochee River Basin Municpal NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	ABBEVILLE SOUTH LAGOON	AL0059358	31.50674167	-85.22944444
2	COLUMBIA LAGOON	AL0058335	31.28651111	-85.10693056
3	DOTHAN OMUSSEE CREEK WWTP	AL0022764	31.26216111	-85.32941944
4	EAST ALABAMA WWTP	AL0024724	32.79772778	-85.15698056
5	EUFAULA WWTP	AL0061671	31.87525833	-85.16666667
6	HEADLAND SOUTH WWTP	AL0027014	31.32444444	-85.33731111
7	HURTSBORO HCR LAGOON	AL0020699	32.23293056	-85.40832778
8	LANETT WWTP	AL0023159	32.86226667	-85.18607222
9	OPELIKA EASTSIDE	AL0059218	32.643889	-85.337778
10	PHENIX CITY WWTP	AL0022209	32.43225556	-84.97108056

Table CHA-8
Semi-Public/Private NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	BEN-MOR VILLAGE HOME ESTATES	AL0062391	32.858611	-85.231667
2	BEULAH HIGH SCHOOL	AL0043664	32.71	-85.182222
3	RUSSELL COUNTY HIGH SCHOOL	AL0057088	31.330556	-85.151464
4	BLESSED TRINITY SHRINE RETREAT	AL0059251	32.218611	-85.023611
5	LAKEPOINT RESORT	AL0023906	31.991242	-85.099156
6	EUFAULA YOUTH CENTER	AL0044563	31.878481	-85.252636
7	RUSSELL COUNTY HIGH SCHOOL	AL0057088	31.330556	-85.151464

Table CHA-9
Chattahoochee River Basin Data

Station		CHA01	CHA01	CHA01	CHA01	CHA01	CHA02	CHA02	CHA02	CHA02	CHA02	CHA03
Sampling Date		6/11/96	7/9/96	8/6/96	9/19/96	10/3/96	6/11/96	7/9/96	8/6/96	9/19/96	10/3/96	6/11/96
Sampling Time		10:00 AM	9:45 AM	10:30 AM	11:50 AM	11:45 AM	10:45 AM	10:15 AM	11:00 AM	11:25 AM	10:45 AM	11:30 AM
Total Water Depth	ft	0.5	0.5	0.25	1	1	0.25	0.5	0.25	1	1	0.5
Depth of Sample	ft	0	0.25	0	0.5	0.5	0	0.25	0	0.5	0.5	0
Air Temperature	°C	26	27	29	27	22	30	30	32	24	23.5	31
Water Temperature	°C	21.9	25	25.3	23	21	24	26	26.7	23	21	24.9
pH	s.u.	6.6	6.7	6.2	6.67	6.6	7	7.1	6.5	7.25	7.06	7.3
Dissolved Oxygen	mg/L	6.9	6	5.9	5.85	6.55	7.1	7.1	7.6	7.95	8.1	7
Flow	cfs*								92		29.6	
Conductivity	mmhos	60	60	72	80.5	52	65	60		83.9	55	80
Cond at 25 °C	mmhos	64	60	72	84	56	66	59		87	60	80
Turbidity	ntu	14	33	26	31.6	22.8	16	38	11	15.5	27.4	19
BOD5	mg/L	0.9			1.2	1.1	0.8			2.5	1	1
NH3-N	mg/L	0.015			0.015K	0.015K	0.015			0.11	0.015	0.015
TKN	mg/L	0.34			0.85	0.27	0.8			0.64	0.34	0.15
NO2+NO3-N	mg/L	0.03			0.03	0.07	0.07			0.19	0.09	0.22
PO4-P	mg/L	0.09			0.02	0.04	0.07			0.04	0.05	0.1
TSS	mg/L					7					14	

Table CHA-9 (cont.)

Station		CHA03	CHA03	CHA03	CHA03	CHA04	CHA04	CHA04	CHA04	CHA05	CHA05	CHA05
Sampling Date		7/9/96	8/6/96	9/19/96	10/3/96	6/11/96	7/9/96	9/19/96	10/17/96	6/11/96	7/9/96	9/19/96
Sampling Time		10:45 AM	11:20 AM	10:50 AM	12:45 PM	3:10 PM	12:55 PM	10:00 AM	10:00 AM	2:30 PM	12:25 PM	9:15 AM
Total Water Depth	ft	0.5	0.5	1.5	2	5	4	2	2.5	4	4	3
Depth of Sample	ft	0.25	0	0.7	1	2.5	2	1	1	2	2	1.5
Air Temperature	°C	32	33	25	26	29	34	22	25	34	34	20
Water Temperature	°C	27	27.5	23	22	27.1	31	21	17	28	30	21
pH	s.u.	7.4	6.4	7.44	7.38	6.9	8.1	7.3	7.2	7.1	8	7.18
Dissolved Oxygen	mg/L	7.1	6.6	8.5	8.25	6.9	8.1	7.25	8.3	7	8.2	7.6
Flow	cfs*											
Conductivity	mmhos	78	108	95.2	68	72	180	105.2	112.3	89	110	74.6
Cond at 25 °C	mmhos	75	103	99	72	69	161	114	133	84	100	81
Turbidity	ntu	54	81L	9.72	31.9	37	16	19.7	13.3	19	10	15.9
BOD5	mg/L			0.9	0.9	1.6		1	1.2	0.9		1
NH3-N	mg/L			0.015K	0.015K	0.015		0.02	0.015L	0.015		0.015K
TKN	mg/L			0.15K	0.16	0.18		0.75	0.41	0.15		0.15K
NO2+NO3-N	mg/L			0.21	0.23	0.14		0.18	0.12	0.1		0.08
PO4-P	mg/L			0.04	0.06	0.35		0.05	0.04	0.06		0.05
TSS	mg/L				26							

Table CHA-9 (cont.)

Station		CHA05	CHA06	CHA06	CHA06	CHA06	CHA06	CHA07	CHA07	CHA07	CHA07	CHA07
Sampling Date		10/17/96	6/11/96	7/9/96	8/6/96	9/19/96	10/17/96	6/12/96	7/9/96	8/7/96	9/18/96	10/23/96
Sampling Time		9:30 AM		12:00 PM	12:45 PM	9:00 AM	9:05 AM	11:00 AM	5:00 PM	9:55 AM	6:05 PM	9:40 AM
Total Water Depth	ft	2.5	15	20		13.5	14				1	1
Depth of Sample	ft	1.2	5	5		5	5				0.5	0.5
Air Temperature	°C	21	30	32		19	19				26	14
Water Temperature	°C	17	30	30		24					28	15
pH	s.u.	7.31	7.2	7.2		7.33	7.57				5.15	5.15
Dissolved Oxygen	mg/L	9	5.7	3.1		6.45	8.9				2.6	5.05
Flow	cfs*				0	0		0	0	0		
Conductivity	mmhos	82.3	128	132		106.5	119.3				40.1	34.1
Cond at 25 °C	mmhos	97	117	120		109					38	42
Turbidity	ntu	7.11	42	91		39	8.11				7.26	3.76
BOD5	mg/L	1.1	1.2			1.8	1.1					1.3
NH3-N	mg/L	0.015K	0.015			0.015K	0.45				0.015K	0.015K
TKN	mg/L	0.32	0.15			0.15K	0.51				0.91	0.15K
NO2+NO3-N	mg/L	0.13	0.1			0.08	0.4				0.01	1.55
PO4-P	mg/L	0.03	0.06			0.05	0.04				0.05	0.083
TSS	mg/L											

Table CHA-9 (cont.)

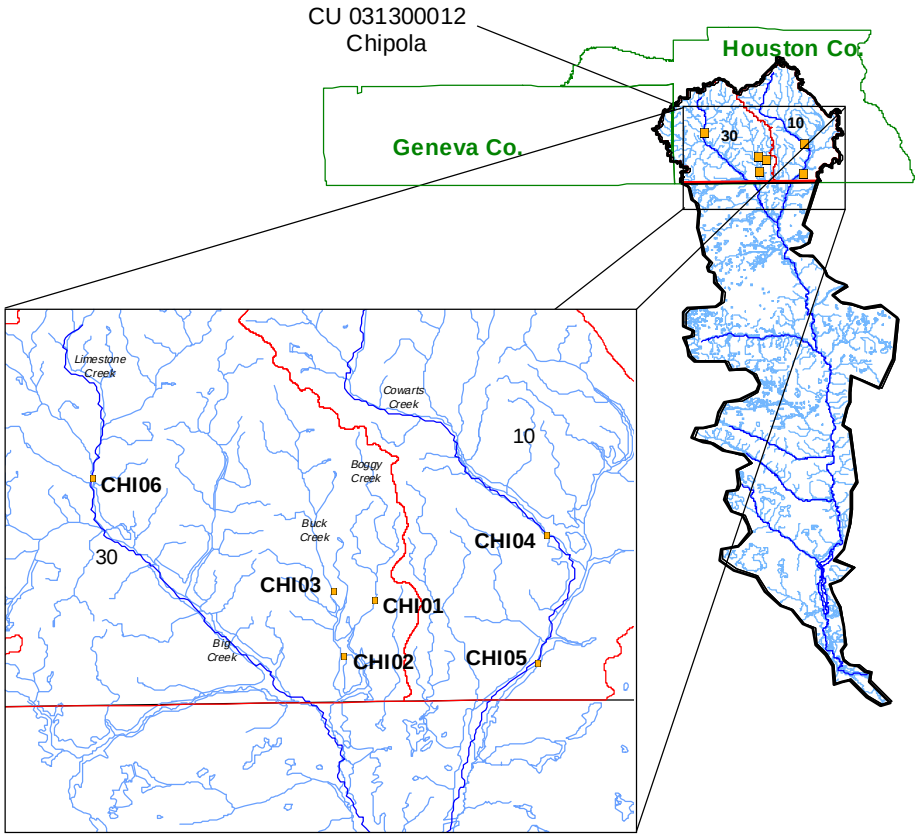
Station		CHA08	CHA08	CHA08	CHA08	CHA08	CHA09	CHA09	CHA09	CHA09	CHA09	CHA10
Sampling Date		6/12/96	7/9/96	8/7/96	9/18/96	10/23/96	6/12/96	7/9/96	8/7/96	9/18/96	10/23/96	6/12/96
Sampling Time		10:30 AM	4:35 PM	9:30 AM	6:25 PM	10:00 AM	8:00 AM	3:40 PM	8:20 AM	7:10 PM	10:45 AM	9:15 AM
Total Water Depth	ft	0.5	0.3	0.25	1	1.5	5	4	4	1.5	3.5	4
Depth of Sample	ft	0	0	0	0.5	0.75	2.5	2	2	0.7	1.75	2
Air Temperature	°C	28	32	30	24	13	29	35	25	23	15	27
Water Temperature	°C	22.9	26	24.8	24	16	24.5	31	26.4	26	16	22.2
pH	s.u.	7.1	7.3	6.5	6.58	7.19	6.7	7.7	6.6	7.16	7.52	7.2
Dissolved Oxygen	mg/L	6	5.5	4.1	5.35	6.6	1.3	4.9	0.9	5.4	5	8.6
Flow	cfs*											
Conductivity	mmhos	150	162	208	73.1	84.3	250	249	250	169.2	216.6	140
Cond at 25 °C	mmhos	156	159	209	75	102	252	223	243	166	262	148
Turbidity	ntu	0	1.2	1.5	7	1.74	0	3.4	4.8	8.62	3.87	7
BOD5	mg/L	0.8				1	8				0.8	0.4
NH3-N	mg/L	0.015			0.015K	0.015K	0.015			0.015K	0.015K	0.015
TKN	mg/L	0.15			1.2	0.15K	0.15			0.67	0.15K	0.15
NO2+NO3-N	mg/L	0.1			0.09	0.13	0.19			0.33	0.82	0.54
PO4-P	mg/L	0.07			0.03	0.038	0.07			0.02	0.056	0.08
TSS	mg/L											

Table CHA-9 (cont.)

Station		CHA10	CHA10	CHA10	CHA10
Sampling Date		7/9/96	8/7/96	9/18/96	10/23/96
Sampling Time		3:40 PM	9:00 AM	6:50 PM	10:25 AM
Total Water Depth	ft	1	1	1.5	2
Depth of Sample	ft	0.5	0.5	0.7	1
Air Temperature	°C	36	26	24	16
Water Temperature	°C	27	23.6	25	16
pH	s.u.	7.6	6.6	7.2	7.65
Dissolved Oxygen	mg/L	7.3	7.5	7.4	8.6
Flow	cfs*				
Conductivity	mmhos	145	150	112.4	115.9
Cond at 25 °C	mmhos	140	154	112	140
Turbidity	ntu	4.5	32	24.7	7.97
BOD5	mg/L				0.3
NH3-N	mg/L			0.015K	0.015K
TKN	mg/L			0.86	0.15K
NO2+NO3-N	mg/L			0.46	0.77
PO4-P	mg/L			0.02	0.089
TSS	mg/L				

Chipola River Basin

Figure CHI-1



Chipola River Basin
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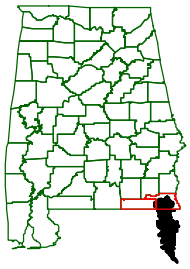
1996



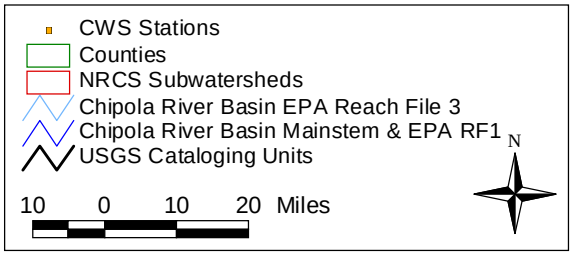
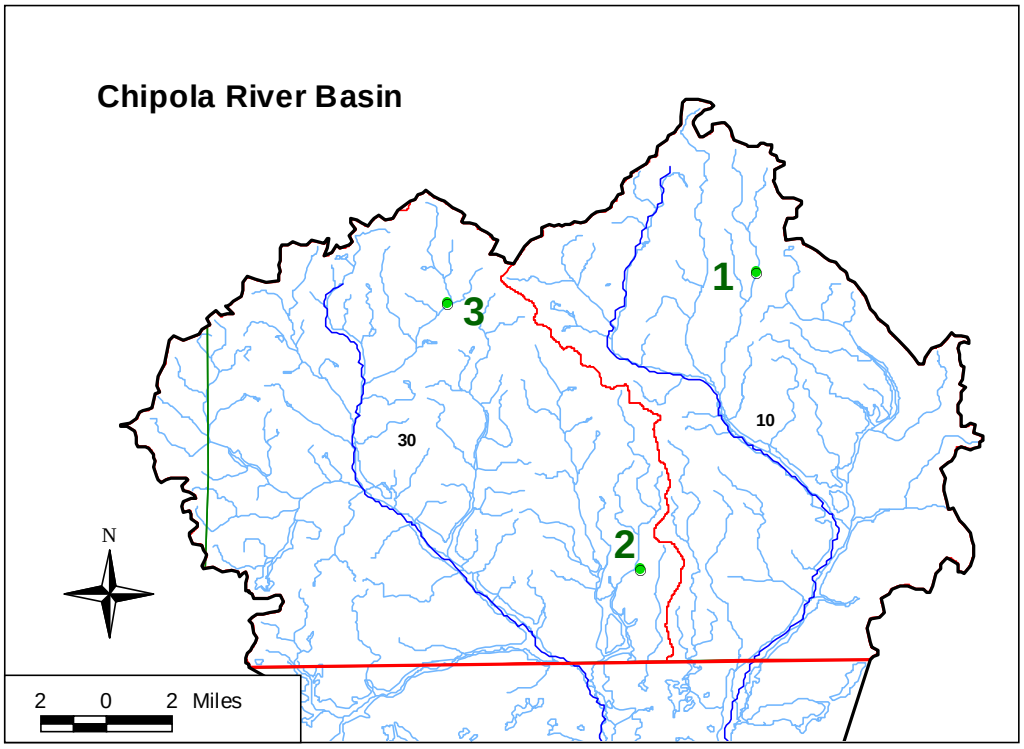


Figure CHI-2



Municipal NPDES Dischargers

1 Ashford Lagoon
2 Cottonwood Lagoon
3 Dothan Cypress Creek WWTP

Table CHI-1
1996 Chipola River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
CHI01	Boggy Creek	AL Hwy 53 at Cottonwood	31.045	-85.29528
CHI02	Boggy Creek	Unnamed Co. Rd. south of Cottonwood	31.02	-85.30889
CHI03	Buck Creek	Co. Rd. 55 west of Cottonwood	31.04916	-85.31361
CHI04	Cowarts Creek	Co. Rd 81 east of Cottonwood	31.074444	-85.21889
CHI05	Cowarts Creek	AL Hwy 53 southeast of Cottonwood	31.016944	-85.2225
CHI06	Limestone Creek	AL Hwy 109 south of Dothan	31.09916	-85.42083

Table CHI-2
Chipola River Basin Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
CHI01	Boggy Creek	AL Hwy 53	Its source	M	Full	6.5
CHI02	Boggy Creek	Unnamed Co. Rd. south of Cottonwood	CHI01	M	Non	2.2
CHI03	Buck Creek	Co. Rd. 55	Its source	M	Full	6.8
CHI04	Cowarts Creek	Co. Rd. 81	Its source	M	Full	14.4
CHI05	Cowarts Creek	AL Hwy 53	CHI04	M	Full	4.9
CHI06	Limestone Creek	AL Hwy 109	Its source	M	Full	8.2

Table CHI-3
Chipola River Basin Municpal NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	Ashford Lagoon	AL0057878	31.1725	-85.241944
2	Cottonwood Lagoon	AL0024295	31.04056	-85.293333
3	Dothan Cypress Creek WWTP	AL0022748	31.15833	-85.379167

Table CHI-4
Chipola River Basin Data

Station		CHI01	CHI01	CHI01	CHI01	CHI01	CHI02	CHI02	CHI02	CHI02	CHI02	CHI03
Sampling Date		6/13/96	7/10/96	8/7/96	9/18/96	10/23/96	6/13/96	7/10/96	8/7/96	9/18/96	10/23/96	6/13/96
Sampling Time		11:15 AM	10:20 AM	11:15 AM	4:45 PM	8:25 AM	10:35 AM	9:55 AM	11:45 AM	5:05 PM	8:00 AM	10:00 AM
Total Water Depth	ft	2	1	0.5	1	2.5	4	0.5	1	0	2	0.5
Depth of Sample	ft	1	0.5	0	0.5	1.25	2	0	0.5	0	1	0
Air Temperature	°C	32	34	32	30	12	30	33	32	27	12	30
Water Temperature	°C	24.3	24	25.3	25	16	26.6	28	29.2	29	15	25.5
pH	s.u.	7.9	8	7.3	7.73	7.8	6.9	7.1	7	7.66	7.22	6.7
Dissolved Oxygen	mg/L	8.9	7.7	8.7	7.3	7.9	3.2	4.2	6.9	7.55	5.65	6.6
Flow	cfs											
Conductivity	mmhos	220	230	255	204	152.1	1000	265	2700	511	732	105
Cond at 25 °C	mmhos	223	234	254	204	184	970	251	2499	475	905	104
Turbidity	ntu	0	3.5	3.9	6.15	7.53	6	8.9	4.3	3.66	13.1	
BOD5	mg/L		0.9	0.8		0.6		1.3	0.8		1.3	
NH3-N	mg/L		0.015	0.015		0.015K		0.028	0.11		0.015K	
TKN	mg/L		0.15	0.17		0.56		6.18	0.7		0.59	
NO2+NO3-N	mg/L		1.75	1.73		0.01		0.19	0.26		0.73	
PO4-P	mg/L			0.02		0.065		0.05	0.04		0.08	

Table CHI-4 (cont.)

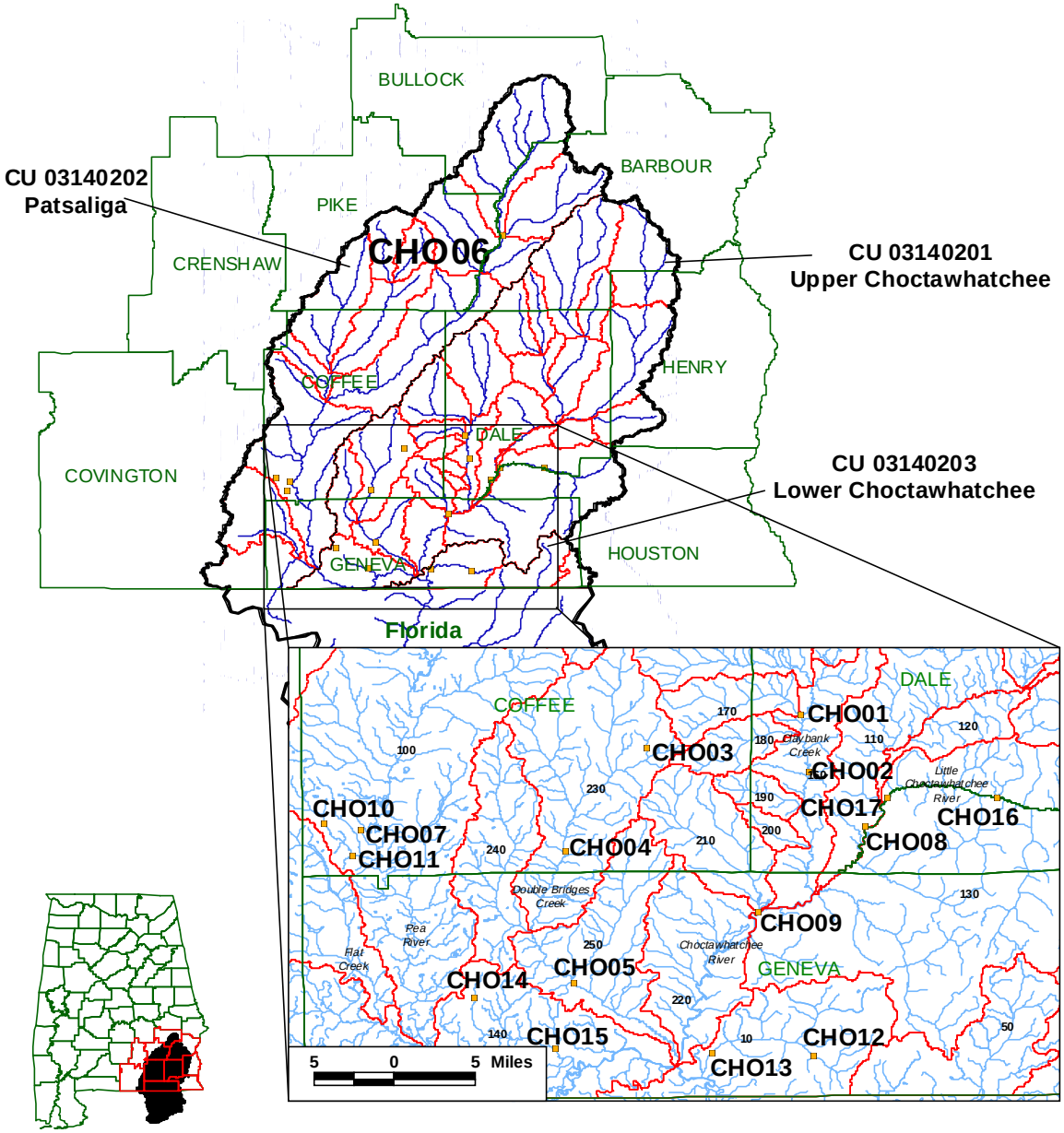
Station		CHI03	CHI03	CHI03	CHI03	CHI04	CHI04	CHI04	CHI04	CHI04	CHI05	CHI05
Sampling Date		7/10/96	8/7/96	9/18/96	10/23/96	6/13/96	7/10/96	8/7/96	9/18/96	10/23/96	6/13/96	7/10/96
Sampling Time		9:30 AM	11:30 AM	4:25 PM	7:35 AM	12:05 PM	11:10 AM	10:20 AM	5:45 PM	9:15 AM	11:40 AM	10:40 AM
Total Water Depth	ft	0.5		4.5	2	4	2	3	6	5	5	2
Depth of Sample	ft	0		2	1	2	1	1.5	3	2.5	2.2	1
Air Temperature	°C	30		28	13	30	34	30	28	12	32	34
Water Temperature	°C	26.5		26	16	25.8	27	25.2		15	25.9	26
pH	s.u.	6.8		6.56	7.26	7.6	7.8	6.8	6.85	7.57	7.7	7.6
Dissolved Oxygen	mg/L	4.7		5.9	7.8	7.3	7.1	6.9	5.95	7.85	6.5	6.6
Flow	cfs		0									
Conductivity	mmhos	108		87.1	83.1	189	220	212	108.1	135.6	200	215
Cond at 25 °C	mmhos	105		85	100	186	212	211		168	197	211
Turbidity	ntu	6.2		16.4	4.51		3.8	5.6	15.6	5.15	3	4
BOD5	mg/L	1.7		1.9	0.8		0.9	1	1.3	0.7		0.7
NH3-N	mg/L	0.015			0.015K		0.015	0.015K		0.015K		0.015
TKN	mg/L	0.15			0.15K		0.15	0.15K		0.39		0.15
NO2+NO3-N	mg/L	0.01			0.04		0.29	0.25		0.57		1.65
PO4-P	mg/L	0.02			0.067		0.04	0.04		0.077		0.03

Table CHI-4 (cont.)

Station		CHI05	CHI05	CHI05	CHI06	CHI06	CHI06	CHI06	CHI06
Sampling Date		8/7/96	9/18/96	10/23/96	6/13/96	7/10/96	8/7/96	9/18/96	10/23/96
Sampling Time		10:50 AM	5:20 PM	8:45 AM	9:15 AM	8:30 AM	12:25 PM	4:00 PM	7:10 AM
Total Water Depth	ft	2	7	4.5	5	0.5	1	2	2
Depth of Sample	ft	1	3.5	2.25	2.5	0	0	1	1
Air Temperature	°C	31	28	12	29	28	30	33	12
Water Temperature	°C	25.6	25	16	23.7	25	26.3	26	16
pH	s.u.	6.9	7.03	7.54	6.9	6.9	6.8	6.94	7.53
Dissolved Oxygen	mg/L	6.5	5.2	6.85	6.5	6.6	7.9	6.65	7.8
Flow	cfs								
Conductivity	mmhos	200	145	171.9	111	129	130	99.3	90.1
Cond at 25 °C	mmhos	198	145	208	114	129	127	97	109
Turbidity	ntu	4.2	14.2	4.7	5	5.3	13	9.36	4.92
BOD5	mg/L	0.7	1.2	1		0.6	1.2		1
NH3-N	mg/L	0.015K		0.015K		0.015	0.015K		0.015K
TKN	mg/L	0.21		0.15K		0.15	0.64		0.32
NO2+NO3-N	mg/L	1.1		1.3		0.9	0.53		0.62
PO4-P	mg/L	0.03		0.107		0.12	0.07		0.072

Choctawhatchee River Basin

Figure CHO-1



Choctawhatchee River Basin
Clean Water Strategy
Sampling Stations
1996

- NRCS Subwatersheds
- Counties
- Choctawhatchee River Basin
- Choctawhatchee River Basin Mainstem and RF1
- USGS Cataloging Units

10 0 10 20 Miles

N

ADEM-Water Quality Section 1997

Figure CHO-2

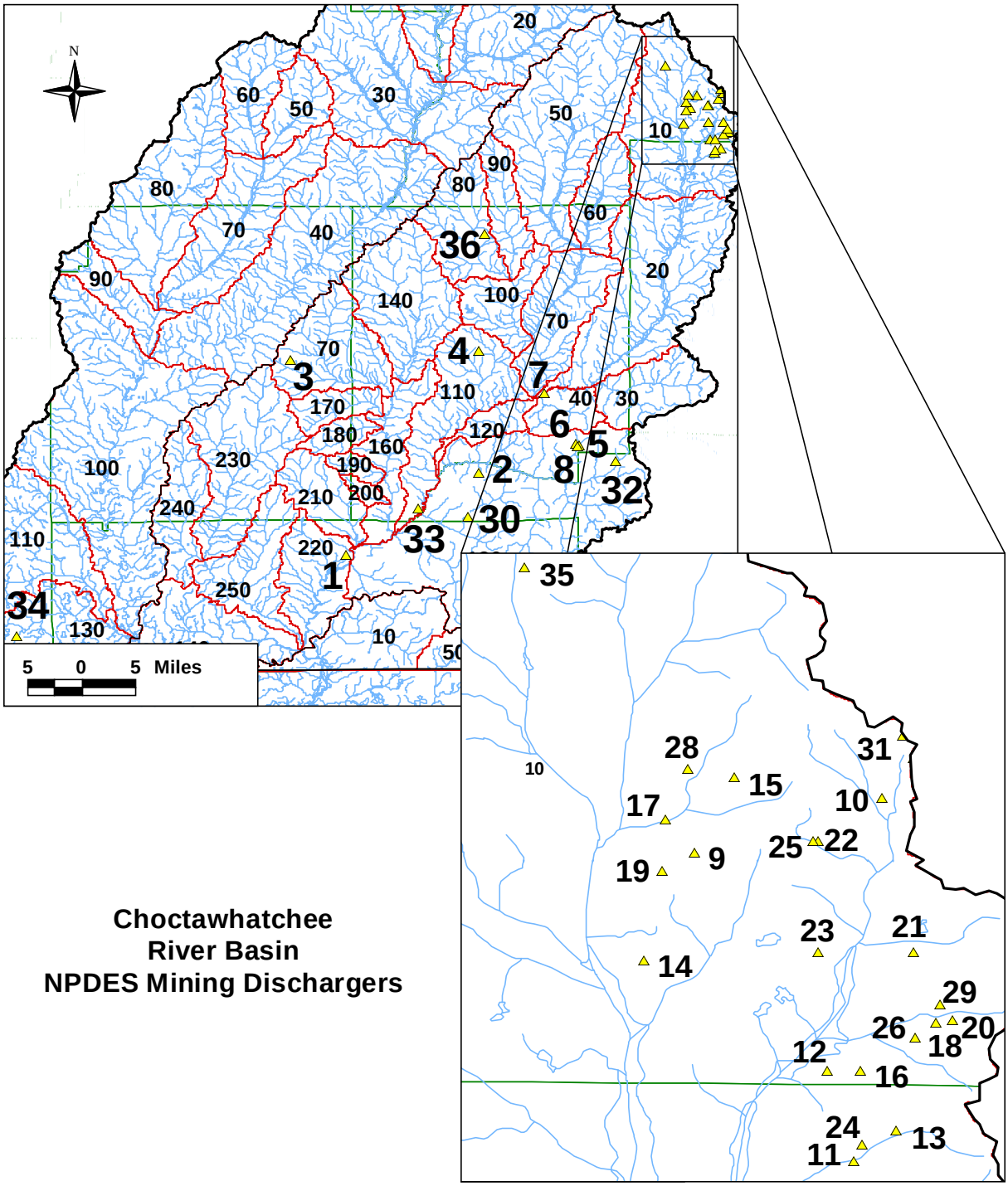
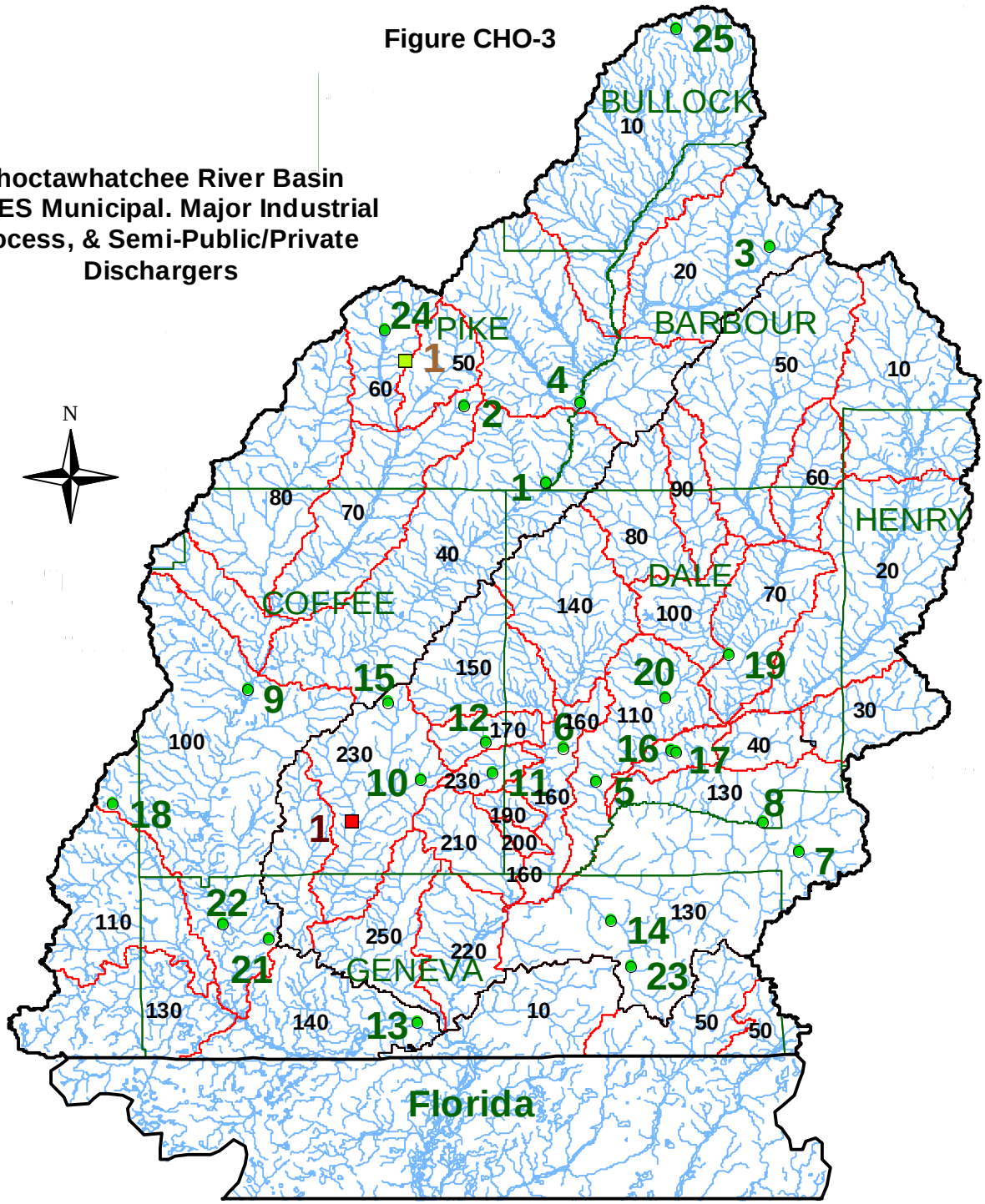

N
5 0 5 Miles
Choctawhatchee
River Basin
NPDES Mining Dischargers

Figure CHO-3

Choctawhatchee River Basin NPDES Municipal. Major Industrial Process, & Semi-Public/Private Dischargers



Municipal NPDES Dischargers		Industrial NPDES Process Wastewater Dischargers
1 Ariton Lagoon	13 Geneva WWTP	1 Con Agra Poultry Co., Inc.
2 Brundidge WWTP	14 Hartford Lagoon	
3 Clayton WWTP	15 New Brockton WWTP	**Semi-Public/Private NPDES Dischargers**
4 Clio Lagoon	16 Newton Callaway St. WWTP	1 Camelot Park
5 Daleville SE Lagoon	17 Newton Edna St WWTP	
6 Daleville Westside Lagoon	18 Opp Eastside WWTP	
7 Dothan Beaver Creek WWTP	19 Ozark Northeast Lagoon	
8 Dothan L. Choctawhatchee WWTP	20 Ozark Southside WWTP	
9 Elba Lagoon	21 Samson Lagoon	
10 Enterprise WWTP #2 (College St.)	22 Samson Lagoon	
11 Enterprise WWTP #3 (SE)	23 Slocomb Lagoon	
12 Enterprise WWTP #4 (NE)	24 Troy Walnut Creek WWTP	
	25 Union Springs Spray Field	

Table CHO-1
1996 Choctawhatchee River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
CHO01	Claybank Creek	AL Hwy 248 south of Lowe Field	31.336388	-85.74611
CHO02	Claybank Creek	Co. Rd. 24 southwest of Daleville	31.285278	-85.73889
CHO03	Blanket Creek	Co. Rd. 622 southwest of Enterprise	31.306667	-85.88417
CHO04	Double Bridges Creek	Co. Rd. 655 southwest of Enterprise	31.213056	-85.9575
CHO05	Double Bridges Creek	Co. Rd. 65 northwest of Geneva	31.095	-85.95
CHO06	Pea River	AL Hwy 130 west of Louisville	31.785277	-85.6628
CHO07	Pea River	Coffee Co.Rd. 474 E of Kinston (NW 1/4, S15, T3N, R19E)	31.232222	-86.14056
CHO08	Choctawhatchee River	AL Hwy 12 east of Clayhatchee	31.236111	-85.68833
CHO09	Choctawhatchee River	Co. Rd. northeast of Geneva	31.159166	-85.78472
CHO10	Cripple Creek	Co. Rd. 470 at Kinston	31.239444	-86.17333
CHO11	Cripple Creek	Co. Rd. 473 east of Kinston	31.210833	-86.14778
CHO12	Spring Creek	Co. Rd. 61 north of Black	31.030555	-85.735
CHO13	Spring Creek	Co. Rd. 4 east of Eunola	31.033611	-85.82583
CHO14	Sandy Creek	Co. Rd. 16 south of Samson	31.083611	-86.03944
CHO15	Sandy Creek	Co. Rd. 65 east of Geneva	31.036388	-85.96667
CHO16	Little Choctawhatchee River	Co. Rd. 9 south of Newton	31.2625	-85.57
CHO17	Little Choctawhatchee River	Hwy 84 east of Daleville	31.262222	-85.6689

Table CHO-2
Choctawhatchee River Basin

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
CHO01	Claybank Creek	CHO01	Its source	M	Full	21.4
CHO02	Claybank Creek	CHO02	CHO01	M	Full	4.9
CHO03	Blanket Creek	CHO03	Its source	M	Full	0.5
CHO04	Double Bridges Creek	CHO04	Its source	M	Full	14.5
CHO05	Double Bridges Creek	CHO05	CHO04	M	Full	12
CHO06	Pea River	CHO06	Double Cr	M	Full	9.3
CHO07	Pea River	CHO07	Whitewater Cr	M	Full	17.7
CHO08	Choctawhatchee River	CHO08	E & W Fks	M	Full	17.4
CHO09	Choctawhatchee River	CHO09	CHO08	M	Full	11.8
CHO10	Cripple Creek	CHO10	Its source	M	Full	2.7
CHO11	Cripple Creek	CHO11	CHO10	M	Full	6.9
CHO12	Spring Creek	CHO12	Its source	M	Partial	4.8
CHO13	Spring Creek	CHO13	CHO12	M	Full	6.4
CHO14	Sandy Creek	CHO14	Its source	M	Non	1.8
CHO15	Sandy Creek	CHO15	CHO14	M	Full	6.8
CHO16	Little Choctawhatchee River	CHO16	Its source	M	Full	13
CHO17	Little Choctawhatchee River	CHO17	CHO16	M	Full	7.4

Table CHO-3
Industrial NPDES Process Wastewater Dischargers

Index	Facility	NPDES Permit	Latitude	Longitude
1	CONAGRA POULTRY CO. INC	AL0003697	31.2546	-85.9604

Table CHO-4
Semi-Public/Private NPDES Dischargers

Index	Facility	NPDES Permit	Latitude	Longitude
1	CAMELOT PARK	AL0057509	31.760311	-85.900647

Table CHO-5
Choctawhatchee Mining NPDES Dischargers

INDEX	COMPANY	FACILITY	NPDES PERMIT	LATITUDE	LONGITUDE	USDA-NRCS SUBWATERSHED
1	Couch Inc.	Bellwood Sand Plant	AL0067849	31.149722	-85.795278	03140201-220
2	Couch Inc.	Box Pit	AL0062090	31.259722	-85.616667	03140201-130
3	Couch Inc.	Bradshaw Pit	AL0064068	31.410833	-85.870278	03140201-170
4	Couch Inc.	Espy Pit	AL0065498	31.425	-85.616667	03140201-110
5	Couch Inc.	Gary Pit	AL0060984	31.297222	-85.483333	03140201-130
6	Couch Inc.	Newt Gary Pit	AL0066524	31.3	-85.4875	03140201-130
7	Couch Inc.	Newton Sand Plant	AL0066532	31.366667	-85.529167	03140201-040
8	Couch Inc.	Ward Pit	AL0069949	31.295278	-85.485556	03140201-130
9	Eufaula Minerals Mullite Company of America	A.P. Green Plant	AL0069353	31.751667	-85.333056	03140201-010
10	Eufaula Minerals Mullite Company of America	B. Bynum Pit 2	AL0064548	31.7625	-85.295833	03140201-010
11	Eufaula Minerals Mullite Company of America	Crawford Pit #5	AL0069426	31.690556	-85.301389	03140201-010
12	Eufaula Minerals Mullite Company of America	Crawford Pit #7	AL0058149	31.708333	-85.306667	03140201-010
13	Eufaula Minerals Mullite Company of America	Crawford/Owens Pit #2	AL0069256	31.696389	-85.292778	03140201-010
14	Eufaula Minerals Mullite Company of America	Green Pit #1	AL0058131	31.730278	-85.343056	03140201-010
15	Eufaula Minerals Mullite Company of America	Hudson Pits	AL0068284	31.766667	-85.325	03140201-010
16	Eufaula Minerals Mullite Company of America	J.R. Wood Pits #8 & #23	AL0058271	31.708333	-85.3	03140201-010
17	Eufaula Minerals Mullite Company of America	J.S. Jones Pit #1	AL0063959	31.758333	-85.338889	03140201-010
18	Eufaula Minerals Mullite Company of America	Linn Mine #4	AL0069400	31.717778	-85.285	03140201-010
19	Eufaula Minerals Mullite Company of America	McLeod Pit #20	AL0059111	31.748056	-85.339444	03140201-010
20	Eufaula Minerals Mullite Company of America	O.B. Smith Mine #2	AL0064564	31.718333	-85.281667	03140201-010
21	Eufaula Minerals Mullite Company of America	O.B. Smith Pit #8	AL0069566	31.731944	-85.289444	03140201-010
22	Eufaula Minerals Mullite Company of America	Oma Threatt 5E	AL0055930	31.754167	-85.308333	03140201-010
23	Eufaula Minerals Mullite Company of America	Smith-Lee Pit No.1, Phase III	AL0057894	31.731944	-85.308333	03140201-010
24	Eufaula Minerals Mullite Company of America	Vickers Pit	AL0068128	31.693611	-85.299722	03140201-010
25	Eufaula Minerals Mullite Company of America	Walker Pit #1	AL0069914	31.754167	-85.309444	03140201-010
26	Eufaula Minerals Mullite Company of America	Wood Pit #1	AL0056821	31.715	-85.289167	03140201-010
27	Eufaula Minerals Mullite Company of America	Baker Hill Stockpiles	AL0050539	31.770556	-85.289444	03140201-010
28	Eufaula Minerals Mullite Company of America	J.B. Lee Pit No.1	AL0070688	31.768333	-85.334444	03140201-010
29	Eufaula Pulpwood Company Inc.	Eufaula Pulpwood Pit #1	AL0064556	31.721667	-85.284167	03140201-010
30	Fennco Inc.	King Pit	AL0069922	31.201111	-85.631667	03140201-130
31	Harbison-Walker Refractories	Dixon-Gachet Pit	AL0057746	31.775	-85.291667	03140201-010
32	Lingo Sand & Gravel Inc.	Lingo Road Pit #2	AL0067971	31.275556	-85.434167	03140201-130
33	Mark Donnell Sand Company	Donnell Sand Pit	AL0067431	31.211389	-85.698889	03140201-110
34	Rodney H. Greenway Inc.	Diamond Pit No.2	AL0069876	31.040556	-86.237778	03140202-130
35	Wilson Mining Company Inc.	Odum Pit #2	AL0065889	31.808333	-85.366667	03140201-010
36	Wiregrass Construction Co. Inc.	Faust Pit	AL0067717	31.581111	-85.610556	03140201-080

Table CHO-6
Choctawhatchee Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude	Treatment
1	AL0068551	Ariton Lagoon	Pea River	31.623889	-85.743611	Secondary
2	AL0044105	Brundidge WWTP	Whitewater Creek	31.71	-85.833333	Secondary
3	AL0060461	Clayton WWTP	Pea Creek	31.883056	-85.497222	Secondary
4	AL0067181	Clio Lagoon	Pea River	31.713333	-85.706944	Secondary
5	AL0050261	Daleville SE Lagoon	Choctawhatchee River	31.296111	-85.6875	Secondary
6	AL0062448	Daleville Westside WWTP	Claybank Creek	31.333333	-85.725	Advanced
7	AL0022756	Dothan Beaver Creek WWTP	Beaver Creek	31.218889	-85.465556	Advanced
8	AL0047465	Dothan Little Choctawhatchee WWTP	Little Choctawhatchee River	31.252222	-85.505278	Advanced
9	AL0020940	Elba Lagoon	Pea River	31.398333	-86.073611	Secondary
10	AL0020036	Enterprise WWTP #2 (College)	Blanket Creek	31.299444	-85.882778	Advanced
11	AL0020044	Enterprise WWTP #3 (SE)	Cowpen Creek	31.305833	-85.803611	Advanced
12	AL0020061	Enterprise WWTP #4 (NE)	Harrand Creek	31.339722	-85.811111	Advanced
13	AL0020273	Geneva WWTP	Pea River	31.032778	-85.885833	Secondary
14	AL0058947	Hartford Lagoon	Hurricane Creek	31.143611	-85.671667	Secondary
15	AL0055875	New Brockton WWTP	UT to Double Bridges Creek	31.383611	-85.918056	Advanced
16	AL0060551	Newton Callaway Street WWTP	UT to Choctawhatchee River	31.331389	-85.605	Advanced
17	AL0060569	Newton Edna Street WWTP	UT to Choctawhatchee River	31.328889	-85.6	Advanced
18	AL0021407	Opp Eastside WWTP	Cripple Creek	31.271389	-86.221944	Secondary
19	AL0058688	Ozark Northeast Lagoon	West Fork Choctawatchee River	31.435278	-85.543056	Secondary
20	AL0056324	Ozark Southside WWTP	Klondike Creek	31.388056	-85.612778	Secondary
21	AL0047643	Samson Lagoon	Samson Branch	31.125	-86.05	Advanced
22	AL0068896	Samson Lagoon	Pea River	31.139722	-86.099722	Secondary
23	AL0056111	Slocomb Lagoon	Hurricane Creek	31.092778	-85.650556	Secondary
24	AL0032310	Troy Walnut Creek WWTP	Walnut Creek	31.791667	-85.9225	Advanced
25	AL0060445	Union Springs Spray Field	Groundwater	32.122222	-85.6	Advanced

Table CHO-7
Choctawhatchee River Basin Data

Station		CHO01	CHO01	CHO01	CHO01	CHO01	CHO02	CHO02	CHO02	CHO02	CHO02	CHO03
Sampling Date		6/18/96	7/16/96	8/14/96	9/18/96	10/22/96	6/18/96	7/17/96	8/14/96	9/18/96	10/22/96	6/18/96
Sampling Time		3:45 PM	8:15 AM	8:40 AM	10:25 AM	10:40 AM	4:15 PM	8:50 AM	9:15 AM	10:00 AM	10:15 AM	2:30 PM
Total Water Depth	ft	3	2	1	1.5	2	6	2	2	1.5	3.5	0.5
Depth of Sample	ft	1.5	1	0.5	0.7	1	3	1	1	0.7	1.75	
Air Temperature	°C	29	27	24	23	22	29	29	25	23	23	31
Water Temperature	°C	27	25.1	24	22	14	27.2	25.8	24.3	22	14	26.7
pH	s.u.	6	6.8	6.7	7.1	7.19	6.9	7	6.3	7.12	7.21	7.1
Dissolved Oxygen	mg/L	7.1	7.1	7.1	7.4	9.3	7	6.9	6.9	7.15	8.95	6.2
Flow	cfs			22								
Conductivity	mmhos	51	68	70	88.4	79.2	59	78	72	86.2	79.8	142
Cond at 25 °C	mmhos	49	68	71	94	100	57	77	73	91	101	138
Turbidity	ntu	14	14	22	14.2	8.96	12	14	30	13.3	9.33	10
BOD5	mg/L	0.6			0.9	1.2	1.3			1	0.8	0.9
NH3-N	mg/L	0.015			0.015K	0.015K	0.015			0.015	0.015K	0.065
TKN	mg/L	3.36			0.23	0.22	1.3			0.49	0.15K	1.19
NO2+NO3-N	mg/L	0.59			0.78	0.94	0.67			0.7	0.92	1.47
PO4-P	mg/L	0.12			0.09	0.082	0.11			0.06	0.081	0.28

Table CHO-7 (cont.)

Station		CHO03	CHO03	CHO03	CHO03	CHO04	CHO04	CHO04	CHO04	CHO04	CHO05	CHO05
Sampling Date		7/16/96	8/13/96	9/18/96	10/22/96	6/18/96	7/16/96	8/13/96	9/18/96	10/22/96	6/18/96	7/16/96
Sampling Time		4:50 PM	3:55 PM	10:50 AM	11:15 AM	3:00 PM	5:15 PM	4:20 PM	11:10 AM	11:35 AM	11:20 AM	2:05 PM
Total Water Depth	ft	1	1	1	1	6	3	1	3	1.5	6	4
Depth of Sample	ft	0	0.5	0.6	0.5	3	1.5	0.5	1.5	0.75	3	2
Air Temperature	°C	34	32	23	24	37	34	33	28	22	30	33
Water Temperature	°C	28.2	26.3	21	15	26.1	26.8	26.6	25	15	26	27.4
pH	s.u.	6.9	6.8	7.1	7.22	6.9	6.4	6.7	6.96	7.13	7.1	7.3
Dissolved Oxygen	mg/L	5.7	6.1	6.25	7.8	6.5	6.3	6.5	6.8	8.8	6.2	6.7
Flow	cfs											
Conductivity	mmhos	155	170	162.1	152.8	82	69	100	103.2	90.6	61	73
Cond at 25 °C	mmhos	146	166	176	189	80	67	97	103	112	60	70
Turbidity	ntu	12	6.1	8.89	9.27	26	32	17	16.8	14.4	18	38
BOD5	mg/L			1.2	1.1	1.2			1.5	0.9	0.4	
NH3-N	mg/L			0.015	0.015K	0.015			0.015K	0.015K	0.015	
TKN	mg/L			0.75	0.15K	0.18			0.61	0.43	0.15	
NO2+NO3-N	mg/L			0.47	1.1	2.78			1.98	2.3	1.24	
PO4-P	mg/L			0.17	0.199	0.45			0.33	0.297	0.18	

Table CHO-7 (cont.)

Station		CHO05	CHO05	CHO05	CHO06	CHO06	CHO06	CHO06	CHO06	CHO07	CHO07	CHO07
Sampling Date		8/13/96	9/18/96	10/22/96	6/18/96	7/17/96	8/14/96	9/18/96	10/17/96	6/18/96	7/16/96	8/13/96
Sampling Time		12:20 PM	1:52 PM	2:20 PM	7:20 PM	12:25 PM	12:20 PM	7:35 AM	11:20 AM	9:40 AM	12:10 PM	1:15 PM
Total Water Depth	ft	2	4	3.5	6	4	3	5.9	6	6	4	
Depth of Sample	ft	1	2	1.75	3	2	1.5	2.9	3	3	2	
Air Temperature	°C	33	31	27	25	33	32	17	28	32	33	31
Water Temperature	°C	26.7	26	16	24.9	25.9	25.2	22	19	27.2	28.4	27.8
pH	s.u.	6.8	7.24	7.39	6.3	6.8	6.5	6.72	6.74	7	7.2	6.5
Dissolved Oxygen	mg/L	7.3	7.25	9.25	5.4	6.2	5.8	5.7	7.5	6.7	6.9	6.8
Flow	cfs											
Conductivity	mmhos	88	86.1	81.5	48	48	48	55	54.2	68	82	82
Cond at 25 °C	mmhos	85	84	98	48	47	48	58	61	65	77	78
Turbidity	ntu	13	12.1	8.64	18	18	13	17.5	11.4	14	20	21
BOD5	mg/L		1.1	0.9	0.8			0.9	0.9	0.4		
NH3-N	mg/L		0.015K	0.015K	0.015			0.015K	0.015L	0.015		
TKN	mg/L		0.33	0.15K	0.15			0.5	0.3	0.15		
NO2+NO3-N	mg/L		0.9	1.64	0.16			0.03	0.09	0.46		
PO4-P	mg/L		0.14	0.188	0.06			0.04	0.03	0.26		

Table CHO-7 (cont.)

Station		CHO07	CHO07	CHO08	CHO08	CHO08	CHO08	CHO08	CHO09	CHO09	CHO09	CHO09
Sampling Date		9/18/96	10/22/96	6/18/96	7/17/96	8/14/96	9/18/96	10/22/96	6/18/96	7/16/96	8/13/96	9/18/96
Sampling Time		11:40 AM	12:10 PM	4:40 PM	9:20 AM	9:50 AM	9:39 AM	9:50 AM	1:30 PM	4:05 PM	3:10 PM	3:05 PM
Total Water Depth	ft	2	2		4	4	9	6	8	6	8	10
Depth of Sample	ft	1	1		2	2	4.5	3	4	3	4	5
Air Temperature	°C	30	25	28	29	30	23	20	38	34	32	30
Water Temperature	°C	27	16	28.1	26.5	25.2	24	15	29.1	28.7	27.6	27
pH	s.u.	7.02	7.44	7.2	7.2	6.8	7.21	7.23	7.1	7	6.8	6.95
Dissolved Oxygen	mg/L	7.1	8.9	7.1	6.8	7	6.8	8.9	6.8	6.9	6.6	6.75
Flow	cfs							78.5				
Conductivity	mmhos	78.1	90.5	72	78	72	84.8	78.5	61	82	75	85.1
Cond at 25 °C	mmhos	75	109	68	76	72	86	97	57	77	71	82
Turbidity	ntu	15.4	6.77	9	18	18	15	7.45	12	20	21	15.6
BOD5	mg/L	0.8	0.6	0.5			0.7	0.6	0.3			0.9
NH3-N	mg/L	0.015K	0.015K	0.015			0.015K	0.015K	0.015			0.015K
TKN	mg/L	0.49	3.23	0.15			0.4	0.15K	0.15			0.34
NO2+NO3-N	mg/L	0.22	0.34	0.63			0.38	0.68	0.59			0.44
PO4-P	mg/L	0.02	0.052	0.08			0.07	0.085	0.1			0.05

Table CHO-7 (cont.)

Station		CHO09	CHO10	CHO10	CHO10	CHO10	CHO10	CHO11	CHO11	CHO11	CHO11	CHO11
Sampling Date		10/22/96	6/18/96	7/16/96	8/13/96	9/18/96	10/22/96	6/18/96	7/16/96	8/13/96	9/18/96	10/22/96
Sampling Time		4:30 PM	9:00 AM	11:15 AM	10:25 AM	12:10 PM	12:50 PM	10:00 AM	11:45 AM	10:50 AM	11:55 AM	12:30 PM
Total Water Depth	ft	6	2	1	0.5	1.5	2	3	1	1	0.6	1
Depth of Sample	ft	3	1	0	0	0.7	1	1.5	0	0.5	0.3	0.5
Air Temperature	°C	23	30	31	30	32	25	32	31	30	25	26
Water Temperature	°C	16	24.2	26.4	25.1	25	17	25.2	26.4	25.6	25	16
pH	s.u.	7.24	7.1	7.1	6.8	7.41	7.59	7.5	7.5	6.8	7.6	7.79
Dissolved Oxygen	mg/L	8.65	7	6.9	6.7	7.5	8.4	7.6	7.4	7.4	7.7	8.85
Flow	cfs											
Conductivity	mmhos	76.8	72	95	110	141.6	141.5	80	102	120	152.9	137.1
Cond at 25 °C	mmhos	93	73	93	110	142	167	80	99	119	153	166
Turbidity	ntu	8	9	8	4.9	5.35	3.88	9	12		5.42	3.95
BOD5	mg/L	0.7	1			0.5	0.5	0.8			1.2	0.8
NH3-N	mg/L	0.015K	0.015	0.015K		0.015K	0.015K	0.015			0.015K	0.015K
TKN	mg/L	0.23	0.15	0.15K		0.39	0.15K	0.15			0.39	0.15K
NO2+NO3-N	mg/L	0.71	0.43	0.39		0.57	0.39	0.68			0.72	0.78
PO4-P	mg/L	0.071	0.06	0.085		0.02	0.085	0.06			0.02	0.02

Table CHO-7 (cont.)

Station		CHO12	CHO12	CHO12	CHO12	CHO12	CHO13	CHO13	CHO13	CHO13	CHO13	CHO14
Sampling Date		6/18/96	7/16/96	8/13/96	9/18/96	10/22/96	6/18/96	7/16/96	8/13/96	9/18/96	10/22/96	6/18/96
Sampling Time		1:00 PM	3:15 PM	2:35 PM	2:40 PM	3:45 PM	12:35 PM	2:50 PM	2:15 PM	2:22 PM	3:30 PM	10:40 AM
Total Water Depth	ft	5	5		3.5	3.5	2	3	1	2	2	4
Depth of Sample	ft	205	2.5		1.5	1.75	1	1.5	0.5	1	1	2
Air Temperature	°C	33	35	30	32	25	32	34	30	31	25	34
Water Temperature	°C	26.7	27.3	26.1	26	17	26.1	27.3	26.2	27	17	25.9
pH	s.u.	6.4	6.5	6.4	6.48	6.55	6.8	7	6.4	6.97	6.99	6.5
Dissolved Oxygen	mg/L	3.3	4.7	4.1	4.25	6.1	6.9	6.9	6.9	7.1	8.55	2.5
Flow	cfs											
Conductivity	mmhos	49	69	70	65.2	57.8	39	49	55	53.8	47.5	78
Cond at 25 °C	mmhos	47	66	69	64	68	38	47	54	52	56	77
Turbidity	ntu	5	7	4.1	4.69	2.43	10	18	7.5	10.9	6.98	5
BOD5	mg/L	0.6			0.9	0.9	0.6			0.9	0.6	1
NH3-N	mg/L	0.022			0.015K	0.015K	0.015			0.015K	0.015K	0.015
TKN	mg/L	0.15			0.39	0.15K	0.15			0.15	0.15	0.15
NO2+NO3-N	mg/L	0.59			0.43	0.57	0.95			0.74	1.16	0.023
PO4-P	mg/L	0.08			0.02	0.072	0.07			0.01	0.076	0.09

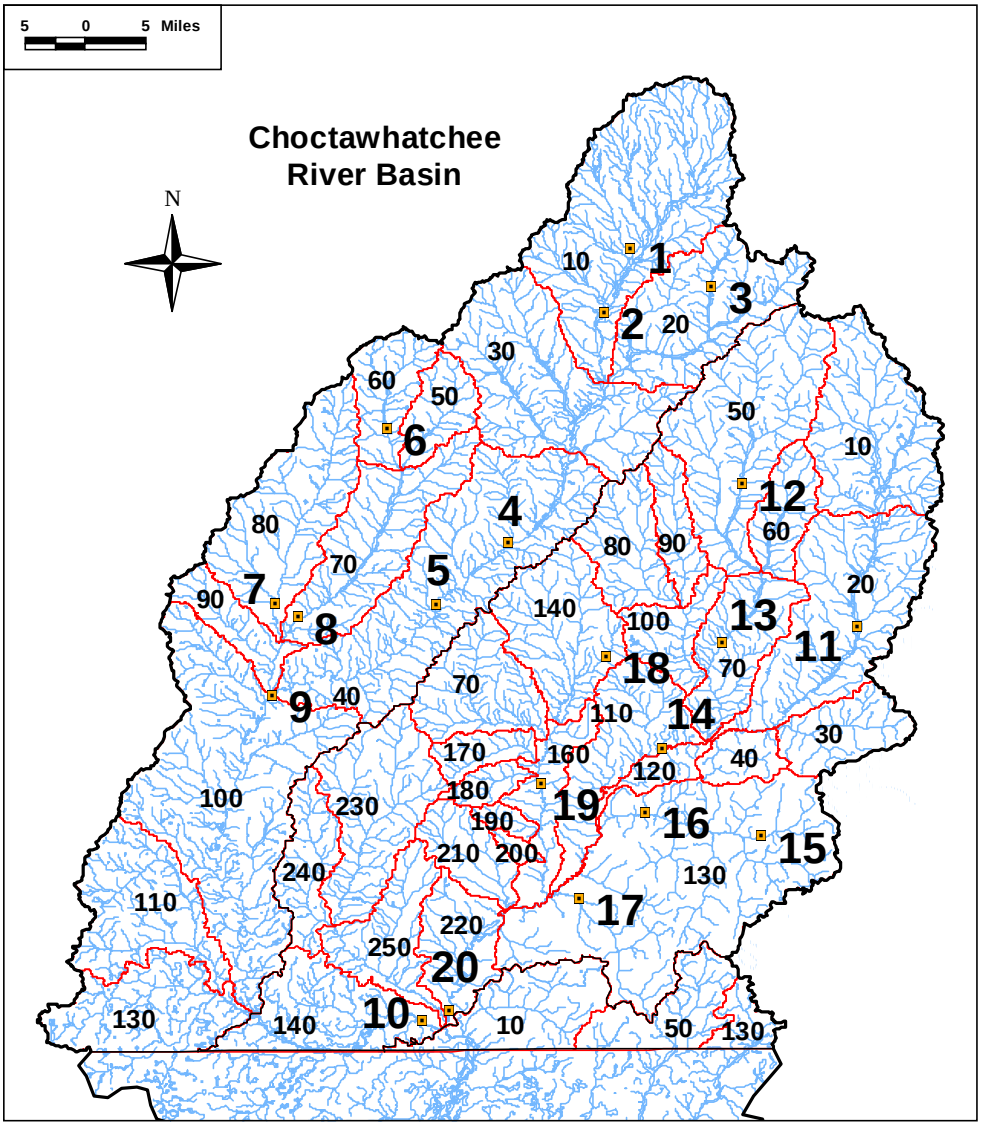
Table CHO-7 (cont.)

Station		CHO14	CHO14	CHO14	CHO14	CHO15	CHO15	CHO15	CHO15	CHO15	CHO16	CHO16
Sampling Date		7/16/96	8/13/96	9/18/96	10/22/96	6/18/96	7/16/96	8/13/96	9/18/96	10/22/96	6/18/96	7/17/96
Sampling Time		1:10 PM	1:00 PM	12:40 PM	1:30 PM	11:00 AM	1:40 PM	1:30 PM	1:00 PM	2:00 PM	5:45 PM	10:20 AM
Total Water Depth	ft	2	1	2	2.5	2	2	1	1.5	1.5	6.5	5
Depth of Sample	ft	1	0.5	1	1.25	1	1	0.5	0.7	0.75	3	2.5
Air Temperature	°C	37	32	29	24	28	35	30	29	27	27	34
Water Temperature	°C	26.3	27.1	26	16	24	27.2	26.4	27	17	25.2	25.9
pH	s.u.	6.3	6.5	6.5	6.95	6.7	6.7	6.7	7.05	7.09	6.9	7.3
Dissolved Oxygen	mg/L	4.5	1.8	2.6	3.85	7.4	6.4	7.2	7.4	8.65	6.8	6.4
Flow	cfs											
Conductivity	mmhos	81	120	119.8	110.2	48	60	65	67.2	56.7	102	128
Cond at 25 °C	mmhos	79	115	118	133	49	58	63	65	67	102	126
Turbidity	ntu	6	4.2	5.48	3.85	5		3.5	4.85	2.31	9	9
BOD5	mg/L			1.6	1.7	0.9			0.8	0.6	0.5	
NH3-N	mg/L			0.015K	0.015K	0.015			0.015K	0.015	0.015	
TKN	mg/L			0.76	0.15K	0.15			0.27	0.29	0.15	
NO2+NO3-N	mg/L			0.03	0.01	0.44			0.38	0.62	1.37	
PO4-P	mg/L			0.09	0.08	0.07			0.02	0.044	0.2	

Table CHO-7 (cont.)

Station		CHO16	CHO16	CHO16	CHO17	CHO17	CHO17	CHO17	CHO17
Sampling Date		8/14/96	9/18/96	10/22/96	6/18/96	7/17/96	8/14/96	9/18/96	10/22/96
Sampling Time		10:50 AM	8:50 AM	9:00 AM	5:25 PM	9:50 AM	10:25 AM	9:15 AM	9:20 AM
Total Water Depth	ft	3	7	1.5	5	3	2	2.5	2
Depth of Sample	ft	1.5	3.5	0.75	2.5	1.5	1	1.3	1
Air Temperature	°C	29	20	15	26	30		22	19
Water Temperature	°C	24.8	22	15	25.8	25.7	24.6	22	14
pH	s.u.	6.7	6.98	7.43	7	7.4	6.8	7.1	7.16
Dissolved Oxygen	mg/L	6.4	5.75	7.85	7.5	7.7	7.2	6.9	8.85
Flow	cfs								
Conductivity	mmhos	125	105.3	111.1	89	128	104	95.1	94
Cond at 25 °C	mmhos	125	112	137	88	126	105	101	119
Turbidity	ntu	7.8	12	18.3	9	8	12	15.8	7.23
BOD5	mg/L		0.8	0.7	0.4			1.3	0.7
NH3-N	mg/L		0.015K	0.015K	0.015			0.015K	0.015
TKN	mg/L		0.21	0.34	0.15			0.71	0.15
NO2+NO3-N	mg/L		0.44	1.28	1.14			0.46	1.07
PO4-P	mg/L		0.11	0.134	0.13			0.09	0.093

Figure CHO-4



Troy State Center for Environmental Research and Service
Sampling Sites 1993-97

Table CHO-8
Clean Water Strategy Troy State/CERS Sampling Sites

Index	Waterbody	Location	Latitude	Longitude
CP1	Big Sandy Creek	Bullock Co. 8	31.943333	-85.637222
CP2	Pea River	Pike Co. Rd. 44	31.866389	-86.669167
CP3	Stinking Creek	Hwy. 239 Barbour Co.	31.896389	-85.541111
CP4	Pea River	U.S. 231	31.595278	-85.783056
CP5	Pea River	Coffee Co. Rd. 147	31.520833	-85.868333
CP6	Walnut Creek	Pike Co. 59	31.728889	-85.925833
CP7	Big Creek	Coffee Co. 342	31.522778	-86.059444
CP8	Whitewater Creek	Coffee Co. 224	31.506111	-86.031944
CP9	Pea River	Hwy. 84, Elba	31.412778	-86.062222
CP10	Pea River	Hwy. 27, Geneva	31.0275	-85.884167
CP11	E. Fork Choctawhatchee R.	Hwy. 27 Henry Co.	31.493889	-85.368889
CP12	W. Fork Choctawhatchee R.	Hwy. 10	31.663611	-85.505278
CP13	W. Fork Choctawhatchee R.	Dale Co. 36	31.475278	-85.528611
CP14	Choctawhatchee R.	Waterford	31.349722	-85.599444
CP15	Little Choctawhatchee R.	Houston Co. 59	31.246389	-85.481667
CP16	Little Choctawhatchee R.	Hwy. 123, Dale Co.	31.274444	-85.619722
CP17	Hurricane Creek	Geneva Co. 41	31.171389	-85.698611
CP18	Little Claybank Creek	U.S. 231	31.458056	-85.667778
CP19	Claybank Creek	Hwy. 134 Dale Co.	31.308056	-85.743056
CP20	Choctawhatchee R.	Hwy. 52, Geneva	31.040556	-85.8525

Table CHO-9
Clean Water Strategy Troy State/CERS Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
CP1	Big Sandy Creek	Bullock Co. 8	L. Sandy Cr	M	Full	3.2
CP2	Pea River	Pike Co. Rd. 44	Station 1	M	Full	5
CP3	Stinking Creek	Hwy. 239 Barbour Co.	Its source	M	Full	5.6
CP4	Pea River	U.S. 231	5 miles upstream	M	Full	5
CP5	Pea River	Coffee Co. Rd. 147	Station 4	M	Full	8.8
CP6	Walnut Creek	Pike Co. 59	Its source	M	Full	9.3
CP7	Big Creek	Coffee Co. 342	4 miles upstream	M	Full	4
CP8	Whitewater Creek	Coffee Co. 224	Walnut Cr	M	Full	13.1
CP9	Pea River	Hwy. 84, Elba	Station 5	M	Full	19.2
CP10	Pea River	Hwy. 27, Geneva	5.6 miles upstream	M	Full	5.6
CP11	E. Fork Choctawhatchee R.	Hwy. 27 Henry Co.	9.8 miles upstream	M	Full	9.8
CP12	W. Fork Choctawhatchee R.	Hwy. 10	Its source	M	Full	10
CP13	W. Fork Choctawhatchee R.	Dale Co. 36	Bear Cr	M	Full	6.8
CP14	Choctawhatchee R.	Waterford	E. & W. Forks	M	Full	3.4
CP15	Little Choctawhatchee R.	Houston Co. 59	Its source	M	Full	7.7
CP16	Little Choctawhatchee R.	Hwy. 123, Dale Co.	Station 15	M	Full	8.8
CP17	Hurricane Creek	Geneva Co. 41	Its source	M	Full	13.9
CP18	Little Claybank Creek	U.S. 231	Its source	M	Full	3.5
CP19	Claybank Creek	Hwy. 134 Dale Co.	Steep Head Cr	M	Full	4.2
CP20	Choctawhatchee R.	Hwy. 52, Geneva	11.5 miles upstream	M	Full	12.7

Table CHO-10
Troy State/CERS Choctawhatchee River Basin Data

Station		1	1	1	1	1	1	1	1
Date		9/20/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	5/16/96	7/28/96
Time		900	710	1240	754	655	635	620	620
Tot. Alk.	mg/L	14	18	16	21	12	10	20	16
NH3-N	mg/L	0.019	0.385	1.49	0.509	0.203	0.31	1.14	0.484
Chloride	mg/L	15	11		11.5	10	11	12.5	8
Cond.	mS/cm	0.047	0.061	0.058	0.084	0.044	0.042	0.067	0.066
D.O.	mg/L	6.2	8.6	6.9	6.5	7.49	9	6.2	4.87
D.O.	%Sat.	70.6	80.4	65.3	78.9	70.8	84.5	70.1	58.8
Hardness Tot.	mg/L	18	26	22	26	26	14	23	24
NO3+NO2-N	mg/L	0.4	0.4	0.5	0.4	0.6	0.3	0.7	0.4
NO2-N	mg/L	ND	ND	ND	ND	ND	0.01	ND	ND
pH	s.u.	6.2	6.58	6.92	6.72	6.63	6.91	7.2	6.84
Ortho-P	mg/L PO_4	0.01	0.02	0.04	0.04	0.03	0.07	0.1	0.09

Station		2	2	2	2	2	2	2	2
Date		9/20/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	5/16/96	7/28/96
Time		745	620	1313	720	615	604	540	535
Tot. Alk.	mg/L	22	18	20	16	12	10	23	10
NH3-N	mg/L	0.018	0.224	1.53	0.919	0.168	0.263	0.913	0.678
Chloride	mg/L	14	15		11	15	10	17.5	10.5
Cond.	mS/cm	0.067	0.067	0.074	0.081	0.061	0.05	0.087	0.071
D.O.	mg/L	6.05	8.4	7.3	6.8	7.7	8.9	6.27	6.27
D.O.	%Sat.	68.7	79.2	77.1	83.1	74.2	85.3	71.3	76.5
Hardness Tot.	mg/L	26	24	26	24	22	18	25	18
NO3+NO2-N	mg/L	0.3	0.4	0.5	0.5	0.3	0.3	0.7	0.3
NO2-N	mg/L	ND	ND	ND	ND	ND	<0.01	ND	ND
pH	s.u.	6.64	6.59	6.85	6.76	6.68	6.7	7.4	6.59
Ortho-P	mg/L PO_4	0.06	0.02	0.05	0.06	0.05	0.06	0.05	0.11

Station		3	3	3	3	3	3	3	3
Date		9/20/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	5/16/96	7/28/96
Time		955	740	1218	819	725	712	645	655
Tot. Alk.	mg/L	8	12	5	7	6	3	7	6
NH3-N	mg/L	0.023	0.45	1.46	0.511	0.223	0.364	0.832	1.34
Chloride	mg/L	12.5	8		9	9.5	9	12.5	6.5
Cond.	mS/cm	0.026	0.028	0.025	0.031	0.027	0.023	0.032	0.027
D.O.	mg/L	7.6	8.85	8.2	5.1	8.87	10	6.33	7.43
D.O.	%Sat.	86.3	81.9	84.5	60.6	80.4	89.1	70.4	88.7
Hardness Tot.	mg/L	8	20	8	9	10	9	8	8
NO3+NO2-N	mg/L	0.2	0.2	0.2	0.8	0.2	0.1	0.3	ND
NO2-N	mg/L	0.01	ND	ND	ND	<0.01	ND	ND	ND
pH	s.u.	6.13	6.67	6.36	6.36	6.32	6.29	6.73	6.61
Ortho-P	mg/L PO_4	0.01	0.02	0.03	0.03	0.03	0.05	0.07	0.04

Table CHO-10 (cont.)

Station		4	4	4	4	4	4	4	4
Date		9/20/94	12/18/94	4/17/95	7/26/95	11/13/95	2/13/96	6/2/96	7/28/96
Time		1755	1606	530	1810	820	645	615	1820
Tot. Alk.	mg/L	19	18	18	17	11	10	12	17
NH3-N	mg/L	0.022	0.596	4.75	0.163	0.278	0.19	0.159	0.442
Chloride	mg/L	20	9.5		10	9.5	10.5	7.5	9
Cond.	mS/cm	0.054	0.061	0.063	0.075	0.045	0.046	0.062	0.065
D.O.	mg/L	7.6	9.6	8.1	7.2	9.41	10.2	7.2	7.42
D.O.	%Sat.	91.1	93.2	84.9	92.8	88	92.9	84.4	93.3
Hardness Tot.	mg/L	22	22	22	24	13	14	18	21
NO3+NO2-N	mg/L	0.4	0.4	0.5	0.6	0.4	0.3	0.4	0.5
NO2-N	mg/L	ND	ND	ND	ND	ND	ND	ND	<0.01
pH	s.u.	6.86	6.67	6.82	7.12	6.5	6.53	6.51	7.12
Ortho-P	mg/L PO_4	0.01	0.01	0.03	0.06	0.01	0.07	0.1	0.1

Station		5	5	5	5	5	5	5	5
Date		9/28/94	12/15/94	4/13/95	7/26/95	11/13/95	2/13/96	6/2/96	7/28/96
Time		1410	1615	1205	1745	735	745	1515	1735
Tot. Alk.	mg/L	18	16	12	18	12	10	12	16
NH3-N	mg/L	0.022	0.165	1.27	0.139	0.362	0.299	0.13	0.508
Chloride	mg/L	21	10.5		11	9.5	10.5	8	8.5
Cond.	mS/cm	0.056	0.056	0.051	0.071	0.046	0.046	0.057	0.069
D.O.	mg/L	7.6	10.2	8.3	6.8	9.65	10.1	7.6	7.45
D.O.	%Sat.	92.9	92.7	98.2	60.4	90.4	92	92.1	94.8
Hardness Tot.	mg/L	20	22	19	22	14	14	19	23
NO3+NO2-N	mg/L	0.5	0.4	0.6	0.5	0.4	0.3	0.3	0.6
NO2-N	mg/L	ND	ND	0.015	ND	ND	ND	ND	ND
pH	s.u.	7.33	7.05	7.05	7.3	6.6	6.57	6.71	7.26
Ortho-P	mg/L PO_4	0.01	0.03	0.02	0.04	0.05	0.07	0.1	0.14

Station		6	6	6	6	6	6	6	6	6
Date		9/26/94	11/7/94	12/18/94	4/13/95	7/26/95	11/13/95	2/13/96	6/2/96	7/28/96
Time		1030	725	1650	1347	1850	645	840	1615	1855
Tot. Alk.	mg/L	45	50	38	31	21	26	32	47	55
NH3-N	mg/L	0.018		0.164	1.13	0.12	0.367	0.2	0.136	0.381
Chloride	mg/L	30		16		13		13	14	17.5
Cond.	mS/cm	0.169	0.178	0.143	0.115	0.123	0.126	0.116	0.167	0.223
D.O.	mg/L	7.2	7.8	8.5	8	6	10	11.1	7.1	6.52
D.O.	%Sat.	80.7	79.9	82.5	87	72.3	87.8	92.7	84.7	80
Hardness Tot.	mg/L	45	50	42	32	29	22	32	43	67
NO3+NO2-N	mg/L	1.6		1.3	1.2	1.4	0.7	0.5	0.8	1.6
NO2-N	mg/L	0.01		ND	<0.01	ND	ND	ND	ND	ND
pH	s.u.	7	6.53	6.65	7.23	6.76	6.95	7	7.06	7.38
Ortho-P	mg/L PO_4	0.1		0.05	0.07	0.16	0.07	0.06	0.19	0.36

Table CHO-10 (cont.)

Station		7	7	7	7	7	7	7	7
Date		9/26/94	12/15/94	4/13/95	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		810	1510	1300	1635	1625	1635	1410	1630
Tot. Alk.	mg/L	42	46	20	92	16	24	52	42
NH3-N	mg/L	0.016	0.185	2.48	0.461	0.404	0.145	0.081	0.363
Chloride	mg/L	23	10		10	10	10.5	9	9.5
Cond.	mS/cm	0.113	0.114	0.072	0.235	0.055	0.081	0.123	0.129
D.O.	mg/L	7.8	10.4	8.3	8	9.02	10.2	8.4	7.53
D.O.	%Sat.	84.4	96.3	89.9	100.4	87.1	97.8	100.2	83.7
Hardness Tot.	mg/L	48	56	26	98	22	30	58	49
NO3+NO2-N	mg/L	0.4	0.4	0.5	0.6	0.4	0.3	0.5	0.3
NO2-N	mg/L	0.01	<0.01	0.01	0.01	ND	ND	ND	ND
pH	s.u.	7.42	6.94	7.16	7.92	7.13	7	7.27	7.52
Ortho-P	mg/L PO_4	0.05	0.01	0.03	0.06	0.05	0.06	0.05	0.11

Station		8	8	8	8	8	8	8	8	8
Date		8/31/94	9/26/94	12/15/94	1/12/95	4/13/95	7/26/95	10/26/95	11/12/95	2/12/96
Time		1035	720	1537	1030	1240	1704		1645	1705
Tot. Alk.	mg/L	35	32	36	25	22	38	45	15	20
NH3-N	mg/L		0.014	0.197		0.922	0.514		0.145	0.19
Chloride	mg/L		28.5	11			14.5		9.5	11.5
Cond.	mS/cm		0.096	0.097		0.073	0.189		0.053	0.071
D.O.	mg/L	7.8	7.8	10.65	11.4	8	8.2	9.4	9.13	9.8
D.O.	%Sat.	94.5	84.4	97.7	104.4	86.8	107.2	98.3	89.4	94.8
Hardness Tot.	mg/L	40	32	40	50	24	34	60	21	23
NO3+NO2-N	mg/L		0.4	0.6		0.7	0.6		0.4	0.4
NO2-N	mg/L		ND	ND		0.02	ND		ND	ND
pH	s.u.	7	6.83	7.02	6.8	7.24	7.85	7	6.98	6.9
Ortho-P	mg/L PO_4		0.01	0.02		0.01	0.05		0.05	0.07

Station		8	8	8
Date		6/2/96	7/28/96	9/31/94
Time		1445	1655	1325
Tot. Alk.	mg/L	37	24	45
NH3-N	mg/L	0.099	0.97	
Chloride	mg/L	9	10.5	
Cond.	mS/cm	0.102	0.094	
D.O.	mg/L	8.2	7.7	8
D.O.	%Sat.	98.6	95.5	92.1
Hardness Tot.	mg/L	38	27	50
NO3+NO2-N	mg/L	0.7	0.5	
NO2-N	mg/L	ND	ND	
pH	s.u.	7.45	7.3	7.7
Ortho-P	mg/L PO_4	0.07	0.09	

Table CHO-10 (cont.)

Station		9	9	9	9	9	9	9
Date		9/26/94	12/15/94	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		925	1425	1610	1600	1605	1330	1600
Tot. Alk.	mg/L	20	14	32	15	10	14	21
NH3-N	mg/L	0.106	0.286	0.142	0.166	0.323	0.113	0.481
Chloride	mg/L	23.5	11	12	10	10.5	8	9
Cond.	mS/cm	0.064	0.056	0.108	0.05	0.044	0.053	0.075
D.O.	mg/L	7.4	10.5	7.8	8.1	9.7	6.8	8.39
D.O.	%Sat.	95.1	98.1	103.2	80.1	92.4	82.4	107.4
Hardness Tot.	mg/L	21	22	35	17	14	19	25
NO3+NO2-N	mg/L	0.6	0.5	0.5	0.5	0.4	0.3	0.5
NO2-N	mg/L	0.01	ND	ND	ND	ND	ND	ND
pH	s.u.	6.87	6.72	7.7	6.8	6.96	7.04	7.41
Ortho-P	mg/L PO_4	0.1	0.07	0.05	0.07	0.05	0.07	0.12

Station		10	10	10	10	10	10	10	10
Date		9/28/94	12/6/94	4/4/95	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		1225	737	712	1445	1440	1455	1130	1455
Tot. Alk.	mg/L	30	16	22	32	13	15	20	24
NH3-N	mg/L	0.021	0.136	0.312	0.196	0.27	0.199	0.581	0.528
Chloride	mg/L	29.5	10		11.5	8.5	11	7.5	9
Cond.	mS/cm	0.075	0.053	0.069	0.104	0.046	0.055	0.063	0.084
D.O.	mg/L	8.5	8.5	8.6	6.7	8.62	9.6	7.2	7.22
D.O.	%Sat.	103.7	86.7	86.5	89.1	88.5	92.7	87.3	91.8
Hardness Tot.	mg/L	38	22	24	35	17	17	22	29
NO3+NO2-N	mg/L	0.6	0.5	0.6	0.5	0.6	0.5	0.7	0.6
NO2-N	mg/L	0.01	<0.01	0.01	ND	ND	ND	ND	<0.01
pH	s.u.	7.09	7.01	7.3	7.4	6.5	7.03	6.96	7.2
Ortho-P	mg/L PO_4	0.02	0.05	0.05	0.06	0.18	0.06	0.08	0.16

Station		11	11	11	11	11	11	11	11
Date		9/20/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	5/16/96	7/28/96
Time		1330	942	1025	955	915	850	850	828
Tot. Alk.	mg/L	38	36	32	68	14	18	43	64
NH3-N	mg/L	0.019	0.062	1.02	0.188	0.278	0.303	0.466	0.304
Chloride	mg/L	14.5	9		10.5	6.5	8.5	12.5	8
Cond.	mS/cm	0.096	0.083	0.087	0.167	0.049	0.054	0.118	0.16
D.O.	mg/L	6.9	8.85	8.1	6.7	9	9.1	7.09	6.28
D.O.	%Sat.	83.5	85.1	89.2	82.2	85.1	86.7	82.3	77.9
Hardness Tot.	mg/L	42	40	36	69	19	20	46	70
NO3+NO2-N	mg/L	0.2	0.3	0.4	0.3	0.2	0.2	0.6	0.3
NO2-N	mg/L	0.01	0.01	ND	ND	<0.01	ND	ND	0.02
pH	s.u.	7.05	6.67	7.18	7.49	6.91	7	7.43	7.49
Ortho-P	mg/L PO_4	0.01	0.01	0.03	0.05	0.03	0.15	0.06	0.08

Table CHO-10 (cont.)

Station		12	12	12	12	12	12	12	12	12
Date		9/20/94	11/8/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	5/16/96	7/28/96
Time		1200	1540	831	1125	910	820	805	745	740
Tot. Alk.	mg/L	26	30	22	24	38	11	14	28	24
NH3-N	mg/L	0.019		0.266	1.35	0.202	0.339	0.528	0.635	1.1
Chloride	mg/L	13.5		9.5		10.5	9	9.5	14	10
Cond.	mS/cm	0.067	0.072	0.066	0.072	0.113	0.043	0.049	0.085	0.078
D.O.	mg/L	6.8	8.2	8.65	8.1	6.3	8.67	9.1	6.55	6.51
D.O.	%Sat.	82	99.2	82.4	85.8	75.4	80.1	83.1	74.9	79.5
Hardness Tot.	mg/L	28	30	36	28	42	18	18	30	28
NO3+NO2-N	mg/L	0.4		0.5	0.5	0.3	0.3	0.3	0.6	0.5
NO2-N	mg/L	ND		<0.01	<0.01	ND	<0.01	ND	ND	0.01
pH	s.u.	7.12	7.38	6.68	7.02	7.21	6.8	7.05	7.22	7.19
Ortho-P	mg/L PO_4	0.01		0.01	0.02	0.02	0.04	0.04	0.08	0.1

Station		13	13	13	13	13	13	13	13
Date		9/20/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	5/16/96	7/28/96
Time		1425	1027	957	1026	947	930	920	902
Tot. Alk.	mg/L	23	26	22	35	14	16	28	28
NH3-N	mg/L	0.02	0.206	1.89	0.142	0.212	0.211	0.305	0.024
Chloride	mg/L	12.5	9.5		11	9.5	11	13.5	8.5
Cond.	mS/cm	0.059	0.069	0.069	0.1	0.053	0.052	0.085	0.08
D.O.	mg/L	7.6	10.2	8.5	7.1	9.35	9.7	7.94	7.4
D.O.	%Sat.	93.4	99	89.5	87.2	90.8	93.6	91.8	91.4
Hardness Tot.	mg/L	26	30	26	38	18	19	30	30
NO3+NO2-N	mg/L	0.5	0.5	0.5	0.5	0.3	0.4	0.6	0.6
NO2-N	mg/L	ND	0.01	ND	ND	ND	<0.01	ND	0.01
pH	s.u.	7.28	6.82	7.14	7.42	7.12	7.02	7.41	7.41
Ortho-P	mg/L PO_4	0.01	0.01	0.02	0.03	0.03	0.04	0.09	0.12

Station		14	14	14	14	14	14	14	14
Date		9/20/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		1525	1106	720	1135	1105	1045	745	1045
Tot. Alk.	mg/L	22	20	19	18	12	13	18	34
NH3-N	mg/L	0.021	0.194	2.03	0.162	0.542	0.29	1.47	0.073
Chloride	mg/L	17	11		11	10.5	10	9.5	8.5
Cond.	mS/cm	0.063	0.063	0.062	0.067	0.042	0.047	0.06	0.098
D.O.	mg/L	7.6	9.8	8.6	7.6	9.19	10	7.9	7.82
D.O.	%Sat.	93	95.1	90.6	93.7	90.7	96	92.6	100.8
Hardness Tot.	mg/L	24	24	23	18	15	16	22	39
NO3+NO2-N	mg/L	0.5	0.6	0.6	0.7	0.5	0.4	0.6	0.5
NO2-N	mg/L	ND	0.01	ND	0.01	0.01	ND	ND	0.015
pH	s.u.	7.13	6.83	7.11	7.14	6.91	7.05	7.07	7.58
Ortho-P	mg/L PO_4	0.01	0.01	0.04	0.14	0.05	0.05	0.1	0.06

Table CHO-10 (cont.)

Station		15	15	15	15	15	15	15	15
Date		9/28/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		640	1124	917	1237	1205	1210	850	1205
Tot. Alk.	mg/L	30	28	28	26	26	28	32	34
NH3-N	mg/L	0.017	0.16	0.783	0.479	0.208	4.3	0.869	0.216
Chloride	mg/L	30	9.5		11	9	12.5	10.8	9.5
Cond.	mS/cm	0.092	0.091	0.095	0.1	0.093	0.099	0.09	0.104
D.O.	mg/L	6.6	8.45	7.4	6.4	8.92	9.9	7	6.61
D.O.	%Sat.	74.4	86.2	78.6	76.4	85.1	94.3	82.1	81.8
Hardness Tot.	mg/L	35	34	32	31	29	34	37	39
NO3+NO2-N	mg/L	0.9	1	1.1	1	0.6	0.9	0.7	0.9
NO2-N	mg/L	ND	0.01	ND	ND	ND	ND	ND	0.03
pH	s.u.	6.78	6.46	6.98	6.74	7.12	7.08	7.06	7.09
Ortho-P	mg/L PO_4	0.01	0.01	0.03	0.04	0.03	0.07	0.06	0.11

Station		16	16	16	16	16	16	16	16
Date		9/28/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		750	1143	750	1207	1135	1130	815	1130
Tot. Alk.	mg/L	25	20	20	16	20	20	28	32
NH3-N	mg/L	0.019	0.182	3.23	0.239	0.222	0.743	1.02	1.11
Chloride	mg/L	36.5	14		12.5	10	15	13.8	14
Cond.	mS/cm	0.094	0.09	0.09	0.07	0.083	0.089	0.11	0.133
D.O.	mg/L	7.4	9.25	8.2	7	9.34	9.8	7.6	7.5
D.O.	%Sat.	83.7	92.5	86.8	83	89.3	93.7	88.8	87
Hardness Tot.	mg/L	26	22	23	18	23	21	28	32
NO3+NO2-N	mg/L	1.1	1.2	1.3	1.3	0.8	1.2	1.2	1.4
NO2-N	mg/L	0.02	0.01	<0.01	0.01	0.02	ND	ND	0.015
pH	s.u.	7.2	6.8	7.02	6.78	7.01	7.03	6.88	7.48
Ortho-P	mg/L PO_4	0.06	0.09	0.11	0.22	0.12	0.13	0.32	0.44

Station		17	17	17	17	17	17	17	17
Date		9/28/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		1020	1327	843	1343	1320	1340	1015	1330
Tot. Alk.	mg/L	17	16	14	10	15	16	20	23
NH3-N	mg/L	0.02	0.329	1.47	0.844	0.56	0.506	0.088	0.205
Chloride	mg/L	21.5	10		11	9.5	11	8.5	8.5
Cond.	mS/cm	0.057	0.058	0.057	0.06	0.065	0.063	0.06	0.074
D.O.	mg/L	7	8.4	8.3	6.8	9	9.4	7.9	7.71
D.O.	%Sat.	83.4	86.6	87.8	80.3	90.6	94.6	91.8	93.3
Hardness Tot.	mg/L	20	22	18	14	22	18	22	24
NO3+NO2-N	mg/L	0.9	0.9	0.8	1.4	0.9	0.7	0.9	1
NO2-N	mg/L	ND	<0.01	ND	0.01	ND	ND	ND	0.01
pH	s.u.	7.03	6.72	6.78	6.42	6.85	7.05	6.92	6.94
Ortho-P	mg/L PO_4	0.06	0.01	0.07	0.34	0.12	0.07	0.1	0.1

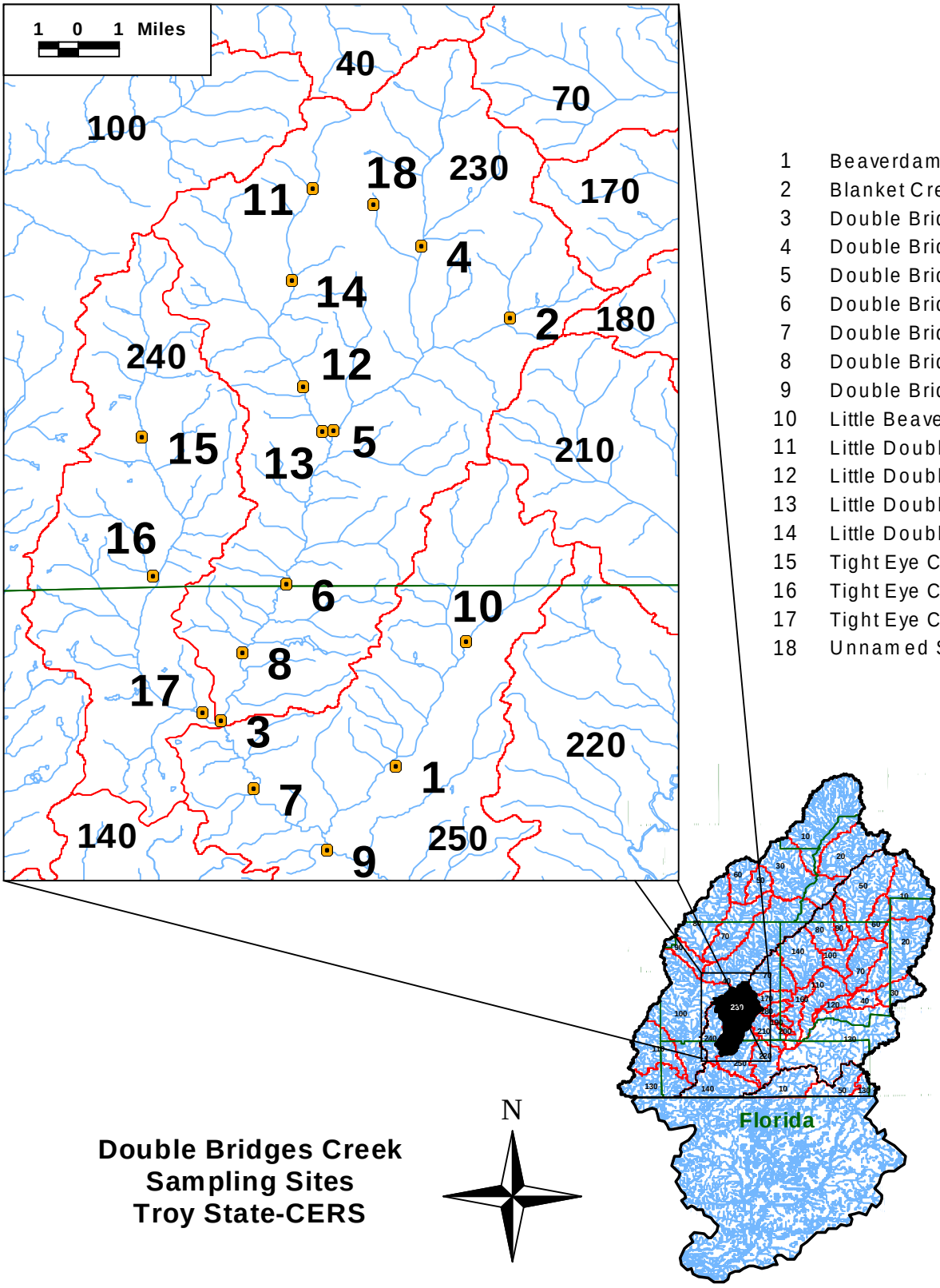
Table CHO-10 (cont.)

Station		18	18	18	18	18	18	18	18	18
Date		9/20/94	12/18/94	4/17/95	7/26/95	11/12/95	2/12/96	5/16/96	6/2/96	7/28/96
Time		1625	1500	645	1058	1025	1010	955	700	938
Tot. Alk.	mg/L	28	26	22	14	18	15	25	35	47
NH3-N	mg/L	0.09	1.25	6.61	0.293	0.45	0.396	1.02		1.26
Chloride	mg/L	22	9.5		12	10.5	12	18	13	13.5
Cond.	mS/cm	0.09	0.087	0.086	0.088	0.075	0.074		0.12	0.157
D.O.	mg/L	5.8	8.3	9.1	7	9.57	10.8		7.1	4.63
D.O.	%Sat.	71.4	83.8	91	83.2	91.5	94.6		78.8	56.3
Hardness Tot.	mg/L	26	24	22	15	22	20	25	30	30
NO3+NO2-N	mg/L	0.7	0.7	0.5	0.7	0.8	0.7	0.7	0.8	1.1
NO2-N	mg/L	0.02	0.01	0.01	ND	ND	ND	0.02		0.03
pH	s.u.	7.03	7.13	7.08	7.1	6.8	7		6.9	7.01
Ortho-P	mg/L PO_4	0.03	0.01	0.05	0.04	0.08	0.07	0.1	0.11	0.09

Station		19	19	19	19	19	19	19	19
Date		9/28/94	12/18/94	4/13/95	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		900	1417	1107	1312	1245	1255	930	1245
Tot. Alk.	mg/L	16	14	10	15	10	12	17	18
NH3-N	mg/L	0.21	0.187	3.56	0.223	0.233	0.707	0.518	0.724
Chloride	mg/L	27.5	9.5		12.5	8.5	11.5	10.3	9.5
Cond.	mS/cm	0.058	0.059	0.045	0.069	0.043	0.049	0.061	0.075
D.O.	mg/L	7.6	9.05	8.9	6.4	9.4	10.3	7.6	7.84
D.O.	%Sat.	88.3	92.3	93.1	77.3	90.6	97.4	89.9	98.1
Hardness Tot.	mg/L	18	18	10	18	12	14	19	20
NO3+NO2-N	mg/L	1	1	0.7	1.3	0.6	0.6	1	1
NO2-N	mg/L	0.04	<0.01	0.01	0.02	ND	ND	ND	ND
pH	s.u.	7.48	7.15	7.04	6.83	6.61	6.84	7.22	7.17
Ortho-P	mg/L PO_4	0.01	0.02	0	0.28	0.11	0.1	0.12	0.18

Station		20	20	20	20	20	20	20	20
Date		9/28/94	12/6/94	4/4/95	7/26/95	11/12/95	2/12/96	6/2/96	7/28/96
Time		1130	645	640	1425	1415	1425	1100	1415
Tot. Alk.	mg/L	21	15	18	24	13	14	18	27
NH3-N	mg/L	0.02	0.173	0.34	0.15	0.171	0.384	0.541	1.41
Chloride	mg/L	26	12.5		11.5	8.9	11	9	10
Cond.	mS/cm	0.067	0.055	0.064	0.09	0.043	0.054	0.06	0.091
D.O.	mg/L	8.4	8.2	8.5	7	8.17	9.9	7	6.97
D.O.	%Sat.	103.1	86.3	85.8	90.2	82.6	96.4	85.6	90.5
Hardness Tot.	mg/L	24	19	22	27	13	16	22	30
NO3+NO2-N	mg/L	0.9	0.7	0.8	1	0.6	0.6	0.9	0.9
NO2-N	mg/L	0.01	<0.01	ND	ND	ND	ND	ND	0.03
pH	s.u.	7.04	6.71	7.4	7.3	6.93	7.06	6.76	7.29
Ortho-P	mg/L PO_4	0.02	0.02	0.06	0.07	0.16	0.09	0.12	0.15

Figure CHO-5



1 Beaverdam Creek
2 Blanket Creek
3 Double Bridges Creek
4 Double Bridges Creek
5 Double Bridges Creek
6 Double Bridges Creek
7 Double Bridges Creek
8 Double Bridges Creek
9 Double Bridges Creek
10 Little Beaverdam Creek
11 Little Double Bridges Creek
12 Little Double Bridges Creek
13 Little Double Bridges Creek
14 Little Double Bridges Creek
15 Tight Eye Creek
16 Tight Eye Creek
17 Tight Eye Creek
18 Unnamed Stream

Double Bridges Creek
Sampling Sites
Troy State-CERS

Table CHO-11
Clean Water Strategy Troy State/CERS
Double Bridges Creek Sampling Stations

Index	Waterbody	Location	Lattitude	Longitude
DB1	Beaverdam Creek	Geneva Co. 21	31.126944	-85.9247222
DB2	Blanket Creek	Coffee Co. -new bypass	31.298611	-85.8833333
DB3	Double Bridges Creek	at/near Spears	31.144444	-85.9883333
DB4	Double Bridges Creek	Coffee Co. 537	31.326111	-85.9155556
DB5	Double Bridges Creek	Coffee Co. 636	31.255556	-85.9472222
DB6	Double Bridges Creek	Coffee Co. 661	31.196389	-85.9647222
DB7	Double Bridges Creek	Geneva Co. 58	31.118333	-85.9763889
DB8	Double Bridges Creek	Geneva Co. 64	31.170278	-85.9805556
DB9	Double Bridges Creek	Geneva Co. 65	31.094722	-85.95
DB10	Little Beaverdam Creek	Just off Geneva Co. 75	31.174722	-85.8994444
DB11	Little Double Bridges Creek	Coffee Co. 531	31.348056	-85.9552778
DB12	Little Double Bridges Creek	Coffee Co. 606	31.272222	-85.9586111
DB13	Little Double Bridges Creek	Coffee Co. 636	31.255	-85.9513889
DB14	Little Double Bridges Creek	Hwy. 134	31.312778	-85.9630556
DB15	Tight Eye Creek	Coffee Co. 636	31.252778	-86.0169444
DB16	Tight Eye Creek	Coffee Co. 661	31.199444	-86.0127778
DB17	Tight Eye Creek	Geneva Co. 79	31.147222	-85.995
DB18	Unnamed Stream	Coffee Co. 537	31.341667	-85.9330556

Table CHO-12
Double Bridges Creek Use Support

Station	Waterbody Name	Monitored or Evaluated	Support Status
DB1	Beaverdam Creek	E	Partial
DB2	Blanket Creek	E	Partial
DB3	Double Bridges Creek	E	Non
DB4	Double Bridges Creek	E	Partial
DB5	Double Bridges Creek	E	Partial
DB6	Double Bridges Creek	E	Partial
DB7	Double Bridges Creek	E	Partial
DB8	Double Bridges Creek	E	Non
DB9	Double Bridges Creek	E	Partial
DB10	Little Beaverdam Creek	E	Partial
DB11	Little Double Bridges Creek	E	Partial
DB12	Little Double Bridges Creek	E	Partial
DB13	Little Double Bridges Creek	E	Partial
DB14	Little Double Bridges Creek	E	Full
DB15	Tight Eye Creek	E	Full
DB16	Tight Eye Creek	E	Partial
DB17	Tight Eye Creek	E	Partial
DB18	Unnamed Stream	E	n/a

Partial = 1 of 4 grabs > 2000 colonies/100 ml fecal coliform
Non = 2 of 4 grabs > 2000 colonies/100 ml fecal coliform

Table CHO-13
Double Bridges Creek Data

STATION		1	1	1	1	2	2	2	2	3	3	4
DATE		5/15/94	8/27/94	12/6/94	4/4/95	5/15/94	8/27/94	12/15/94	4/13/95	5/15/94	8/27/94	5/15/94
TIME		15:00	7:15	16:20	13:30	8:40	16:10	11:45	10:00	16:48	11:02	7:30
T_A	°C	33.6	22.1	16.1	24.1	22.1	29.1	12.2	20.8	28.9	32	23.7
T_W	°C	25.9	23.5	16.3	16.2	23.8	29.4	11.1	18.2	24.5	27	21.8
DO	mg/L	6.8	6.6	8	8.4	5.1	5.9	9	7.3	7.1	6.9	6.1
DO	%Sat	85	79.4	84.2	88.2	62	77.6	84.5	79.8	87	87.8	71
pH	s.u.	6.8	6.5	6.73	6.95	6.96	6.72	6.87	6.88	6.61	6.58	6.47
Tot. Alkalinity		18	20	8	12	32	30	22	16	16	20	12
CO_2	mg/L	6.5	7.25	5.5	5	13	10	8	9.5	5	6	9
Cl	mg/L	14.5	14.5	11	10	25	19.5	15	14.5	18.5	19.5	17.5
Conductivity	mS/cm	0.054	0.051	0.036	0.042	0.118	0.125	0.093	0.084	0.075	0.077	0.047
Tot. Hardness	mg/L	18	24	20	18	32	36	28	20	20	24	15
NO_2-N	mg/L	0.01	ND	<0.01	<0.01	0.02	0.05	0.01	0.015	0.01	0.05	<0.01
NO_2 +NO_3-N	mg/L	4.7	0.4	0.4	0.3	1.4	2.4	1.6	0.9	4	2.5	2.4
NH_3-N mg/l	mg/L	0.162	0.045	0.215	0.356	0.428	0.423	1.43	0.74	0.181	0.038	0.465
ortho-PO4	mg/L PO_4-P	0.01	0.01	0.01	0.04	0.91	0.63	0.56	0.28	0.5	0.35	0.01
Hydrolyzable-P	mg/L PO_4-P	0.17	0.15	0.24	0.1	1.18	0.8	0.72	0.56	0.74	0.57	0.19
Total-P	mg/L PO_4-P	0.24	0.16	0.25	0.12	1.23	0.84	0.78	0.58	0.76	0.58	0.33
TSS	mg/L	5.1	2.2	6	3.6	24.6	10.2	5.7	12.4	9.2	9.6	21.5
Turbidity	ntu	12	16	12	7.4	26	17	18	22	18	18	33
Total Coliform	MPN/100 ml		<2000	500	230	3000	23000	5000	300	330	2000	3000
Fecal Coliform	MPN/100 ml		<2000	<20	130	<20	8000	<20	230	<20	<2000	140

Table 13 (cont.)

STATION		4	4	4	5	5	5	5	6	6	6	6
DATE		8/27/94	12/15/94	4/13/95	5/15/94	8/27/94	12/15/94	4/13/95	5/15/94	8/27/94	12/15/94	4/4/95
TIME		17:50	12:17	9:30	10:30	14:37	9:40	9:30	12:55	12:00	7:42	14:40
T_A	°C	29.5	12.4	21.8	28.2	35.5	9.5	19.2	30.9	32.5	7.1	23.2
T_W	°C	27.2	10.3	17.4	23.7	29.1	9.9	17.9	24.9	26.1	8.8	15.8
DO	mg/L	6.1	9.5	10.7	6.6	6.6	9.4	7.6	7	6.9	9.4	8.2
DO	%Sat	77.8	87.6	115.2	80	86.5	85.8	82.6	86	86.3	83.6	85.4
pH	s.u.	6.81	7	6.91	6.5	6.67	6.42	6.69	7.04	6.74	6.62	7.01
Tot. Alkalinity		14	10	10	16	18	16	10	20	20	16	14
CO_2	mg/L	6.25	4.25	5.5	7.5	7	4	8	7.5	6	4	6
Cl	mg/L	14.5	11.5	11.25	22	15	12	12.5	22	17.5	13.5	14.5
Conductivity	mS/cm	0.049	0.046	0.042	0.06	0.061	0.062	0.05	0.079	0.079	0.076	0.077
Tot. Hardness	mg/L	18	14	12	16	20	18	13	21	22	22	19
NO_2-N	mg/L	ND	<0.01	0.02	0.02	0.04	0.01	<0.01	0.01	0.03	>0.2	0.16
NO_2 +NO_3-N	mg/L	0.9	1	0.8	1.2	1.1	1.1	0.9	1.2	2.5	2.6	2.6
NH_3-N mg/l	mg/L	0.067	0.861	1.81	0.251	0.055	1.53	3.11	0.243	0.053	2.99	0.799
ortho-PO4	mg/L PO_4-P	0.01	0.01	0.02	0.03	0.02	0	0.03	0.67	0.47	0.27	0.31
Hydrolyzable-P	mg/L PO_4-P	0.27	0.07	0.1	0.36	0.17	0.22	0.22	0.86	0.68	0.6	0.61
Total-P	mg/L PO_4-P	0.28	0.1	0.15	0.32	0.24	0.24	0.22	0.91	0.74	0.63	0.64
TSS	mg/L	7.8	4.2	16	12.4	11.6	3.8	13.7	12.9	17	8.5	13.5
Turbidity	ntu	23	17	34	29	21	16	31	20	20	16	21
Total Coliform	MPN/100 ml	9000	300	300	700	2000	3000	300	130	2000	500	230
Fecal Coliform	MPN/100 ml	<2000	<20	80	<20	<2000	<20	170	80	<2000	<20	40

Table 13 (cont.)

STATION		7	7	7	7	8	8	8	9	9	9	10
DATE		5/15/94	8/27/94	12/6/94	4/4/95	12/6/94	4/4/95	5/15/94	8/27/94	12/6/94	4/4/95	5/15/94
TIME		15:30	9:07	13:47	11:20	15:30	12:50	14:10	8:00	12:45	10:45	18:00
T_A	°C	31.1	26.6	17	23.9	16	25.4	33	24.9	16.8	21.8	29.5
T_W	°C	24.7	23.9	17	15.5	16.5	15.5	25.8	23.7	17	15.2	27.9
DO	mg/L	7.5	7.5	8.3	9.1	7.6	8.8	7.5	7.5	8.6	9.4	6.8
DO	%Sat	92	90.8	88.6	94.2	80.3	91.9	94	90.5	91.8	96.7	88
pH	s.u.	6.38	6.46	6.83	7.1	6.72	6.93	6.46	6.38	6.71	7.27	6.33
Tot. Alkalinity		16	20	16	12	16	12	16	20	16	13	14
CO_2	mg/L	7	6	5.5	3.25	6.5	5	6.5	5	5.5	3.5	10.5
Cl	mg/L	15.5	15.6	11.5	12	12	13	18	17.5	11.5	11.75	17
Conductivity	mS/cm	0.075	0.069	0.055	0.065	0.059	0.073	0.074	0.068	0.052	0.064	0.049
Tot. Hardness	mg/L	23	24	20	18	20	18	20	22	16	18	18
NO_2-N	mg/L	<0.01	0.005	0.03	0.03	0.08	0.1	0.04	0.005	0.03	0.03	<0.01
NO_2 +NO_3-N	mg/L	2.3	1.8	1.2	1.8	1.8	2.4	1.2	1.7	1.3	1.7	2.5
NH_3-N mg/l	mg/L	0.189	0.036	0.337	0.399	0.481	0.454	0.211	0.034	0.308	0.313	0.129
ortho-PO4	mg/L PO_4-P	0.38	0.26	0.08	0.15	0.02	0.26	0.28	0.18	0.04	0.05	0.01
Hydrolyzable-P	mg/L PO_4-P	0.54	0.42	0.3	0.37	0.42	0.56	0.62	0.41	0.25	0.34	0.06
Total-P	mg/L PO_4-P	0.57	0.49	0.44	0.39	0.53	0.56	0.64	0.41	0.29	0.35	0.16
TSS	mg/L	6.6	11.4	16.3	9.6	21	9	6.8	9.4	16.7	8.8	10.9
Turbidity	ntu	18	18	27	17	28	18	16	18	25	16	10
Total Coliform	MPN/100 ml	800	<2000	700	230	800	230	80	<2000	700	130	900
Fecal Coliform	MPN/100 ml	220	<2000	40	110	<20	40	<20	<2000	<20	80	40

Table 13 (cont.)

STATION		10	10	10	11	11	11	11	12	12	12	12
DATE		8/27/94	12/6/94	4/4/95	5/15/94	8/27/94	12/15/94	4/4/95	5/15/94	8/27/94	12/15/94	4/13/95
TIME		6:10	16:55	14:00	6:30	19:00	13:05	15:45	9:45	15:27	10:55	7:50
T_A	°C	22.2	15.8	24.4		27.5	12.6	22.4	27.9	31.9	10.4	16
T_W	°C	23.9	16.6	20	20.2	24.8	11.6	16.5	22.8	29.1	10	17.4
DO	mg/L	3.9	6	7	7.8	6.1	9.8	8.7	6.5	6.6	9.5	8.3
DO	%Sat	47.2	63.5	79.2	89	74.9	93.1	92	76	86.5	87	94.7
pH	s.u.	6.41	6.94	6.5	6.45	6.66	6.75	6.56	6.67	6.58	6.8	6.56
Tot. Alkalinity		18	10	10	10	16	8	7	10	12	10	10
CO_2	mg/L	19	7.5	8.5	10	5	4	5	7	7.5	3.5	8
Cl	mg/L	14.5	10	10	17.5	14	10.5	11.5	14	15.3	10.5	12
Conductivity	mS/cm	0.052	0.042	0.041	0.033	0.038	0.038	0.034	0.039	0.055	0.039	0.036
Tot. Hardness	mg/L	20	11	13	9	18	16	15	13	16	16	10
NO_2-N	mg/L	0.005	<0.01	<0.01	0.01	ND	<0.01	0.03	0.03	0.03	ND	<0.01
NO_2 +NO_3-N	mg/L	0.3	0.4	0.5	3.7	0.6	0.6	0.8	1.8	0.9	0.8	0.7
NH_3-N mg/l	mg/L	0.031	0.286	0.372	0.377	0.067	0.587	0.874	0.373	0.088	0.929	2.67
ortho-PO4	mg/L PO_4-P	0.01	0.01	0.04	0.01	0.01	0.04	0.07	0.01	0.01	0.01	0.02
Hydrolyzable-P	mg/L PO_4-P	0.11	0.12	0.04	0.08	0.09	0.1	0.21	0.15	0.12	0.09	0.14
Total-P	mg/L PO_4-P	0.12	0.12	0.04	0.16	0.13	0.11	0.2	0.2	0.26	0.09	0.14
TSS	mg/L	5.9	4.2	6.5	9	9	2.6	47	20	6	5.4	17.1
Turbidity	ntu	14	11	12	12	15	7	48	27	19	17	38
Total Coliform	MPN/100 ml	<2000	230	230	600	<2000	130	230	1100	2000	130	1300
Fecal Coliform	MPN/100 ml	<2000	<20	40	140	<2000	<20	230	270	<2000	20	800

Table 13 (cont.)

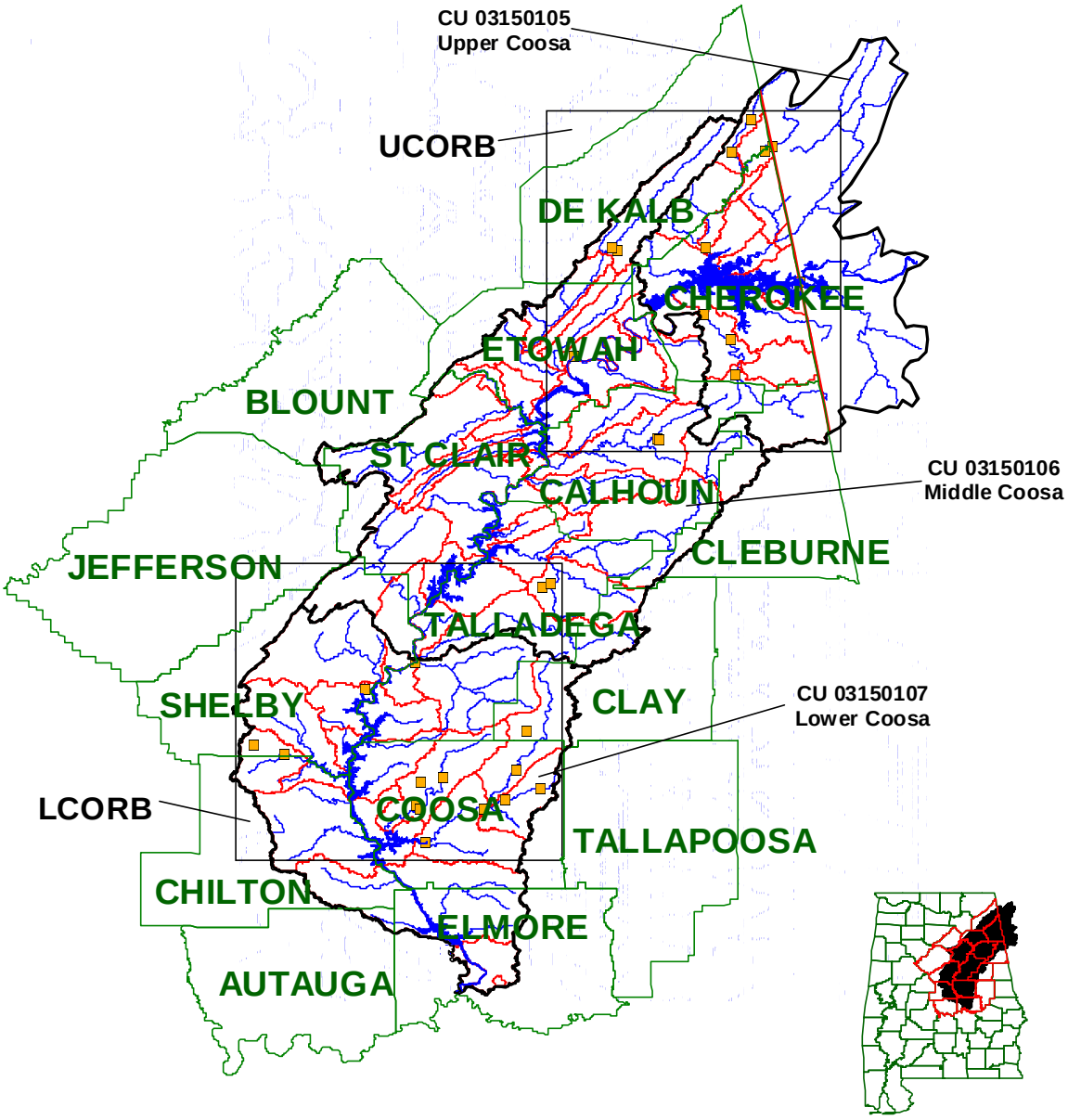
STATION		13	13	13	13	14	14	14	14	15	15	15
DATE		5/15/94	8/27/94	12/15/94	4/13/95	5/15/94	8/27/94	12/15/94	4/13/95	5/15/94	12/15/94	4/13/95
TIME		11:00	13:55	9:07	9:05	8:10	18:25	13:37	7:17	11:45	8:30	8:21
T_A	°C	29.8	34.4	9.4	17.7	27.8	28.2	11.8	12.4	30.8	8	17.4
T_W	°C	23.7	27.1	9.7	17.3	24.9	25.1	11	16.8	24.2	9.5	17.4
DO	mg/L	6.8	6.6	9.8	8.6	6.1	7.15	9.2	7.6	5.9	8.7	8.8
DO	%Sat	82	84.1	89.1	92.4	76	88.3	86.2	80.8	72	78.7	94.7
pH	s.u.	6.28	6.52	6.34	6.7	6.49	6.74	6.97	6.64	6.22	7.2	6.44
Tot. Alkalinity		8	14	10	10	8	10	8	6	9	8	6
CO_2	mg/L	7.5	6	3.5	6	8	6.25	3.5	7	7.5	4.5	11.5
Cl	mg/L	22	17	11	11.5	17.5	16.5	11	10	12.5	9	9.75
Conductivity	mS/cm	0.04	0.047	0.042	0.037	0.036	0.038	0.036	0.034	0.033	0.034	0.028
Tot. Hardness	mg/L	12	16	12	10	10	14	12	11	10	10	7
NO_2-N	mg/L	0.04	0.04	0.01	0.025	0.02	ND	<0.01	<0.01	0.02	<0.01	<0.01
NO_2 +NO_3-N	mg/L	1.1	0.9	1	0.9	1.1	0.7	0.6	0.6	3.5	0.6	0.6
NH_3-N mg/l	mg/L	0.31	0.084	1.02	2.96	0.442	0.069	0.742	1.74	0.183	0.692	2.23
ortho-PO4	mg/L PO_4-P	ND	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0	0.03
Hydrolyzable-P	mg/L PO_4-P	0.18	0.22	0.09	0.17	0.11	0.16	0.07	0.12	0.14	0.05	0.09
Total-P	mg/L PO_4-P	0.17	0.24	0.09	0.21	0.23	0.16	0.1	0.12	0.15	0.09	0.11
TSS	mg/L	12.3	11.4	5.4	17.8	25.1	5.7	2.2	16.8	41.5	3.6	7
Turbidity	ntu	24	18	16	37	21	16	11	22	12	12	22
Total Coliform	MPN/100 ml		2000	40	300	800		130	300	600	80	230
Fecal Coliform	MPN/100 ml		<2000	<20	200	70		<20	230	130	<20	230

Table 13 (cont.)

STATION		16	16	16	16	17	17	17	17	18
DATE		5/15/94	8/27/94	12/15/94	4/4/95	5/15/94	8/27/94	12/6/94	4/4/95	5/15/94
TIME		12:25	12:42	7:00	15:05	16:15	10:15	14:45	12:20	7:15
T_A	°C	32	31.6	6.7	22.1	30.6	30	17.7	25.4	
T_W	°C	25.2	27.6	8.4	16.3	25.3	24.8	16.8	16	
DO	mg/L	6.1	7	9.2	7.9	7.2	7	8.2	9.4	
DO	%Sat	75	89.9	81	83.2	89	86	87.1	98.3	
pH	s.u.	6.56	6.77	6.96	7.08	6.63	6.48	6.87	6.98	
Tot. Alkalinity		14	14	16	12	14	16	14	14	
CO_2	mg/L	8	6.5	4.5	4.75	5	5.5	5.25	3.75	
Cl	mg/L	15	13	12	10	15.5	19.5	10.5	10	17.5
Conductivity	mS/cm	0.046	0.046	0.05	0.043	0.049	0.049	0.048	0.049	
Tot. Hardness	mg/L	16	18	18	18	18	18	16	17	
NO_2-N	mg/L	0.03	0.04	<0.01	<0.01	0.01	0.03	0.01	<0.01	
NO_2 +NO_3-N	mg/L	2.7	0.6	0.6	0.6	2.3	0.5	0.6	0.6	
NH_3-N mg/l	mg/L	0.238	0.039	0.913	1.34	0.196	0.038	0.372	0.452	0.436
ortho-PO4	mg/L PO_4-P	0.01	0.01	0.01	0.01	ND	0.01	0.02	0.05	
Hydrolyzable-P	mg/L PO_4-P	0.06	0.21	0.13	0.06	0.15	0.1	0.15	0.08	
Total-P	mg/L PO_4-P	0.14	0.21	0.14	0.06	0.21	0.14	0.14	0.08	
TSS	mg/L	14.2	3.9	3.4	3.2	5.8	3.1	6.3	8.1	
Turbidity	ntu	13	17	13	14	14	14	16	13	
Total Coliform	MPN/100 ml	340	<2000	40	130	170	<2000	500	500	
Fecal Coliform	MPN/100 ml	<20	<2000	<20	40	70	<2000	20	40	

Coosa River Basin

Figure CO-1



Coosa River Basin
Clean Water Strategy
Sampling Stations
1996

- CWS Stations
- NRCS Subwatersheds
- Counties
- Coosa River Basin EPA Reach File 3
- Coosa River Basin Mainstem, Reservoirs, & EPA RF 1
- USGS Cataloging Units

10 0 10 20 Miles

N

Figure CO-2

UCORB

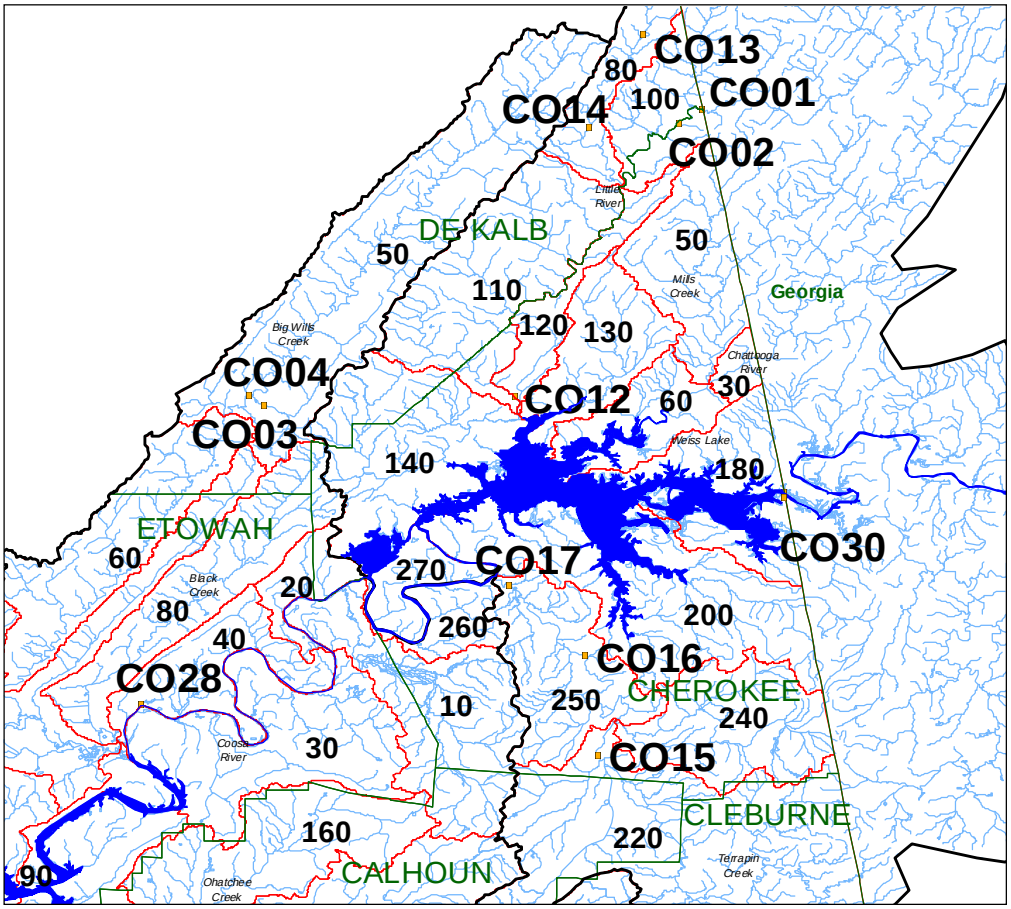


Figure CO-3

LCORB

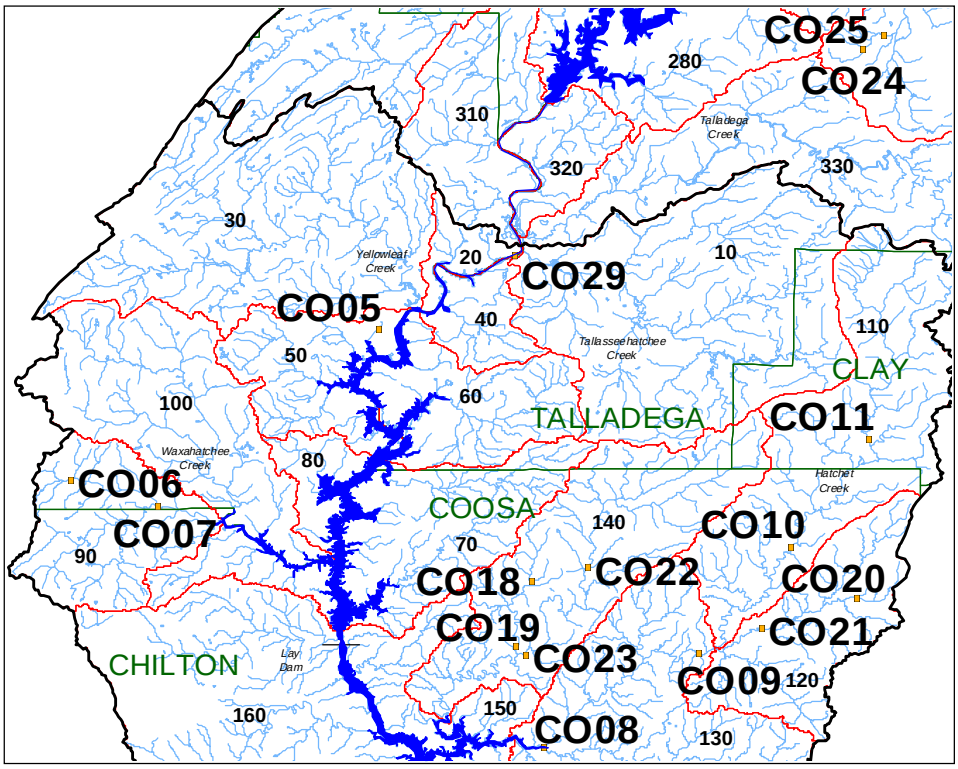


Figure CO-4

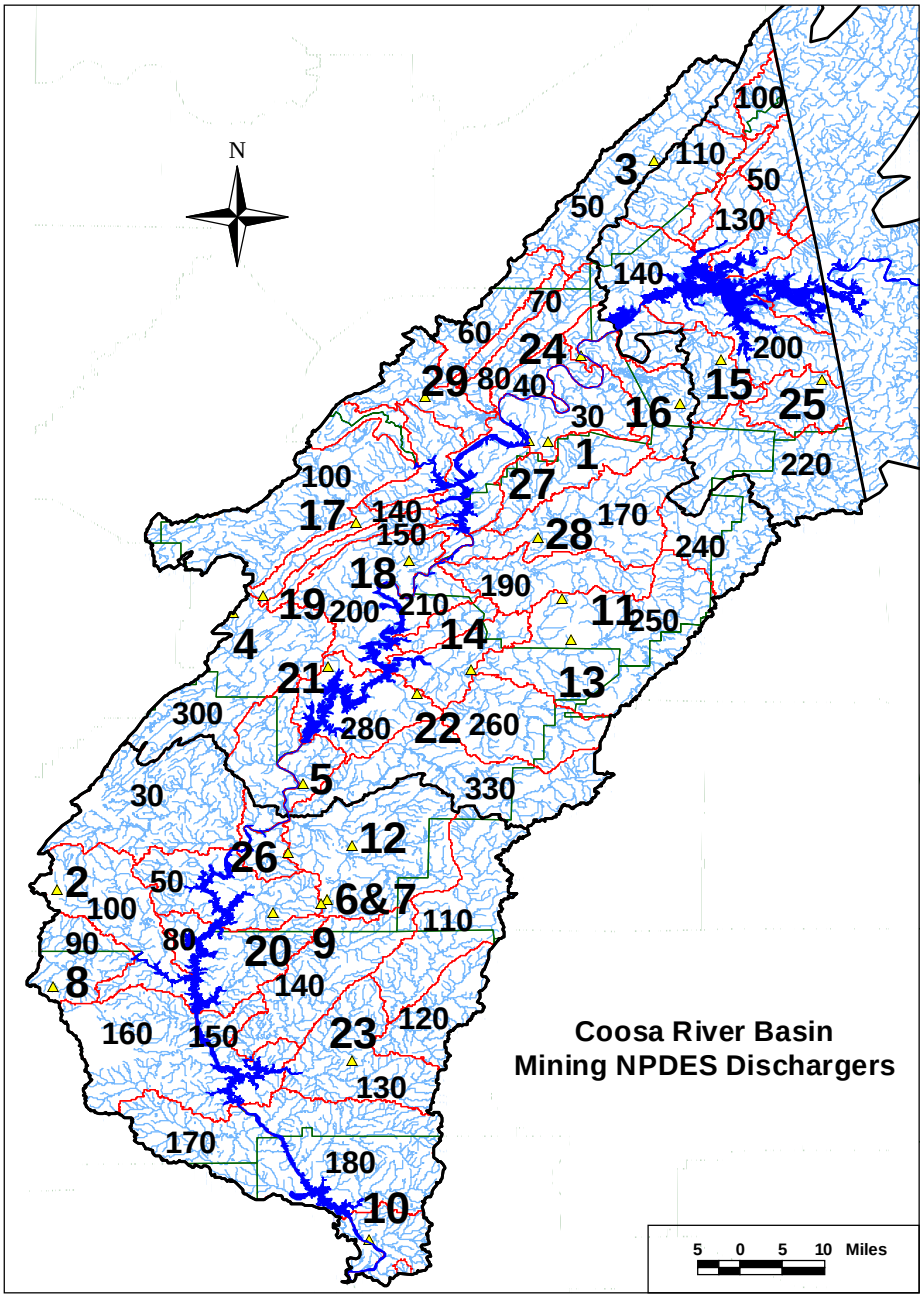
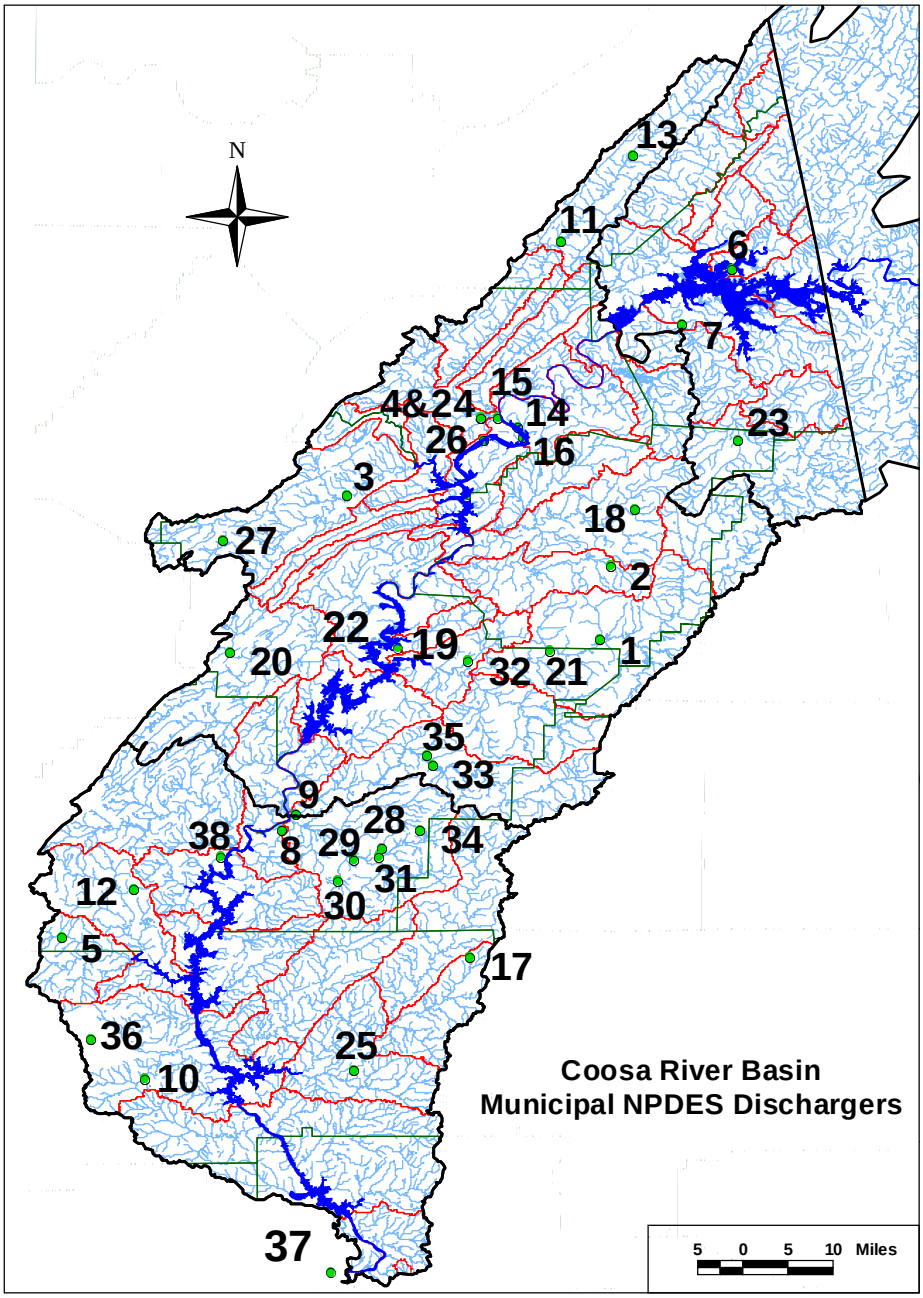


Figure CO-4 (cont.)

Coosa River Basin Mining NPDES Dischargers

1	Calhoun Asphalt Company Inc.	Sims Pit
2	Chemical Lime Company of Alabama Inc.	O'Neal Quarry and Lime Plant
3	Covington Stone Company	Fort Payne Quarry
4	Dollar J.D.	J.D. Dollar Chert Mine
5	Dumont Inc.	Goose Creek Transportation Facility
6	E.C.C. America Calcium Products Inc.	Sylacauga Plant
7	E.C.C. International - SID #356100240	Sylacauga Plant
8	Frye Troy	Pit #1
9	Georgia Marble Company Inc.	Gantt's Quarry
10	J & J Gravel Inc.	J & J Gravel Pit
11	Landfill Clays Inc.	Landfill Clays, Inc. Mine
12	Luzenac America Inc.	Holmes-Ward Mine
13	McCartney Construction Company Inc.	Coldwater Quarry
14	McCartney Construction Company Inc.	Speedway Quarry
15	McCartney Construction Company Inc.	Ellis Pit
16	McCartney Construction Company Inc.	Frinak Pit
17	National Cement Company of Alabama Inc.	Beaver Creek Facility
18	National Cement Company of Alabama Inc.	Blue Spring Fork Facility
19	Opelika Materials LLC	Aggregate Operation
20	Purple Mountain Marble Company Inc.	Marsh Quarry
21	Riverside Refractories Inc.	Brush Pond Mine
22	Riverside Refractories Inc.	Idelia Hill Acres Mine
23	Rockford Minerals LLC	McAllister Plant
24	Sagna Inc.	Sagna Sand & Gravel Mine
25	St. John Clay Company Inc.	St. John Clay Mine
26	Vulcan Materials Company	Childersburg Quarry
27	Vulcan Materials Company	Glencoe Quarry
28	Vulcan Materials Company	Ohatchee Quarry
29	Whorton J. Mack Trust Fund	Whorton Chert Pit

Figure CO-5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37
Coosa River Basin
Municipal NPDES Dischargers
5 0 5 10 Miles

Figure CO-5 (cont.)

Coosa River Basin
Municipal NPDES Dischargers

1 Anniston Choccolocco WWTP
2 Anniston Ft. McClellan WWTP
3 Ashville Lagoon
4 Attalla Lagoon
5 Calera Lagoon
6 Cedar Bluff WWTP
7 Centre Lagoon
8 Childersburg Bailey Branch Lagoon
9 Childersburg Pinecrest Lagoon
10 Clanton Walnut Creek WWTP
11 Collinsville Lagoon
12 Columbiana WWTP
13 Ft. Payne WWTP
14 Gadsden East WWTP
15 Gadsden West WWTP
16 Glencoe Lagoon
17 Goodwater WWTP
18 Jacksonville WWYP
19 Coosa River
20 Moody Kelly Creek WWTP
21 Oxford Tull C. Allen WWTP
22 Pell City Dye Creek WWTP
23 Piedmont Lagoon
24 Rainbow City Lagoon
25 Rockford WWTP
26 Southside Laggon
27 Springville Lagoon
28 Sycamore WWTP
29 Sylacauga Fairmont WWTP
30 Sylacauga J. Earl Ham WWTP
31 Sylacauga Valleyview WWYP
32 Talladega Airport Ind. WWTP
33 Talladega Brecon WWTP
34 Talladega Main WWTP
35 Taddadega Niki-Lu WWTP
36 Thorsby HCR Lagoon
37 Wetumpka WWTP
38 Wilsonville WWTP

Figure CO-6

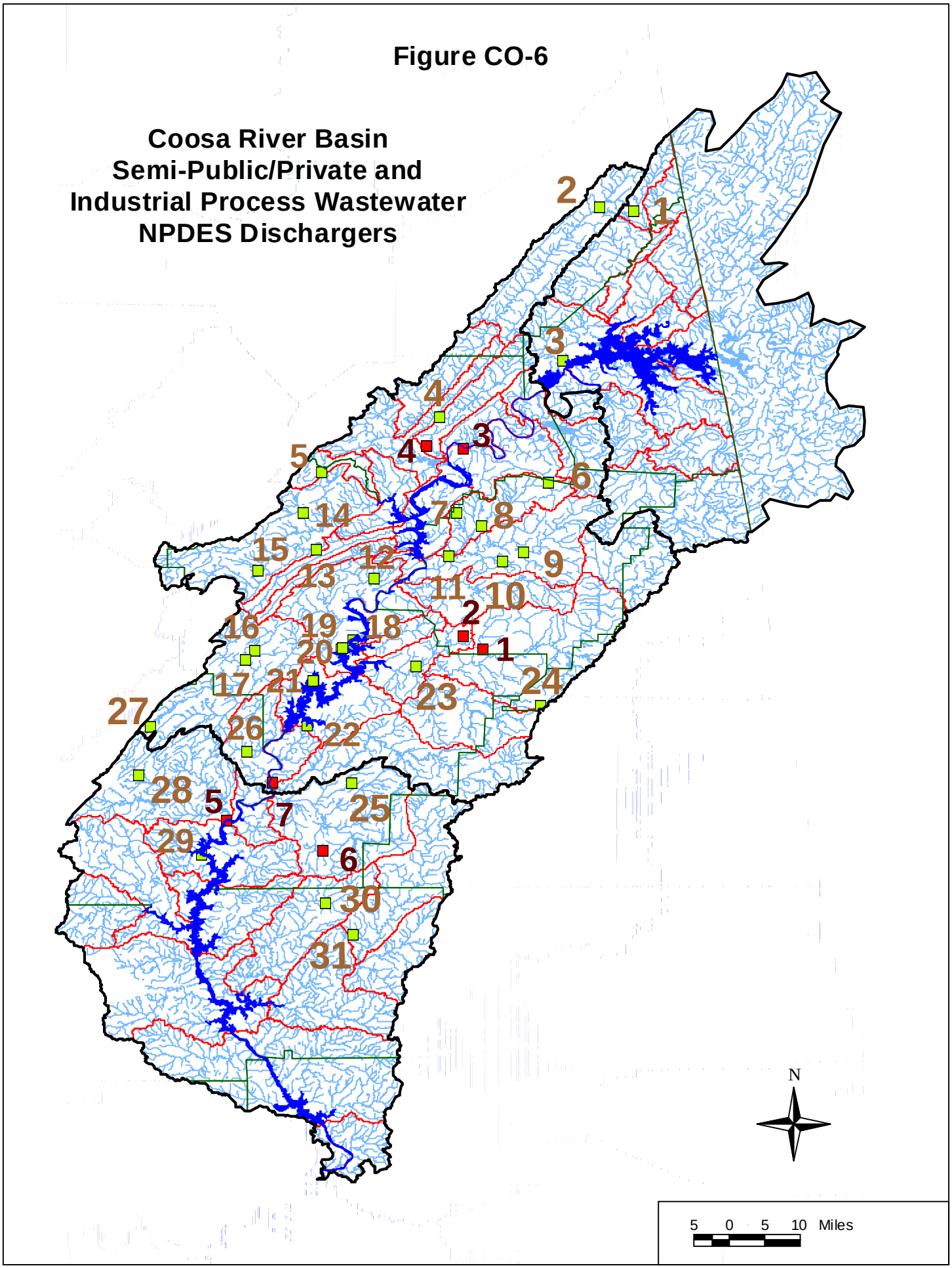

Coosa River Basin
Semi-Public/Private and
Industrial Process Wastewater
NPDES Dischargers
N
5 0 5 10 Miles

Figure CO-6 (cont.)

Coosa River Basin Semi-Public/Private NPDES Dischargers

1 DeSoto Statep Park STP
2 Terrapin Hills Golf Estates
3 Cherokee County STP
4 Mountain View Baptist Hospital
5 Camp Sumatanga WWTP
6 Northern District School
7 Big Oak Boy's Ranch
8 Silver Lakes Subdivision Lagoon
9 North Pine Inc. WWTP
10 Alexandria School
11 Ohatchee School
12 Ragland Housing Authority
13 Ashville School
14 Ashville Manor Nursing Home
15 St. Clair Correctional Faility
16 The Village at Cook Springs
17 St. Clair Health Care Center
18 River Bend Apratments
19 Best Western Riverside Inn
20 Paradise Isle Condominiums
21 Harbortown Townhomes WWTP
22 Alpine Bay
23 Talladega Speedway
24 Cheaha State Park
25 Pittard Vocational School Lagoon
26 Vincent High School
27 Shoal Creek Country Club
28 Chelsea High School
29 4-H Center
30 Stewartville School
31 Coosa Co. Central High School

Coosa River Basin Major Industrial NPDES Process Wastewater Dischargers

1 NGC Industries, Inc.
2 Anniston Army Depot
3 APCO Gadsden Plant
4 Gulf States Steel Inc.
5 APCO Gaston Plant
6 Avondale Mills Eva Jane
7 US Alliance Coosa Pines

Table CO-1
1996 Coosa River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
CO01	East Fork of Little River	Wooden bridge on state line road	34.52383	-85.51394
CO02	East Fork of Little River	1/2 mile DS of Lookout Mountain Boys Camp-RR crossing	34.51267	-85.53311
CO03	Little Wills Creek	Center of Co. Rd. 51 Bridge south of Hwy 68	34.2745	-85.88336
CO04	Little Wills Creek	20 yards US of Little Wills Creek mouth, south of Hwy 68	34.28294	-85.89608
CO05	UT to Dry Creek	Co. Rd. 103 south of Wilsonville	33.227472	-86.48325
CO06	Buxahatchee Creek	US 31 Bridge	33.095556	-86.752777
CO07	Buxahatchee Creek	Hiawatha Rd Bridge	33.072027	-86.67706
CO08	Hatchet Creek	Co. Rd. 29	32.861111	-86.338611
CO09	Hatchet Creek	Hwy 231 north of Rockford	32.943889	-86.2033
CO10	Hatchet Creek	US Hwy 280	33.036389	-86.12333
CO11	Hatchet Creek	Co. Rd. 4	33.130278	-86.055556
CO12	Little River	Center of bridge on Hwy 273	34.28186	-85.67244
CO13	West Fork of Little River	River ford on Co. Rd. 517 off of Co. Rd.	34.58664	-85.56356
CO14	West Fork of Little River	Co. Rd. 165 Bridge south of Mentone.	34.50842	-85.60844
CO15	Terrapin Creek	Co. Rd. 8 Bridge	33.97961	-85.60122
CO16	Terrapin Creek	Hwy 9 Bridge	34.06328	-85.61197
CO17	Terrapin Creek	West side of Co. Rd. 71 Bridge down side road to creek bank	34.12194	-85.67672
CO18	Finikochika Creek	Co. Rd. 56 west of Weogufka	33.00639	-86.35
CO19	Finikochika Creek	Co. Rd. 15 northwest of Moriah	32.95	-86.363333
CO20	Socapatoy Creek	AL Hwy 9	32.991389	-86.06528
CO21	Socapatoy Creek	Unnamed dirt rd (Co. Rd. 69)	32.965556	-86.14972
CO22	Weogufka Creek	Co. Rd. 56 east of Weogufka	33.018611	-86.30083
CO23	Weogufka Creek	Co. Rd. 15 northwest of Moriah	32.941944	-86.35556
CO24	Brecon Branch	US of Brecon WWTP	33.471111	-86.060556
CO25	Brecon Branch	Co. Rd. 5 Bridge DS of Brecon Branch WWTP	33.48308	-86.04272
CO26	Williams Branch	Farm lane off AL Hwy 204, 0.7 miles east of Tallahatchee Cr Bridge	33.82463	-85.78836
CO27	Williams Branch	AL Hwy 204 west of STP	33.82417	-85.78333
CO28	Coosa River	Faucet in water treatment plant.	34.02222	-85.9875
CO29	Coosa River	Talladega\Shelby Water Treatment Plant	33.290556	-86.36528
CO30	Coosa River	Private property access on stateline.	34.2	-85.4447

Table CO-2
Coosa River Basin Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
CO01	East Fork of Little River	Wooden bridge on state line road	na	M	Full	0
CO02	East Fork of Little River	1/2 mile DS of Lookout Mtn Boys Camp-RR crossing	1.22 miles upstream	M	Full	1.22
CO03	Little Wills Creek	Co. Rd. 51	Its source	M	Full	4.9
CO04	Little Wills Creek	20 yards US of Little Wills Cr mouth	CO03	M	Full	7
CO05	UT to Dry Creek	Co. Rd. 103	Its source	M	Partial	0.5
CO06	Buxahatchee Creek	US 31 Bridge	Its source	M	Partial	3.2
CO07	Buxahatchee Creek	Hiawatha Rd Bridge	CO06	M	Full	5.6
CO08	Hatchet Creek	Co. Rd. 29	CO09	M	Full	15.6
CO09	Hatchet Creek	Hwy 231	CO10	M	Full	13.2
CO10	Hatchet Creek	US Hwy 280	CO11	M	Full	12.6
CO11	Hatchet Creek	Co. Rd. 4	Its source	M	Full	4.6
CO12	Little River	Hwy 273	Yellow Creek	M	Full	12.5
CO13	West Fork of Little River	Co. Rd. 517	GA Stateline	E	Full	5
CO14	West Fork of Little River	Co. Rd. 165	CO13	M	Full	7.4
CO15	Terrapin Creek	Co. Rd. 8	Its source	M	Full	14.6
CO16	Terrapin Creek	Hwy 9	CO15	M	Full	12.2
CO17	Terrapin Creek	Co. Rd. 71	CO16	M	Full	6.8
CO18	Finikochika Creek	Co. Rd. 56	Its source	M	Full	5
CO19	Finikochika Creek	Co. Rd. 15	CO19	M	Full	6.4
CO20	Socapatoy Creek	AL Hwy 9	Its source	M	Full	4.1
CO21	Socapatoy Creek	Co. Rd. 69	CO20	E	Full	7.6
CO22	Weogufka Creek	Co. Rd. 56	Its source	M	Full	16
CO23	Weogufka Creek	Co. Rd. 15	CO23	M	Full	12.5
CO24	Brecon Branch	US Brecon WWTP	Its source	M	Full	2
CO25	Brecon Branch	Co. Rd. 5	CO24	M	Full	1.9
CO26	Williams Branch	AL Hwy 204	CO27	M	Full	0.3
CO27	Williams Branch	AL Hwy 204	Its source	M	Full	4.8
CO28	Coosa River	Faucet in water treatment plant.	na	M	Partial	-
CO29	Coosa River	Talladega\Shelby Water Treatment Plant	na	M	Full	11.2
CO30	Coosa River	Private property access on stateline	na	M	Full	0

Table CO-3
Coosa River Basin Industrial NPDES Process Wastewater Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	NGC INDUSTRIES, INC	AL0003930	33.59537	-85.92647
2	ANNISTON ARMY DEPOT	AL0002658	33.62095	-85.96907
3	APCO GADSDEN PLT	AL0002887	34.009761	-85.968633
4	GULF STATES STEEL INC	AL0055239	34.01453	-86.0442
5	APCO GASTON PLT	AL0003140	33.243611	-86.456667
6	AVONDALE MILLS EVA JANE	AL0001627	33.18194	-86.25865
7	U S ALLIANCE COOSA PINES	AL0003158	33.32171	-86.3593

Table CO-4
Coosa River Basin Semi-Public/Private NPDES Dischargers

Map Index	Facility	NPDES Permit No.	Latitude	Longitude
1	DESOTO STATE PARK STP	AL0046701	34.498753	-85.617108
2	TERRAPIN HILLS GOLF ESTATES	AL0052493	34.506264	-85.686744
3	CHEROKEE COUNTY STP	AL0057592	34.189258	-85.76265
4	MOUNTAIN VIEW BAPTIST HOSPITAL	AL0059544	34.073017	-86.018264
5	CAMP SUMATANGA WWTP	AL0048275	33.961111	-86.260278
6	NORTHERN DISTRICT SCHOOL	AL0043052	33.938889	-85.791667
7	BIG OAK BOY'S RANCH	AL0052736	33.874861	-85.982036
8	SILVER LAKES SUBDIVISION LAGOON	AL0066630	33.85	-85.930833
9	NORTH PINE INC. WWTP	AL0057703	33.794458	-85.842697
10	ALEXANDRIA SCHOOL	AL0055549	33.776247	-85.888294
11	OHATCHEE SCHOOL	AL0055727	33.786072	-85.999211
12	RAGLAND HOUSING AUTHORITY	AL0043338	33.741111	-86.151389
13	ASHVILLE SCHOOL	AL0043061	33.8	-86.2725
14	ASHVILLE MANOR NURSING HOME	AL0057975	33.874803	-86.298094
15	ST CLAIR CORRECTIONAL FACILITY	AL0043494	33.757778	-86.391111
16	THE VILLAGE AT COOK SPRINGS	AL0049051	33.5925	-86.398889
17	ST. CLAIR HEALTH CARE CENTER	AL0057096	33.573889	-86.416667
18	RIVER BEND APARTMENTS	AL0027570	33.614808	-86.194808
19	BEST WESTERN RIVERSIDE INN	AL0053422	33.596428	-86.216039
20	PARADISE ISLE CONDOMINIUMS	AL0050385	33.593675	-86.219106
21	HARBORTOWN TOWNHOMES WWTP	AL0052281	33.529722	-86.276389
22	ALPINE BAY	AL0051268	33.439097	-86.289953
23	TALLADEGA SPEEDWAY	AL0058238	33.5582	-86.066553
24	CHEAHA STATE PARK	AL0046728	33.478025	-85.807789
25	PITTARD VOCATIONAL SCHOOL LAGOON	AL0058823	33.317961	-86.199528
26	VINCENT HIGH SCHOOL	AL0051781	33.383675	-86.415208
27	SHOAL CREEK COUNTY CLUB	AL0049891	33.436389	-86.611667
28	CHELSEA HIGH SCHOOL	AL0051772	33.333761	-86.636
29	4-H CENTER	AL0043010	33.1725	-86.5075
30	STEWARTVILLE SCHOOL	AL0050954	33.072736	-86.252581
31	COOSA COUNTY CENTRAL HIGH SCHOOL	AL0055263	33.008333	-86.196389

Table CO-5
Coosa River Basin Mining NPDES Dischargers

Map Index	NPDES Permit No.	Company Name	Facility Name	Lattitude	Longitude	NRCS Subwatershed
1	AL0060585	Calhoun Asphalt Company Inc.	Sims Pit	33.939167	-85.915	03150106-090
2	AL0056073	Chemical Lime Company of Alabama Inc.	O'Neal Quarry and Lime Plant	33.175	-86.751944	03150107-100
3	AL0055778	Covington Stone Company	Fort Payne Quarry	34.419444	-85.733611	03150105-050
4	AL0066851	Dollar J.D.	J.D. Dollar Chert Mine	33.647778	-86.451667	03150106-140
5	AL0067873	Dumont Inc.	Goose Creek Transportation Facility	33.356944	-86.334444	03150106-320
6	AL0003662	E.C.C. America Calcium Products Inc.	Sylacauga Plant	33.158333	-86.292222	03150107-010
7	AL3561002	E.C.C. International - SID #356100240	Sylacauga Plant	33.158333	-86.292222	03150107-010
8	AL0057568	Frye Troy	Pit #1	33.01	-86.759722	03150107-090
9	AL0001261	Georgia Marble Company Inc.	Gantt's Quarry	33.151389	-86.302778	03150107-060
10	AL0068136	J & J Gravel Inc.	J & J Gravel Pit	32.5775	-86.22	03150107-200
11	AL0028011	Landfill Clays Inc.	Landfill Clays, Inc. Mine	33.673611	-85.888889	03150106-250
12	AL0055794	Luzenac America Inc.	Holmes-Ward Mine	33.25	-86.25	03150107-010
13	AL0069892	McCartney Construction Company Inc.	Coldwater Quarry	33.603611	-85.876389	03150106-250
14	AL0066320	McCartney Construction Company Inc.	Speedway Quarry	33.552222	-86.045556	03150106-270
15	AL0070157	McCartney Construction Company Inc.	Ellis Pit	34.079167	-85.620556	03150105-250
16	AL0070165	McCartney Construction Company Inc.	Frinak Pit	34.004444	-85.690556	03150106-010
17	AL0031534	National Cement Company of Alabama Inc.	Beaver Creek Facility	33.802778	-86.241944	03150106-140
18	AL0031542	National Cement Company of Alabama Inc.	Blue Spring Fork Facility	33.736944	-86.153611	03150106-180
19	AL0070611	Opelika Materials LLC	Aggregate Operation	33.677222	-86.402222	03150106-140
20	AL0062588	Purple Mountain Marble Company Inc.	Marsh Quarry	33.136389	-86.385	03150107-060
21	AL0041327	Riverside Refractories Inc.	Brush Pond Mine	33.557778	-86.289722	03150106-290
22	AL0069663	Riverside Refractories Inc.	Idelia Hill Acres Mine	33.51	-86.137778	03150106-270
23	AL0070696	Rockford Minerals LLC	McAllister Plant	32.883611	-86.248611	03150107-130
24	AL0062472	Sagna Inc.	Sagna Sand & Gravel Mine	34.086667	-85.859167	03150106-010
25	AL0066893	St. John Clay Company Inc.	St. John Clay Mine	34.045556	-85.447222	03150105-240
26	AL0002313	Vulcan Materials Company	Childersburg Quarry	33.238056	-86.3575	03150107-010
27	AL0002020	Vulcan Materials Company	Glencoe Quarry	33.941667	-85.948889	03150106-030
28	AL0002186	Vulcan Materials Company	Ohatchee Quarry	33.777222	-85.931667	03150106-170
29	AL0068683	Whorton J. Mack Trust Fund	Whorton Chert Pit	34.016389	-86.124722	03150106-070

Table CO-6
Coosa River Basin Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude	Treatment
1	AL0022195	Anniston Choccolocco WWTP	Choccolocco Creek	33.603056	-85.826389	Secondary
2	AL0024520	Anniston Ft. Mcclellan WWTP	Cane Creek	33.726944	-85.808889	Secondary
3	AL0023302	Ashville Lagoon	Big Canoe Creek	33.849444	-86.257778	Secondary
4	AL0057657	Attalla Lagoon	Coosa River	33.981389	-86.029444	Secondary
5	AL0050938	Calera WWTP	Buxahatchee Creek	33.094167	-86.746389	Advanced
6	AL0024678	Cedar Bluff WWTP	Chattooga River	34.234722	-85.600278	Secondary
7	AL0062723	Centre Lagoon	Coosa River	34.139444	-85.686667	Secondary
8	AL0021466	Childersburg Bailey Branch Lagoon	Bailey Branch	33.278333	-86.370556	Secondary
9	AL0021458	Childersburg Pinecrest Lagoon	Talladega Creek	33.302778	-86.346111	Secondary
10	AL0054631	Clanton Walnut Creek WWTP	Walnut Creek	32.853889	-86.603611	Advanced
11	AL0024236	Collinsville Lagoon	Big Wills Creek	34.281667	-85.893333	Secondary
12	AL0024589	Columbiana WWTP	Waxahatchee Creek	33.176667	-86.623056	Advanced
13	AL0023311	Fort Payne WWTP	Big Wills Creek	34.428313	-85.768805	Advanced
14	AL0022659	Gadsden East WWTP	Coosa River	33.963611	-85.968333	Secondary
15	AL0053201	Gadsden West WWTP	Coosa River	33.981944	-86	Secondary
16	AL0021334	Glencoe Lagoon	Coosa River	33.947222	-85.957222	Secondary
17	AL0023582	Goodwater WWTP	UT to Baker Creek	33.061389	-86.048333	Secondary
18	AL0022586	Jacksonville WWTP	Williams Branch	33.825	-85.766667	Secondary
19	AL0054356	Coosa River	Coosa River	33.5875	-86.172222	Secondary
20	AL0061581	Moody Kelly Creek WWTP	Kelly Creek	33.581944	-86.458333	Advanced
21	AL0058408	Oxford Tull C. Allen WWTP	Choccolocco Creek	33.583333	-85.911111	Secondary
22	AL0045993	Pell City Dye Creek WWTP	Coosa River	33.575	-86.2125	Advanced
23	AL0024376	Piedmont Lagoon	Nances Creek	33.941667	-85.591944	Secondary
24	AL0056839	Rainbow City Lagoon	Coosa River	33.981389	-86.029444	Secondary
25	AL0062278	Rockford WWTP	Red Mouth Creek	32.866667	-86.246944	Secondary
26	AL0055867	Southside Lagoon	Coosa River	33.942222	-86.025	Secondary
27	AL0050903	Springville Lagoon	Little Canoe Creek	33.772222	-86.471111	Secondary
28	AL0061573	Sycamore WWTP	Foreman Branch	33.245	-86.1975	Advanced
29	AL0020010	Sylacauga Fairmont WWTP	Tallaseehatchee Creek	33.226667	-86.245833	Advanced
30	AL0020001	Sylacauga J. Earl Ham WWTP	Shirtee Creek	33.190278	-86.272222	Advanced
31	AL0020028	Sylacauga Valleyview WWTP	Crooked Creek	33.230278	-86.202778	Advanced
32	AL0054658	Talladega Airport Ind. WWTP	Eastaboga Creek	33.565833	-86.051111	Advanced
33	AL0022349	Talladega Brecon WWTP	Brecon Branch	33.388889	-86.1125	Secondary
34	AL0022357	Talladega Main WWTP	Talladega Creek	33.278333	-86.132778	Secondary
35	AL0059579	Talladega Niki-Lu WWTP	Talladega Creek	33.405556	-86.122222	Secondary
36	AL0050636	Thorsby HCR Lagoon	Yellow Leaf Creek	32.919444	-86.695278	Secondary
37	AL0064025	Wetumpka WWTP	Coosa River	32.520556	-86.283333	Secondary
38	AL0021491	Wilsonville WWTP	UT to Dry Branch	33.231944	-86.473889	Advanced

Table CO-7
Coosa River Basin Data

Station		CO01	CO01	CO01	CO01	CO01	CO02	CO02	CO02	CO02	CO02	CO03
Sampling Date		6/24/96	7/24/96	8/28/96	9/23/96	10/24/96	6/24/96	7/24/96	8/29/96	9/23/96	10/24/96	6/25/96
Sampling Time		1:45 PM	1:50 PM	3:20 PM	1:45 PM	1:10 PM	2:45 PM	1:30 PM	10:15 AM	12:50 PM	1:45 PM	10:55 AM
Total Water Depth	ft	5	7.24	8.4	8	7.5		0.75	0.75	2	0.75	
Depth of Sample	ft	2.5		5	4	3.75		0.375	0.375	1.8	0.75	
Air Temperature	°C	31	31.5	28.5	18	23	33	29.5	28.5	18	21	31.5
Water Temperature	°C	24.6	24.7	26.2	16.8	15.2	27	25.1	26	19.4	16	18.7
pH	s.u.	6.77	7.11	7.3	6.97	6.45	7.21	6.73	7.09	7.03	6.61	8.02
Dissolved Oxygen	mg/L	5.7	7	7.3	9.2	4.6	7.5	7.8	7.3	8.95	6.87	8
Flow	cfs*											
Conductivity	mmhos	51	55	48	25	35	55	55	42	26	32	220
Cond at 25 °C	mmhos	51	55	47	30	43	53	55	41	29	39	250
Turbidity	ntu											
BOD5	mg/L		1.8	2.3		2.2		0.5	1.6		0.7	
NH3-N	mg/L		0.007	0.005K		0.1K		0.005K	0.005K		0.1K	
TKN	mg/L		0.263	0.226		0.05K		0.18	0.183		0.15K	
NO2+NO3-N	mg/L		0.005K	0.01		0.13		0.005	0.01K		0.1	
PO4-P	mg/L		0.05K	0.04K		0.05		0.05K	0.04K		0.05K	
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO03	CO03	CO03	CO03	CO04	CO04	CO04	CO04	CO04	CO05	CO05
Sampling Date		7/24/96	8/28/96	9/23/96	10/25/96	6/25/96	7/24/96	8/28/96	9/23/96	10/25/96	6/20/96	7/25/96
Sampling Time		10:20 AM	12:00 PM	10:35 AM	9:00 AM	10:30 AM	10:50 AM	12:20 PM	11:00 AM	9:20 AM	7:20 AM	7:30 AM
Total Water Depth	ft	1	0.5	1	1		0.6	0.75	0.75	0.5		2
Depth of Sample	ft	0.5	0.25	0.5	0.5		0	0.375	0.375	0.25		1
Air Temperature	°C	31	28.5	20	15	31.5	29	28	21	16	24	25
Water Temperature	°C	19.9	22.4	18.5	12.9	20.5	19.8	22.5	17	13	23.1	24.5
pH	s.u.	7.87	7.5	7.7	7	7.8	7.62	6.83	7.89	7.45	7.54	6.42
Dissolved Oxygen	mg/L	8	7.9	9.24	5.61	6.7	6	6.5	8.41	4.95	4.7	1.9
Flow	cfs*											
Conductivity	mmhos	202	235	240	201	248	248	238	248	228	219	925
Cond at 25 °C	mmhos	224	247	274	261	271	275	250	293	296	227	934
Turbidity	ntu											
BOD5	mg/L	0.1	1.4		0.7		2.5	2		1.4		1.5
NH3-N	mg/L	0.014	0.022		0.1K		0.299	0.335		0.1K		0.083
TKN	mg/L	0.1K	0.215		0.15K		0.497	0.6		0.18		0.344
NO2+NO3-N	mg/L	0.582	1.052		1.13		0.857	1.033		1.32		1.058
PO4-P	mg/L	0.05K	0.091		0.05K		0.11	0.189		0.12		1.959
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO05	CO05	CO05	CO06	CO06	CO06	CO06	CO06	CO07	CO07	CO07
Sampling Date		8/15/96	9/18/96	10/22/96	6/18/96	7/10/96	8/15/96	9/26/96	10/24/96	6/18/96	7/10/96	8/15/96
Sampling Time		7:40 AM	7:30 AM	2:05 PM	8:10 AM	8:00 AM	8:00 AM	7:30 AM	7:45 AM	9:15 AM	8:45 AM	8:40 AM
Total Water Depth	ft	2	3	1			0.5	0.75	0.8			1.75
Depth of Sample	ft	1	2	0.5			0.25	0.375	0.4			0.875
Air Temperature	°C	23.5	14	25	27	25	22	21.5	2	30	29	25.5
Water Temperature	°C	22.2	19	18.9	24.8	25	22	19.8	9.7	25.4	24.7	22.6
pH	s.u.	7.08	6.58	7.62	7.65	7.47	7.63	7.46	7.74	7.54	7.11	7.32
Dissolved Oxygen	mg/L	4	4.25	5.4	1.6	4.5	1.6	2.64	3.3	6.2	7	6.7
Flow	cfs*	0										
Conductivity	mmhos	382	475	370	334	282	285	188	299	122.5	200	185
Cond at 25 °C	mmhos	404	536	419	335	282	302	209	422	122	201	194
Turbidity	ntu											
BOD5	mg/L	0.4		1.8		2.7	1.1		2.3		2.1	0.1
NH3-N	mg/L	0.037		0.27		0.078	0.181		0.1K		0.042	0.005K
TKN	mg/L	0.204		0.15K		0.414	0.377		0.25		0.405	0.213
NO2+NO3-N	mg/L	0.466		1.6		0.056	0.04		2.17		0.068	0.03
PO4-P	mg/L	0.078		0.14		0.05K	0.078		0.08		0.05K	0.05
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO07	CO07	CO08	CO08	CO08	CO08	CO08	CO09	CO09	CO09	CO09
Sampling Date		9/26/96	10/24/96	6/25/96	7/23/96	8/21/96	9/19/96	10/9/96	6/25/96	7/23/96	8/21/96	9/19/96
Sampling Time		8:00 AM	8:15 AM	2:00 PM	3:30 PM	1:35 PM	5:45 PM	9:00 AM	8:40 AM	7:35 AM	8:25 AM	3:30 PM
Total Water Depth	ft	1.5	1.1	6	8	6	7	6.5	4	2.5	2	3
Depth of Sample	ft	0.75	0.55	3	4	3	3.5	3	2	1.25	1	1.5
Air Temperature	°C	20	4	32	30	32	21	18	28	24	24	26
Water Temperature	°C	19.6	9.9	28.6	30.1	30.2	25	19	25.7	26.3	25.6	24
pH	s.u.	6.78	7.15	7.4	7.1	6.6	7.28	7.8	6.8	6.4	5.4	7.39
Dissolved Oxygen	mg/L	6.8	7.8	7.6	7.1	6.9	8.25	7.45	6.8	7	7.1	8.55
Flow	cfs*											
Conductivity	mmhos	253	98	49	50	52	39.4	51.4	50	42	50	41.7
Cond at 25 °C	mmhos	282	138	46	46	47	39	58	49	41	49	43
Turbidity	ntu			6	46	2.9	33.9	3.99	26	51	5.5	20.2
BOD5	mg/L		1.9		0.9	0.8		0.5		1.8	1.1	
NH3-N	mg/L		0.1K		0.015K	0.015K		0.015		0.015K	0.015K	
TKN	mg/L		0.15K		0.15K	0.15K		0.15K		0.15K	0.15K	
NO2+NO3-N	mg/L		0.91		0.02	0.03		0.003K		0.06	0.02	
PO4-P	mg/L		0.05K		0.03	0.1		0.01		0.03	0.14	
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO09	CO10	CO10	CO10	CO10	CO10	CO11	CO11	CO11	CO11	CO11
Sampling Date		10/9/96	6/25/96	7/23/96	8/21/96	9/19/96	10/9/96	6/25/96	7/23/96	8/21/96	9/19/96	10/9/96
Sampling Time		11:10 AM	9:25 AM	8:30 AM	9:10 AM	3:10 PM	11:50 AM	11:45 AM	11:25 AM	10:55 AM	2:00 PM	1:10 PM
Total Water Depth	ft	3	2	1	2	1.5	2.5	5	2	2	2.5	2.5
Depth of Sample	ft	1.5	1	0	1	0.7	1.5	2.5	1	1	1.2	1.5
Air Temperature	°C	20	29	25	25	25	20	32	30	30	26	21
Water Temperature	°C	18	25.8	27.5	25.3	24	17	25.6	26.7	24.3	23	18
pH	s.u.	7.6	6.9	7.3	6.5	7.38	7.6	7	7.2	6.6	7.15	7.3
Dissolved Oxygen	mg/L	8.95	7.1	7.2	7	8.7	9.65	7.1	6.9	7.2	8.2	9
Flow	cfs*											
Conductivity	mmhos	44.7	50	48	50	40.9	46.1	49	48	58	49.5	46.4
Cond at 25 °C	mmhos	52	49	46	50	42	54	48	46	59	51	54
Turbidity	ntu	4.93	2.5	5.4	3.6	21.5	4.53	7	4.3	5.3	11.5	5.3
BOD5	mg/L	0.5		1.5	0.6		0.6		0.5	0.6		0.7
NH3-N	mg/L	0.015K		0.015K	0.015K				0.015K	0.015K		0.015K
TKN	mg/L	0.15K		0.15K	0.15K				0.15K	0.15K		0.15K
NO2+NO3-N	mg/L	0.003K		0.1	0.02				0.07	0.03		0.03
PO4-P	mg/L	0.02		0.03	0.11				0.03	0.12		0.01
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO12	CO12	CO12	CO12	CO12	CO13	CO13	CO13	CO13	CO13	CO14
Sampling Date		6/24/96	7/25/96	8/29/96	9/24/96	10/24/96	6/24/96	7/24/96	8/28/96	9/23/96	10/24/96	6/25/96
Sampling Time		11:50 AM	10:40 AM	12:00 PM	8:50 AM	3:25 PM	4:15 PM	2:20 PM	2:50 PM	2:20 PM	12:40 PM	12:00 PM
Total Water Depth	ft		3.05	1.5	0.5	1		1	1	2	0.5	5
Depth of Sample	ft		1.5	0.75	0.5	0.5		0.5	0.5	1	0.25	2.5
Air Temperature	°C	32	26	30	10	24		28.5	28	21	21	30
Water Temperature	°C	25.8	21.7	26	19.6	15.8		23.6	26.3	18.2	12.2	27
pH	s.u.	7.64	7.18	6.46	7.04	6.71		6.55	6.6	6.7	5.83	6.78
Dissolved Oxygen	mg/L	7.9	7.5	7.7	8.2	7.02		6.5	7.3	9.44	6.52	6.6
Flow	cfs*											
Conductivity	mmhos	39	40	39	28	28		21	19	17	12	19
Cond at 25 °C	mmhos	38	43	38	31	34		22	19	20	16	18
Turbidity	ntu											
BOD5	mg/L		0.4	1.7		0.7		0.3	1.3		1.2	
NH3-N	mg/L		0.005K	0.005		0.1K		0.005K	0.014		0.1K	
TKN	mg/L		0.177	0.168		0.15K		0.124	0.23		1.1	
NO2+NO3-N	mg/L		0.067	0.243		0.1K		0.015	0.234		0.1	
PO4-P	mg/L		0.13	0.04		0.05K		0.05	0.04		0.05K	
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO14	CO14	CO14	CO14	CO15	CO15	CO15	CO15	CO15	CO16	CO16
Sampling Date		7/24/96	8/28/96	9/23/96	10/24/96	6/20/96	7/31/96	8/15/96	9/4/96	10/30/96	6/20/96	7/31/96
Sampling Time		12:15 PM	2:00 PM	12:00 PM	2:40 PM	1:00 PM	11:20 AM	1:00 PM	11:50 AM	12:25 PM	12:30 PM	11:00 AM
Total Water Depth	ft	6	8	7	6.5		4	1.1	0.8	0.9		7.33
Depth of Sample	ft	3	5	5	3.25		2	0.55	0.4	0.45		3.75
Air Temperature	°C	30	28.5	22	22	35	29	32	27.5	26	34	30
Water Temperature	°C	23.1	24.5	17.6	14.4	26.2	25.1	25.8	23	21.3	27.6	25
pH	s.u.	6.94	7.5	7.26	6.51	8.06	7.43	8.05	7.71	7.19	7.76	7.48
Dissolved Oxygen	mg/L	5.9	6.4	8.92	6.23	9.7	7.7	9.2	8.1	8.8	7.2	6.9
Flow	cfs*											
Conductivity	mmhos	32	28	20	18	135	241	120	120	110	160	290
Cond at 25 °C	mmhos	33	28	23	23	132	241	118	125	118	152	290
Turbidity	ntu											
BOD5	mg/L	0.6	1		1.6		0.1	0.6		1		0.1K
NH3-N	mg/L	0.005K	0.034		0.1K		0.005	0.015		0.1K		0.013
TKN	mg/L	0.184	0.186		1.1		0.181	0.158		0.54		0.152
NO2+NO3-N	mg/L	0.005	0.031		0.1		0.267	0.265		0.15		0.233
PO4-P	mg/L	0.05K	0.04K		0.05K		0.043	0.04K		0.05K		0.04K
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO16	CO16	CO16	CO17	CO17	CO17	CO17	CO17	CO18	CO18	CO18
Sampling Date		8/15/96	9/4/96	10/30/96	6/20/96	7/31/96	8/15/96	9/4/96	10/30/96	6/25/96	7/23/96	8/21/96
Sampling Time		12:30 PM	11:25 AM	12:50 PM	11:30 AM	10:30 AM	12:05 PM	10:30 AM	1:20 PM	12:45 PM	12:20 PM	11:55 AM
Total Water Depth	ft			1.2		3.3	1		1.5	2	2	1
Depth of Sample	ft	0	0.5	0.6		1.5	0	1	0.75	1	1	0.5
Air Temperature	°C	30	25.5	29	30	28.5	28	24	29	31	28	32
Water Temperature	°C	25.4	21.8	19.6	27	25.1	25.6	22.2	20.3	27.1	25.4	26.4
pH	s.u.	8.87	7.58	7.27	7.89	7.46	7.65	7.1	7.31	7	6.8	6.4
Dissolved Oxygen	mg/L	7.6	6.9	8.1	8.04	7.3	8.3	6.75	7.8	6.3	6.7	6
Flow	cfs*											
Conductivity	mmhos	160	149	130	160		160	130	135	70	59	78
Cond at 25 °C	mmhos	159	159	145	154		158	137	148	67	59	76
Turbidity	ntu									13	24	9
BOD5	mg/L	0.9		0.8			0.9		1		1.4	1.1
NH3-N	mg/L	0.01		0.1K			0.008		0.1K		0.015K	0.015K
TKN	mg/L	0.191		0.49			0.191		0.54		0.15K	0.15
NO2+NO3-N	mg/L	0.222		0.14			0.189		0.14		0.05	0.13
PO4-P	mg/L	0.044		0.05K			0.043		0.05K		0.03	0.13
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO18	CO18	CO19	CO19	CO19	CO19	CO19	CO20	CO20	CO20	CO20
Sampling Date		9/19/96	10/9/96	6/25/96	7/23/96	8/21/96	9/19/96	10/9/96	6/25/96	7/23/96	8/21/96	9/19/96
Sampling Time		4:05 PM	10:08 AM	1:15 PM	2:30 PM	1:00 PM	4:40 PM	9:39 AM	10:45 AM	10:25 AM	10:25 AM	1:40 PM
Total Water Depth	ft	1.5	2	2	1	1	1.5	2.5	1	1	1	2
Depth of Sample	ft	0.7	1	1	0	0.5	0.7	1.5	0	0.5	0.5	1
Air Temperature	°C	26	21	32	30	32	25	19	29	28	26	29
Water Temperature	°C	22	18	27.3	28.2	27.1	23	18	30.4	25	23.7	23
pH	s.u.	6.84	7.11	7.5	6.2	6.6	7.4	7.5	6.6	6.8	6.4	6.64
Dissolved Oxygen	mg/L	6.9	8.9	6.6	8	8	8.5	9.65	6.2	5.3	5.1	6.25
Flow	cfs*	0										
Conductivity	mmhos	60.2	67.4	60	80	70	64.6	63.1	70	55	70	56.8
Cond at 25 °C	mmhos	64	78	57	75	67	67	73	63	55	72	59
Turbidity	ntu	20.8	22.1	3.4	3.7	4.3	7.49	418	32	30	17	18.2
BOD5	mg/L		2.8		1	0.7		0.8		2.1	0.8	
NH3-N	mg/L		0.015		0.015K	0.015K		0.015K		0.015K	0.015K	
TKN	mg/L		0.26		0.15K	0.15K		0.15K		0.15K	0.15K	
NO2+NO3-N	mg/L		0.02		0.09	0.05		0.003K		0.06	0.06	
PO4-P	mg/L		0.04		0.25	0.11		0.02		0.05	0.12	
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO20	CO21	CO21	CO21	CO21	CO22	CO22	CO22	CO22	CO22	CO23
Sampling Date		10/9/96	6/25/96	7/23/96	8/21/96	10/9/96	6/25/96	7/23/96	8/21/96	9/19/96	10/9/96	6/25/96
Sampling Time		1:36 PM	9:55 AM	9:30 AM	9:50 AM	12:20 PM	12:30 PM	1:35 PM	12:30 PM	3:55 PM	10:25 AM	1:30 PM
Total Water Depth	ft	2.5	2	1	1	1	5	2	2	2.5	2	2
Depth of Sample	ft	1.5	1	0.5	0.5	0.5	2.5	1	1	1.25	1	1
Air Temperature	°C	21	28	26	25	21	31	30	31	23	18	33
Water Temperature	°C	18	26	26.4	25.9	19	25.5	26.8	25.4	22	17	27.2
pH	s.u.	6.8	7.4	7.4	6.6	7.7	7.1	7	6.5	6.9	7.3	7.4
Dissolved Oxygen	mg/L	6.6	7.7	7.4	8.2	10	7	6.3	6.6	7.4	8.95	7.8
Flow	cfs*											
Conductivity	mmhos	57	50	52	60	53.3	60	68	70	48.6	58.8	50
Cond at 25 °C	mmhos	66	49	51	59	60	59	66	69	52	69	48
Turbidity	ntu	13.4	4.7	22	5.9	7.5	14	34	11	18.9	9.01	12
BOD5	mg/L	0.7		0.9	1.1	0.7		0.9	1.1		0.7	
NH3-N	mg/L	0.015K		0.015K	0.015K	0.015K		0.015K	0.015K		0.015K	
TKN	mg/L	0.26		0.15K	0.15K	0.15K		0.15K	7.06		0.15K	
NO2+NO3-N	mg/L	0.01		0.06	0.02	0.04		0.17	0.13		0.03	
PO4-P	mg/L	0.05		0.05	0.11	0.02		0.02	0.1		0.01	
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO23	CO23	CO23	CO23	CO24	CO24	CO24	CO24	CO24	CO25	CO25
Sampling Date		7/23/96	8/21/96	9/19/96	10/9/96	6/13/96	7/31/96	8/13/96	9/25/96	10/22/96	6/13/96	7/31/96
Sampling Time		2:55 PM	1:15 PM	5:30 PM	9:23 AM	11:05 AM	10:15 AM	10:10 AM	10:10 AM	11:30 AM	10:20 AM	10:40 AM
Total Water Depth	ft	3	1	1.5	1.5		2	0.8	0.75	1		3
Depth of Sample	ft	1.5	0.5	0.7	0.75		1	0.4	0.375	0.5		1.5
Air Temperature	°C	30	31	25	19	27.5	28.4	25	27.2	21	27	28.7
Water Temperature	°C	26.3	27.1	23	18	21.3	21.4	20.9	19.7	18	21	24.4
pH	s.u.	6.3	6.6	7.05	7.43	7.94	8.48	9.09	8.02	7.15	6.27	7.08
Dissolved Oxygen	mg/L	6.8	8	7.95	8.35	9.6	8.7	9.5	8.95	10	8.6	6.5
Flow	cfs*											
Conductivity	mmhos	42	55	42.5	50.1	208	220	200	202	200	200	180
Cond at 25 °C	mmhos	41	53	44	58	224	236	217	225	231	217	182
Turbidity	ntu	87	5.3	24.4	6.74							
BOD5	mg/L	2.5	1.9		0.6		0.3	0.3		0.7		0.1
NH3-N	mg/L	0.015K	0.015K		0.015K		0.008	0.005K		0.1		0.011
TKN	mg/L	0.15K	2.436K		0.15K		0.255	0.1K		0.15K		0.143
NO2+NO3-N	mg/L	0.18	0.04		0.01		0.136	0.12		0.1K		0.711
PO4-P	mg/L	0.05	0.12		0.02		0.054	0.04K		0.05K		0.07
Fecal Coliform	MPN											

Table CO-7 (cont.)

Station		CO25	CO25	CO25	CO26	CO26	CO26	CO26	CO26	CO27	CO27	CO27
Sampling Date		8/13/96	9/25/96	10/22/96	6/20/96	7/31/96	8/15/96	9/4/96	10/30/96	6/20/96	7/31/96	8/15/96
Sampling Time		10:35 AM	10:35 AM	11:50 AM	3:25 PM	11:50 AM	2:20 PM	12:30 PM	10:50 AM	2:35 PM	12:10 PM	2:00 PM
Total Water Depth	ft	0.5	0.5	1		1.52	0.8	1.3	1		0.8	2
Depth of Sample	ft	0.25	0.5	0.5		0.75	0.4	0.65	0.5		0.4	1
Air Temperature	°C	29	27.5	21	30	27	32	31	31.5	32	27	34.5
Water Temperature	°C	22.5	19.7	18.5	25.1	22.9	25.8	25.2	26.2	25.5	23.1	25.7
pH	s.u.	7.56	7.46	6.91	7.84	7.98	8.27	7.88	7.6	7.89	8.12	8.09
Dissolved Oxygen	mg/L	7.5	7.39	8.3	8	9.2	7.2	8.5	9.9	8	7.8	8.1
Flow	cfs*											
Conductivity	mmhos	305	229	210	235	473	235	330	312	190	594	130
Cond at 25 °C	mmhos	320	255	240	235	493	231	329	305	188	616	128
Turbidity	ntu											
BOD5	mg/L	0.1		0.6		0.1K	0.1		0.6		0.3	0.8
NH3-N	mg/L	0.01		0.1K		0.005K	0.007		0.1K		0.11	0.009
TKN	mg/L	0.143		0.15K		0.1K	0.104		0.76		0.399	0.213
NO2+NO3-N	mg/L	1.416		2.32		0.472	0.436		6.05		4.016	3.796
PO4-P	mg/L	0.142		0.18		0.052	0.053		0.92		0.681	0.595
Fecal Coliform	MPN											

Table CO-7 (cont.)

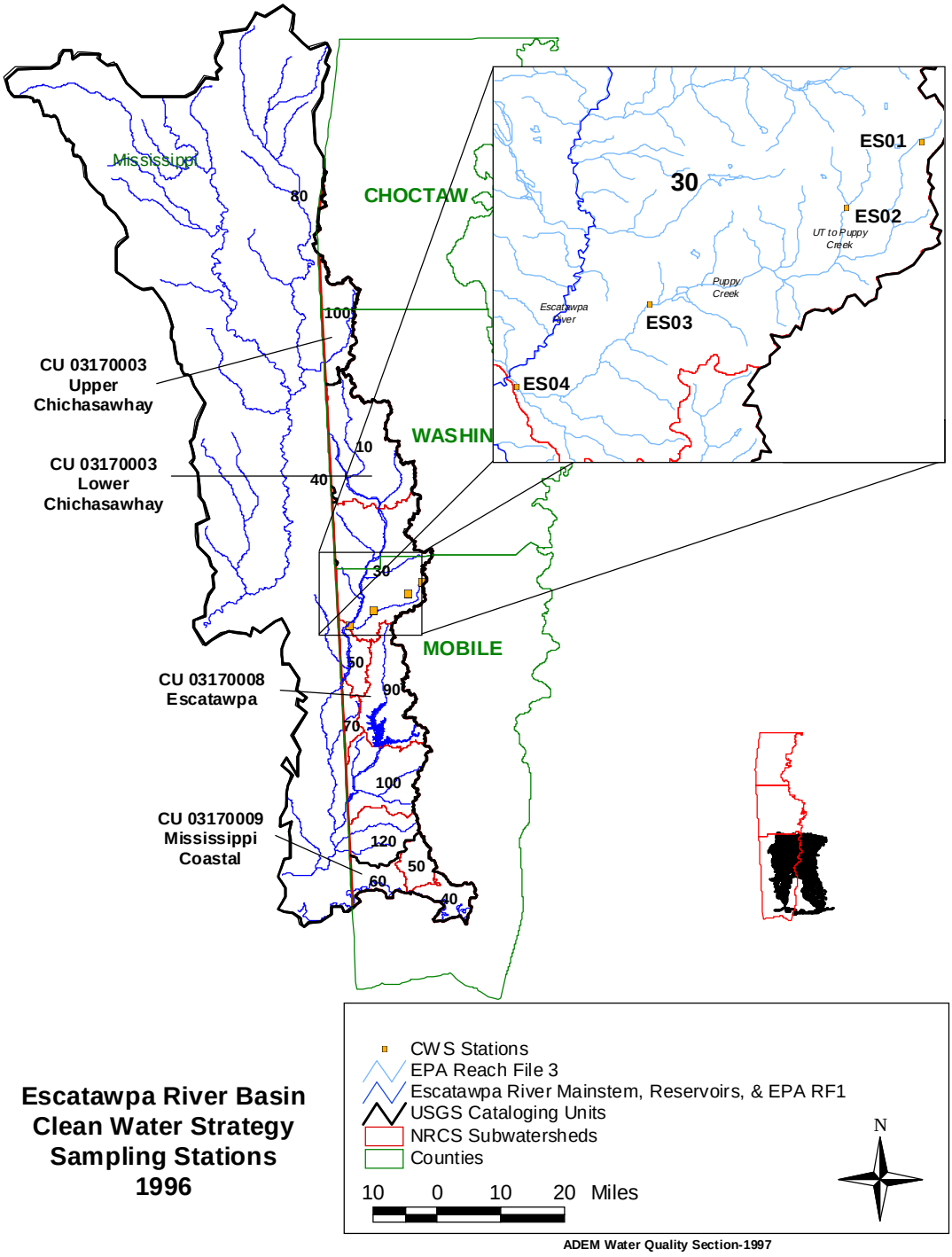
Station		CO27	CO27	CO28	CO28	CO28	CO28	CO28	CO29	CO29	CO29	CO29
Sampling Date		9/4/96	10/30/96	6/6/96	7/11/96	8/29/96	9/24/96	10/23/96	6/28/96	7/31/96	8/13/96	9/25/96
Sampling Time		12:50 PM	11:15 AM	2:00 PM	1:30 PM	2:00 PM	9:50 AM	1:10 PM	10:50 AM	12:15 PM	11:30 AM	11:20 AM
Total Water Depth	ft	0.5	0.75					50				
Depth of Sample	ft	0.25	0.375					40				
Air Temperature	°C	33	30.5	37	36	31	12	23	33	29.4	28	32
Water Temperature	°C	24	32.3	28.3	32.4	29.8	25.2	21	29.2	28.4	27.8	25.8
pH	s.u.	8.26	7.32	7.51	7.31	7.42	7.01	8.5	7.75	6.8	7.45	7.31
Dissolved Oxygen	mg/L	9.1	10	5.3	5.1	3.1	4.2	6.9	5.8	5.5	4.9	4.01
Flow	cfs*											
Conductivity	mmhos	240	238	160	165		155	129	142	172	160	190
Cond at 25 °C	mmhos	245	209	151	145		154	140	131	162	152	187
Turbidity	ntu											
BOD5	mg/L		0.8									
NH3-N	mg/L		0.1K									
TKN	mg/L		0.72									
NO2+NO3-N	mg/L		0.12		0.229	0.248	0.158	1.08		0.092	0.156	0.156
PO4-P	mg/L		0.05K									
Fecal Coliform	MPN				0						3	

Table CO-7 (cont.)

Station		CO29	CO30	CO30	CO30	CO30	CO30
Sampling Date		10/22/96	6/6/96	7/11/96	8/8/96	9/12/96	10/17/96
Sampling Time		1:15 PM	12:15 PM	10:30 AM	12:00 PM	12:30 PM	11:30 AM
Total Water Depth	ft	40			40	41	27.5
Depth of Sample	ft	20		5	0	5	5
Air Temperature	°C	20	32	32	32	27	25
Water Temperature	°C	20.9	26.1	29	26.7	27.7	18.7
pH	s.u.	7.91	7.89	7.72	7.75	7.44	7.44
Dissolved Oxygen	mg/L	8.2	7.6	7.6	8.5	6.6	9.1
Flow	cfs*						
Conductivity	mmhos	240	140.6	200		209	140
Cond at 25 °C	mmhos	260	138	186		199	159
Turbidity	ntu						
BOD5	mg/L			2.6		1	
NH3-N	mg/L						
TKN	mg/L			0.4		0.1K	
NO2+NO3-N	mg/L	0.1K		0.091K		0.465	0.8
PO4-P	mg/L			0.005K		0.102	0.16
Fecal Coliform	MPN				10	25	

Escatawpa River Basin

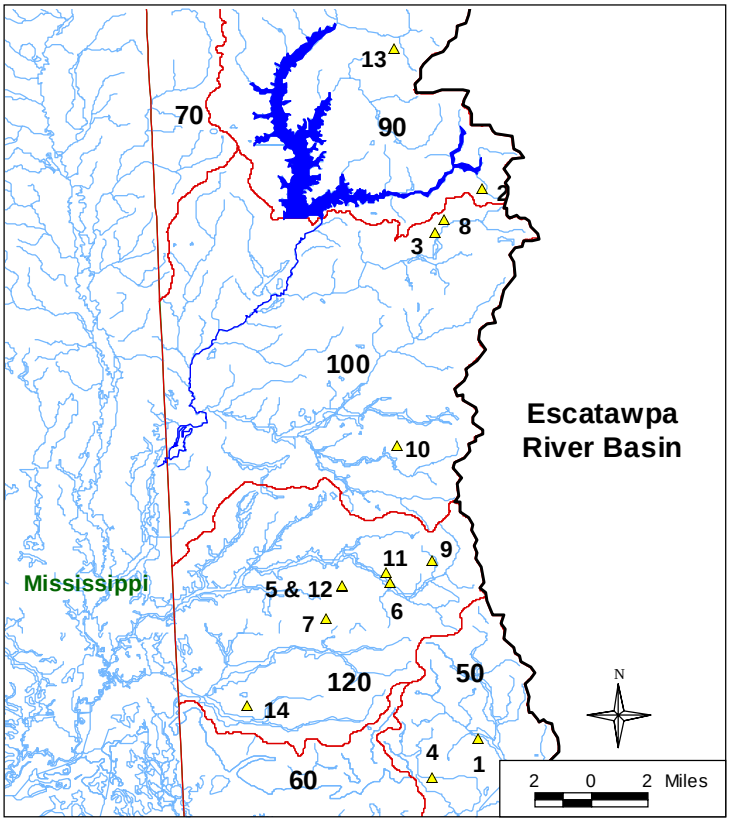
Figure ES-1



Escatawpa River Basin Clean Water Strategy Sampling Stations 1996

ADEM Water Quality Section-1997

Figure ES-2



ESRB NPDES Mining Permits

1 Dirt, Inc.-Pit #5
2 H&S Land Inc.
3 J.S. Walton & Co., Inc.-Pit #3
4 Landry, Gernes
5 Mallette Brothers Construction
6 May, Ilene
7 Moore, Orman G.-Boe Rd Sand Pit
8 Pit Development Corp.-Pit #2
9 Pit Development Corp.-Pit #3
10 Select Soils Co.-Pit #1
11 Sibley, W.S. Jr. & Hamilton, Macie L.
12 Southern States Sand & Gravel-Pit #1
13 Taylor Alvin G.
14 Whitehead Construction Co, Inc.-Pit #2

Figure ES-3

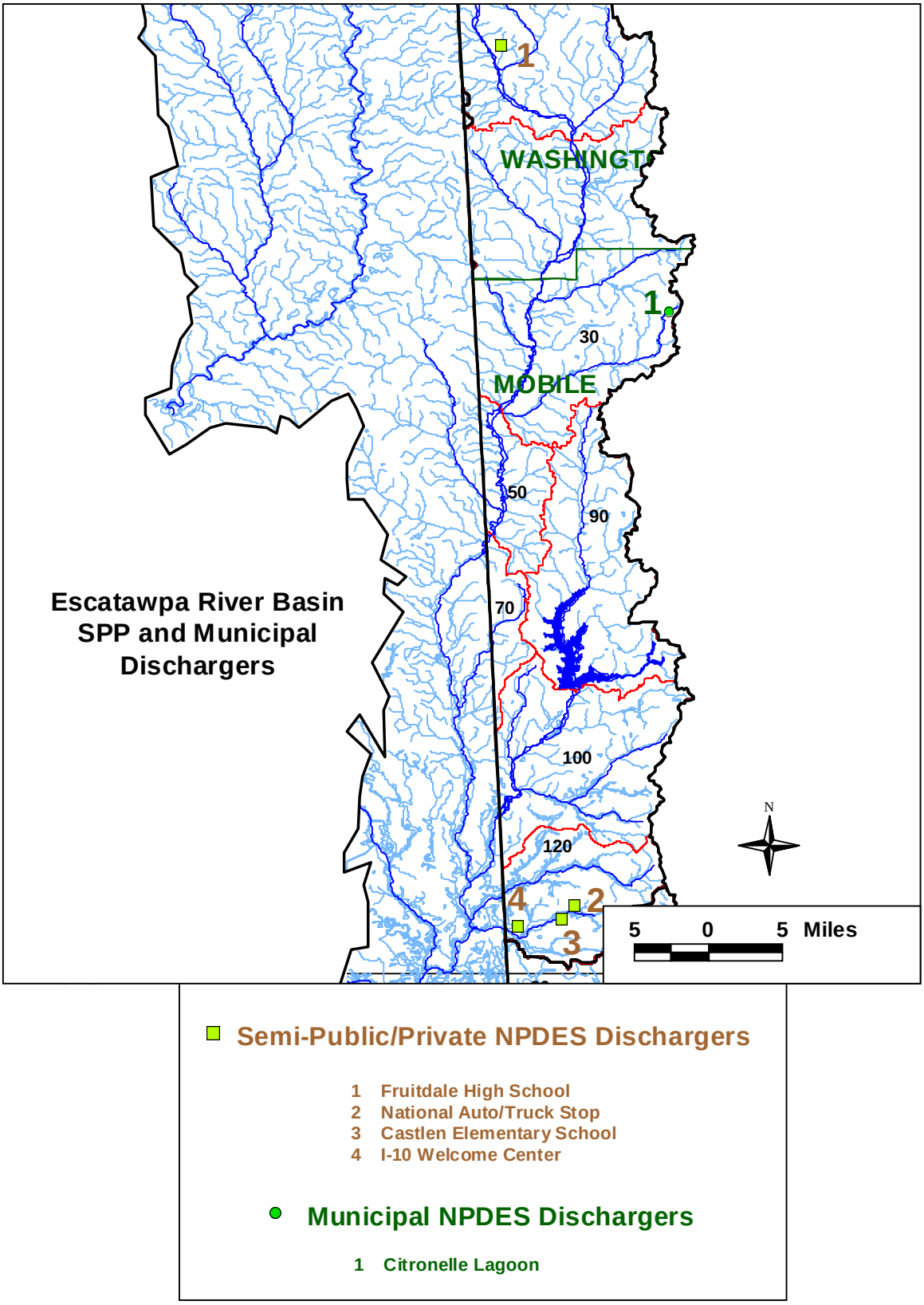

Escatawpa River Basin
SPP and Municipal
Dischargers
WASHINGTO
MOBILE
1
1
2
3
4
30
50
70
90
100
120
N
5 0 5 Miles
Semi-Public/Private NPDES Dischargers
1 Fruitdale High School
2 National Auto/Truck Stop
3 Castlen Elementary School
4 I-10 Welcome Center
Municipal NPDES Dischargers
1 Citronelle Lagoon

Table ES-1
1996 Escatawpa River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
ES01	Puppy Creek	AL Hwy 45	31.082972	-88.238111
ES02	UT to Puppy Creek	Russell Road SE 1/4, Sec. 11, T1N, R3W	31.055833	-88.25
ES03	Puppy Creek	AL Hwy 217	31.017777	-88.348138
ES04	Puppy Creek	Mobile Co. Rd. 21	30.984111	-88.401194

Table ES-2
Escatawpa River Basin Use Support

Station	Waterbody Name	From	To	Monitored Or Evaluated	Support Status	Miles
ES01	Puppy Creek	ES01	Its source	E	Non-	0.9
ES02	UT to Puppy Creek	ES02	Its source	E	Partial	*2*
ES03	Puppy Creek	ES03	To ES02 UT	E	Non	10.2
ES04	Puppy Creek	ES04	ES03	E	Non	5.1

Table ES-3
Escatawpa River Basin Semi-Public/Private NPDES Dischargers

Index	Facility	NPDES Permit	Latitude	Longitude
1	FRUITDALE HIGH SCHOOL	AL0044202	31.343056	-88.404167
2	NATIONAL AUTO/TRUCKSTOP	AL0030601	30.498381	-88.3323
3	CASTLEN ELEMENTARY SCHOOL	AL0055166	30.484806	-88.345178
4	I-10 WELCOME CENTER	AL0024902	30.477328	-88.388028

Table ES-4
Escatawpa River Basin Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude	Treatment
1	AL0060887	Citronelle Lagoon	Puppy Creek	31.084167	-88.238333	Secondary

Table ES-5
Escatawpa River Basin Mining NPDES Dischargers

INDEX	COMPANY	FACILITY	NPDES PERMIT	LATITUDE	LONGITUDE	NRCS SUBWATERSHED
1	Dirt Inc.	Pit #5	AL0064467	30.446667	-88.246111	3170009-050
2	H & S Land Inc.	H & S Land Pit	AL0064530	30.727222	-88.244444	3170008-090
3	J.S. Walton & Company Inc.	Pit #3	AL0064777	30.704722	-88.268056	3170008-100
4	Landry Gernes	Landry Dirt Pit	AL0068527	30.426389	-88.269722	3170009-050
5	Mallette Brothers Construction Company Inc.	2-Mallette-1 #5514	AL0066737	30.523889	-88.315833	3170008-120
6	May Ilene	May Pit	AL0063720	30.525833	-88.291111	3170008-120
7	Moore Orman G.	Boe Road Sand Pit	AL0065561	30.5075	-88.323611	3170008-120
8	Pit Development Corporation	Pit #2	AL0063746	30.711111	-88.263889	3170008-090
9	Pit Development Corporation	Pit #3	AL0063754	30.537222	-88.269444	3170008-120
10	Select Soils Company W.I. Pope & G. Powell	Pit #1	AL0064122	30.595833	-88.2875	3170008-100
11	Sibley W.S. Jr. & Hamilton Macie L.	Sibley-Hamilton Dirt Pit	AL0064572	30.530833	-88.293056	3170008-120
12	Southern States Sand & Gravel Company	Pit #1	AL0063045	30.524444	-88.315833	3170008-120
13	Taylor Alvin G.	Taylor Pit	AL0064904	30.798611	-88.288889	3170008-090
14	Whitehead Construction Co. Inc.	Pit #2	AL0067105	30.463333	-88.363889	3170008-120

Table ES-6
Escatawpa River Basin Data

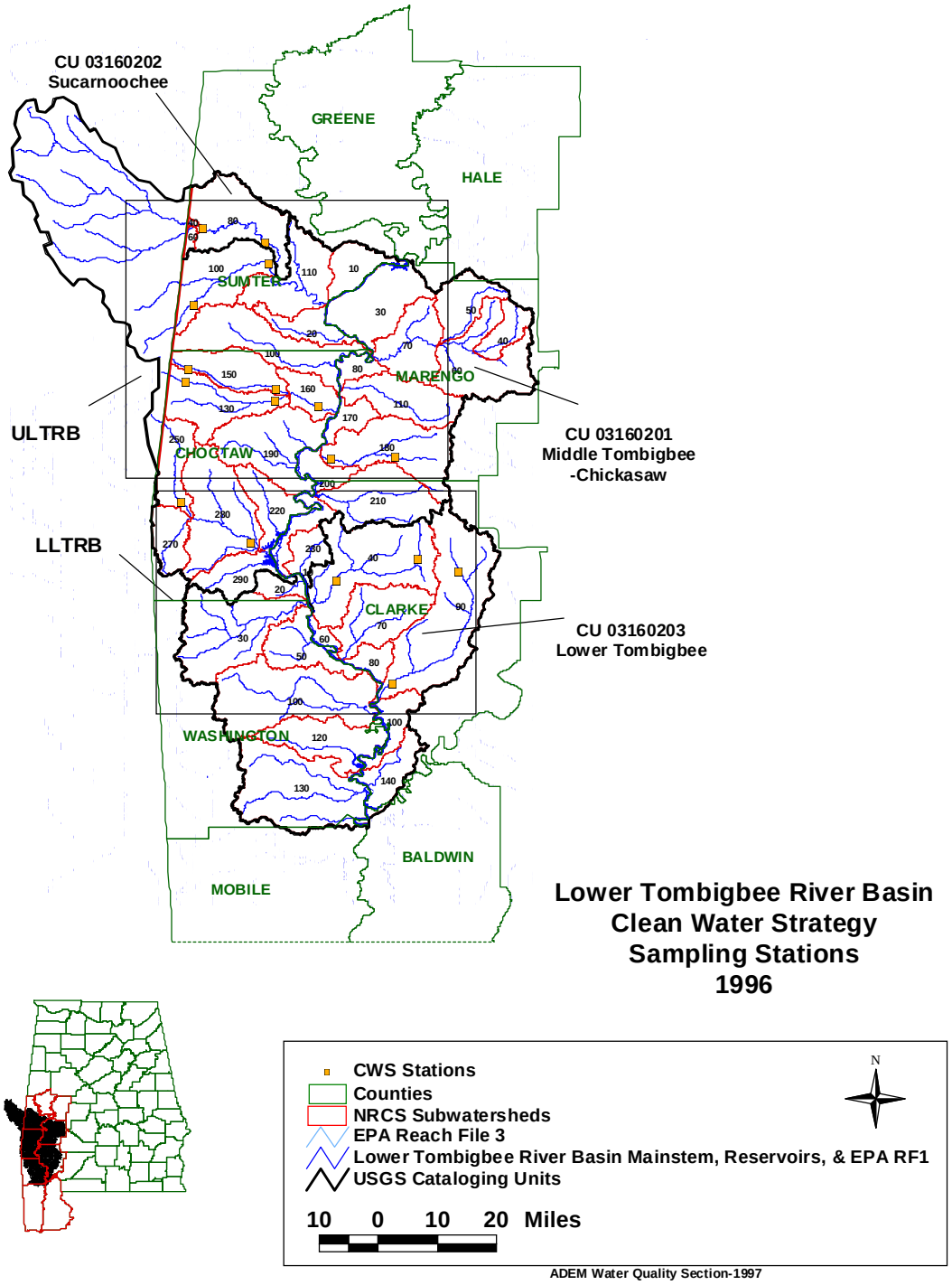
Station		ES01	ES01	ES01	ES02	ES02	ES02	ES03	ES03	ES03	ES04	ES04
Sampling Date		6/12/96	9/23/96	10/16/96	6/12/96	9/23/96	10/16/96	6/12/96	9/23/96	10/16/96	6/12/96	9/23/96
Sampling Time		10:50 AM	11:15 AM	10:30 AM	11:20 AM	11:45 AM	10:10 AM	11:50 AM	12:00 PM	8:45 AM	12:15 PM	12:30 PM
Total Water Depth	ft	0.5	0.5	0.5	1.3	0.5	1.5	1	1	1	1	1.5
Depth of Sample	ft	0.25	0.25	0.25	0.25	0.25	0.7	0.25	0.5	0.5	0.25	0.75
Air Temperature	°C	30	24	22	30	30	22	27	30	20	30	30
Water Temperature	°C	23	21	18	22	20	18	24	21	17	24	21
pH	s.u.	6.3	6.4	6.3	6.6	6.6	6.6	6.6	6.6	6.4	6	6
Dissolved Oxygen	mg/L	4.4	4.6	6	4.9	5.9	7	8.5	8.6	9	8.1	8.6
Conductivity	mmhos	102	90	94	146	157	179	43	51	56	37	39
Cond at 25 °C	mmhos	93	92	100	133	143	190	41	47	62	34	36
Turbidity	ntu	24	18.3	21	7.5	5.6	3.8	7.2	5.8	3.9	6.6	6.3
BOD5	mg/L	2.1	2K	1	1.4	2K	1K	1.2	2K	1.2	1.2	2K
NH3-N	mg/L	0.147	0.11	0.01	0.06	0.04	0.02	0.01K	0.01K	0.01	0.01K	0.04
TKN	mg/L	0.68	0.91	1.3	0.63	0.71	1.2	0.04	0.4	0.88	0.29	0.17
NO2+NO3-N	mg/L	0.005K	0.005K	0.005K	0.005K	0.087	0.049	0.005K	0.005K	0.055	0.032	0.162
PO4-P	mg/L	0.113	0.078	0.042	0.144	0.068	0.014	0.022	0.005	0.005	0.015	0.005
Fecal Coliform	MPN	194	56	90	160L	43	67	160L	62	106	160L	97

Table ES-6 (cont.)

Station		ES04
Sampling Date		10/16/96
Sampling Time		9:30 AM
Total Water Depth	ft	1
Depth of Sample	ft	0.5
Air Temperature	°C	24
Water Temperature	°C	18
pH	s.u.	6.1
Dissolved Oxygen	mg/L	9
Conductivity	mmhos	41
Cond at 25 °C	mmhos	42
Turbidity	ntu	3.9
BOD5	mg/L	1K
NH3-N	mg/L	0.01K
TKN	mg/L	0.62
NO2+NO3-N	mg/L	0.206
PO4-P	mg/L	0.005
Fecal Coliform	MPN	320

Lower Tombigbee River Basin

Figure LT-1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Sucarnoochee
GREENE
HALE
SUMTER
MARENGO
CHOCTAW
CLARKE
WASHINGTON
BALDWIN
MOBILE
ULTRB
LLTRB
CU 03160201
Middle Tombigbee
-Chickasaw
CU 03160203
Lower Tombigbee
Lower Tombigbee River Basin
Clean Water Strategy
Sampling Stations
1996
CWS Stations
Counties
NRCS Subwatersheds
EPA Reach File 3
Lower Tombigbee River Basin Mainstem, Reservoirs, & EPA RF1
USGS Cataloging Units
N
10 0 10 20 Miles
ADEM Water Quality Section-1997

Figure LT-2

ULTRB

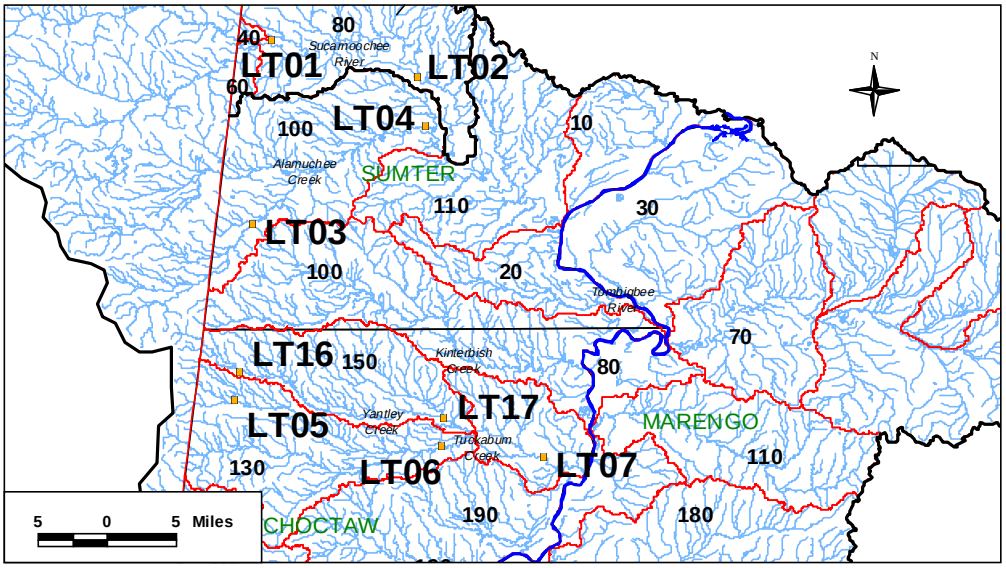
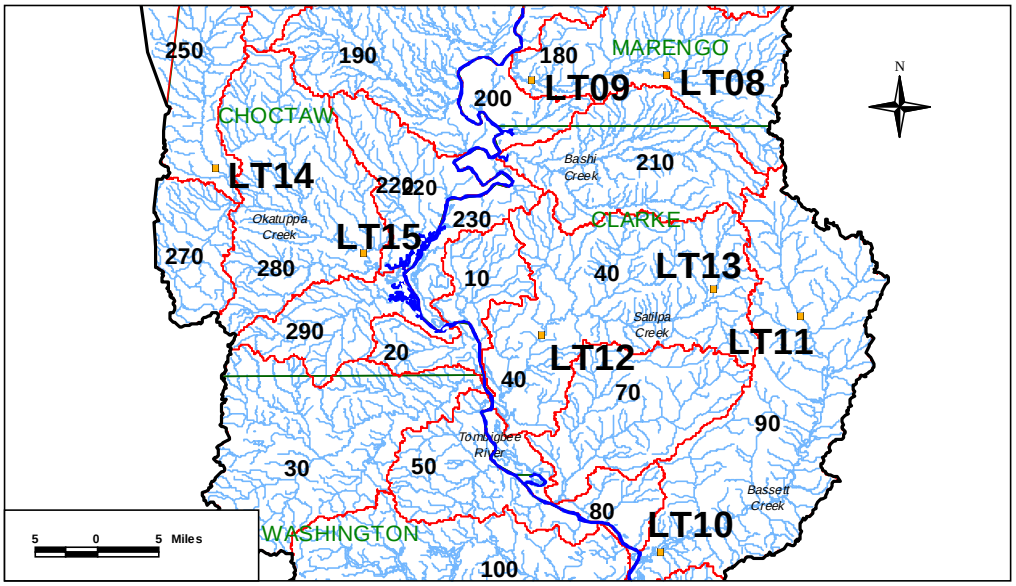
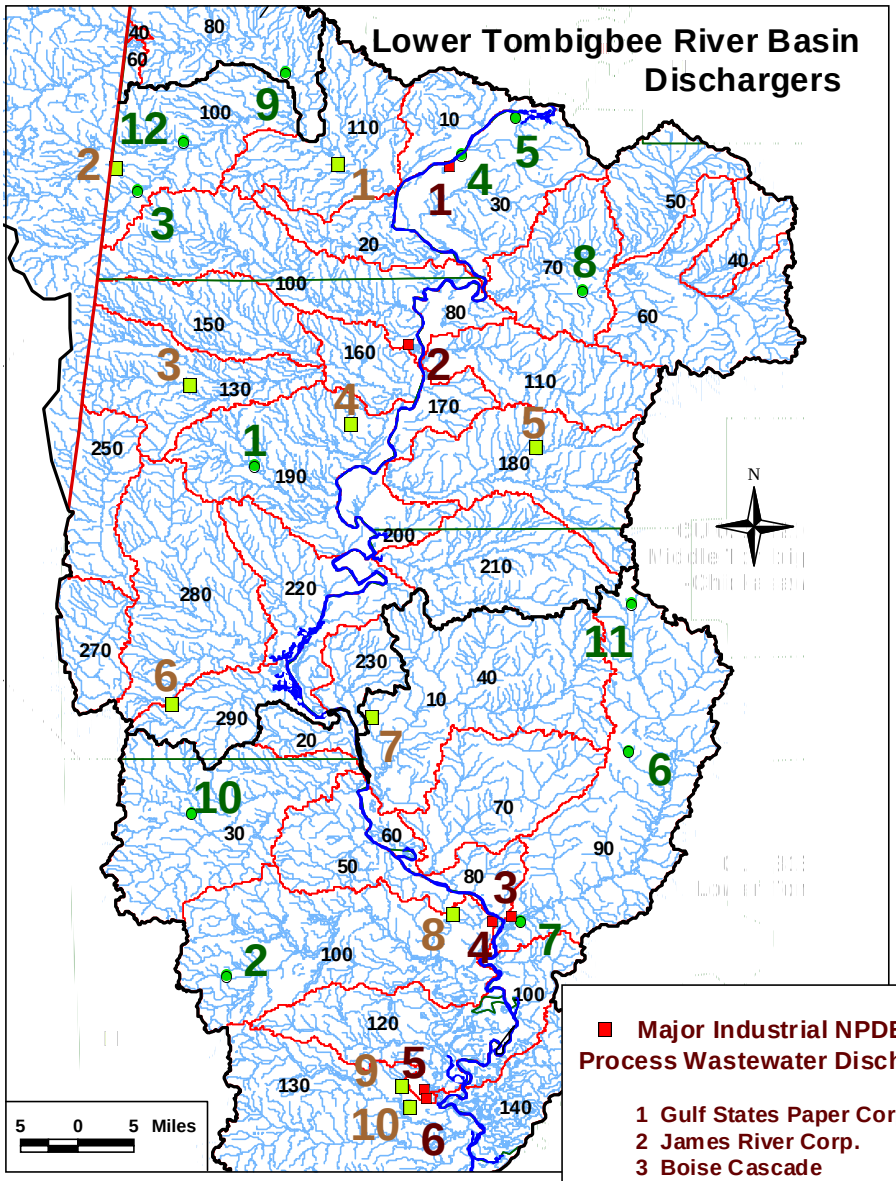


Figure LT-3

LLTRB





Major Industrial NPDES Process Wastewater Dischargers

1 Gulf States Paper Corp.
2 James River Corp.
3 Boise Cascade
4 AEC Lowman Steam Plant
5 Ciba Geigy Corp.
6 Olin Corp.

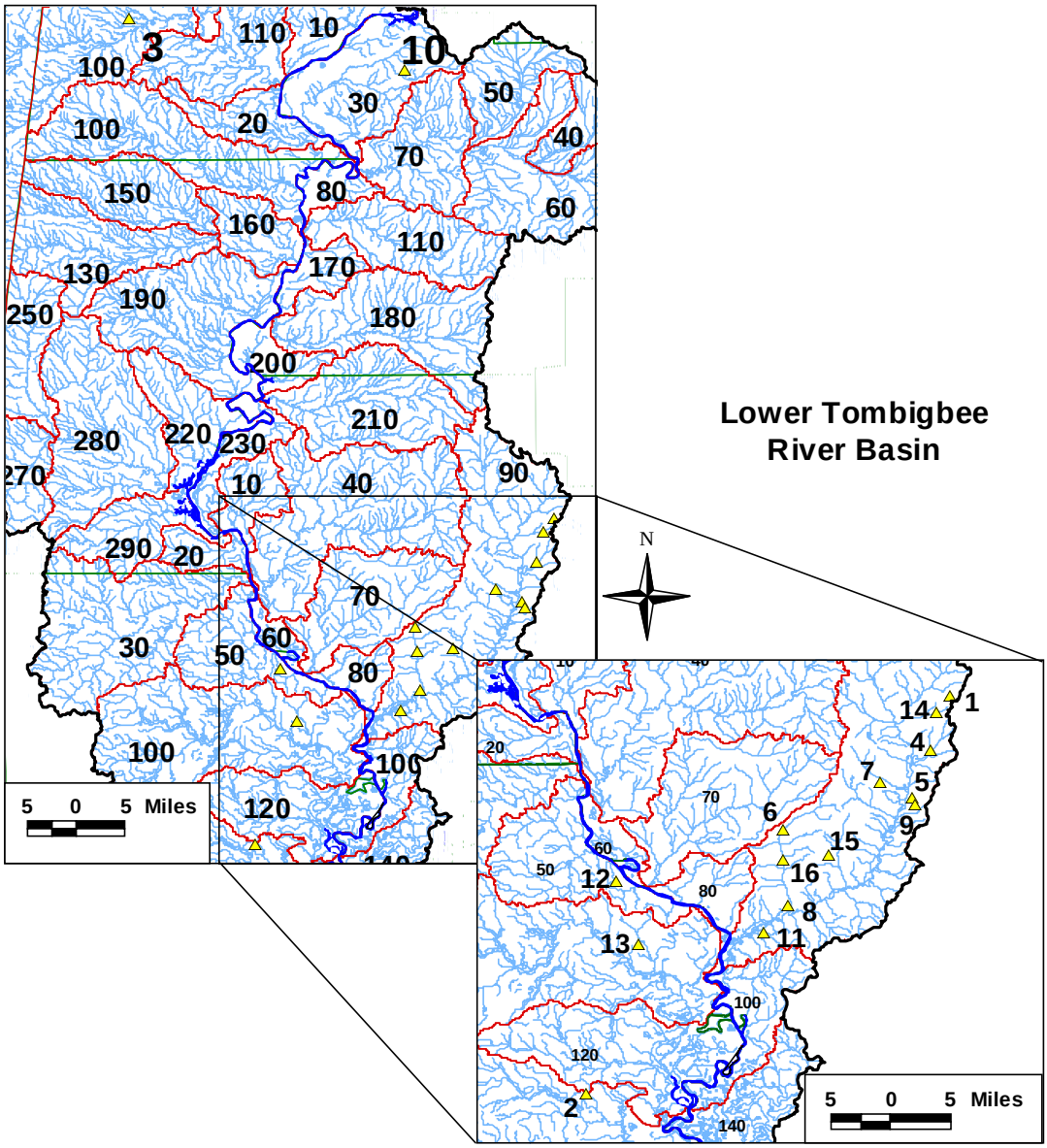
Municipal NPDES Dischargers

1 Butler WWTP
2 Chatom Lagoon
3 Cuba WWTP
4 Demopolis Airport Industrial Park WWTP
5 Demopolis WWTP
6 Grove Hill James Creek WWTP
7 Jackson Lagoon
8 Linden HCR Lagoon
9 Livingston Main Lagoon
10 Millry Lagoon
11 Thomasville HCR Lagoon
12 York Lagoon

Semi-Public/Private NPDES Dischargers

1 Georgia Pacific Lagoon
2 I-59 Welcome Center
3 Lisman Jr. High School
4 East Choctaw Jr. High School
5 Sweet Water High School
6 Southern Choctaw High School
7 Coffeeville Elementary
8 Leroy High School
9 Frank W Boykin Elementary
10 McIntosh High School

Figure LT-5



LTRB NPDES Mining Permits

1 B&S Gravel Co.-Bradford Pit #3
2 Bailey's Construction Co., Inc.-McKee Pit
3 Big River Industries-Livlite Division
4 Bradford Gravel Co.-Swamp Pit #2
5 Bradford Gravel Co.-Powell Pit
6 Bradford Gravel Co.-Harrelll Pit
7 Bradford Gravel Co.-Webb Pit
8 Criswell Construction Co. Inc.
9 Fuller Sand & GravelCo.-Whatley Pit
10 Horne, George A & Peggy J.-Sleepy Hollow Pit
11 Jackson Sand & Gravel Co., Inc.-Clolinger Pit
12 Medusa Corp.-St. Stephans Quarry
13 Mobile Asphalt Corp.-Leroy Plant
14 Roberts Materials, Inc.
15 Southwest Alabama Construction, Inc.
16 Waterways material Company Division

Table LT-1
1996 Lower Tombigbee River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
LT01	Sucarnoochee River	Unnamed Sumter Co. Rd. at Payneville (SE1/4, S13, T19N, R4W)	32.612108	-88.349062
LT02	Sucarnoochee River	US Hwy 11 at Livingston (SW 1/4, S33, T19N, R2W)	32.573722	-88.194158
LT03	Alamuchee Creek	Sumter Co. Rd. 10 S of Cuba (SW 1/4, S26, T17N, R4W)	32.419854	-88.369267
LT04	Alamuchee Creek	Sumter Co. Rd. 13 E of York (SW 1/4, S26, T17N, R4W)	32.522208	-88.186776
LT05	Tuckabum Creek	AL Hwy 10 NW of Pushmataha (NE 1/4, S33, T15N, R4W)	32.231778	-88.38902
LT06	Tuckabum Creek	AL Hwy 17 S of Jachin (NE 1/4, S3, T14N, R2W)	32.184575	-88.170032
LT07	Tuckabum Creek	AL Hwy 114 SW of Pennington (NE 1/4, S22, T14N, R2W)	32.173898	-88.062695
LT08	Horse Creek	Marengo Co. Rd. 7 S of Sweetwater (SW1/4, S34, T12N, R2W)	32.048025	-87.875078
LT09	Horse Creek	AL Hwy 69 north of Putnam (NW1/4, S6, T12N, R2W)	32.044033	-88.03173
LT10	Bassett Creek	Clarke Co. Rd. 27 S of Fulton (NE1/4, S12, T9N, R3E)	31.491835	-87.892937
LT11	Bassett Creek	Clarke Co. Rd. 15 S of Jackson (NE1/4, S17, T6N, R2E)	31.767545	-87.719756
LT12	Satilpa Creek	US Hwy 84 in Clarke Co. (NE1/4, S36, T10N, R2E)	31.744435	-88.021334
LT13	Satilpa Creek	Satilpa Creek at Co. Rd. 17	31.798981	-87.819807
LT14	Okatuppa Creek	Choctaw Co. Rd. 18 W of Toxey (NE 1/4, S8, T11N, R4W)	31.939829	-88.401632
LT15	Okatuppa Creek	Choctaw Co.Rd. 14 E of Barrytown (NE 1/4, S13, T10N, R3W)	31.840054	-88.227981
LT16	Yantley Creek	Yantley Creek at Co. Rd. 1 south of Rosser	32.263879	-88.383347
LT17	Yantley Creek	Yantley Creek at AL Hwy 17	32.213865	-88.166781

Table LT-2
Lower Tombigbee River Basin Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
LT01	Sucarnoochee River	LT01	Stateline	M	Full	3.3
LT02	Sucarnoochee River	LT02	LT01	M	Full	22.3
LT03	Alamuchee Creek	LT03	Stateline	M	Full	6.9
LT04	Alamuchee Creek	LT04	LT03	M	Full	21.2
LT05	Tuckabum Creek	LT05	Stateline	M	Full	5
LT06	Tuckabum Creek	LT06	LT05	M	Full	25.5
LT07	Tuckabum Creek	LT07	Yantley Cr	M	Full	7.4
LT08	Horse Creek	LT08	Its source	M	Full	12.3
LT09	Horse Creek	LT09	LT08	M	Full	16.9
LT10	Bassett Creek	LT10	LT11	M	Full	32.4
LT11	Bassett Creek	LT11	Its source	M	Full	10.7
LT12	Satilpa Creek	LT12	LT13	M	Full	20.5
LT13	Satilpa Creek	LT13	Its source	M	Full	8
LT14	Okatuppa Creek	LT14	Stateline	M	Full	18.5
LT15	Okatuppa Creek	LT15	LT14	M	Full	19.2
LT16	Yantley Creek	LT16	Stateline	M	Full	3.5
LT17	Yantley Creek	LT17	LT16	M	Full	25.5

Table LT-3
Lower Tombigbee River Basin Major Industrial Process Wastewater NPDES Dischargers

Index	NPDES Permit	Company	Latitude	Longitude
1	AL0002828	GULF STATES PAPER CORP	32.45132	-87.97595
2	AL0003301	JAMES RIVER CORPORATION	32.22491	-88.0279
3	AL0002755	BOISE CASCADE	31.49697	-87.89672
4	AL0003671	AEC LOWMAN STEAM PLT	31.489837	-87.921489
5	AL0003093	CIBA GEIGY CORP.	31.2757	-88.00771
6	AL0001945	OLIN CORPORATION	31.26493	-88.0051

Table LT-4
Lower Tombigbee River Basin Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude
1	AL0050211	Butler WWTP	Wahalak Creek	32.07	-88.221667
2	AL0060453	Chatom Lagoon	Groundwater	31.422778	-88.257778
3	AL0064386	Cuba WWTP	Alamuchee Creek	32.420556	-88.368611
4	AL0061239	Demopolis Airport Ind. Park WWTP	Tombigbee River	32.466111	-87.96
5	AL0043168	Demopolis WWTP	Tombigbee River	32.514444	-87.890556
6	AL0026891	Grove Hill James Creek WWTP	James Creek	31.708333	-87.745833
7	AL0020869	Jackson Lagoon	East Bassett Creek	31.490833	-87.884722
8	AL0045683	Linden HCR Lagoon	Sycamore Creek	32.293611	-87.805833
9	AL0023256	Livingston Main Lagoon	Sucarnoochee River	32.57	-88.1825
10	AL0051144	Millry Lagoon	Mill Creek	31.627222	-88.3
11	AL0056022	Thomasville HCR Lagoon	Bassett Creek	31.895556	-87.743056
12	AL0023361	York Lagoon	Alamuchee Creek	32.482778	-88.311111

Table LT-5
Lower Tombigbee River Basin Semi-Public/Private NPDES Dischargers

Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0026735	GEORGIA PACIFIC LAGOON	32.45435	-88.117417
2	AL0029076	I-59 WELCOME CENTER	32.449136	-88.398133
3	AL0057053	LISMAN JUNIOR HIGH SCHOOL	32.174444	-88.303889
4	AL0057045	EAST CHOCTAW JUNIOR HIGH SCHOOL	32.124444	-88.101111
5	AL0045942	SWEET WATER HIGH SCHOOL	32.095011	-87.865233
6	AL0057070	SOUTHERN CHOCTAW HIGH SCHOOL	31.768333	-88.326944
7	AL0044547	COFFEEVILLE ELEMENTARY SCHOOL	31.751667	-88.073611
8	AL0042391	LEROY HIGH SCHOOL	31.500556	-87.971667
9	AL0044016	FRANK W BOYKIN ELEMENTARY SCHOOL	31.2825	-88.036111
10	AL0044008	MCINTOSH HIGH SCHOOL	31.255833	-88.024722

Table LT-6
Lower Tombigbee River Basin Mining NPDES Permits

INDEX	COMPANY	FACILITY	NPDES PERMIT	LATITUDE	LONGITUDE	NRCS SUBWATERSHED
1	B & S Gravel Company	Bradford Pit #3	AL0059471	31.781944	-87.638889	3160203-090
2	Bailey's Construction Company Inc.	McKee Pit	AL0064521	31.301389	-88.079167	3160203-130
3	Big River Industries Inc.	Livlite Division	AL0055913	32.518056	-88.265833	3160202-100
4	Bradford Gravel Company	Swamp Pit #2	AL0060151	31.716667	-87.663333	3160203-090
5	Bradford Gravel Company	Powell Pit	AL0070319	31.658889	-87.686111	3160203-090
6	Bradford Gravel Company Levoyde Bradford	Harrell Pit	AL0067288	31.620278	-87.842222	3160203-090
7	Bradford Gravel Company Levoyde Bradford	Webb Pit	AL0058262	31.677222	-87.724444	3160203-090
8	Criswell Construction Co. Inc.	Criswell #1	AL0062171	31.529444	-87.835278	3160203-070
9	Fuller Sand & Gravel Company	Whatley Pit	AL0070521	31.650556	-87.681111	3160203-090
10	Horne George A. & Peggy J.	Sleepy Hollow Pit	AL0066516	32.441667	-87.858333	3160201-030
11	Jackson Sand & Gravel Co. Inc.	Clolinger Pit	AL0059480	31.496944	-87.866111	3160203-090
12	Medusa Corporation	Saint Stephens Quarry	AL0060615	31.559167	-88.0425	3160203-050
13	Mobile Asphalt Company R.J. Billingsley	Leroy Plant	AL0059501	31.4825	-88.016111	3160203-100
14	Roberts Materials Inc.	Pit #1 (Scyrene)	AL0068195	31.761667	-87.655278	3160203-088
15	Southwest Alabama Construction Inc.	SAC Pit No. 1	AL0069761	31.590278	-87.786111	3160203-089
16	Waterways Material Company Division of Parker	Pit #1	AL0067148	31.583889	-87.841389	3160203-090

Table LT-7
Lower Tombigbee River Basin Data

Station		LT01	LT01	LT01	LT01	LT01	LT02	LT02	LT02	LT02	LT02	LT03
Sampling Date		6/28/96	7/24/96	8/28/96	9/25/96	10/31/96	6/28/96	7/24/96	8/28/96	9/25/96	10/31/96	6/28/96
Sampling Time		8:36 AM	7:15 PM	5:50 PM	6:35 PM	8:30 AM	7:10 AM	5:45 PM	5:10 PM	5:35 PM	7:35 AM	9:15 AM
Total Water Depth	ft	3	3	4	3	4	3	3	2.5	2	3	1
Depth of Sample	ft	1.5	1.5	2	1.5	2	1.5	1.5	1.25	1	1.5	0.5
Air Temperature	°C	25	23	25	25	15	24	23	27.5	27	12	25
Water Temperature	°C	26	28	27	24	18	27	29	27	24.5	17	25
pH	s.u.	6.94	7	6.9	7.03	6.92	7.14	7.3	7	7.42	6.94	6.98
Dissolved Oxygen	mg/L	6.6	6.8	7.95	8	8.1	6.6	6.8	7.15	7.85	7.7	6.2
Flow	cfs*						210					
Conductivity	mmhos	51	45	41	30	39	70	60	59	45	49	81
Cond at 25 °C	mmhos	50	43	39	31	45	67	56	57	45	58	81
Turbidity	ntu	11	29	16	13.5	15	19	27	26	20	26	
BOD5	mg/L		1	1.1	1.1			0.7	1.8	1.4		
NH3-N	mg/L		0.015K	0.015K	0.015K			0.015K	0.015K	0.015K		
TKN	mg/L		0.15K	0.25	0.15K			0.15K	0.15	0.15		
NO2+NO3-N	mg/L		0.09	0.07	0.05			0.08	0.07	0.06		
PO4-P	mg/L		0.03	0.14	0.03			0.03	0.13	0.03		
TSS	mg/L		30	19	8			30	5	15		

Table LT-7 (cont.)

Station		LT03	LT03	LT03	LT03	LT04	LT04	LT04	LT04	LT04	LT05	LT05
Sampling Date		7/25/96	8/29/96	9/26/96	10/31/96	6/28/96	7/24/96	8/28/96	9/25/96	10/31/96	6/28/96	7/25/96
Sampling Time		8:00 AM	7:55 AM	7:55 AM	9:25 AM	7:35 AM	6:40 PM	4:50 PM	6:05 PM	7:55 AM	10:20 AM	9:05 AM
Total Water Depth	ft	1.5	1.3	1.5	1.5	1.5	1.8	1	1.5	1.5	1	1.2
Depth of Sample	ft	1	1	1	1	0.8	1	0.75	1	1	0.5	1
Air Temperature	°C	22	23	25	19	25	23	27	25	12	29	24
Water Temperature	°C	24	23.5	21	17	28	29	27	26	17	24	23
pH	s.u.	6.9	7	7.49	6.67	7.03	7.1	6.9	7.2	6.72	6.85	6.9
Dissolved Oxygen	mg/L	5.85	6.9	7.25	7.3	5.55	6	6.9	7.65	7.5	6.8	6.1
Flow	cfs*			70		46.9	100					
Conductivity	mmhos	80	79	70	60	95	100	82	65	58	100	90
Cond at 25 °C	mmhos	82	81	76	71	90	93	79	64	68	102	94
Turbidity	ntu	18	16	9.4	21	12	7.4	19	15	23	10	7100
BOD5	mg/L	0.5	1.7	0.8			1.4	1.8	1.4			
NH3-N	mg/L	0.015K	0.015K	0.02			0.015K	0.015K	0.015K			0.015K
TKN	mg/L	0.19	0.15K	0.26			0.31	0.27	0.29			0.15K
NO2+NO3-N	mg/L	0.1	0.07	0.13			0.01	0.03	0.04			0.03
PO4-P	mg/L	0.03	0.11	0.04			0.04	0.21	0.05			0.075
TSS	mg/L	10	5	3			13	3	5			

Table LT-7 (cont.)

Station		LT05	LT05	LT05	LT06	LT06	LT06	LT06	LT06	LT07	LT07	LT07
Sampling Date		8/29/96	9/26/96	10/31/96	6/28/96	7/25/96	8/29/96	9/26/96	10/30/96	6/28/96	7/24/96	8/28/96
Sampling Time		8:55 AM	8:50 AM	10:05 AM	11:20 AM	10:10 AM	9:40 AM	9:40 AM	3:45 PM	12:05 PM	4:00 PM	3:50 PM
Total Water Depth	ft	1	1.5	1.2	2	2	2.5	3	3	2	2	4
Depth of Sample	ft	1	1	1	1	1	1.2	1.5	1.5	1	1	2
Air Temperature	°C	26	23	23	30	27	27	26	22	34	26	29
Water Temperature	°C	24	21	18	27	26	25	23	21	28	27	24.5
pH	s.u.	6.8	6.74	6.5	7.66	7.1	6.7	7.26	6.09	7.26	7.2	6.6
Dissolved Oxygen	mg/L	6.5	5.75	7.6	7.95	6.2	6.4	7.65	7.3	6.45	6.55	5.7
Flow	cfs*											
Conductivity	mmhos	98	85	95	115	100	59	85	75	112	125	45
Cond at 25 °C	mmhos	100	92	110	111	98	59	88	81	106	120	45
Turbidity	ntu	19	30	18	10	36	47	17	35	9.9	21	100L
BOD5	mg/L	1.9	0.9			0.8	3	0.7				4.1
NH3-N	mg/L	0.015K	0.02				0.015K	0.015K			0.015K	0.015K
TKN	mg/L	0.32	0.15K				1.16	0.15K			0.15K	0.46
NO2+NO3-N	mg/L	0.05	0.003K				0.1	0.01			0.04	0.11
PO4-P	mg/L	0.12	0.04				0.17	0.04			0.04	0.16
TSS	mg/L	1	21			18	25	5				235

Table LT-7 (cont.)

Station		LT07	LT07	LT08	LT08	LT08	LT08	LT08	LT09	LT09	LT09	LT09
Sampling Date		9/26/96	10/30/96	6/27/96	7/25/96	8/29/96	9/26/96	10/31/96	6/27/96	7/25/96	8/29/96	9/26/96
Sampling Time		10:10 AM	3:10 PM	7:40 PM	11:00 AM	10:45 AM	10:50 AM	11:10 AM	6:40 PM	11:35 AM	11:25 AM	11:20 AM
Total Water Depth	ft	2	3.5	1	1.5	1	1.5	1.2	1	3	2	3
Depth of Sample	ft	1	1.5	0.5	1	1	1	1	0.5	1.5	1	1.5
Air Temperature	°C	30	27	26	26	26.5	26	25	29	28	29	32
Water Temperature	°C	24	21	27	25	25	24	19	29	27	26.5	24.5
pH	s.u.	7.29	6.82	6.86	6.8	6.8	7	6.48	7.12	7	7.2	7.17
Dissolved Oxygen	mg/L	7.45	7.7	5.2	5.75	6.55	7.1	7	6.15	5.8	6.7	7.15
Flow	cfs*								11.05			
Conductivity	mmhos	100	61	75	60	41	65	80	100	80	90	80
Cond at 25 °C	mmhos	102	66	72	60	41	66	90	93	77	87	81
Turbidity	ntu	15	37	10	27	20	16.5	13	8.6	22	16	13
BOD5	mg/L	1.4			0.8	2.4	1.8			0.6	0.9	1.5
NH3-N	mg/L	0.06			0.015K	0.015K	0.015K			0.015K	0.015	0.015K
TKN	mg/L	0.15K			0.15K	0.15K	0.41			0.42	0.44	0.33
NO2+NO3-N	mg/L	0.03			0.17	0.25	0.11			0.1	0.07	0.05
PO4-P	mg/L	0.06			0.03	0.12	0.04			0.09	0.15	0.05
TSS	mg/L	3			21	12	9			8	6	3

Table LT-7 (cont.)

Station		LT09	LT10	LT10	LT10	LT10	LT10	LT11	LT11	LT11	LT11	LT11
Sampling Date		10/31/96	6/27/96	7/24/96	8/28/96	9/25/96	10/30/96	6/27/96	7/24/96	8/28/96	9/25/96	10/30/96
Sampling Time		11:40 AM	11:30 AM	10:30 AM	11:10 AM	11:20 AM	10:45 AM	10:35 AM	11:25 AM	10:10 AM	10:10 AM	9:20 AM
Total Water Depth	ft	4	1.5	1.5	1.2	1	2.2	4	3	3	2	3
Depth of Sample	ft	2	0.8	1	0.5	1	1	2	1.5	1.5	1	1.5
Air Temperature	°C	27	30	30	26	29.5	25	29	28	29	30	25
Water Temperature	°C	19	26	25.5	25	24	22	25	25	24	22	22
pH	s.u.	6.61	6.95	6.5	6.9	7.2	6.83	7.58	7.1	7.6	7.2	6.81
Dissolved Oxygen	mg/L	7.75	5.85	6.2	4.65	7.3	6.7	7	7	7.6	7.95	7.55
Flow	cfs*		9.13									
Conductivity	mmhos	85	82	70	135	81	61	102	100	95	90	98
Cond at 25 °C	mmhos	96	80	69	135	83	65	102	100	97	95	104
Turbidity	ntu	11	10.5	51	17.5	6	8.2	7.2	7.4	7	6	6.4
BOD5	mg/L			0.8	1.2	1.5			0.2	0.3	1.3	
NH3-N	mg/L			0.015K	0.015K	0.015K			0.015K	0.015K	0.03	
TKN	mg/L			0.15K	0.19	0.34			0.15K	0.15K	0.15K	
NO2+NO3-N	mg/L			0.13	0.06	0.03			0.17	0.23	0.17	
PO4-P	mg/L			0.05	0.14	0.04			0.02	0.1	0.02	
TSS	mg/L			33	1	1			6	4	1	

Table LT-7 (cont.)

Station		LT12	LT12	LT12	LT12	LT12	LT13	LT13	LT13	LT13	LT13	LT14
Sampling Date		6/27/96	7/24/96	8/28/96	9/25/96	10/30/96	6/27/96	7/24/96	8/28/96	9/25/96	10/30/96	6/27/96
Sampling Time		12:46 PM	12:40 PM	12:25 PM	12:45 PM	11:50 AM	1:33 PM	12:05 PM	11:45 AM	12:00 PM	11:15 AM	3:55 PM
Total Water Depth	ft	1.5	2	2	2	2.2	3	2	1.5	1.5	2	1.5
Depth of Sample	ft	0.8	1	1	1	1	1.5	1	1	1	1	0.8
Air Temperature	°C	32	36	30	35	26	34	32	28	30.5	25	32
Water Temperature	°C	28	28	26	24	21	27	26	25	22	21	31
pH	s.u.	7.1	7.5	7.4	7.2	6.62	7.45	6.2	7.2	7	6.55	7.06
Dissolved Oxygen	mg/L	6.7	6.3	7.55	7.4	7.2	6.3	6.6	6.9	8.05	7.5	6.8
Flow	cfs*						35					
Conductivity	mmhos	72	170	147	115	80	145	60	80	61	61	70
Cond at 25 °C	mmhos	68	161	144	117	87	140	59	80	65	66	63
Turbidity	ntu	7.2	5.7	18	8.9	17	9.4	100	15	7.5	8.7	5.3
BOD5	mg/L		0.3	0.7	1.2			0.7	0.8	1		
NH3-N	mg/L	0.015K	0.015K	0.015K	0.015K				0.015K	0.015K		
TKN	mg/L	0.27	0.15K	0.15K	0.15K				0.2	0.15K		
NO2+NO3-N	mg/L	0.74	0.1	0.1	0.04				0.04	0.003K		
PO4-P	mg/L	0.03	0.02	0.11	0.01				0.11	0.01		
TSS	mg/L		9	10	4			72	1	1		

Table LT-7 (cont.)

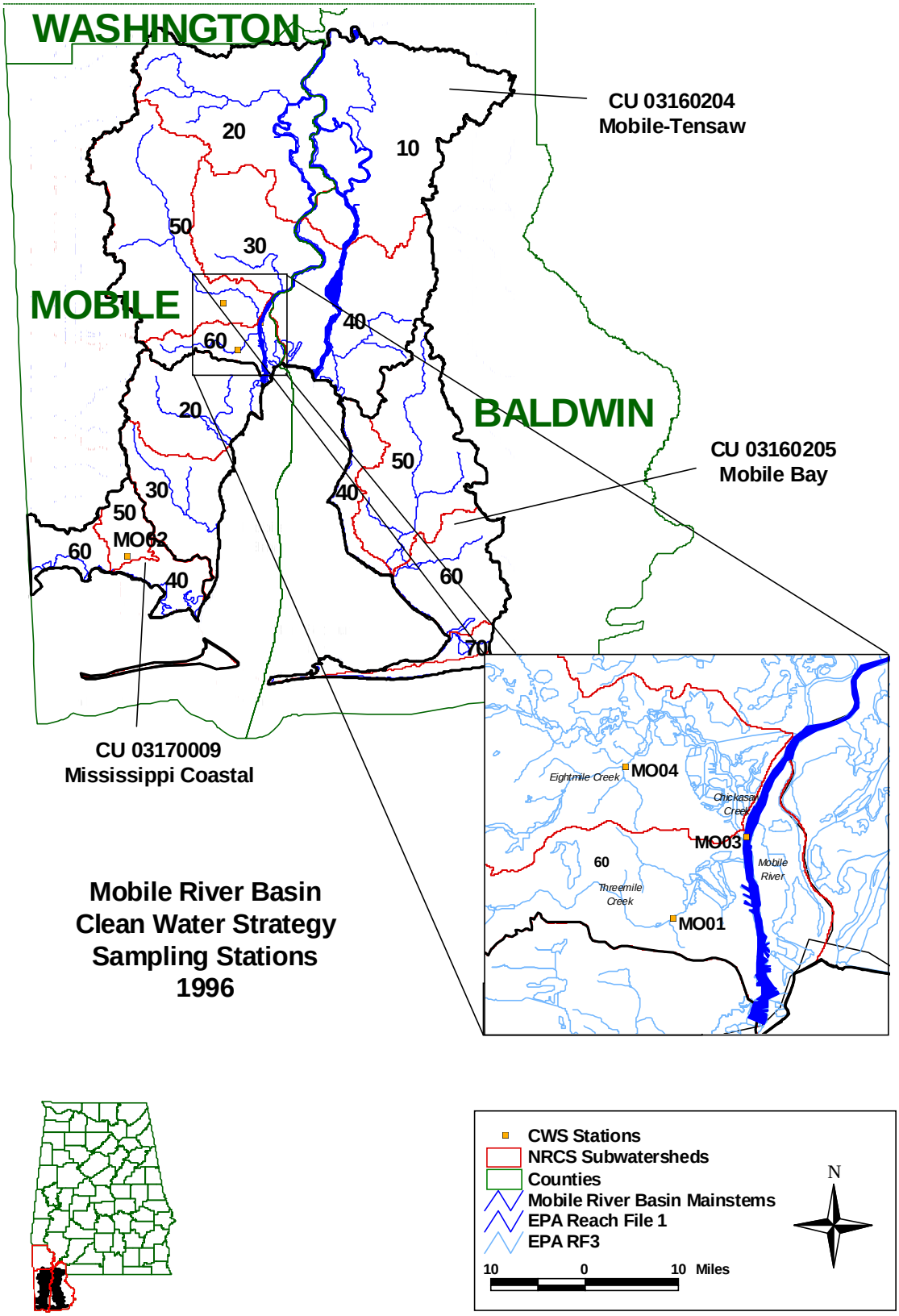
Station		LT14	LT14	LT14	LT14	LT15	LT15	LT15	LT15	LT15	LT16	LT16
Sampling Date		7/24/96	8/28/96	9/25/96	10/30/96	6/27/96	7/24/96	8/28/96	9/25/96	10/30/96	6/28/96	7/25/96
Sampling Time		1:50 PM	1:35 PM	2:05 PM	12:50 PM	2:15 PM	1:15 PM	1:00 PM	1:30 PM	12:20 PM	10:00 AM	8:45 AM
Total Water Depth	ft	1.3	1.2	2	2	3	3	3	3	4	1	2
Depth of Sample	ft	1	1	1	1	1.5	1.5	1.5	1.5	2	0.5	1
Air Temperature	°C	33.5	26	33	27	32	31	25	34	27	29	24
Water Temperature	°C	30	25	27	23	30	30	26	26	22	24	23
pH	s.u.	7	6.6	7.04	6.76	7.5	7.5	7.1	7.2	6.86	6.97	7
Dissolved Oxygen	mg/L	7	7.95	7.75	7.7	6.85	7.1	6.1	8.05	7.5	4.6	4.4
Flow	cfs*					48.5						
Conductivity	mmhos	85	50	70	52	150	170	119	209	150	100	100
Cond at 25 °C	mmhos	78	50	67	54	137	155	117	205	159	102	104
Turbidity	ntu	5.8	100L	4.8	19	10	8.9	41	6.2	19	14	31
BOD5	mg/L	0.2	1.4	0.6			0.5	1.2	1.3			0.9
NH3-N	mg/L	0.015K	0.015K	0.015K			0.015K	0.015K	0.015K			0.015K
TKN	mg/L	0.15K	0.15K	0.15K			0.15	0.59	0.15K			0.15K
NO2+NO3-N	mg/L	0.02	0.03	0.003K			0.04	0.09	0.003K			0.04
PO4-P	mg/L	0.02	0.15	0.01			0.02	0.14	0.02			0.03
TSS	mg/L	2	114	1			13	32	5			18

Table LT-7 (cont.)

Station		LT16	LT16	LT16	LT17	LT17	LT17	LT17	LT17
Sampling Date		8/29/96	9/26/96	10/31/96	6/28/96	7/25/96	8/29/96	9/26/96	10/31/96
Sampling Time		8:30 AM	8:35 AM	9:50 AM	10:50 AM	9:50 AM	9:20 AM	9:20 AM	3:55 PM
Total Water Depth	ft	1.3	2	1.5	1.5	2	0.75	2.5	2
Depth of Sample	ft	1	1	1	0.8	1	0.75	1	1
Air Temperature	°C	25	21	19	31	27.5	27	25	25
Water Temperature	°C	24	20	17	25	24	23.5	21.5	21
pH	s.u.	7	6.98	6.64	7.11	6.9	7.2	7.15	6.93
Dissolved Oxygen	mg/L	5.1	4.7	5.1	6.45	5.95	6.8	7.35	6.4
Flow	cfs*								
Conductivity	mmhos	108	90	85	108	80	118	110	79
Cond at 25 °C	mmhos	110	100	100	108	82	121	118	86
Turbidity	ntu	27	21	30	8.8	7.9	13	10	24
BOD5	mg/L	3.3	1.2			2.1	0.5	0.8	
NH3-N	mg/L	0.015K	0.015K			0.015K	0.015K	0.015	
TKN	mg/L	0.59	0.44			0.17K	0.15K	0.16	
NO2+NO3-N	mg/L	0.07	0.02			0.12	0.11	0.02	
PO4-P	mg/L	0.13	0.02			0.12	0.13	0.06	
TSS	mg/L	11	7			102	2	2	

Mobile River Basin

Figure MO-1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MOBILE
BALDWIN
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Mobile-Tensaw
CU 03160205
Mobile Bay
CU 03170009
Mississippi Coastal
MO02
MO03
MO04
MO01
Eightmile Creek
Chickasaw Creek
Threemile Creek
Mobile River
Mobile River Basin
Clean Water Strategy
Sampling Stations
1996
CWS Stations
NRCS Subwatersheds
Counties
Mobile River Basin Mainstems
EPA Reach File 1
EPA RF3
10 0 10 Miles
N

Figure MO-2

MORB View 1

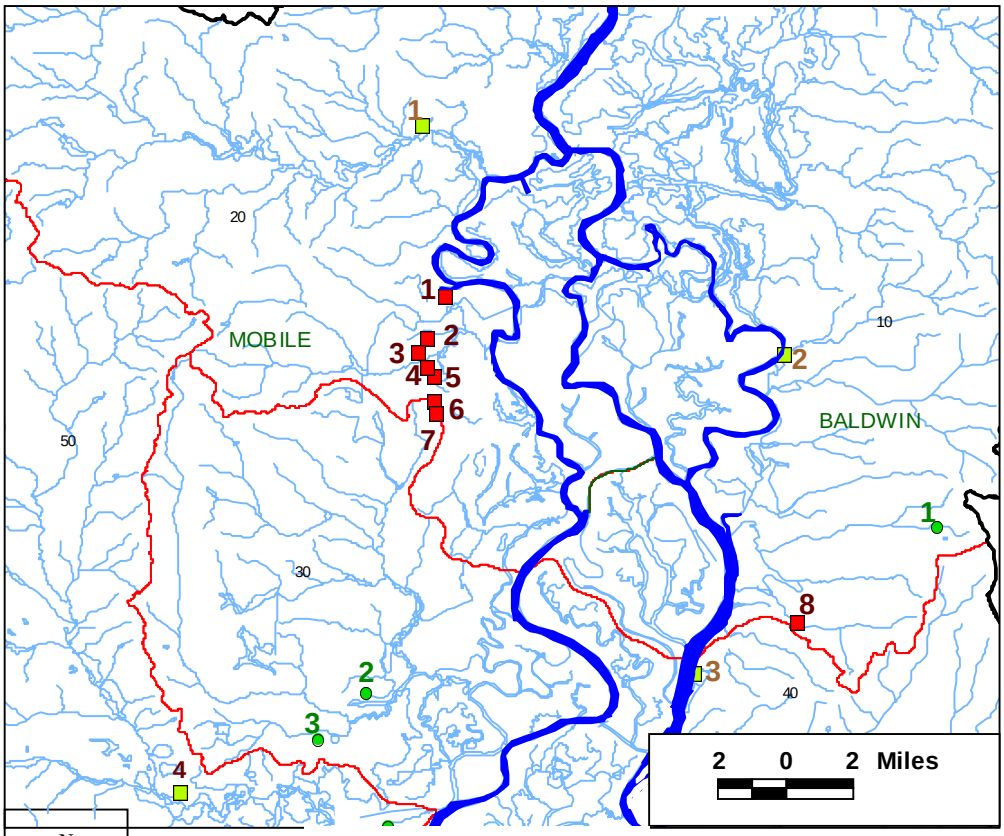


Figure MO-3

MORB View 2

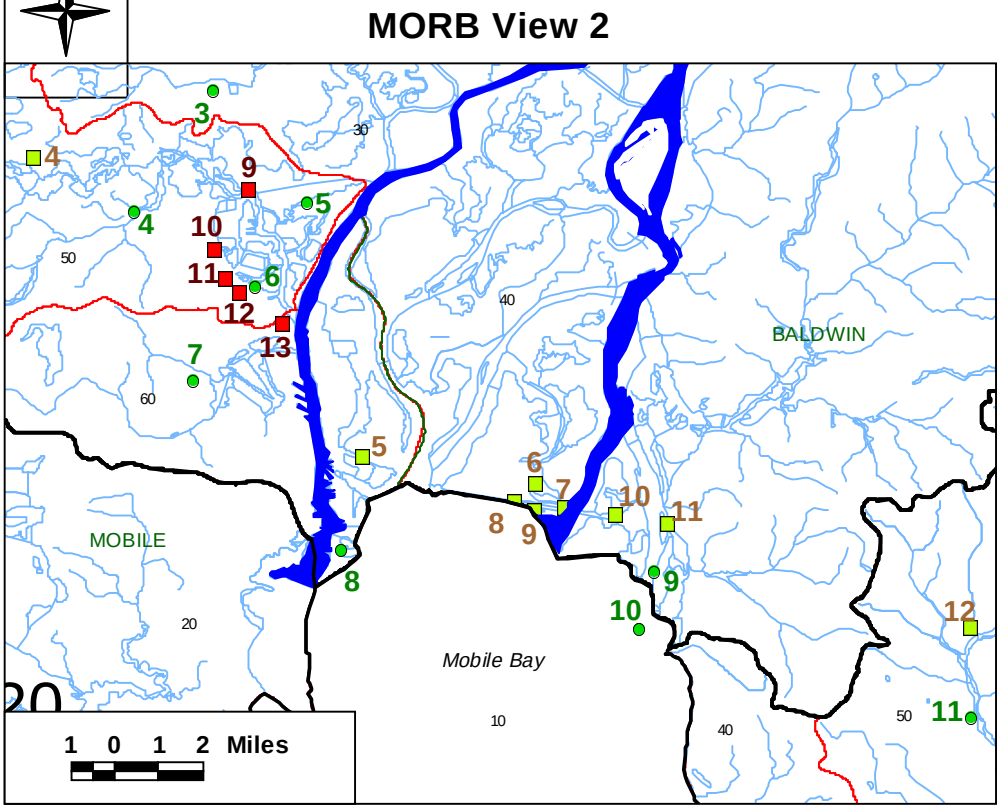
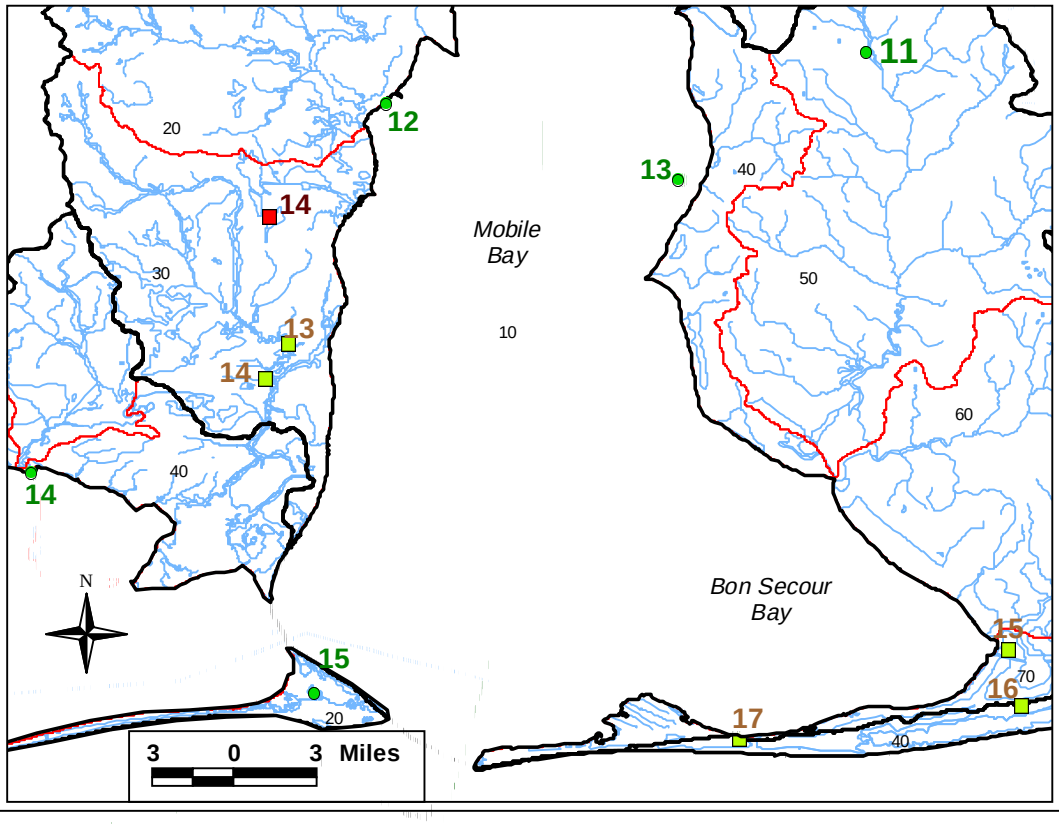


Figure MO-4

MORB View 3



Industrial NPDES Process Wastewater Discharges

1 APCO Barry Steam Plant
2 Hoechst Celanese Corp.
3 Elf Atochem North America
4 Zeneca Inc.
5 Akzo Nobel Chemicals
6 Courtaulds Fibers Inc.
7 E.I. Dupont-Mobile Plant
8 Uniroyal Chemical Co.
9 Shell Oil Co.
10 UOP-Molecular Sieve Plant
11 Occidental Chemical Corp.
12 IP Paper Co.
13 Kimberly Clark Tissue Co.
14 Degussa Corp.-Alabama Group

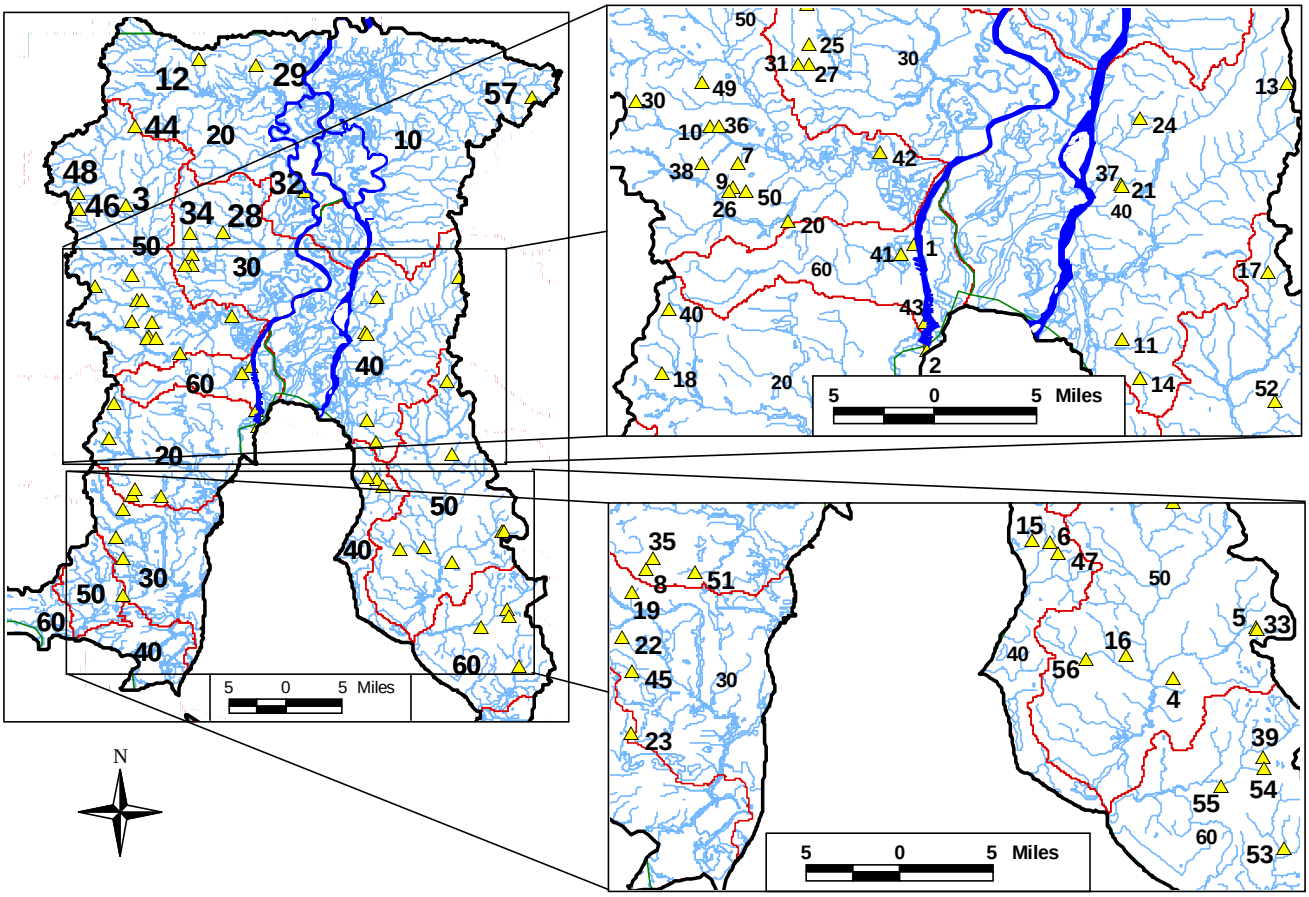
Municipal NPDES Permits

1 Bay Minette Lagoon
2 Satsuma WWTP
3 Saraland Norton Creek WWTP
4 Prichard Stanely Brooks WWTP
5 Chickasaw Lagoon
6 Mobile Smith WWTP
7 Prichard Carlos A. Morris WWTP
8 Mobile Williams WWTP
9 Daphne Lake Forest WWTP
10 Daphne Eastern Shore WWTP
11 Loxley Lagoon
12 Mobile Ziebach WWTP
13 Fairhope WWTP
14 Bayou La Batre WWTP
15 Dauphin Island WWTP

Semi-Public/Private NPDES Permits

1 Searcy Hospital
2 The Landing Inc.
3 Tensaw Shores
4 Mobile College
5 Ramada Inn on the Bay
6 Woody's Motel
7 Trader George Club
8 Hudson Service Station
9 Sunset Bay WWTP
10 The Shoulder
11 Jerry's Cabaret WWTP
12 Bay Branch WWTP
13 H.J. Sonneborn Radney Residence
14 Bellingrath Gardens & Home
15 Sailboat Bay
16 So. Alabama Sewer Service WWTP
17 Gulf Shores Plantation

Figure MO-5



MORB NPDES Mining Permits

1 AL State Docks-Bulk Handling Plant
2 AL State Docks-McDuffie Terminal
3 B&T Dirt & Material Inc.
4 Baldwin Co. Commission-Marlow Dirt Pit
5 Baldwin Co. Construction, Inc.-Summerdale Dirt Pit
6 Brantley, Howard W. Sr
7 Brownlee Asphalt Paving Inc.
8 Brunson Construction & Environment-Boykin Rd Pit
9 Brunson Construction & Environment-Jarrett Rd & Bell Case Pit
10 Brunson Construction & Environment-McCloud Rd Pit
11 Brunson Construction & Environment-Spanish Ft. Pit
12 Byrd, Samuel
13 Crosby, John
14 Scott, Curtis A.
15 Dale, Mack Jr. & Mary Dale Love
16 Danne, Charles L.
17 Darby, Benny
18 Dirt Inc.-Pit #1
19 Dirt Inc.-Pit #4
20 Dirt Inc.-Pits #2, 3, & 6
21 Eagle River Inc.
22 Esfeller, Michael W.-Gibson Pit
23 Esfeller, Michael W.-Walker Pit
24 Friese Materials Corp.-225 Pit
25 G.D. Knapp Construction Co.-Dirt Pit #1
26 G.D. Knapp Construction Co.-Jarrett Rd Dirt Pit
27 G.D. Knapp Construction Co.-Pit #3
28 Hatter Tenants in Common
29 Henderson, John
30 Hill Builders Inc.-Natural Resources
31 Hill Builders Inc./Hill Trucking Co.-Celeste Rd Pit
32 Holnam Inc.
33 H.O. Weaver & Sons Inc.
34 J&J Const. & Maintenance Contractors Inc.
35 J.S. Walton & Co., Inc.
36 J.H. Adams & Son Const. Co., Inc.
37 Kelley's Excavation Inc.
38 L&J Dirt
39 LayCo Mining LLC
40 M.C. Williams Contracting Co., Inc.
41 Martin Marietta Aggregates-Oyster Shell Prod.
42 Martin Marietta Aggregates-Saraland Yard
43 Mobile River Terminal Co., Inc.
44 Pit Development Corp.-Pit #1
45 Pit Development Corp.-Pit #4
46 Powell, Darrell
47 Sand & Clay Inc.
48 Smith, Bobby
49 Smith Sand Inc.
50 Southern Piping Specialists Inc.-Lott Rd Borrow Pit
51 Southern Piping Specialists Inc.-Todd Acres Pit
52 Stapleton Land Co.
53 Strickland Construction Co.
54 Strickland Construction Co.
55 Temco Corp., Inc.
56 W.T. Walley & Sons Inc.
57 Weekly, J. Roy & Gregory L.

Table MO-1
1996 Mobile River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
MO01	Threemile Creek	US Hwy 98	30.7005	-88.124167
MO02	Bayou La Batre	AL Hwy 188	30.405556	-88.249167
MO03	Mobile River	Upstream of Chickasaw Creek	30.741111	-88.041667
MO04	Eight Mile Creek	Prichard Water Intake	30.767778	-88.1

Table MO-2
Mobile River Basin

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
MO01	Threemile Creek	MO01	Its source	E	Full	10.9
MO02	Bayou La Batre	MO02	Its source	E	Non	2.9
MO03	Mobile River	MO03	US Hwy 43	E	Full	4.5
MO04	Eight Mile Creek	MO04	Red Cr	E	Full	5.8

Table MO-3
Mobile River Basin Industrial NPDES Process Wastewater Dischargers

Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0002879	APCO BARRY PLT	31.004321	-88.016239
2	AL0003085	HOECHST CELANESE CORP	30.986	-88.02391
3	AL0042447	ELF ATOCHEM NORTH AMERICA	30.97939	-88.02828
4	AL0001970	ZENECA INC.	30.97374	-88.02407
5	AL0001961	AKZO NOBEL CHEMICALS	30.96944	-88.0214
6	AL0003026	COURTAULDS FIBERS INC	30.95892	-88.02106
7	AL0001597	E.I. DUPONT-MOBILE PLANT	30.9535	-88.02048
8	AL0054399	UNIROYAL CHEMICAL CO.	30.8625	-87.864444
9	AL0055859	SHELL OIL CO-MOBILE SITE	30.778889	-88.059722
10	AL0002666	UOP-MOLECULAR SIEVE PLT	30.75909	-88.07113
11	AL0003514	OCCIDENTAL CHEMICAL CORP	30.74943	-88.06784
12	AL0002780	IP - PAPER CO- MILL	30.74471	-88.06297
13	AL0002801	KIMBERLY CLARK TISSUE CO	30.73432	-88.04819

Table MO-4
Mobile River Basin Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude	Treatment
1	AL0027448	Bay Minette Lagoon	UT to Martin Branch	30.905	-87.803333	Secondary
2	AL0022632	Bayou La Batre WWTP	Portersville Bay	30.379167	-88.263611	Secondary
3	AL0020885	Chickasaw Lagoon	Chickasaw Creek	30.775556	-88.040278	Secondary
4	AL0046531	Daphne Eastern Shore WWTP	Blakeley River	30.633333	-87.929167	Secondary
5	AL0027561	Daphne Lake Forest WWTP	Blakeley River	30.6525	-87.925	Secondary
6	AL0050547	Dauphin Island WWTP	Mississippi Sound	30.2625	-88.113889	Secondary
7	AL0020842	Fairhope WWTP	Mobile Bay	30.536111	-87.917222	Secondary
8	AL0060283	Loxley Lagoon	Fish River	30.604167	-87.819444	Secondary
9	AL0023094	Mobile Smith WWTP	Three Mile Creek	30.747222	-88.0575	Advanced
10	AL0023086	Mobile Williams WWTP	Mobile Bay	30.659444	-88.028611	Secondary
11	AL0023078	Mobile Ziebach WWTP	Mobile Bay	30.577222	-88.075	Secondary
12	AL0023205	Prichard Carlos A. Morris WWTP	Three Mile Creek	30.716111	-88.077778	Advanced
13	AL0055204	Prichard Stanley Brooks WWTP	Chickasaw Creek	30.7725	-88.0975	Secondary
14	AL0055786	Saraland Norton Creek WWTP	Norton Creek	30.812778	-88.071389	Advanced
15	AL0068705	Satsuma WWTP	Groundwater	30.833333	-88.05	Advanced

Table MO-5
Mobile River Basin Semi-Public/Private NPDES Dischargers

Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0056928	SEARCY HOSPITAL	31.078333	-88.026389
2	AL0067776	THE LANDING INC.	30.978608	-87.870189
3	AL0046761	TENSAW SHORES	30.840986	-87.908869
4	AL0048062	MOBILE COLLEGE	30.789444	-88.131389
5	AL0042617	RAMADA INN ON THE BAY WWTP	30.69	-88.022222
6	AL0064165	WOODY'S MOTEL	30.681389	-87.964722
7	AL0042242	TRADER GEORGE CLUB	30.673294	-87.954806
8	AL0064891	HUDSON SERVICE STATION	30.675278	-87.971944
9	AL0044172	SUNSET BAY WWTP	30.6725	-87.965
10	AL0042251	THE SHOULDER	30.671111	-87.938056
11	AL0063711	JERRY'S CABARET WWTP	30.668056	-87.920833
12	AL0042234	BAY BRANCH WWTP	30.633347	-87.820242
13	AL0044059	HARRY J SONNEBORN RADNEY RESIDENCE	30.447778	-88.1275
14	AL0044041	BELLINGRATH GARDENS AND HOME	30.428889	-88.140278
15	AL0042625	SAILBOAT BAY	30.285258	-87.744175
16	AL0049859	SOUTH ALABAMA SEWER SERVICE WWTP	30.255047	-87.737464
17	AL0046523	GULF SHORES PLANTATION	30.236667	-87.887778

Table MO-6
Mobile River Basin Mining NPDES Dischargers

INDEX	NPDES PERMIT	COMPANY	FACILITY	LATITUDE	LONGITUDE	NRCS SUBWATERSHED
1	AL0047651	Alabama State Docks Department	Bulk Material Handling Plant	30.725556	-88.045	3160204-060
2	AL0042374	Alabama State Docks Department	McDuffie Terminal	30.651389	-88.035278	3160205-010
3	AL0068578	B & T Dirt and Material Inc.	B & T Pit #1	30.928611	-88.202778	3160204-050
4	AL0068012	Baldwin County Commission	Marlow Dirt Pit	30.480556	-87.786111	3160205-050
5	AL0067016	Baldwin County Construction Inc.	Summerdale Dirt Pit	30.518889	-87.721944	3160205-050
6	AL0068446	Brantley Howard W. Sr.	5-Howard W. Brantley-1 Dirt Pit	30.583889	-87.882222	3160204-040
7	AL0065650	Brownlee Asphalt Paving Inc.	Brownlee Borrow Pit	30.782222	-88.170833	3160204-050
8	AL0066010	Brunson Construction & Environmental Services	Boykin Road Pit	30.563889	-88.197222	3160205-020
9	AL0066036	Brunson Construction & Environmental Services	Jarrett Road & Belle Case Pits	30.764444	-88.174444	3160204-050
10	AL0066028	Brunson Construction & Environmental Services	McCloud Road Pit	30.808056	-88.19	3160204-051
11	AL0066001	Brunson Construction & Environmental Services	Spanish Fort Pit	30.658611	-87.896111	3160204-040
12	AL0065501	Byrd Samuel	Samuel Byrd Dirt Pit	31.111389	-88.110833	3160204-020
13	AL0067202	Crosby John	Crosby Pit	30.837778	-87.778056	3160204-040
14	AL0067369	Curtis A. Scott	Yancey Pit	30.630833	-87.883611	3160204-040
15	AL0067130	Dale Mack Jr. and Mary Dale Love	Dirt Pit 5 Love #1	30.586111	-87.896111	3160205-040
16	AL0067385	Danne Charles L.	5-Danne-1 Dirt Pit	30.4975	-87.823333	3160205-050
17	AL0069582	Darby Benny	Darby Dirt Pit	30.706111	-87.7925	3160205-051
18	AL0064432	Dirt Inc.	Pit #1	30.634722	-88.225	3160205-020
19	AL0064459	Dirt Inc.	Pit #4	30.546111	-88.208333	3160205-030
20	AL0064441	Dirt Inc.	Pits #2, 3, & 6	30.741944	-88.134444	3160204-050
21	AL0061166	Eagle River Inc.	Bromley Dirt Pit	30.7675	-87.897222	3160204-040
22	AL0066044	Esfeller Michael W.	Gibson Pit	30.511111	-88.216667	3160205-030
23	AL0066290	Esfeller Michael W.	Walker Pit	30.437778	-88.208611	3160205-031
24	AL0064131	Friese Materials Corporation	Friese 225 Pit	30.813056	-87.883056	3160204-040
25	AL0067458	George D. Knapp Construction Company	Dirt Pit #1	30.865278	-88.119444	3160204-030
26	AL0067865	George D. Knapp Construction Company	Jarrett Road Dirt Pit	30.7625	-88.176944	3160204-050
27	AL0064785	George D. Knapp Construction Company	Pit #3	30.851667	-88.120278	3160204-030
28	AL0068250	Hatter Tenants in Common	Hatter Pit No.1	30.895833	-88.079167	3160204-050
29	AL0070025	Henderson John	Henderson Pit #3	31.103333	-88.038056	3160204-020

Table MO-6 (cont.)

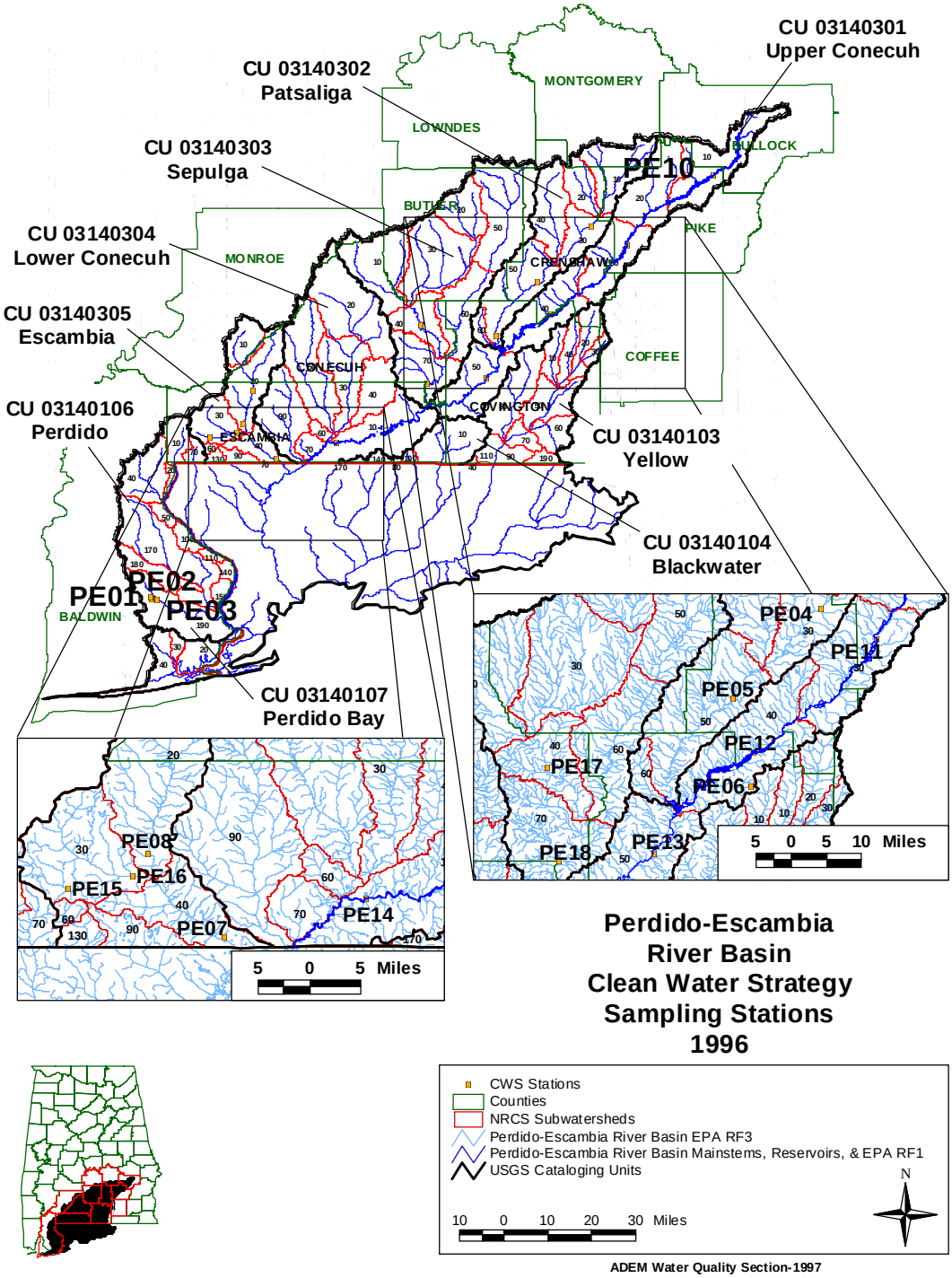
30	AL0070033	Hill Builders Inc.	Natural Resources	30.825833	-88.243333	3160204-050
31	AL0065994	Hill Builders Inc. dba Hill Trucking Co.	Celeste Road Pit	30.851667	-88.127778	3160204-030
32	AL0063169	Holnam Inc.	Axis Quarry	30.945833	-87.975	3160204-020
33	AL0067164	Hosea O. Weaver & Sons Inc.	Plant 2 Pit	30.518056	-87.720278	3160205-050
34	AL0064637	J & J Construction & Maintenance Contractors	Saraland Operation	30.893333	-88.121667	3160204-030
35	AL0063851	J.S. Walton & Company Inc.	Pit #1 & #2	30.572222	-88.191667	3160205-030
36	AL0064831	James H. Adams & Son Construction Co. Inc.	Kushla Dirt Pit	30.807778	-88.183611	3160204-050
37	AL0069779	Kelley's Excavation Inc.	Kelley's Pit #2	30.766389	-87.895833	3160205-060
38	AL0067091	L & J Dirt	Lott Road Pit	30.781944	-88.196667	3160204-050
39	AL0066681	LayCo Mining LLC	Ruegg Pit	30.42	-87.715556	3160205-060
40	AL0066907	M.C. Williams Contracting Company Inc.	Borrow Pit	30.679722	-88.22	3160205-020
41	AL0068781	Martin Marietta Aggregates	Oyster Shell Products	30.717778	-88.054722	3160204-060
42	AL0068802	Martin Marietta Aggregates	Saraland Yard	30.789167	-86.068889	3160204-061
43	AL0065919	Mobile River Terminal Company Inc.	Mobile Terminal	30.670833	-88.036944	3160204-062
44	AL0063738	Pit Development Corporation	Pit #1	31.027222	-88.191667	3160204-020
45	AL0070769	Pit Development Corporation	Pit #4	30.485556	-88.208333	3160205-030
46	AL0064653	Powell Darrell	Powell's Pit	30.924167	-88.263611	3160204-050
47	AL0070394	Sand and Clay Inc.	Corte Dirt Pit	30.575833	-87.875833	3160205-040
48	AL0070360	Smith Bobby	C.I.C. Pit	30.944444	-88.265833	3160204-050
49	AL0064084	Smith Sand Inc.	Smith Pit	30.838611	-88.196944	3160204-051
50	AL0065668	Southern Piping Specialists Inc.	Lott Road Borrow Pit	30.762222	-88.165	3160204-060
51	AL0068063	Southern Piping Specialists Inc.	Todd Acres Pit	30.561389	-88.159722	3160205-020
52	AL0067270	Stapleton Land Company	Stapleton Dirt Pit	30.615556	-87.786667	3160205-050
53	AL0069868	Strickland Construction Inc.	Strickland Dirt Pit	30.350556	-87.700556	3160205-060
54	AL0070106	Strickland Construction Inc.	Strickland Dirt Pit Co. Rd. 65	30.411111	-87.714444	3160205-061
55	AL0064611	Temco Corporation Inc.	Foley Pit	30.397778	-87.748056	3160205-062
56	AL0060658	W.T. Walley & Sons Inc.	S & G Mine	30.495278	-87.854167	3160205-050
57	AL0065927	Weekly J. Roy & Gregory L.	Weekly Pit	31.0625	-87.685556	3160204-010

Table MO-7
Mobile River Basin Data

Station	MO01	MO01	MO01	MO02	MO02	MO02	MO03	MO03	MO03	MO04	MO04
Sampling Date	6/12/96	9/23/96	10/16/96	6/12/96	9/12/96	10/7/96	6/11/96	9/30/96	10/28/96	6/18/96	9/25/96
Sampling Time	9:30 AM	10:25 AM	11:15 AM	2:30 PM	11:50 AM	11:20 AM	10:15 AM	1:00 PM	11:15 AM	10:15 AM	9:20 AM
Total Water Depth	0.5	2.5	1.6	10	13.5	13	13	30	26	5.3	5.3
Depth of Sample	0.25	1.25	0.8	0.25	5	0.5	0.25	5	5	0.25	2.6
Air Temperature	30	28	25	30	33	19	30	26	26	30	24
Water Temperature	26	23	23	26	27	20	28	26	23	23	20
pH	7	7.6	7	7.2	6.7	6.8	7	7.4	7.2	7.2	6.5
Dissolved Oxygen	7.5	7.6	9.8	4.2	6.4	0.7	6.2	7.2	6.6	7.2	7.6
Conductivity	79	81	83	2660	12000	7490	2730	4430	6340	64	53
Cond at 25 °C	72	77	83	2428	10409	8459	2492	4347	6221	58	54
Turbidity	5	4.8	2	2.3	4.1	7.6	15.9	12	15.1	8.1	8.2
BOD5	1.2	2K	1.2	2.3	1.5	1	3.5	1K	1.1		0
NH3-N	0.042	0.08	0.01K	0.02	0.03	0.01K	0.314	0.07	0.01K	0.014	0.02
TKN	0.36	0.1K	0.1K	0.36	0.67	1.1	1	0.1K	0.1K	0.3	0.49
NO2+NO3-N	0.035	0.222	0.13	0.035	0.104	0.005K	0.016	0.067	0.077	0.005K	0.243
PO4-P	0.018	0.005	0.005K	0.009	0.005K	0.005K	0.168	0.024	0.039	0.005K	0.005K
Fecal Coliform	1050	80	10	460	83	240L		28	68	110	130

Perdido-Escambia River Basin

Figure-PE-1



Perdido-Escambia River Basin Clean Water Strategy Sampling Stations 1996

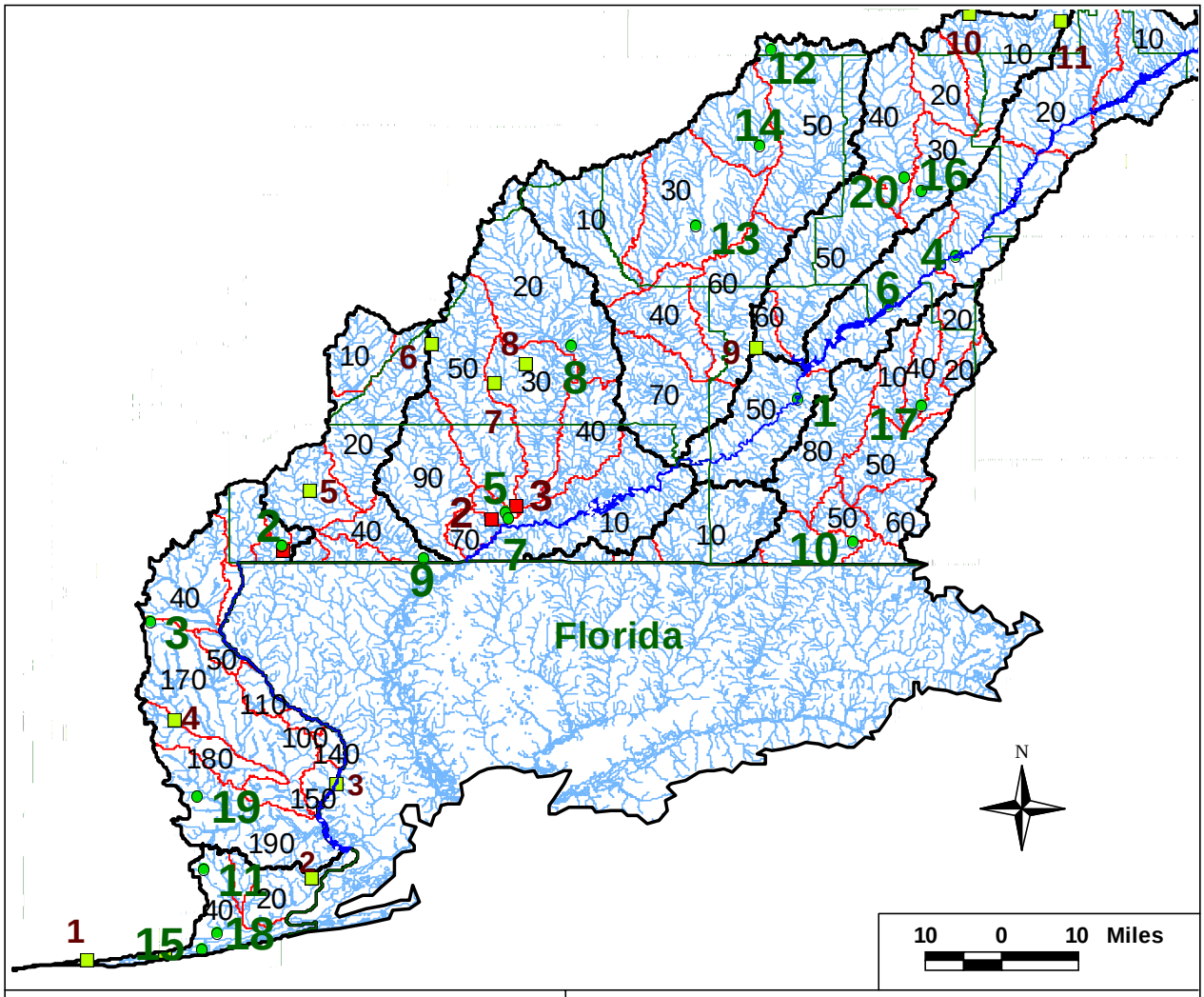
- CWS Stations
- Counties
- NRCS Subwatersheds
- Perdido-Escambia River Basin EPA RF3
- Perdido-Escambia River Basin Mainstems, Reservoirs, & EPA RF1
- USGS Cataloging Units

10 0 10 20 30 Miles

N

ADEM Water Quality Section-1997

Figure-PE-2



Municipal NPDES Dischargers

1 Andalusia Riverside WWTP
2 Atmore WWTP
3 Bay Minette WWTP
4 Brantley Lagoon
5 Brewton Lagoon
6 Dozier Lagoon
7 East Brewton WWTP
8 Evergreen Lagoon
9 Flomaton Lagoon
10 Florala.Lockhart WWTP
12 Fort Deposit Lagoon
13 Gergiana WWTP
14 Greenville WWTP
15 Gulf Shores WWTP
16 Luverne Lagoon
17 Opp Westside WWTP
18 Orange Beach Hwy 180 WWTP
19 Robertsdale WWTP
20 Rutledge Wastewater Lagoon

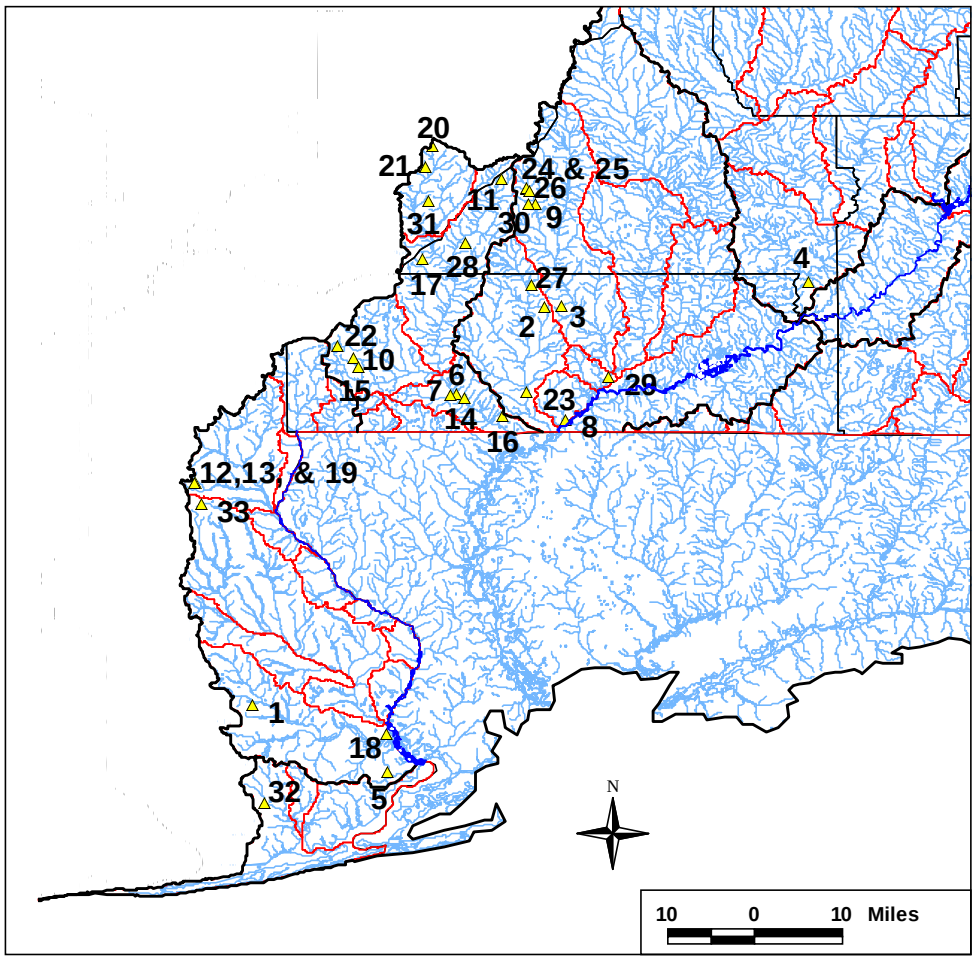
Major Industrial NPDES Process Wastewater Dischargers

1 Masland Carpets, Inc.
2 Jefferson Smurfitt
3 TR Miller Mill Co.

Semi-Public/Private NPDES Dischargers

1 Gulf Shores Plantation
2 Bay S& W, Inc.
3 I-10 Welcome Center
4 Steelwood Limited WWTP
5 Fountain/Holman Correctional Facility
6 Repton Public School
7 I-65 Rest Area-Northbound
8 I-65 Rest Area-Southbound
9 Red Level High School
10 Dunbar Elementary School
11 US 231 Rest Area

Figure-PE-3



Mining NPDES Dischargers

1 Blair, John Franklin
2 Campbell Sand & Gravel Co., Inc-Gilmore Pit
3 Campbell Sand & Gravel Co., Inc.-Pettis Pit
4 Couch Construction L.P.
5 F&S Development Co.
6 Fore Sand & Gravel Co., Inc.-Scott Pit
7 Fore Sand & Gravel Co., Inc-Scott Pit #3
8 Fore Sand & Gravel Co., Inc.-Pollard Pit #1
9 Friese Hauling Inc.Champion Pit
10 Friese Hauling Inc.-Scott Pit
11 Friese Hauling Inc.-Repton Pit
12 Graham, Denny
13 Graham, G. Denny
14 Gulf Coast Mining LLC-Flomaton Pit
15 Gulf Coast Mining LLC-Ward Pit
16 Henderson Ready Mix Concrete Co.
17 Lanier Sand & Gravel
18 McDirt Industries of AL Inc.
19 Morris, William F.
20 S&S Sand & Gravel Inc.
21 S&T Sand & Gravel Co. Inc.
22 South Alabama Materials Inc.-McCollough Pit
23 South Alabama Materials Inc.-Osaka Pit
24 South Alabama Materials Inc.-Repton Pit #1
25 South Alabama Materials Inc.-Repton Pit #2
26 South Alabama Materials Inc.-Repton/Champion
27 South Alabama Materials Inc.Wallace/International
28 South Alabama Materials Inc.-Range/Scott Pit
29 South Alabama Materials Inc.-Brewton South
30 Southern Sand & Gravel
31 Stacey, Glenn Jr.
32 Summit Construction Co., Inc.
33 Temco Corp., Inc.

Table PE-1
1996 Perdido-Escambia River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
PE01	Rock Creek	US of Robertsdale STP	30.55	-87.6742
PE02	Rock Creek	Baldwin Co. Rd. 52	30.55408	-87.6753
PE03	Rock Creek	US of mouth	30.54839	-87.6578
PE04	Patsaliga Creek	Crenshaw Co. Rd. 59 northeast of Luverne (SE1/4 S2, T9N, R18E)	31.78083	-86.2236
PE05	Patsaliga Creek	Crenshaw Co. Rd. 106 southwest of Luverne (NE 1/4, S12, T7N, R17E)	31.59556	-86.4044
PE06	Patsaliga Creek	Covington Co. Rd. 82 west of Gantt (SE1/4, S10, T5N, R15E)	31.41444	-86.535
PE07	Big Escambia Creek	Unnamed Escambia Co. Rd. NW of Barnett Crossroads (SW 1/4, S11, T3N, R7E)	31.235	-87.336944
PE08	Big Escambia Creek	Escambia Co. Rd. 27 at Sardine (SW 1/4, S16, T2N, R7E)	31.13008	-87.3703
PE09	Big Escambia Creek	US Hwy. 31 in Flomaton (NE 1/4, S33, T1N, R8E)	31.01219	-87.2627
PE10	Conecuh River	AL Hwy. 223 S of Saco (SW 1/4, S2, T11N, R22E)	31.94889	-85.8211
PE11	Conecuh River	Pike Co. Rd. 6 SW of Goshen (NW 1/4, S21, T8N, R19E)	31.71944	-86.1072
PE12	Conecuh River	Crenshaw Co. Rd. 77 at Dozier (SW 1/4, S16, T6N, R17E)	31.48722	-86.3611
PE13	Conecuh River	Covington Co. Rd. 42 SW of Andalusia (SE 1/4, S29, T4N, R15E)	31.27722	-86.5683
PE14	Conecuh River	Al. Hwy 41 at Riverview (NE 1/4 S9, T11N, R10E)	31.06686	-87.0619
PE15	Sizemore Creek	AL Hwy 21 N of Atmore (NE 1/4, S5, T1N, R6E)	31.08019	-87.4816
PE16	Sizemore Creek	Escambia Co. Rd. 27 NE of Atmore (NW 1/4, S32, T2N, R7E)	31.09911	-87.3913
PE17	Sepulga River	US Hwy 31 E of Evergreen (SE 1/4 S29, T6N, R13E)	31.45406	-86.7868
PE18	Sepulga River	Conecuh Co. Rd. 42 at Brooklyn (NW 1/4, S4, T3N, R13E)	31.26022	-86.7652

Table PE-2
Perdido-Escambia River Basin Use Support

Station	Waterbody Name	From	To	Evaluated Or Monitored	Support Status	Miles
PE01	Rock Creek	PE01	PE02	E	Non	0.3
PE02	Rock Creek	PE02	Its source	E	Non-	6.3
PE03	Rock Creek	PE03	PE03	E	Non	0.9
PE04	Patsaliga Creek	PE04	Gin Cr	E	Full	3.8
PE05	Patsaliga Creek	PE05	L. Patsaliga Cr	E	Full	9.7
PE06	Patsaliga Creek	PE06	Pineywoods Cr	E	Full	16.2
PE07	Big Escambia Creek	PE07	B. Escambia Cr	E	Full	3.3
PE08	Big Escambia Creek	PE08	PE07	E	Full	8.8
PE09	Big Escambia Creek	PE09	PE08	E	Non	12.7
PE10	Conecuh River	PE10	L. Conecuh R	E	Full	11.2
PE11	Conecuh River	PE11	Indian Cr	E	Full	6.5
PE12	Conecuh River	PE12	Dry Cr	E	Full	11.6
PE13	Conecuh River	PE13	Point A Dam	E	Full	10
PE14	Conecuh River	PE14	Silas Cr	E	Full	15.4
PE15	Sizemore Creek	PE15	Its source	E	Full	6.2
PE16	Sizemore Creek	PE16	PE15	E	Non	5.9
PE17	Sepulga River	PE17	Its source	E	Full	35.3
PE18	Sepulga River	PE18	PE17	E	Full	27

Table PE-3
Perdido-Escambia River Basin Industrial NPDES Process Wastewater Dischargers

Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0021997	MASLAND CARPETS INC	31.017056	-87.515
2	AL0002682	JEFFERSON SMURFITT	31.07838	-87.11652
3	AL0000779	T R MILLER MILL CO	31.10498	-87.06945

Table PE-4
Perdido-Escambia River Basin Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude	Treatment
1	AL0055417	Andalusia Riverside WWTP	Conecuh River	31.308611	-86.532222	Secondary
2	AL0049557	Atmore WWTP	Boggy Branch	31.030556	-87.514167	Advanced
3	AL0049867	Bay Minette WWTP	Hollinger Creek	30.886111	-87.765	Secondary
4	AL0022641	Brantley Lagoon	Conecuh River	31.583056	-86.230833	Secondary
5	AL0023825	Brewton Lagoon	Murder Creek	31.094444	-87.089444	Secondary
6	AL0060518	Dozier Lagoon	Conecuh River	31.487778	-86.359444	Secondary
7	AL0022608	East Brewton WWTP	Murder Creek	31.081667	-87.0825	Secondary
8	AL0047503	Evergreen Lagoon	Mill Creek	31.409444	-86.961111	Secondary
9	AL0023493	Flomaton Lagoon	Big Escambia Creek	31.005833	-87.244167	Secondary
10	AL0031925	Florala/Lockhart WWTP	Pond Creek	31.0375	-86.426667	Secondary
11	AL0049042	Foley WWTP	Wolf Creek	30.413889	-87.661667	Advanced
12	AL0024155	Fort Deposit Lagoon	Pigeon Creek	31.975278	-86.581667	Advanced
13	AL0043532	Georgiana WWTP	UT to Rocky Creek	31.637778	-86.723889	Advanced
14	AL0020532	Greenville WWTP	Persimmon Creek	31.789722	-86.605	Advanced
15	AL0055841	Gulf Shores WWTP	Gulf State Park Golf Course	30.26	-87.666667	Advanced
16	AL0060534	Luverne Lagoon	Patsaliga Creek	31.704444	-86.296111	Secondary
17	AL0054313	Opp Westside WWTP	Lightwood Knot Creek	31.296389	-86.2975	Secondary
18	AL0052515	Orange Beach Hwy 180 WWTP	Intracoastal Waterway	30.290833	-87.638611	Advanced
19	AL0042838	Robertsdale WWTP	Rock Creek	30.553056	-87.675	Secondary
20	AL0062634	Rutledge Wastewater Lagoon	Little Patsaliga Creek	31.729722	-86.329722	Secondary

Table PE-5
Perdido-Escambia River Basin Semi-Public/Private NPDES Dischargers

Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0046523	GULF SHORES PLANTATION	30.236667	-87.887778
2	AL0048780	BAY S & W INC.	30.394167	-87.459167
3	AL0024911	I-10 WELCOME CENTER	30.573889	-87.411667
4	AL0070904	STEELWOOD LIMITED WWTP	30.696156	-87.720842
5	AL0046744	FOUNTAIN/HOLMAN CORRECTIONAL FACILITY	31.133256	-87.463481
6	AL0049662	REPTON PUBLIC SCHOOL	31.409292	-87.232814
7	AL0024911	I-10 WELCOME CENTER	30.573889	-87.411667
8	AL0024902	I-10 WELCOME CENTER	30.477328	-88.388028
9	AL0044148	RED LEVEL HIGH SCHOOL	31.403111	-86.615181
10	AL0051730	DUNBAR ELEMENTARY SCHOOL	32.042686	-86.209147
11	AL0024929	US 231 REST AREA	32.025925	-86.0324

Table PE-6
Perdido-Escambia River Basin Mining NPDES Dischargers

INDEX	NPDES PERMIT	COMPANY	FACILITY	LATITUDE	LONGITUDE	NRCS SUBWATERSHED
1	AL0070017	Blair John Franklin	Blair Fish Pond No.1	30.544722	-87.670556	03140106-190
2	AL0067075	Campbell Sand & Gravel Co. Inc.	Gilmore Pit	31.206667	-87.185278	03140304-090
3	AL0059790	Campbell Sand & Gravel Co. Inc.	Pettis Pit	31.208333	-87.158333	03140304-050
4	AL0070734	Couch Construction L.P.	Brooklyn Quarry	31.249722	-86.746667	03140303-070
5	AL0069086	F and S Development Company	F and S Lillian Pit	30.432778	-87.444444	03140107-020
6	AL0064076	Fore Sand & Gravel Company Inc.	Scott Pit	31.063889	-87.330556	03140305-040
7	AL0069493	Fore Sand & Gravel Company Inc.	Scott Pit No.3	31.061389	-87.341389	03140305-041
8	AL0069574	Fore Sand & Gravel Inc.	Pollard Pit No.1	31.019722	-87.149444	03140304-070
9	AL0065790	Friese Hauling Inc.	Champion/Grant Pit #1	31.378889	-87.199167	03140304-050
10	AL0059498	Friese Hauling Inc.	Scott Pit	31.1225	-87.503333	03140305-030
11	AL0071013	Friese Hauling Inc.	Repton Pit	31.420833	-87.256389	03140305-020
12	AL0070556	Graham Denny	G & H Dirt Pit	30.915278	-87.765556	03140106-040
13	AL0068918	Graham G. Denny	Graham Dirt Pit #1	30.914722	-87.766667	03140106-040
14	AL0069337	Gulf Coast Mining LLC	Flomaton Plant	31.055	-87.32	03140305-040
15	AL0070149	Gulf Coast Mining LLC	Ward Pit No.1	31.106944	-87.495278	03140305-030
16	AL0055832	Henderson Ready Mix Concrete Company	Sand & Gravel Screening Plant	31.025	-87.254167	03140305-040
17	AL0062600	Lanier Sand & Gravel Co. Glenn E. Lanier dba	St. Regis Pit	31.286111	-87.388056	03140305-020
18	AL0069523	McDirt Industries of Alabama Inc.	Lillian Pit	30.498611	-87.4475	03140106-190
19	AL0066371	Morris William F.	Dirt Pit	30.913889	-87.766667	03140106-040
20	AL0068641	S & S Sand and Gravel Inc.	Cook Pit No.1	31.475556	-87.371667	03140305-010
21	AL0068985	S & T Sand & Gravel Company Inc.	Dawson Pit	31.441111	-87.383333	03140305-010
22	AL0068853	South Alabama Materials Inc.	McCollough Pit No.1	31.141944	-87.530833	03140305-030
23	AL0066591	South Alabama Materials Inc.	Osaka Pit	31.065	-87.216111	03140304-090
24	AL0067733	South Alabama Materials Inc.	Repton Pit No.1	31.403611	-87.215278	03140304-050
25	AL0068209	South Alabama Materials Inc.	Repton Pit No.2	31.405833	-87.215278	03140304-050
26	AL0069141	South Alabama Materials Inc.	Repton/Champion Pit #4	31.400278	-87.209722	03140304-051
27	AL0069817	South Alabama Materials Inc.	Wallace/International Pit No.1	31.243056	-87.207778	03140304-090
28	AL0069990	South Alabama Materials Inc.	Range/Scott Pit No.1	31.313056	-87.3175	03140305-020
29	AL0070564	South Alabama Materials Inc.	Brewton South Pit	31.091389	-87.079167	03140304-060
30	AL0064050	Southern Sand & Gravel	Repton Gravel Pit	31.378333	-87.212222	03140304-050
31	AL0062375	Stacey Glenn Jr.	Stacey's Gravel Pit	31.383056	-87.3775	03140305-010
32	AL0067491	Summit Construction Co. Inc.	Summit Construction Dirt Pit	30.385	-87.651667	03140107-040
33	AL0064629	Temco Corporation Inc.	Newport Pit	30.879444	-87.754167	03140106-170

Table PE-7
Perdido-Escambia River Basin Data

Station		PE01	PE01	PE01	PE02	PE02	PE02	PE03	PE03	PE03	PE04	PE04
Sampling Date		7/8/96	8/21/96	10/15/96	7/8/96	8/21/96	10/15/96	7/31/96	8/21/96	10/15/96	7/24/96	8/7/96
Sampling Time		11:35 AM	12:15 PM	12:45 PM	11:55 AM	12:00 PM	12:30 PM	11:00 AM	12:45 PM	1:00 PM	9:30 AM	10:30 AM
Total Water Depth	ft	1	1	0.5	9	9	9	0.5	1	1	6	5
Depth of Sample	ft	0.25	0.5	0.25	0.25	4.5	4.5	0.25	0.5	0.5	3	2.5
Air Temperature	°C	25	29	27	23	30	27	29	30	27	29	28
Water Temperature	°C	25	25	18	25	26	19	25	25	19	27	26
pH	s.u.	6.6	6.2	6.2	6.4	6.4	6.5	6.4	6.3	6.3	7.07	6.8
Dissolved Oxygen	mg/L	4.1	2.6	4.7	4	1.9	4.3	3.7	4.9	4.2	5.9	6.1
Flow	cfs*											
Conductivity	mmhos	83	75	90	106	136	148	109	89	101	80	70
Cond at 25 °C	mmhos	83	75	104	106	133	167	109	89	114	77	69
Turbidity	ntu	28	9.4	6.3	26	7	8.2	7	3.7	4	18	24
BOD5	mg/L	3	1.6	1.2	3.2	3	4.6	1	1.4	1.3	0.9	0.2
NH3-N	mg/L	0.11	0.03	0.01K	0.37	0.39	0.65	0.73	0.02	0.01K	0.015K	0.015K
TKN	mg/L	1.2	0.47	0.54	1.7	1.5	2.4	1.3	0.11	0.69	0.44	0.15K
NO2+NO3-N	mg/L	0.009	0.005K	0.005K	0.743	3.71	2.76	0.141	0.511	0.766	0.06	0.09
PO4-P	mg/L	0.155	0.052	0.005K	0.336	0.653	0.639	0.197	0.108	0.118	0.04	0.02
Fecal Coliform	MPN	2400L	0	70	2400L	0	260	51	42	74		

Table PE-7 (cont.)

Station		PE04	PE05	PE05	PE05	PE06	PE06	PE07	PE07	PE07	PE08	PE08
Sampling Date		10/3/96	7/24/96	8/7/96	10/3/96	7/25/96	10/4/96	7/30/96	8/22/96	10/17/96	7/30/96	8/22/96
Sampling Time		9:55 AM	10:30 AM	11:40 AM	12:10 PM	9:45 AM	10:15 AM	10:50 AM	11:30 AM	10:45 AM	10:30 AM	10:45 AM
Total Water Depth	ft	6	1	2	3	6	3	1	1	1.3	2.3	2.3
Depth of Sample	ft	3	0.5	1	1.5	3	1.5	0.25	0.5	0.6	0.25	1.1
Air Temperature	°C	26	35	34	27	33	29	30	31	24	30	31
Water Temperature	°C	24	27	25	24	28	25	23	23	18	23	23
pH	s.u.	7.14	7.48	6.6	7.25	8.68	7.63	6.2	6.1	6	6.4	5.7
Dissolved Oxygen	mg/L	6	8.2	7.6	8	6.2	8.5	7.2	8.2	8.2	7.6	8.6
Flow	cfs*											
Conductivity	mmhos	50	40	40	60	100	20	42	38	36	36	31
Cond at 25 °C	mmhos	51	39	40	61	95	20	44	40	42	37	32
Turbidity	ntu	18	42	18	20	6	18	4.7	3.4	0	5	2.8
BOD5	mg/L	1.6	0.7	0.5	1.3	0.5	0.6	1K	1K	1K	1K	1K
NH3-N	mg/L	0.015K	0.015K	0.015K	0.015K	0.015K	0.015K	0.01K	0.01K	0.01K	0.01K	0.01K
TKN	mg/L	0.041	0.17	0.15K	0.21	0.15K	0.006K	0.04	0.17	0.1K	0.27	0.1K
NO2+NO3-N	mg/L	0.04	0.1	0.04	0.08	0.29	0.26	0.143	0.212	0.242	0.131	0.176
PO4-P	mg/L	0.08	0.02	0.03	0.06	0.02	0.05	0.005K	0.005K	0.005K	0.005	0.005K
Fecal Coliform	MPN							33		112	60	18

Table PE-7 (cont.)

Station		PE08	PE09	PE09	PE09	PE10	PE10	PE10	PE11	PE11	PE11	PE12
Sampling Date		10/17/96	7/30/96	8/22/96	10/17/96	7/24/96	8/7/96	10/3/96	7/24/96	8/7/96	10/3/96	7/25/96
Sampling Time		10:10 AM	11:50 AM	12:00 PM	11:25 AM	1:25 AM	9:40 AM	8:50 AM	11:30 AM	10:55 AM	11:25 AM	9:25 AM
Total Water Depth	ft	2	6.7	6.7	4.3	3	4	6	10	10	10	9
Depth of Sample	ft	1	0.25	3.3	2.1	1.5	2	3	5	5	5	4.5
Air Temperature	°C	24	31	32	25	34	32	29	34	33	28	34
Water Temperature	°C	18	24	24	20	28	26	21	29	26	25	29
pH	s.u.	5.6	7.3	6	5.8	7.1	6.7	6.88	7.52	7.2	7.16	8.4
Dissolved Oxygen	mg/L	8.3	7.6	8.8	8.5	6.5	4.7	5.1	6.4	5.2	7	6.3
Flow	cfs*											
Conductivity	mmhos	34	42	32	38	50	40	55	100	110	60	110
Cond at 25 °C	mmhos	39	43	33	42	47	39	60	93	108	60	102
Turbidity	ntu	0	10.8	5.3	0	20	16	22	16	12	18	38
BOD5	mg/L	1K	1K	1	1K	1.1	1.1	1.1	0.8	0.7	0.7	0.9
NH3-N	mg/L	0.01K	0.01K	0.01K	0.01K	0.015K	0.015K	0.015K	0.015K	0.015K	0.015K	0.015K
TKN	mg/L	0.1K	0.38	0.1K	0.54	0.61	0.15K	0.006K	0.15K	0.15K	0.23	0.15K
NO2+NO3-N	mg/L	0.156	0.243	0.29	0.294	0.05	0.11	0.05	0.34	0.35	0.018	0.28
PO4-P	mg/L	0.005K	0.006	0.005K	0.005K	0.08	0.04	0.11	0.02	0.03	0.07	0.03
Fecal Coliform	MPN	21	74	27	56							

Table PE-7 (cont.)

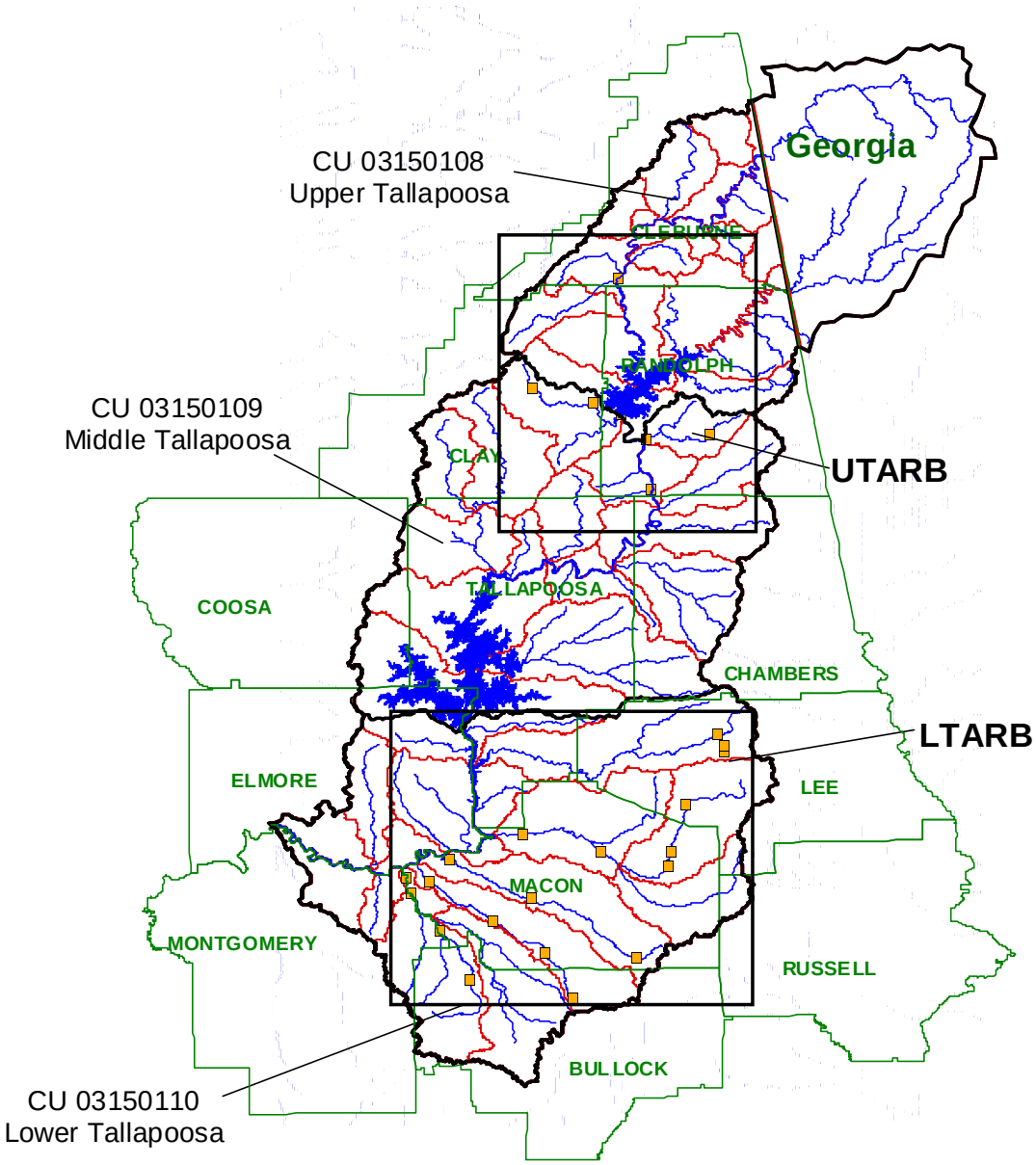
Station		PE12	PE12	PE13	PE13	PE13	PE14	PE14	PE14	PE15	PE15	PE15
Sampling Date		8/7/96	10/3/96	7/25/96	8/8/96	10/4/96	7/31/96	8/22/96	10/17/96	7/30/96	8/22/96	10/17/96
Sampling Time		12:05 PM	12:45 PM	10:30 AM	8:55 AM	9:35 AM	10:25 AM	12:40 PM	12:05 PM	9:45 AM	10:00 AM	9:20 AM
Total Water Depth	ft	8	8	7	7		6.7	6.7	1.3	3.3	3.3	3
Depth of Sample	ft	4	4	3.5	3.5		0.25	3.3	0.6	0.25	1.6	1.5
Air Temperature	°C	36	29	33	38	29	29	32	25	32	30	22
Water Temperature	°C	27	26	29	28	25	27	28	21	23	22	19
pH	s.u.	7	7.33	7.45	6.9	7.45	7	7.1	7	7.1	5.8	5.6
Dissolved Oxygen	mg/L	6.4	7.5	5.6	6.5	7.9	6.7	8.2	8	6.5	6.9	7.3
Flow	cfs*		60									
Conductivity	mmhos	90	60	90	100	50	90	96	96	67	60	62
Cond at 25 °C	mmhos	87	59	84	95	50	87	91	104	70	64	70
Turbidity	ntu	14	16	9	8	8	21	8.7	0	5.8	5.5	0
BOD5	mg/L	0.4	0.6	0.5	0.3	0.7	1K	1	1K	1	1	1K
NH3-N	mg/L	0.015K	0.015K	0.015K	0.015K	0.015K	0.01K	0.01K	0.01K	0.03	0.01	0.01K
TKN	mg/L	0.15K	0.22	0.24	0.15K	0.25	0.38	0.5	0.67	0.3	0.21	0.1
NO2+NO3-N	mg/L	0.03	0.21	0.18	0.23	0.24	0.147	0.109	0.121	1.1	0.934	0.951
PO4-P	mg/L	0.02	0.006	0.02	0.04	0.07	0.01	0.005K	0.005K	0.017	0.014	0.005K
Fecal Coliform	MPN						57	21	11	104	64	74

Table PE-7 (cont.)

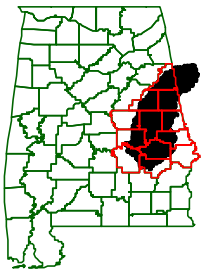
Station		PE16	PE16	PE16	PE17	PE17	PE17	PE18	PE18	PE18
Sampling Date		7/30/96	8/22/96	10/17/96	7/31/96	8/27/96	10/24/96	7/31/96	8/27/96	10/24/96
Sampling Time		10:10 AM	10:25 AM	9:50 AM	12:25 PM	10:30 AM	12:45 PM	11:45 AM	11:00 AM	12:00 PM
Total Water Depth	ft	2	2	3.3	2	1	1.6	2.7	2.7	1.6
Depth of Sample	ft	0.25	1	1.6	0.25	0.5	0.8	0.25	1.3	0.8
Air Temperature	°C	31	30	24	31	32	20	30	32	20
Water Temperature	°C	22	22	19	25	27	16	26	26	16
pH	s.u.	7.1	6	5.8	7.2	7.2	7.3	7.2	7.4	7.6
Dissolved Oxygen	mg/L	7.3	8.6	8.4	6.7	7.2	8.6	7.1	7.5	9.2
Flow	cfs*									
Conductivity	mmhos	48	41	43	67	81	90	70	86	110
Cond at 25 °C	mmhos	51	43	49	67	78	109	69	84	133
Turbidity	ntu	7.2	5.8	0	28	9.7	8.6	22	48	5.7
BOD5	mg/L	1K	1K	1K	1	2K	1K	1K	2K	1K
NH3-N	mg/L	0.01K	0.01	0.01K	0.01K	0.01K	0.01K	0.01K	0.01K	0.01K
TKN	mg/L	0.23	0.18	0.1K	0.55	0.18	0.1K	0.58	0.3	0.1K
NO2+NO3-N	mg/L	0.633	0.599	0.489	0.117	0.078	0.026	0.117	0.125	0.093
PO4-P	mg/L	0.059	0.029	0.005K	0.022	0.005K	0.005K	0.078	0.005K	0.005K
Fecal Coliform	MPN	114	58	82	77	54	33	105	288	38

Tallapoosa River Basin

Figure TA-1



Tallapoosa River Basin
Clean Water Strategy Sampling Stations
1996



NRCS Subwatersheds
Counties
USGS Cataloging Units
Tallapoosa River Basin
Tallapoosa River Mainstem, Reservoirs, & EPA RF1

10 0 10 20 Miles

N

ADEM-Water Quality Section 1997

Figure TA-2
UTARB

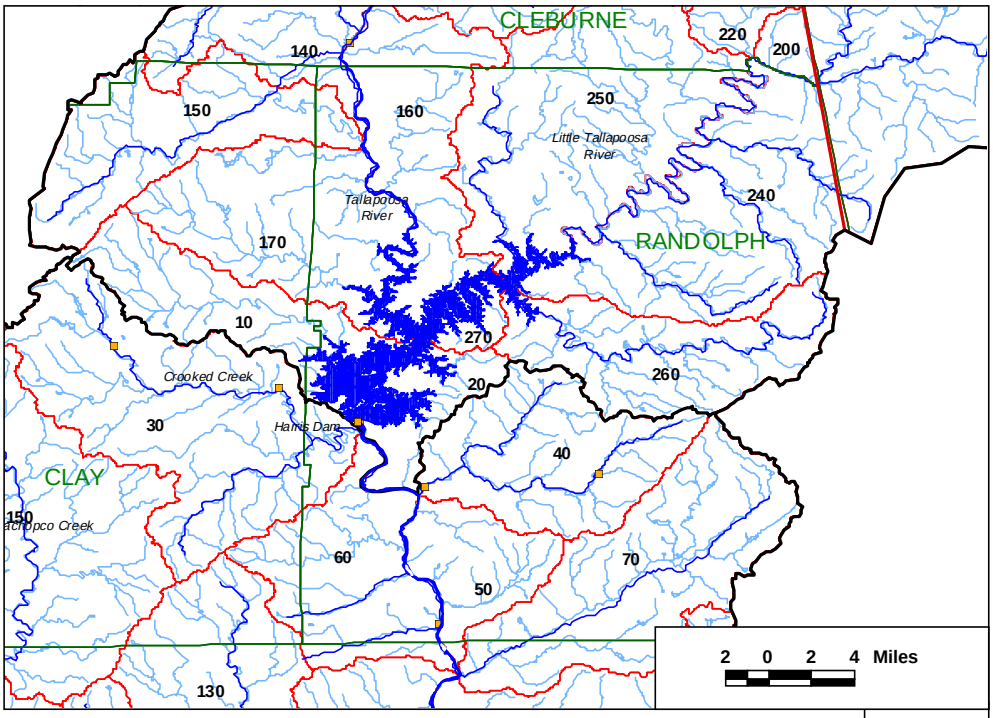


Figure TA-3
LTARB

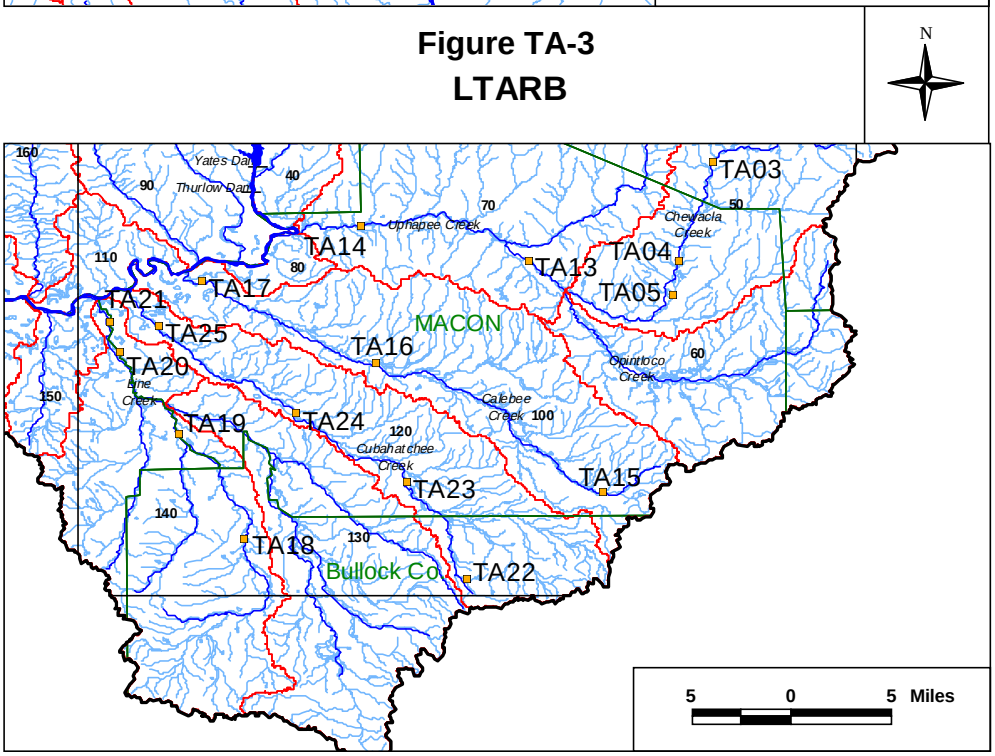


Figure TA-4

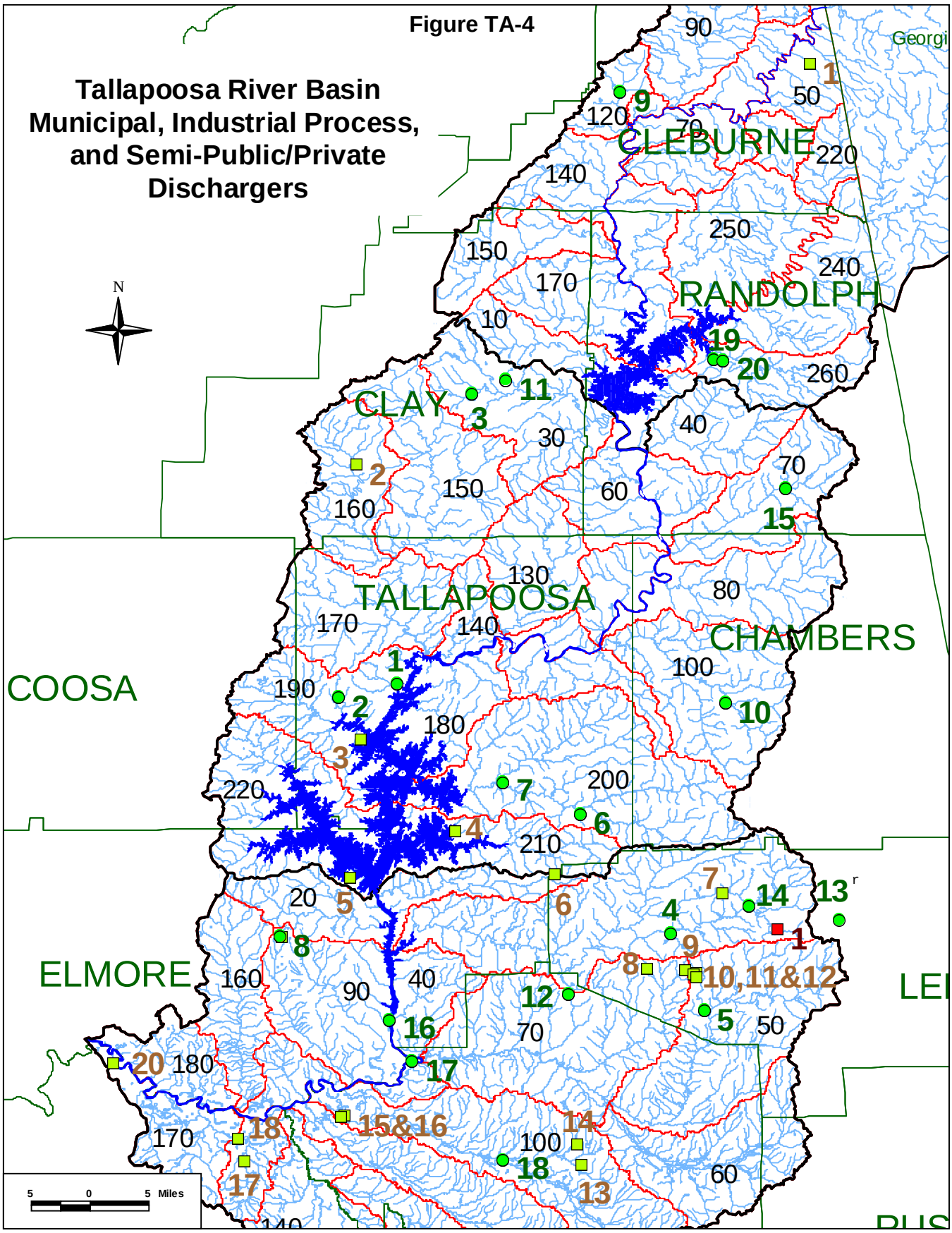


Figure TA-4
Tallapoosa River Basin
Municipal, Industrial Process,
and Semi-Public/Private
Dischargers
N
CLEBURNE
RANDOLPH
CLAY
TALLAPOOSA
CHAMBERS
COOSA
ELMORE
5 0 5 Miles

Figure TA-4 (cont.)

Tallapoosa River Basin
Municipal NPDES Dischargers

1 Alexander City-Coley Creek
2 Alexander City-Sugar Creek
3 Ashland WWTP
4 Auburn Northside WWTP
5 Auburn Southside WWTP
6 Camp Hill Lagoon
7 Dadeville WWTP
8 Eclectic Lagoon & Sprayfield
9 Heflin Lagoon
10 Lafayette WWTP
11 Lineville lagoon
12 Notasulga WWTP
13 Opelika Westside WWTP
14 Roanoke HCR Lagoon
15 Tallassee Lagoon
16 Tuskegee North WWTP
17 Tuskegee South WWTP
18 Wadley Lagoon
19 Wedowee Lagoon

Tallapoosa River Basin
Semi-Public/Private NPDES Dischargers

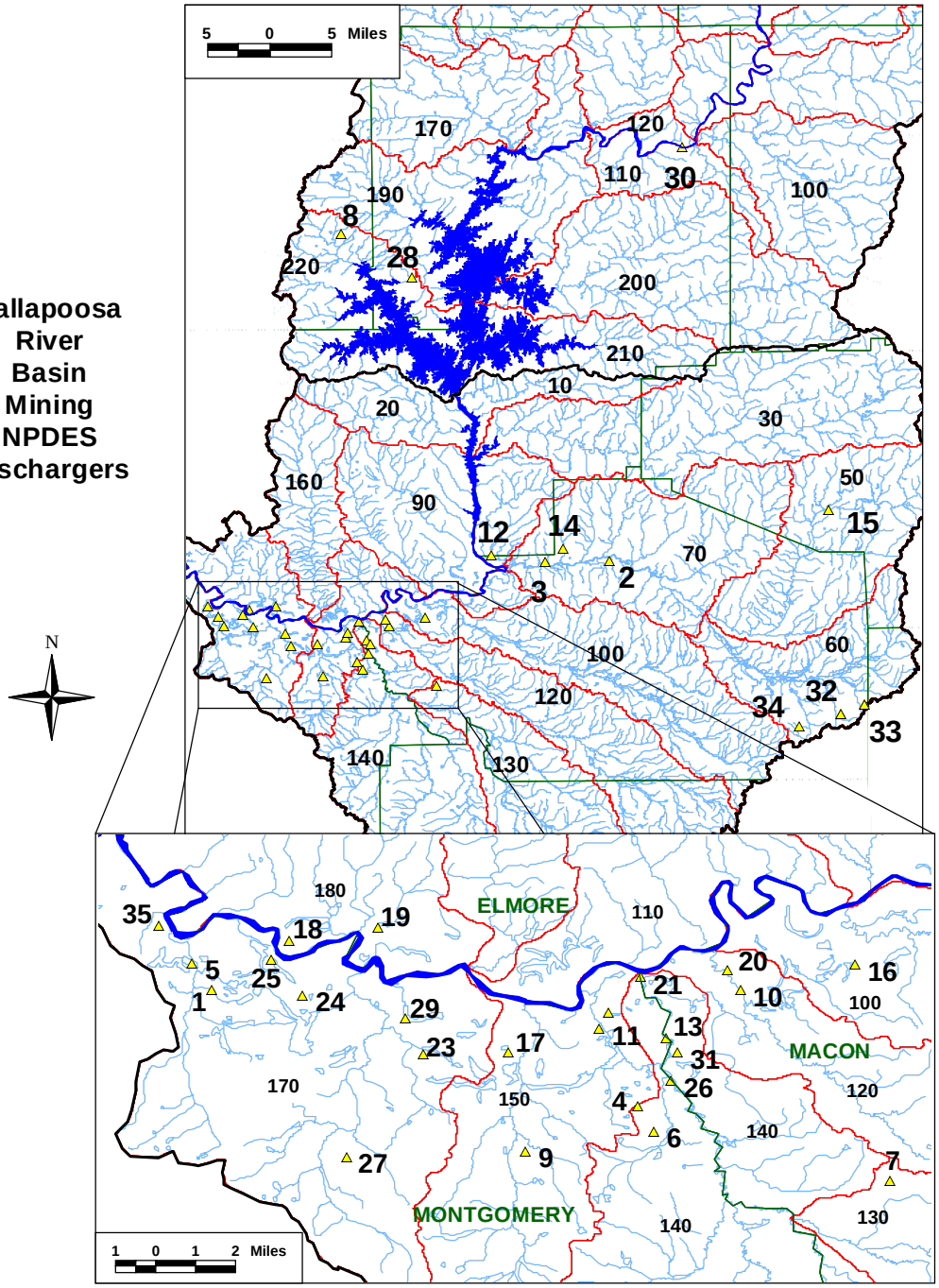
1 I-20 Welocme Center
2 Bibb Graves High School
3 Wind Creek State Park
4 Still Waters Resort
5 Kowaliga Restreat STP
6 Alabama Sheriff's Girls Ranch
7 The Colony Apartments
8 Loachapoka High School
9 Conway Acres Trailer Park
10 Campus Trailer Park Lagoon
11 Barron's Trailer Park Lagoon
12 Swann Mobile Home Park Lagoon
13 Mt. Nebo WWTP
14 Macon Academy Lagoon
15 Macon County Greyhound Track
16 PERTO II No. 48
17 Pike Road WWTP
18 Mt. Meigs Campus Complex
19 Elmore County High School
20 Red Eagle Honour Farm

Tallapoosa River Basin
Major Industrial NPDES Process Wastwater Dischargers

1 West Point-Stevens Opelika Finish Plant

Figure TA-5

Tallapoosa River Basin Mining NPDES Dischargers



Tallapoosa River Basin Mining NPDES Discharge Permits

1 Beaver Rock Inc.-City Pit
2 Beaver Rock Inc.-Sharpe Pit
3 Blue Circle Aggregates Inc.-Wisener Mine
4 B & R Materials and Services-B & R Pit
5 C.T. Thackston Sand & Gravel Inc.-Oliver Pit
6 Capitol Material Inc.-Graham/Mathews Waugh Pit
7 Concrete Company The-Ward Property
8 Davidson Mineral Properties Inc.-Alexander City Plant
9 DuBose Construction Corporation-DuBose Pit #1
10 Hickory Bend Farms Inc.-Calloway Pit
11 Hickory Bend Farms Inc.-Chapman Plant and McWhorter Pit
12 Hickory Bend Farms Inc.-Ingram Mine
13 Hickory Bend Farms Inc.-Thomas Mine
14 Hickory Bend Farms Inc.-Tuskegee Plant
15 Martin Marietta Aggregates-Auburn Quarry
16 Martin Marietta Aggregates-Beaver Rock Pit No. 1
17 Martin Marietta Aggregates-Mt. Meigs Plant
18 Martin Marietta Aggregates-Nicholls Pit
19 Martin Marietta Aggregates-Nicholls Pit No.2
20 Martin Marietta Aggregates-Pinkston Pit
21 Martin Marietta Aggregates-Silica Pit
22 Martin Marietta Aggregates-Waugh Pit
23 McLemore Tom-McLemore Sand and Gravel
24 Mid State Paving Inc.-Dozier Pit #1
25 Mid State Paving Inc.-Dozier Pit #2
26 Mid State Paving Inc.-Line Creek Pit
27 Pinkston T.B.-Pinkston's Pit
28 Scroggins Larry-Larry Scroggins Pit
29 Shaver Sand & Gravel Inc.-Froggy Bottom Materials
30 Shivers Mary-Moran Pit
31 Tysonville Sand & Gravel Inc.-Tysonville Plant No. 1
32 U.S. Silica Company Inc.-Mead/Floyd Mine
33 U.S. Silica Company Inc.-Union Camp Mine
34 U.S. Silica Company Inc.-Waco Mine
35 Wadsworth Contractors Inc.-Shine Pit

Table TA-1
1996 Tallapoosa River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
TA01	Pepperell Branch	US Hwy 29.	32.6345	-85.42575
TA02	Pepperell Branch	US Hwy 280.	32.644667	-85.42603
TA03	Chewacla Creek	Lee Co. Rd. 26 (Lee Co. Rd. 010).	32.535654	-85.49655
TA04	Chewacla Creek	Chewacla Cr at US Hwy 80 in Macon Co.	32.450352	-85.5259
TA05	Chewacla Creek	Chewacla Cr at Co. Rd. 22 bridge.	32.422806	-85.53108
TA06	Tallapoosa River	Cleburne Co. Rd. 17 SE of Hollis Crossroads (SW 1/4, S29, T17S, R10E).	33.51025	-85.62269
TA07	Tallapoosa River	At R. L. Harris Dam (Tailrace) (NE 1/4, S28, T20S, R10E).	33.255472	-85.616305
TA08	Tallapoosa River	AL Hwy 77 at Wadley (SE 1/4, S12, T22S, R10E).	33.118916	-85.56242
TA09	Cornhouse Creek	Unnamed Randolf Co. Rd. at Cornhouse (SW 1/4, S1, T21S, R11E).	33.22025	-85.45497
TA10	Cornhouse Creek	Unnamed Randolf Co.Rd. NE of Malone (SE 1/4, S11, T21S, R10E).	33.210722	-85.57172
TA11	Crooked Creek	Clay Co.Rd. 31 W of Lineville (NE 1/4, S23, T20S, R9E).	33.30625	-85.781
TA12	Crooked Creek	Unnamed Clay Co.Rd. at Berwick (NE 1/4, S2, T20S, R8E).	33.277166	-85.67044
TA13	Uphapee Creek	Uphapee Creek at Co. Rd. 53.	32.450777	-85.65465
TA14	Uphapee Creek	Uphapee Creek at AL Hwy 49 at Franklin.	32.481235	-85.79838
TA15	Calebee Creek	Unnamed Macon Co. Rd. north of Roba.	32.252548	-85.591111
TA16	Calebee Creek	Calebee Creek at Co. Rd. 73 southwest of Liverpool.	32.363432	-85.78477
TA17	Calebee Creek	Calebee Creek at Co. Rd. 40 north of Shorter.	32.43361	-85.93417
TA18	Line Creek	Line Creek at AL Hwy 110.	32.213124	-85.89797
TA19	Line Creek	Macon Co. Rd. 4 E or Co. Rd. 2 of Cecil (NE 1/4, S9, T15N, R21E).	32.302689	-85.95439
TA20	Line Creek	US Hwy 80 SW of Shorter (NE 1/4, S19, T16N, R20E).	32.37292	-86.00472
TA21	Line Creek	Brassell RR Bridge.	32.39972	-86.0136
TA22	Cubahatchee Creek	Cubahatchee Creek at US Hwy 29.	32.1775	-85.707778
TA23	Cubahatchee Creek	Cubahatchee Creek at Co. Rd. 2.	32.26194	-85.75928
TA24	Cubahatchee Creek	Cubahatchee Creek at Co. Rd. 19 northeast of Hardaway.	32.319722	-85.854444
TA25	Cubahatchee Creek	Cubahatchee Creek at US Hwy 80.	32.395	-85.972222
TA26	Sougahatchee Lake	Opelika Water Treatment Plant-Sougahatchee Lake.	32.66475	-85.438139

Table TA-2
Tallapoosa River Basin Use Support

Station	Waterbody Name	From	To	Evaluated or Monitored	Support Status	Miles
TA01	Pepperell Branch	TA01	Its source	E	Full	3.2
TA02	Pepperell Branch	TA02	TA01	E	Full	0.9
TA03	Chewacla Creek	TA03	Its source	E	Full	15.9
TA04	Chewacla Creek	TA04	TA03	E	Full	8.5
TA05	Chewacla Creek	TA05	TA04	E	Full	2.6
TA06	Tallapoosa River	TA06	Cane Cr	E	Full	14
TA07	Tallapoosa River	At tailrace	n/a	E	Non	-
TA08	Tallapoosa River	TA08	TA07	E	Full	13.7
TA09	Cornhouse Creek	TA09	Its source	E	Full	6.7
TA10	Cornhouse Creek	TA10	TA09	E	Full	12.4
TA11	Crooked Creek	TA11	Its source	E	Full	5
TA12	Crooked Creek	TA12	TA11	E	Full	11.7
TA13	Uphapee Creek	TA13	Opintloco Cr	E	Full	3.1
TA14	Uphapee Creek	TA14	TA13	E	Full	13.1
TA15	Calebee Creek	TA15	Its source	E	Non	3.2
TA16	Calebee Creek	TA16	Persimmon Cr	E	Non	4.4
TA17	Calebee Creek	TA17	UT East of Co. Rd. 9	E	Non	8.7
TA18	Line Creek	TA18	Coleman Cr	M	Partial	*8.1*
TA19	Line Creek	TA19	TA18	M	Partial	*11.2*
TA20	Line Creek	TA20	TA19	M	Partial	*11.1*
TA21	Line Creek	TA21	TA20	E	Full	2.4
TA22	Cubahatchee Creek	TA22	Its source	E	n/a	2.7
TA23	Cubahatchee Creek	TA23	TA22	E	Non	*10.3*
TA24	Cubahatchee Creek	TA24	TA23	M	Non	11.8
TA25	Cubahatchee Creek	TA25	TA24	M	Full	13.8

Table TA-3
Tallapoosa River Basin Industrial NPDES Process Wastewater Dischargers

Index	NPDES Permit	Company	Receiving Water	Latitude	Longitude
1	AL0002968	W P STEVENS-OPELIKA FINISH	PEPPERELL BRANCH	32.632240	- 85.415810

Table TA-4
Tallapoosa River Basin Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude	Treatment
1	AL0021156	Alexander City Coley Creek WWTP	Coley Creek	32.928333	-85.884167	Secondary
2	AL0048861	Alexander City Sugar Creek WWTP	Sugar Creek	32.910556	-85.956111	Advanced
3	AL0020141	Ashland WWTP	Horsetrough Creek	33.275	-85.791944	Secondary
4	AL0050245	Auburn Northside WWTP	Sougahatchee Creek	32.6275	-85.546389	Advanced
5	AL0050237	Auburn Southside WWTP	Parkerson Mill Creek	32.535833	-85.505278	Advanced
6	AL0024210	Camp Hill Lagoon	Sandy Creek	32.771111	-85.6575	Secondary
7	AL0063797	Dadeville WWTP	Chattasofka Creek	32.809722	-85.753611	Advanced
8	AL0067903	Eclectic Lagoon & Sprayfield	Groundwater	32.624444	-86.028611	Advanced
9	AL0056146	Heflin Lagoon	Tallapoosa River	33.636667	-85.607778	Secondary
10	AL0062839	Lafayette WWTP	Mill Creek	32.904444	-85.478889	Secondary
11	AL0050644	Lineville Lagoon	UT to Crooked Creek	33.291667	-85.75	Secondary
12	AL0069175	Notasulga WWTP	UT to Red Creek	32.555556	-85.673333	Advanced
13	AL0059218	Opelika Eastside WWTP	UT to Halawaka Creek	32.643889	-85.337778	Advanced
14	AL0050130	Opelika Westside WWTP	Saugahatchee Creek	32.660833	-85.450556	Secondary
15	AL0062715	Roanoke HCR Lagoon	High Pine Creek	33.161111	-85.403611	Secondary
16	AL0020486	Tallassee Lagoon	Tallapoosa River	32.524722	-85.892778	Secondary
17	AL0048763	Tuskegee North WWTP	Tallapoosa River	32.475	-85.865278	Secondary
18	AL0025984	Tuskegee South WWTP	Calebee Creek	32.356984	-85.752674	Advanced
19	AL0062847	Wadley Lagoon	Tallapoosa River	33.316667	-85.4925	Secondary
20	AL0024171	Wedowee Lagoon	Wedowee Creek	33.315	-85.480833	Secondary

Table TA-5
Tallapoosa River Basin Semi-Public/Private NPDES Dischargers

Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0045306	I-20 WELCOME CENTER	33.669472	-85.375847
2	AL0048429	BIBB GRAVES HIGH SCHOOL	33.189167	-85.934444
3	AL0029424	WIND CREEK STATE PARK	32.859847	-85.929703
4	AL0047601	STILL WATERS RESORT	32.750311	-85.812969
5	AL0053538	KOWALIGA RETREAT STP	32.693781	-85.943278
6	AL0050181	ALABAMA SHERIFF'S GIRLS RANCH	32.698283	-85.690542
7	AL0045641	THE COLONY APARTMENTS	32.675469	-85.482981
8	AL0043672	LOACHAPOKA HIGH SCHOOL	32.585833	-85.5775
9	AL0064955	CONWAY ACRES TRAILER PARK	32.583022	-85.530028
10	AL0058840	CAMPUS TRAILER PARK LAGOON	32.579717	-85.516922
11	AL0058866	BARRON'S TRAILER PARK LAGOON	32.5778	-85.518972
12	AL0058858	SWANN MOBILE HOME PARK LAGOON	32.575139	-85.516842
13	AL0047236	MT NEBO WWTP	32.349161	-85.657422
14	AL0059242	MACON ACADEMY LAGOON	32.374136	-85.662436
15	AL0049841	MACON COUNTY GREYHOUND PARK	32.409003	-85.949606
16	AL0065757	PERTO II NO 48	32.406536	-85.954633
17	AL0066354	PIKE ROAD WWTP	32.354872	-86.072969
18	AL0058777	MT MEIGS CAMPUS COMPLEX LAGOON	32.381581	-86.081614
19	AL0045934	ELMORE COUNTY HIGH SCHOOL	32.622778	-86.026944
20	AL0051403	RED EAGLE HONOUR FARM	32.470864	-86.234614

Table TA-6
Tallapoosa River Basin Mining NPDES Dischargers

INDEX	COMPANY	FACILNAME	NPDES PERMIT	LATITUDE	LONGITUDE	NRCS SUBWATERSHED
1	Beaver Rock Inc.	City Pit	AL0069850	32.413056	-86.178056	03150110-170
2	Beaver Rock Inc.	Sharpe Pit	AL0068764	32.488889	-85.732222	03150110-010
3	Blue Circle Aggregates Inc.	Wisener Mine	AL0054925	32.486111	-85.806111	03150110-010
4	B & R Materials and Services	B & R Pit	AL0070301	32.370833	-86.023333	03150110-140
5	C.T. Thackston Sand & Gravel Inc.	Oliver Pit	AL0056995	32.422778	-86.185	03150110-170
6	Capitol Material Inc.	Graham/Mathews Waugh Pit	AL0070637	32.361389	-86.0175	03150110-140
7	Concrete Company The	Ward Property	AL0068632	32.343417	-85.931944	03150110-100
8	Davidson Mineral Properties Inc.	Alexander City Plant	AL0056448	32.866667	-86.041667	03150109-220
9	DuBose Construction Corporation	DuBose Pit #1	AL0061468	32.354167	-86.063889	03150110-150
10	Hickory Bend Farms Inc.	Calloway Pit	AL0062481	32.413056	-85.986111	03150110-120
11	Hickory Bend Farms Inc.	Chapman Plant and McWhorter Pit	AL0057606	32.398889	-86.0375	03150110-140
12	Hickory Bend Farms Inc.	Ingram Mine	AL0069540	32.494722	-85.868611	03150110-040
13	Hickory Bend Farms Inc.	Thomas Mine	AL0068560	32.395556	-86.013056	03150110-140
14	Hickory Bend Farms Inc.	Tuskegee Plant	AL0069531	32.502222	-85.785278	03150110-070
15	Martin Marietta Aggregates	Auburn Quarry	AL0002640	32.546667	-85.477778	03150110-050
16	Martin Marietta Aggregates	Beaver Rock Pit No. 1	AL0067997	32.422222	-85.944444	03150110-080
17	Martin Marietta Aggregates	Mt. Meigs Plant	AL0062049	32.390278	-86.070278	03150110-150
18	Martin Marietta Aggregates	Nicholls Pit	AL0057215	32.430556	-86.149722	03150110-180
19	Martin Marietta Aggregates	Nicholls Pit No.2	AL0069167	32.43583333	-86.118056	03150110-180
20	Martin Marietta Aggregates	Pinkston Pit	AL0062405	32.420278	-85.991111	03150110-100
21	Martin Marietta Aggregates	Silica Pit	AL0063614	32.4175	-86.022222	03150110-140
22	Martin Marietta Aggregates	Waugh Pit	AL0057207	32.404722	-86.033889	03150110-140
23	McLemore Tom	McLemore Sand and Gravel	AL0070351	32.389444	-86.101389	03150110-170
24	Mid State Paving Inc.	Dozier Pit #1	AL0060020	32.410833	-86.145	03150110-170
25	Mid State Paving Inc.	Dozier Pit #2	AL0058963	32.42422222	-86.156722	03150110-170
26	Mid State Paving Inc.	Line Creek Pit	AL0068454	32.38	-86.011389	03150110-140
27	Pinkston T.B.	Pinkston's Pit	AL0066753	32.3525	-86.129167	03150110-170
28	Scroggins Larry	Larry Scroggins Pit	AL0067334	32.816111	-85.960833	03150108-220

Table TA-6 (cont.)

INDEX	COMPANY	FACILNAME	NPDES PERMIT	LATITUDE	LONGITUDE	NRCS SUBWATERSHED
29	Shaver Sand & Gravel Inc.	Froggy Bottom Materials	AL0061824	32.4025	-86.1075	03150110-170
30	Shivers Mary	Moran Pit	AL0067172	32.967778	-85.648333	03150109-120
31	Tysonville Sand & Gravel Inc.	Tysonville Plant No. 1	AL0067024	32.390278	-86.008889	03150110-140
32	U.S. Silica Company Inc.	Mead/Floyd Mine	AL0064220	32.310833	-85.463889	03150110-060
33	U.S. Silica Company Inc.	Union Camp Mine	AL0064254	32.321111	-85.435833	03150110-060
34	U.S. Silica Company Inc.	Waco Mine	AL0064211	32.295833	-85.511667	03150110-060
35	Wadsworth Contractors Inc.	Shine Pit	AL0058378	32.436111	-86.197222	03150110-170

Table TA-7
Tallapoosa River Basin Data

Station		TA01	TA01	TA02	TA02	TA03	TA03	TA04	TA04	TA05	TA05	TA06
Sampling Date		7/2/96	8/20/96	7/2/96	8/20/96	8/14/96	9/4/96	8/14/96	9/4/96	8/14/96	9/4/96	7/2/96
Sampling Time		9:35 AM	9:20 AM	10:15 AM	9:45 AM	12:01 PM	2:50 PM	11:08 AM	2:05 PM	12:50 PM	1:30 PM	3:50 PM
Total Water Depth	ft		10		2	2	1.5	2.5	6.9	1.3	2	
Depth of Sample	ft	0	0	0	1	1	1	1	3	0	1	5
Air Temperature	°C	28	28	28	29	30		26	34	25	32	32
Water Temperature	°C	26	26	26	26	24	26.3	25	26.2	24.3	26	30
pH	s.u.	7.69	8	7.78	8	8.09	8.12	7.61	7.58	7.52	6.51	7.05
Dissolved Oxygen	mg/L	5.2	4.1	7.7	5.6	8.8	9.6	7.4	9.6	7.4	7.8	7.5
Flow	cfs*											
Conductivity	mmhos	2000	1400	1900	1200	170	120	150	110	130	100	55
Cond at 25 °C	mmhos	1963	1374	1864	1178	173	117	150	108	132	98	50
Turbidity	ntu					10	7	16	16	16	22	
BOD5	mg/L	2	4.3	1.6	3.5	0.6	1.7	0.9	1.4	0.9	1.5	1.7
NH3-N	mg/L	0.16	0.13		0.05	0.015K	0.015K	0.015K	0.015K	0.015K	0.015K	
TKN	mg/L	2.63	3.52	1.68	2.88	0.29	0.15K	0.18	0.15K	0.17	0.15K	
NO2+NO3-N	mg/L	8.06	0.37	6.8	0.6	0.57	0.04	1.49	0.79	1.03	0.63	0.3
PO4-P	mg/L	9.82	10.38	7.81	8.85	0.04	0.004K	0.14	0.13	0.11	0.14	0.06
Fe	mg/L						0.374		0.92		1.53	
Mn	mg/L						0.037		0.108		0.165	
TSS	mg/L					4	6	17	19	15	29	

Table TA-7 (cont.)

Station		TA06	TA07	TA07	TA08	TA08	TA09	TA09	TA10	TA10	TA11	TA11
Sampling Date		8/21/96	7/3/96	8/21/96	7/2/96	8/20/96	7/2/96	8/20/96	7/2/96	8/20/96	7/3/96	8/21/96
Sampling Time		2:00 PM	11:35 AM	10:35 AM	1:30 PM	10:55 AM	2:50 PM	12:30 PM	2:00 PM	11:55 AM	10:00 AM	9:44 AM
Total Water Depth	ft	4		3		4		2		2		1
Depth of Sample	ft	2	5	1.5	5	2	1.5	1	1.5	1	0	0
Air Temperature	°C	30	30	31	31	31	32	31	30	30	28	30
Water Temperature	°C	29	25	26	28	25	28	24	27	25	26	25
pH	s.u.	7.15	6.77	6.28	7.71	7.23	6.97	7.16	7.1	7.27	6.85	7.09
Dissolved Oxygen	mg/L	7.2	8.5	7.7	8.8	7.7	8	7.7	7.9	8	7.1	7.6
Flow	cfs*											
Conductivity	mmhos	60	40	50	54	45	50	50	50	40	40	30
Cond at 25 °C	mmhos	56	40	49	51	45	47	51	48	40	39	30
Turbidity	ntu											
BOD5	mg/L	0.9	1.2	1.1	1.8	5.6	1.2	0.9	2	1.1	0.9	0.9
NH3-N	mg/L	0.015K		0.015K		0.015K		0.015K		0.015K		0.015K
TKN	mg/L	0.15K		0.15K		0.15		0.15K		0.15		0.15K
NO2+NO3-N	mg/L	0.37	0.16	0.1	0.15	0.09	0.1	0.11	0.07	0.12	0.09	0.11
PO4-P	mg/L	0.13	0.03	0.09	0.02	0.2	0.03	0.11	0.03	0.11	0.03	0.11
Fe	mg/L											
Mn	mg/L											
TSS	mg/L											

Table TA-7 (cont.)

Station		TA12	TA12	TA13	TA13	TA14	TA14	TA14	TA15	TA15	TA16	TA16
Sampling Date		7/3/96	8/21/96	8/14/96	9/4/96	7/18/96	8/14/96	9/4/96	8/21/96	9/12/96	7/11/96	8/21/96
Sampling Time		11:00 AM	10:15 AM	10:45 AM	1:00 PM	12:12 PM	9:30 AM	12:02 PM	10:30 AM	11:15 AM	10:45 AM	9:45 AM
Total Water Depth	ft		3	0.85	2.71	1.1	1.6	2.6	1	4		1
Depth of Sample	ft	2	1.5	0	1	0	1		0.5	2		0.5
Air Temperature	°C	28	31	36	34	46.2	31	30	30	29	46	29
Water Temperature	°C	26	25	25.4	26.2	31.4	25.6	27.3	25	25	26.9	26
pH	s.u.	6.74	7.07	7.84	7.43	7.84	7.35	7.16	6.49	6.7	6.57	6.95
Dissolved Oxygen	mg/L	8.5	7.6	9.7	8.2	8.8	8.2	8.8	1.2	5.3	5.5	3.7
Flow	cfs*											
Conductivity	mmhos	90	80	100	90	80	90	85	70	50		120
Cond at 25 °C	mmhos	88	80	99	88	71	89	81	70	50		118
Turbidity	ntu			14	36		22	58	110	16	20	16
BOD5	mg/L	0.8	1	0.7	1.6	0.9	1.1	2.1	4	1	1.6	1.2
NH3-N	mg/L		0.015K	0.015K	0.015K	0.015K	0.03	0.015K	0.015K	0.015K		0.05
TKN	mg/L		0.15K	0.15K	0.15K	0.15K	0.21	0.15K	0.15K	0.15K	0.34	0.42
NO2+NO3-N	mg/L	1.28	0.1	0.44	0.47	0.23	0.33	0.22	0.03	0.043	0.56	2.89
PO4-P	mg/L	0.08	0.18	0.06	0.08	0.04	0.05	0.06	0.28	0.02	0.12	0.2
Fe	mg/L											
Mn	mg/L											
TSS	mg/L			8	48		25	70				

Table TA-7 (cont.)

Station		TA16	TA17	TA17	TA17	TA18	TA18	TA18	TA18	TA19	TA19	TA19
Sampling Date		9/12/96	7/11/96	8/21/96	9/12/96	7/18/96	8/6/96	9/5/96	10/3/96	7/11/96	7/16/96	8/6/96
Sampling Time		10:05 AM	8:35 AM	9:15 AM	9:40 AM	9:30 AM	10:39 AM	9:15 AM	9:55 AM	2:10 AM	10:38 AM	11:09 AM
Total Water Depth	ft	3		1	1	2	1.7	2	2		3.2	3
Depth of Sample	ft	1.5		0.5	0.5	1	0	1	1		1.6	2
Air Temperature	°C	25	31.9	30	27		36	24	24	38	29.9	33
Water Temperature	°C	23	26.8	28	25	25.6	26.1	23.7	21.2	28.7	25.8	27.1
pH	s.u.	6.59	6.19	5.97	6.33	7	6.95	6.01	7.02	7.1	6.82	7.13
Dissolved Oxygen	mg/L	5.3	1.6	1.1	0.8	5.3	4.4	7	7.5	6.5	3.2	5.7
Flow	cfs*											
Conductivity	mmhos	110	40	60	50	110	85	50	80	170	140	90
Cond at 25 °C	mmhos	114	39	57	50	109	83	51	86	159	138	87
Turbidity	ntu	20	28	42	26		24		20	10		22
BOD5	mg/L	0.7	3.5	8.8	5		0.1		0.5	2.9		0.1
NH3-N	mg/L	0.015K		0.09	0.015K		0.015K		0.015K			0.25
TKN	mg/L	0.41	0.18	0.46	0.78		0.64		0.15	0.17		0.79
NO2+NO3-N	mg/L	1	0.02	0.03	0.006K		0.12		0.04	0.03		0.11
PO4-P	mg/L	0.11	0.09	0.19	0.13		0.1		0.11	0.09		0.1
Fe	mg/L						1.7		2			1.24
Mn	mg/L						0.072		0.02			0.06
TSS	mg/L						13		5			8

Table TA-7 (cont.)

Station		TA19	TA19	TA19	TA19	TA20	TA20	TA20	TA20	TA20	TA20	TA20
Sampling Date		8/21/96	9/5/96	9/12/96	10/3/96	7/11/96	7/16/96	8/6/96	8/21/96	9/5/96	9/12/96	10/3/96
Sampling Time		11:45 AM	9:40 AM	12:30 PM	10:20 AM	10:10 AM	11:15 AM	11:36 AM	8:40 AM	10:12 AM	8:55 AM	11:55 AM
Total Water Depth	ft	4	12.99	2	3	0	4	4.1	4	8	4	3
Depth of Sample	ft	2	6	1	2		2	2	2	5	2	2
Air Temperature	°C	32	30	32	24	36.5	32.4	40	33	30	26	35
Water Temperature	°C	28	23.8	25	21.8	29.6	29.1	30	29	24.3	25	23.4
pH	s.u.	7.01	6.37	6.8	7.34	7.25	7.21	7.23	7.1	6.42	7.25	7.42
Dissolved Oxygen	mg/L	5.6	6.2	7	6.6	6.8	5.3	7.5	5.7	6.4	6.2	9.3
Flow	cfs*											
Conductivity	mmhos	90	50	110	100	140	150	100	100	65	90	120
Cond at 25 °C	mmhos	85	51	110	107	129	139	91	93	66	90	124
Turbidity	ntu	22		20	20	8		20	18		18	18
BOD5	mg/L	1.2		0.7	0.8	1.8		0.3	1.9		1.1	0.9
NH3-N	mg/L	0.015K		0.015K	0.015K			0.015K	0.015K		0.015K	0.015K
TKN	mg/L	0.15K		0.39	0.52			0.43	0.15K		0.16	0.49
NO2+NO3-N	mg/L	0.1		0.11	0.06	0.04		0.1	0.06		0.08	0.14
PO4-P	mg/L	0.19		0.12	0.14	0.06		0.11	0.18		0.08	0.12
Fe	mg/L				1.71			1.15				1.46
Mn	mg/L				0.02			0.051				0.031
TSS	mg/L				9			17				11

Table TA-7 (cont.)

Station		TA21	TA21	TA21	TA21	TA22	TA23	TA23	TA23	TA23	TA23	TA24
Sampling Date		6/20/96	7/16/96	8/6/96	10/3/96	7/18/96	6/20/96	7/18/96	8/15/96	9/5/96	10/3/96	6/20/96
Sampling Time		11:30 AM	12:56 PM	12:15 PM	2:05 PM	10:12 AM	9:42 AM	10:28 AM	10:35 AM	11:50 AM	1:20 PM	10:15 AM
Total Water Depth	ft		1	2	2			2.8	2.7	5	2	
Depth of Sample	ft	0	0	1	1		0	1.4	1	2.5	1	0
Air Temperature	°C		25	41	30			35.2	31	37	30	
Water Temperature	°C		25	31.6	26.2			27.2	24.9	23.9	22	
pH	s.u.		7.26	7.18	7.3			7	6.84	6.66	7	
Dissolved Oxygen	mg/L		8.2	8.9	9.6			0.9	1.2	6	5.5	
Flow	cfs*					0	0					0
Conductivity	mmhos	111	120	100	110		66	120	130	70	110	125
Cond at 25 °C	mmhos		120	89	108			115	130	72	117	
Turbidity	ntu	12		20	18		38		10		18	24
BOD5	mg/L			0.3	0.8				2.9		1.4	
NH3-N	mg/L			0.37	0.015K				0.04		0.015K	
TKN	mg/L			0.52	0.27				0.15K		0.61	
NO2+NO3-N	mg/L			0.02	0.14				0.023		0.02	
PO4-P	mg/L			0.08	0.1				0.07		0.01	
Fe	mg/L			1.59	1.63						1.53	
Mn	mg/L			0.08	0.037						0.078	
TSS	mg/L	5		15	8		60		10		9	9

Table TA-7 (cont.)

Station		TA24	TA24	TA24	TA24	TA24	TA24	TA24	TA25	TA25	TA25	TA25
Sampling Date		7/11/96	7/18/96	8/15/96	8/21/96	9/5/96	9/12/96	10/3/96	6/20/96	7/18/96	8/15/96	8/21/96
Sampling Time		1:25 AM	11:05 AM	11:15 AM	10:55 AM	11:15 AM	10:30 AM	12:35 PM	10:40 AM	11:40 AM	11:29 AM	8:55 AM
Total Water Depth	ft		2.6	2.05	3	4.9	3	2		1.7	1.53	4
Depth of Sample	ft		1.3	1	1.5	2.5	1.5	1	0	0	1	2
Air Temperature	°C	38	35.2	31	33	31	28	28		35.1	38	30
Water Temperature	°C	28.7	27.6	24.8	28	23.9	24	21.9		29.4	27.9	27
pH	s.u.	7.1	6.92	6.74	7.01	6.41	7.07	6.92		7.29	6.88	6.82
Dissolved Oxygen	mg/L	6.5	1	1.3	3.6	5.5	3.5	6.5		7.6	9.5	5.9
Flow	cfs*											
Conductivity	mmhos	170	120	100	140	40	90	80	65	50	40	60
Cond at 25 °C	mmhos	159	114	100	132	41	92	85		46	38	58
Turbidity	ntu	12		14	12		30	22	12		8	8
BOD5	mg/L	1.8		1.9	2.9		1.2	1			0.9	1
NH3-N	mg/L			0.04	0.015K		0.015K	0.015K			0.015K	0.015K
TKN	mg/L	0.26		0.56	7.65		0.38	0.66			0.23	6.54
NO2+NO3-N	mg/L	0.02		0.08	0.02		0.14	0.08			0.09	0.07
PO4-P	mg/L	0.1		0.13	0.18		0.13	0.1			0.05	0.15
Fe	mg/L			2.59				2.44			2.07	
Mn	mg/L			0.484				0.05			0.155	
TSS	mg/L			7				9	2		2	

Table TA-7 (cont.)

Station		TA25	TA25	TA25
Sampling Date		9/5/96	9/12/96	10/3/96
Sampling Time		10:40 AM	9:20 AM	12:10 PM
Total Water Depth	ft		4	2
Depth of Sample	ft		2	1
Air Temperature	°C	26	26	25
Water Temperature	°C	23.7	24	23
pH	s.u.	6.64	7.24	7.24
Dissolved Oxygen	mg/L	5.5	6.1	9.8
Flow	cfs*			
Conductivity	mmhos	40	70	75
Cond at 25 °C	mmhos	41	71	78
Turbidity	ntu		16	10
BOD5	mg/L		0.7	0.7
NH3-N	mg/L		0.015K	0.015K
TKN	mg/L		0.33	0.15K
NO2+NO3-N	mg/L		0.15	0.1
PO4-P	mg/L		0.07	0.09
Fe	mg/L			1.64
Mn	mg/L			0.041
TSS	mg/L			1

Table TA-8
Tallapoosa River Basin Public Water Supply Intake Data

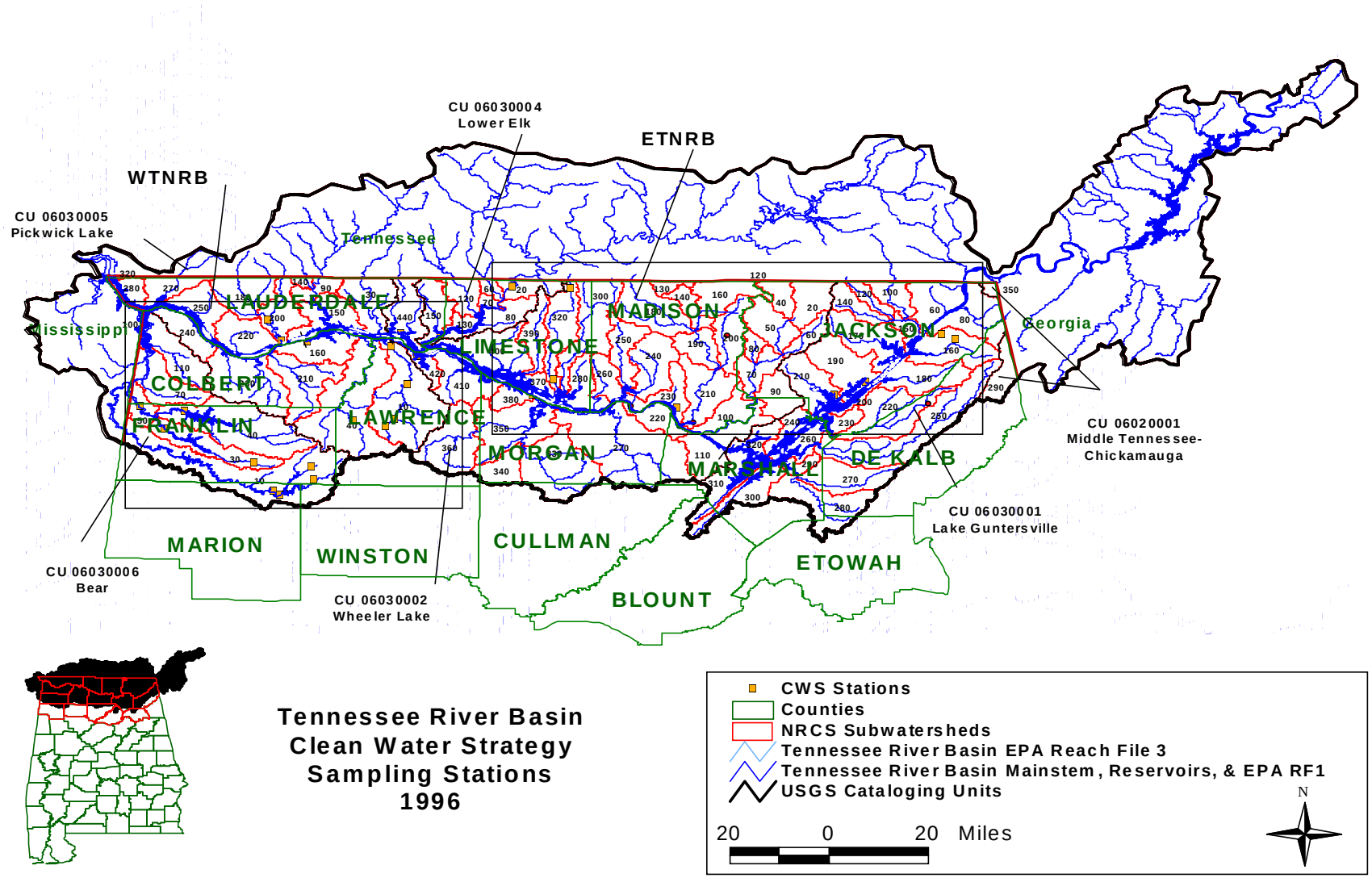
Station	**TA26**			**TA26**		
Date	6/6/96			8/6/96		
Time	12:50 PM			13:25		
NO_2-NO_3	0.020	mg/L		0.003	mg/L	
TOC	6.64	mg/L		3.96	mg/L	
Alkalinity	17	mg/L		22	mg/L	
Specific Conductance	-	um/cm		-	um/cm	
Turbidity	-	NTUs		-	NTUs	
1,2-Dibromo-3-chloropropane	0.0200	ug/L	U	0.0200	ug/L	U
Ethylene dibromide	0.0200	ug/L	U	0.0200	ug/L	U
1,1,1,2-Tetrachloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1,1-Trichloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1,2,2-Tetrachloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1,2-Trichloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloropropene	0.5000	ug/L	U	0.5000	ug/L	U
1,2,3-Trichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U
1,2,3-Trichloropropane	0.5000	ug/L	U	0.5000	ug/L	U
1,2,4-Trimethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
1,2-Dichloroethane	0.5000	ug/L	U	0.5000	ug/L	U
1,2-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U
1,3,5-Trimethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
1,3-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U
1,3-Dichloropropene	0.5000	ug/L	U	0.5000	ug/L	U
2,2-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U
Tetrachlorethylene	0.5000	ug/L	U	0.5000	ug/L	U
Bromobenzene	0.5000	ug/L	U	0.5000	ug/L	U
Bromochloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Bromodichloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Benzene	0.5000	ug/L	U	0.5000	ug/L	U
Bromomethane	0.5000	ug/L	U	0.5000	ug/L	U
cis-1,2-Dichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U
Chlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U
Chlorodibromomethane	0.5000	ug/L	U	0.5000	ug/L	U
Chloroethane	0.5000	ug/L	U	0.5000	ug/L	U
Bromoform	0.5000	ug/L	U	0.5000	ug/L	U
Chloroform	0.5000	ug/L	U	0.5000	ug/L	U
Chloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Carbon tetrachloride	0.5000	ug/L	U	0.5000	ug/L	U
Dibromomethane	0.5000	ug/L	U	0.5000	ug/L	U
Dichlorodifluoromethane	0.5000	ug/L	U	0.5000	ug/L	U
Dichloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Ethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
Fluorotrichloromethane	0.5000	ug/L	U	0.5000	ug/L	U
Hexachlorobutadiene	0.5000	ug/L	U	0.5000	ug/L	U
Isopropylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
m-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U
m & p Xylene	0.5000	ug/L	U	0.5000	ug/L	U
Naphthalene	0.5000	ug/L	U	0.5000	ug/L	U
n-Butylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
n-Propylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
o-Chlorotoluene	0.5000	ug/L	U	0.5000	ug/L	U
o-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U

Table TA-8 (cont.)

Station	TA26			TA26		
o-Xylene	0.5000	ug/L	U	0.5000	ug/L	U
p-Chlorotoluene	0.5000	ug/L	U	0.5000	ug/L	U
p-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U
p-Isopropyltoluene	0.5000	ug/L	U	0.5000	ug/L	U
Secbutylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
Styrene	0.5000	ug/L	U	0.5000	ug/L	U
t-1,2-Dichloroehtylene	0.5000	ug/L	U	0.5000	ug/L	U
Tertbutylbenzene	0.5000	ug/L	U	0.5000	ug/L	U
Trichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U
Toluene	0.5000	ug/L	U	0.5000	ug/L	U
Vinyl Chloride	0.5000	ug/L	U	0.5000	ug/L	U
Diquat	0.440	ug/L	U	0.440	ug/L	U
2,4-D	0.0500	ug/L	U	0.0500	ug/L	U
Dalapon	1.3000	ug/L	U	1.3000	ug/L	U
Dicamba	0.8100	ug/L	U	0.8100	ug/L	U
Dinoseb	0.1900	ug/L	U	0.1900	ug/L	U
Pentachlorophenol	0.0760	ug/L	U	0.0760	ug/L	U
Picloram	0.1400	ug/L	U	0.1400	ug/L	U
Silvex	0.0400	ug/L	U	0.0400	ug/L	U

Tennessee River Basin

Figure TN-1



Tennessee River Basin
Clean Water Strategy
Sampling Stations
1996

Figure TN-2

ETNRB

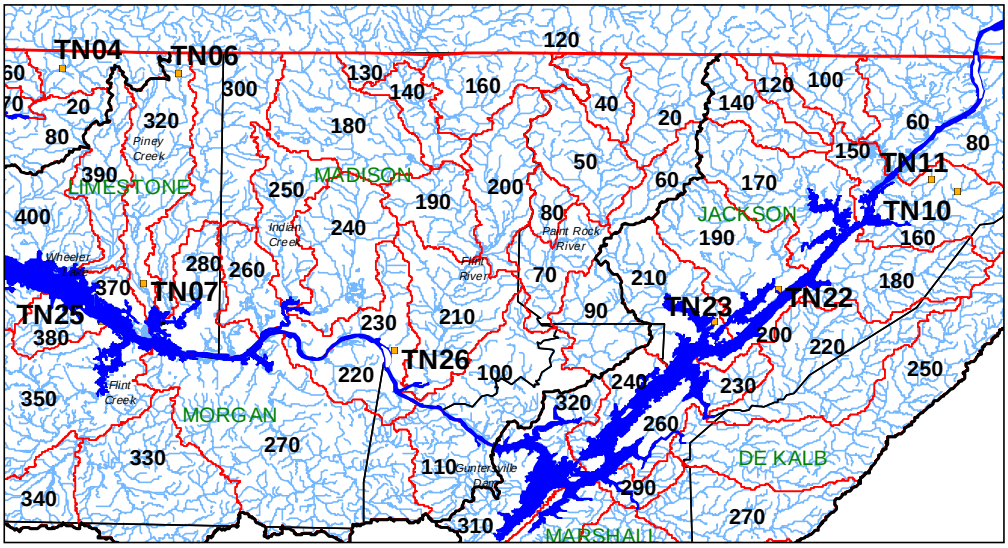


Figure TN-3

WTNRB

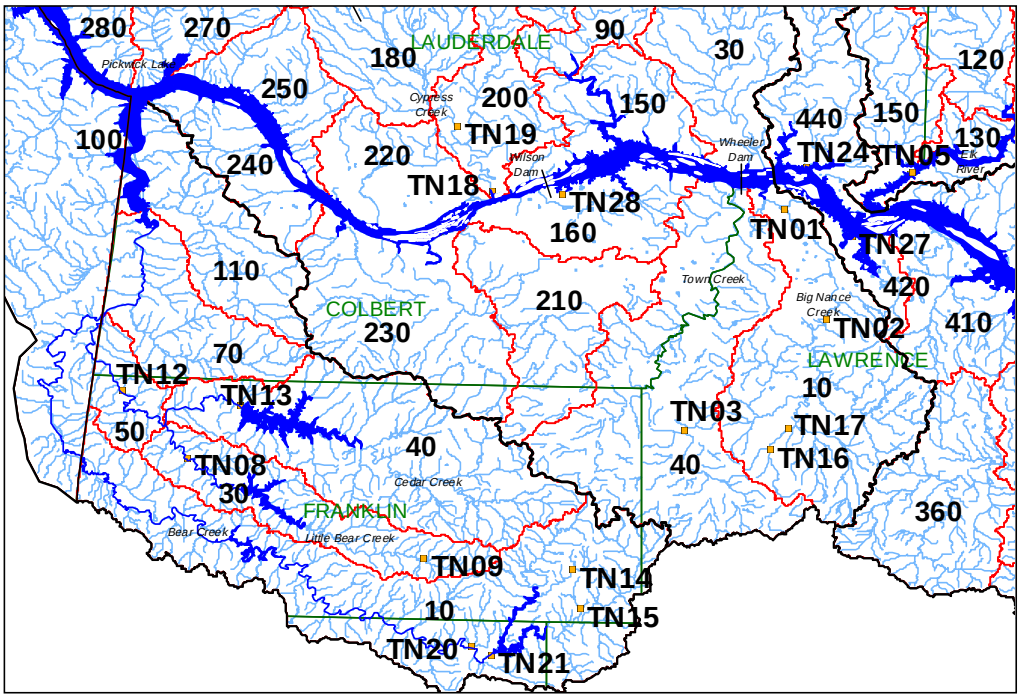
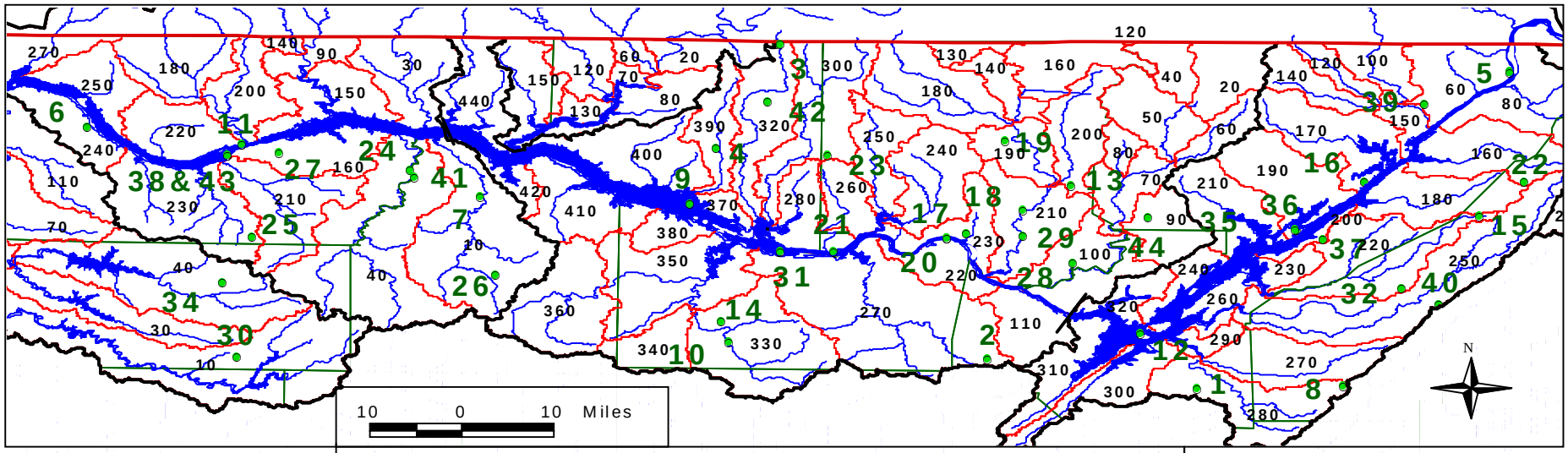


Figure TN-4



TNRB Municipal NPDES Dischargers

1 Albertville Eastside WWTP
2 Arab Gilliam Creek WWTP
3 Ardmore WWTP
4 Athens WWTP
5 Bridgeport Lagoon
6 Cherokee WWTP
7 Courtland WWTP
8 Crossville Industrial Park WWTP
9 Decatur Dry Creek WWTP
10 Falkville HCR Lagoon
11 Florence Cypress Creek WWTP
12 Florence Cypress Creek WWTP
13 Gurley WWTP
14 Hartselle WWTP
15 Henagar WWTP
16 Hollywood Lagoon
17 Huntsville Aldridge CreekWWTP
18 Huntsville Big Cove Creek WWTP
19 Huntsville Chase (#3) WWTP
20 Huntsville Spring Branch WWTP
21 Huntsville West Area WWTP
22 Ider Housing Project WWTP
23 Knox Creek Plantation WWTP
24 Leighton WWTP
25 Littleville WWTP
26 Moulton WWTP
27 Muscle Shoals WWTP
28 New Hope Lagoon
29 Owens Cross Roads WWTP
30 Phil Campbell WWTP
31 Priceville WWTP
32 Rainsville WWTP
33 Red Bay WWTP
34 Russellville WWTP
35 Scottsboro Goosepond WWTP
36 Scottsboro Southside WWTP
37 Section WWTP
38 Sheffield WWTP
39 Stevenson WWTP
40 Sylvania Industrial Park WWTP
41 Town Creek WWTP
42 Town of Elkmont lagoon
43 Tuscumbia WWTP
44 Woodville WWTP

Figure TN-5

East Tennessee River Basin
Semi-Public/Private NPDES Dischargers

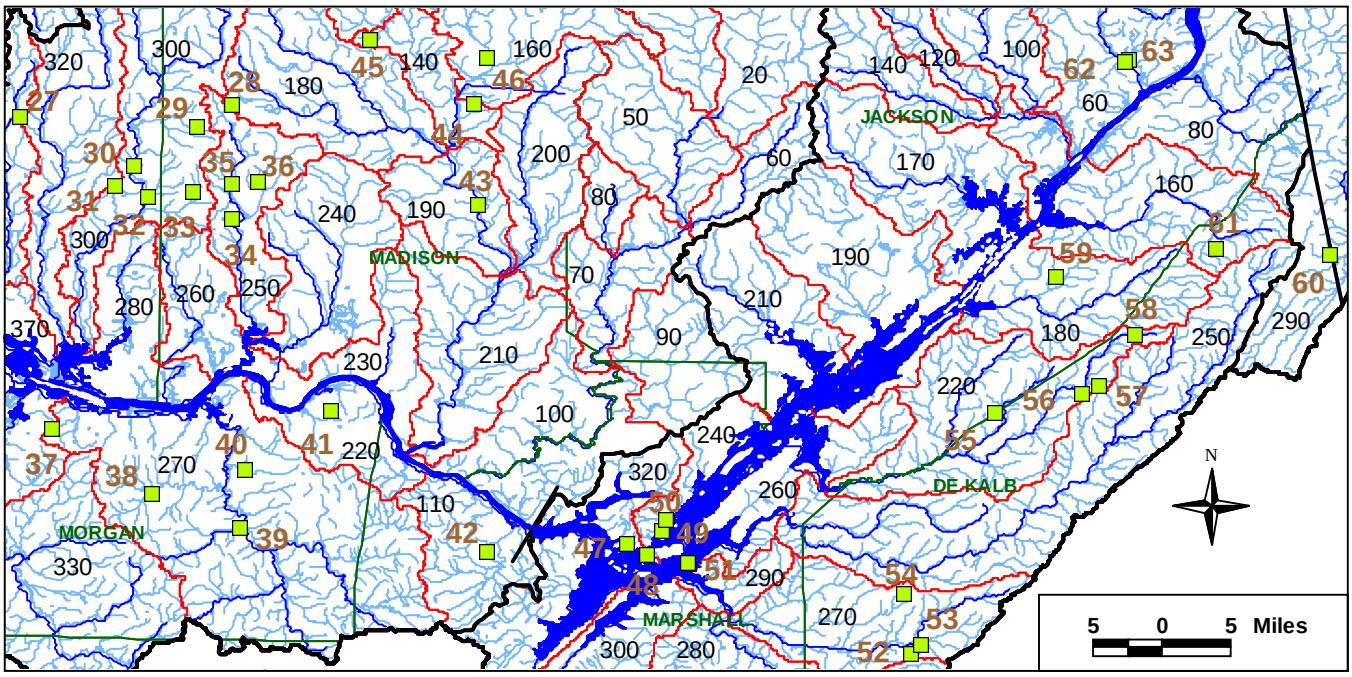


Figure TN-6

West Tennessee River Basin
Semi-Public/Private NPDES Dischargers

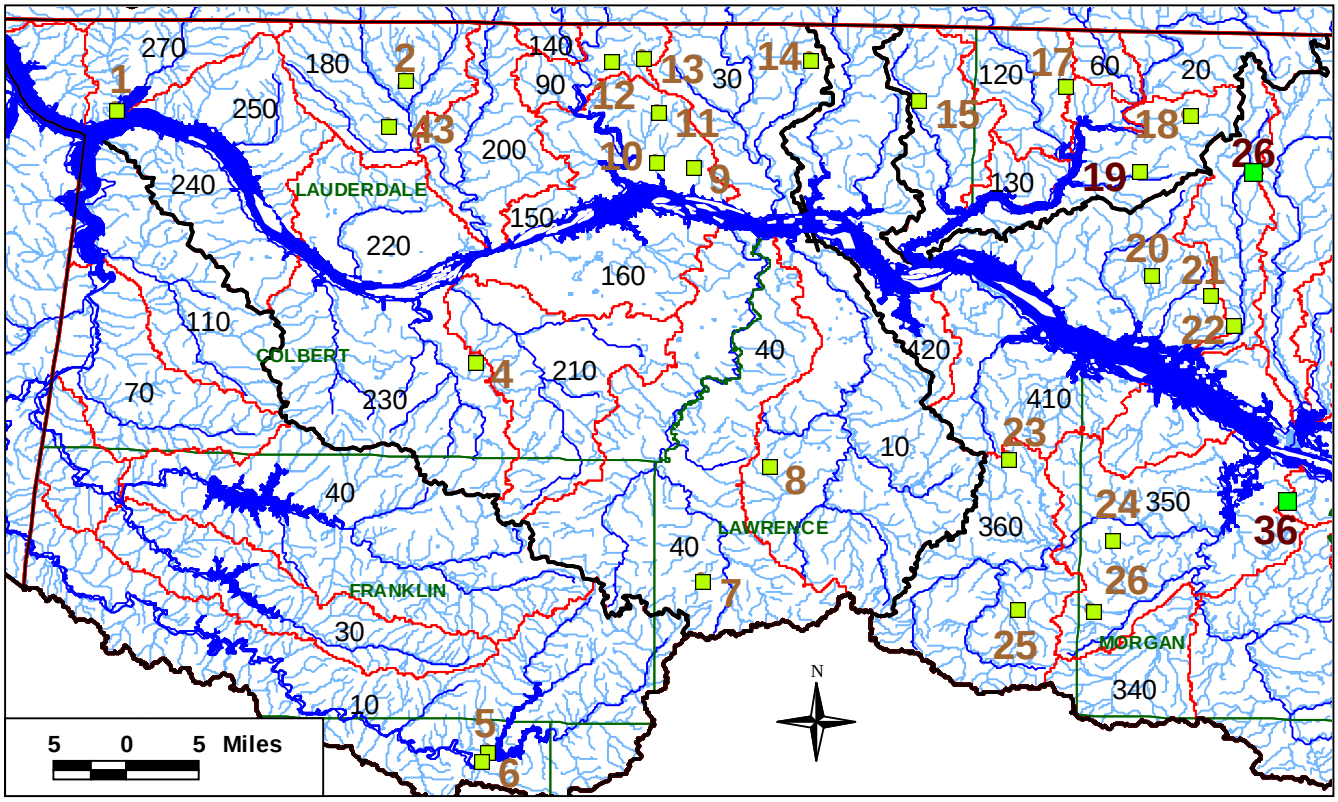
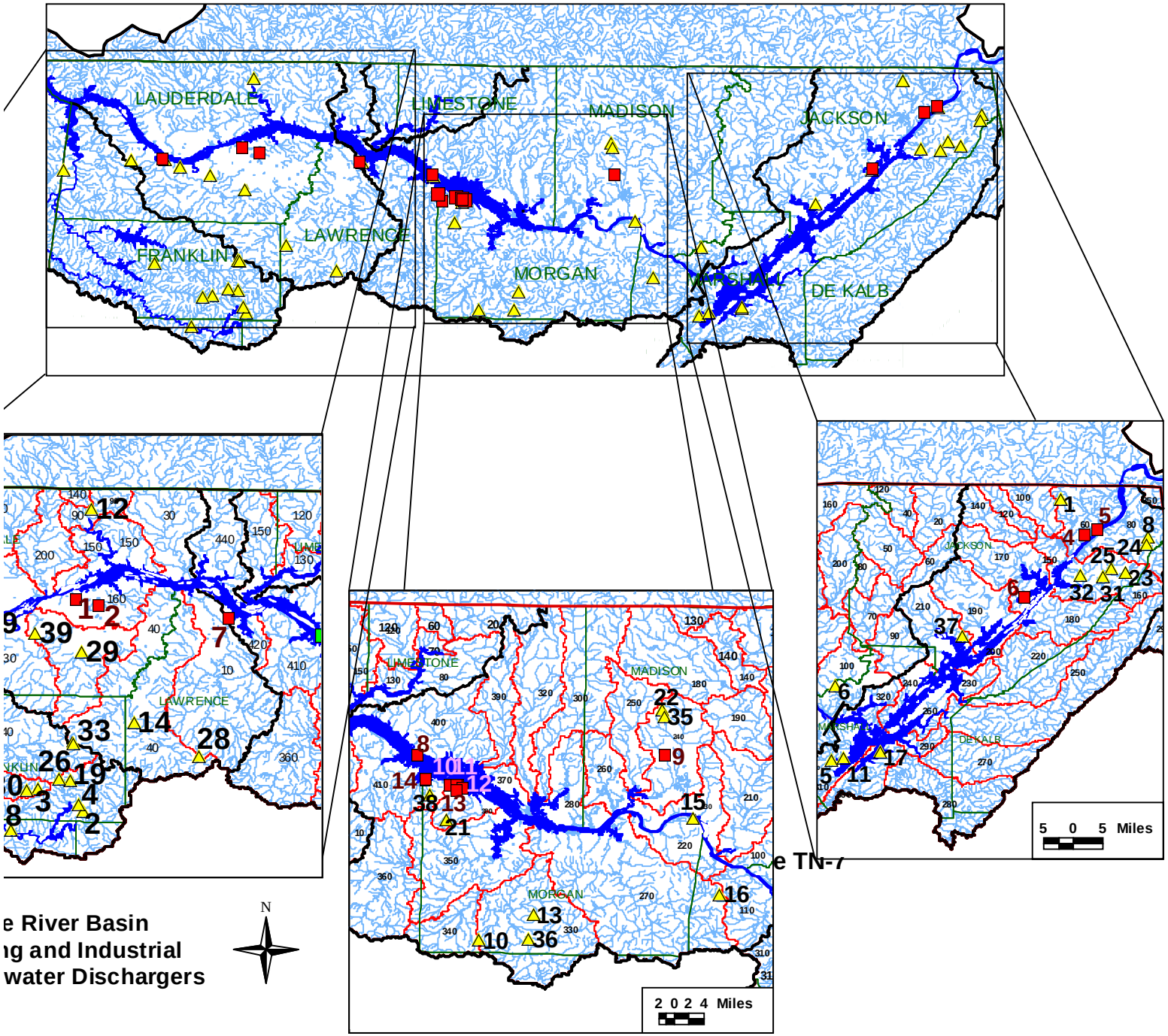


Figure TN-5 & TN-6 (cont)

Tennessee River Basin
Semi-Public/Private NPDES Dischargers

1 Waterloo High School
2 Cloverdale School
3 Central School
4 Colbert Heights School
5 Phillips Elementary & High School
6 Gerald Metals Inc.
7 Mt. Hope School
8 Hatton Schools
9 Brooks High School
10 Brooks Elementary School
11 Lauderdale Christian Nursing Home
12 El Reposo Sanitarium
13 Rogers School
14 Lexington Schools
15 Anderson Schools
16 Hillwood Apartments
17 West Limestone School
18 Elkmont Rural Willage
19 Owens School
20 Reid School
21 Tanner High School
22 Lawson Trailer Park Lagoon
23 East Lawrence School
24 Alabama Sheriff's Boys Ranch
25 Speake Schools
26 Danville High School
27 Piney Chapel Jr. High School
28 Sparkman High School
29 Harvest School
30 Limestone Correctional Facility
31 East Limestone School
32 East Limestone School
33 Hunters Crossing
34 Mountain View Trailer Court
35 Monrovia School
36 Stoney Creek WWTP
37 Priceville School
38 Crosscreek Subdivision
39 Brewer High School
40 Cotaco School
41 Sherbrooke Utilities Inc.
42 Union grove Junior High School
43 Central School
44 Buckhorn High School
45 Hazel Green School
46 McRae's Launderama & MHP
47 Claysville Junior High School
48 Gunter's Landing Lagoon
49 Lakeside Resort WWTP
50 River Bend Marina
51 Lake Guntersville State Park
52 Crossville High School
53 Crossville Healthcare Inc. STP
54 Geraldine High School
55 Northeast Alabama State Jr. College
56 Sylvania High School
57 Sylvania Low Rent Housing
58 Henagar Housing Project
59 Dover Mills STP
60 I-59 Welcome Center
61 Ider High School
62 Camp Maranatha
63 North Jackson Hospital STP

Figure TN-7



e TN-7

e River Basin
ng and Industrial
water Dischargers

N

Figure TN-7 (cont.)

Tennessee River Basin
Mining NPDES Dischargers

1 AL Select Inc.
2 AL Land & Mineral Corp.-7500 Mine
3 AL Land & Mineral Corp.-Spruce Pine Washer
4 AL Land & Mineral Corp.-Warhurst Mine
5 APAC-Alabama Inc.-Lang Sand Plant
6 APAC-Alabama Inc.-Whitaker Pit
7 Bar Coal Inc.-Bledsoe Mine #1
8 Bar Coal Inc.-Higdon Mine
9 Black Eagle Minerals LLC
10 Blount Springs Sand & Gravel
11 C&H Mining Co. Inc.
12 Clanton Classic Stone
13 Faulkville Quarry Jim Gipson
14 Flatrock Mining Corp., Inc.
15 General Sahle Products Corp.-Madison Co. Clay Pit
16 General Shale Products Corp.-Marshall Co. Shale Pit
17 Guntersville Marine Inc.
18 Haley Bros. & Partridge Coal-Ford Mine
19 Holland Co., Inc.
20 Hoover Inc.-Allsboro Quarry
21 Hoover Inc.-Decatur Quarry
22 Hoover Inc.-Huntsville Quarry
23 Mountainbrook Coal Co., Inc.-Mine #1
24 Mountainbrook Coal Co., Inc.-Mine #2
25 Mountainbrook Coal Co., Inc.-Mine #3
26 North Alabama Sand & Gravel
27 Rogers Group Inc.-Belgreen Sand & Gravel Plant
28 Rogers Group Inc.-Moulton Quarry
29 Rogers Group Inc.-Tuscumbia Quarry
30 Spruce Pine Sand & Gravel Co., Inc
31 TVA-Fabius Coal Mines
32 TVA-Fabius Coal Preparation Plant
33 TVA-Reed Quarry
34 Vulcan Materials Co.-Cherokee Quarry
35 Vulcan Materials Co.-Huntsville Quarry
36 Vulcan Materials Co.-Lacon Quarry
37 Vulcan Materials Co.-Scottsboro Quarry
38 Vulcan Materials Co.-Trinity Quarry
39 Vulcan Materials Co.-Tuscumbia Quarry

Tennessee River Basin
Major Industrial NPDES Process Dischargers

1 Occidental Chemical
2 Reynolds Metals-Listerhill
3 TVA Colbert Steam Plant
4 Mead Container Corp.
5 TVA Widows Creek Plant
6 Bellefonte NPP
7 Champion International Corp.
8 Tennessee Browns Ferry NPP
9 Redstone Arsenal
10 Amoco Chemical Co.
11 3M Co.-Decatur
12 Solutia Inc.
13 Daikin America Inc.
14 Trico Steel Co.

Table TN-1
1996 Tennessee River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
TN01	Big Nance Creek	Lawrence Co. Rd. 70 at Red Bank (NE 1/4, S28, T3S, R8W).	34.765833	-87.37167
TN02	Big Nance Creek	Lawrence Co. Rd. 29 SW of Courtland (NE 1/4, S1, T5S, R8W).	34.64167	-87.325
TN03	Town Creek	Lawrence Co.Rd. 7 at Lackey Bridge (NE 1/4, S21, T6S, R9W).	34.517222	-87.48336
TN04	Elk River	AL Hwy 127 NW of Elkmont (SE 1/4, S11, T1S, R5W).	34.968055	-87.01806
TN05	Elk River	US Hwy 72.	34.80417	-87.2311
TN06	Piney Creek	Unnamed Limestone Co. Rd. S of Ardmore (SW 1/4, S9, T1S, R3W).	34.961944	-86.84889
TN07	Piney Creek	Limestone Co. Rd. 6 W of Belle Mina (SE 1/4, S25, T4S, R4W).	34.656944	-86.9005
TN08	Little Bear Creek	Franklin Co. Rd. 59 W of Phil Campbell (NW 1/4, S11, T8S, R12W).	34.48833	-88.03556
TN09	Little Bear Creek	Franklin Co. Rd. 23 NE of Red Bay (NW 1/4, S5, T7S, R14W).	34.37556	-87.7731
TN10	Kash Creek	AL Hwy 117 NW of Flat Rock (SE 1/4, S7, T3S, R9E)	34.790277	-85.725
TN11	Rocky Branch	Jackson Co. Rd. 81 NW of Flat Rock (NE 1/4, S2, T3S, R8E).	34.807888	-85.762527
TN12	Cedar Creek	Unnamed Franklin Co. Rd. NE of Pogo (SE 1/4, S9, T6S, R15W).	34.563055	-88.108333
TN13	Cedar Creek	Moved site to below dam.	34.54694	-87.9772
TN14	Turkey Creek	Moved to Co. Rd. 89 (AL Hwy. 243 SE of Trapptown (NE 1/4, S17, T8S, R10W)).	34.36306	-87.6069
TN15	Little Dice Branch	Franklin Co. Rd. 85 SW of Posey Mill (NE 1/4, S33, T8S, R10W).	34.31889	-87.5983
TN16	Borden Creek	Unnamed Lawrence Co. Rd. NW of Muck City (SW 1/4, S28, T6S, R8W).	34.49722	-87.3875
TN17	Borden Creek	Lawrence Co. Rd. 29 N of Muck City (SW 1/4, S15, T6S, R8W).	34.52139	-87.3664
TN18	Cypress Creek	Lauderdale Co. Rd. 16 NW of Florence (SE 1/4, S19, T2S, R11W).	34.78583	-87.6961
TN19	Cypress Creek	Moved to Hwy 20 Bridge.	34.858055	-87.73528
TN20	Bear Creek	At AL Hwy 172 Bridge.	34.2775	-87.719694
TN21	Bear Creek	At Upper Bear Creek Reservoir Dam.	34.268333	-87.698333
TN22	Tennessee River	Trend Station TVA 017009, Scottsboro, AL Hwy 35 Bridge, Scottsboro Intake	34.648889	-85.98583
TN23	Tennessee River	Northeast Morgan Co. Intake Trend Station TVA 17102	34.60389	-86.0767
TN24	Tennessee River	Champion International Corp. Intake Trend Station TVA 16900 R.M. 277	34.81167	-87.346389
TN25	Tennessee River	Muscle Shoals Intake Trend Station TVA 16912	34.603528	-86.961361
TN26	Tennessee River	Scottsboro US Hwy 35 Intake Trend Station TVA	34.560556	-86.539222
TN27	Tennessee River	Scottsboro North Sauty Intake Trend Station TVA 17101	34.735	-87.296111
TN28	Tennessee River	Arab Intake Trend Station TVA 17261	34.782222	-87.618888

Table TN-2
Tennessee River Basin Use Support

Station	Waterbody Name	From	To	Evaluated or Monitored	Support Status	Miles
TN01	Big Nance Creek	TN01	TN02	M	Full	12.6
TN02	Big Nance Creek	TN02	Muddy Fk	M	Partial	10.5
TN03	Town Creek	TN03	To spillway	M	Full	9.3
TN04	Elk River	TN04	To stateline	M	Full	3.3
TN05	Elk River	TN05	Anderson Cr	M	Full	14.8
TN06	Piney Creek	TN06	Its source	M	Full	4.8
TN07	Piney Creek	TN07	French Mill Cr	M	Full	8.7
TN08	Little Bear Creek	TN08	L. Bear Cr Res.	M	Full	7.4
TN09	Little Bear Creek	TN09	Its source	M	Full	6.8
TN10	Kash Creek	TN10	Its source	M	Full	3.3
TN11	Rocky Branch	TN11	Its source	M	Full	1.4
TN12	Cedar Creek	TN12	Turkey Cr	M	Full	6.6
TN13	Cedar Creek	TN13	To dam	M	Full	0.3
TN14	Turkey Creek	TN14	Its source	M	Full	3
TN15	Little Dice Branch	TN15	Its source	M	Partial	3
TN16	Borden Branch	TN16	TN17	M	Full	2.5
TN17	Borden Creek	TN17	Its source	E	Full	5.9
TN18	Cypress Creek	TN18	TN19	M	Full	12
TN19	Cypress Creek	TN19	Middle Cypress Cr	M	Full	6.2
TN20	Bear Creek	TN20	TN21	M	Full	2.6
TN21	Bear Creek	TN21	To Dam	M	Full	0.4
TN22	Tennessee River	TN22	n/a	E	Full-(PWS data)	-
TN23	Tennessee River	TN23	n/a	E	Full-(PWS data)	-
TN24	Tennessee River	TN24	n/a	E	Full-(PWS data)	-
TN25	Tennessee River	TN25	n/a	E	Full-(PWS data)	-
TN26	Tennessee River	TN26	n/a	E	Full-(PWS data)	-
TN27	Tennessee River	TN27	n/a	E	Full-(PWS data)	-
TN28	Tennessee River	TN28	n/a	E	Full-(PWS data)	-

Table TN-3
Tennessee River Basin Industrial NPDES Process Wastewater

Index	NPDESPermit	Facility_Name	Latitude	Longitude
1	AL0000213	OCCIDENTAL CHEMICAL	34.77053	-87.63447
2	AL0000035	REYNOLDS METALS-LISTERHIL	34.75797	-87.58837
3	AL0003867	TVA COLBERT STEAM PLT	34.741	-87.8494
4	AL0022314	MEAD CONTAINERBOARD*	34.86779	-85.78705
5	AL0003875	TVA WIDOWS CREEK PLT	34.881667	-85.754444
6	AL0024635	TVA BELLEFONTE NPP	34.714167	-85.930278
7	AL0000396	CHAMPION INT'L CORP	34.73234	-87.31709
8	AL0022080	TVA BROWNS FERRY NPP	34.698889	-87.116944
9	AL0000019	REDSTONE ARSENAL	34.69852	-86.62799
10	AL0000108	AMOCO CHEMICAL COMPANY	34.64018	-87.05219
11	AL0000205	3M COMPANY-DECATUR	34.63958	-87.03833
12	AL0000116	SOLUTIA INC	34.634444	-87.029722
13	AL0064351	DAIKIN AMERICA INC.	34.63016	-87.0385
14	AL0070068	TRICO STEEL COMPANY	34.650833	-87.101667

* not a major process wastewater permit

Table TN-4
Tennessee River Basin Semi-Public/Private NPDES Dischargers

Index	NPDES Permit	Facility	Latitude	Longitude
1	AL0047945	WATERLOO HIGH SCHOOL	34.917464	-88.06545
2	AL0048399	CLOVERDALE SCHOOLS	34.945464	-87.779561
3	AL0048810	CENTRAL SCHOOL	34.764822	-86.454122
4	AL0050920	COLBERT HEIGHTS SCHOOLS	34.665833	-87.709167
5	AL0054593	PHILLIPS ELEMENTARY & HIGH SCHOOL	34.277206	-87.696914
6	AL0049433	GERALD METALS INC.	34.267042	-87.702089
7	AL0043044	MT. HOPE SCHOOL	34.447431	-87.482125
8	AL0043036	HATTON SCHOOLS	34.560619	-87.416561
9	AL0057126	BROOKS HIGH SCHOOL	34.858736	-87.492714
10	AL0047953	BROOKS ELEMENTARY SCHOOL	34.863978	-87.529181
11	AL0056901	LAUDERDALE CHRISTIAN NURSING HOME	34.914472	-87.527428
12	AL0056715	EL REPOSO SANITARIUM	34.964244	-87.57395
13	AL0057134	ROGERS SCHOOL	34.969003	-87.541106
14	AL0047937	LEXINGTON SCHOOLS	34.966997	-87.375619
15	AL0047929	ANDERSON SCHOOLS	34.924978	-87.267775
16	AL0050466	HILLWOOD APARTMENTS	34.923747	-87.267506
17	AL0049387	WEST LIMESTONE SCHOOL	34.940364	-87.122283
18	AL0056545	ELKMONT RURAL VILLAGE	34.910153	-86.998792
19	AL0055514	OWENS SCHOOL	34.854639	-87.047131
20	AL0055522	REID SCHOOL	34.752261	-87.036803
21	AL0055506	TANNER HIGH SCHOOL	34.731558	-86.976922
22	AL0058670	LAWSON TRAILER PARK LAGOON	34.702075	-86.954872
23	AL0054879	EAST LAWRENCE SCHOOL	34.569186	-87.179653
24	AL0060097	ALABAMA SHERIFF'S BOYS RANCH	34.486944	-87.076111
25	AL0043028	SPEAKE SCHOOLS	34.418889	-87.170278
26	AL0051870	DANVILLE HIGH SCHOOL	34.417617	-87.094967
27	AL0044644	PINEY CHAPEL JR HIGH SCHOOL	34.855564	-86.935708
28	AL0051721	SPARKMAN HIGH SCHOOL	34.869489	-86.710997
29	AL0051705	HARVEST SCHOOL	34.847361	-86.749042
30	AL0048461	LIMESTONE CORRECTIONAL FACILITY	34.804722	-86.815278
31	AL0067814	EAST LIMESTONE SCHOOL	34.782964	-86.835414
32	AL0055484	EAST LIMESTONE SCHOOL	34.771944	-86.800278
33	AL0055158	HUNTERS CROSSING WWTP	34.7781	-86.7527
34	AL0058017	MOUNTAIN VIEW TRAILER COURT	34.748522	-86.711317
35	AL0068004	MONROVIA SCHOOL	34.786469	-86.712461
36	AL0066478	STONEY CREEK WWTP	34.7887	-86.683853
37	AL0051888	PRICEVILLE SCHOOL	34.528333	-86.901111
38	AL0042943	CROSSCREEK SUBDIVISION	34.458611	-86.795
39	AL0051853	BREWER HIGH SCHOOL	34.423333	-86.703889
40	AL0051861	COTACO SCHOOL	34.485	-86.697778
41	AL0068241	SHERBROOKE UTILITIES INC.	34.546575	-86.608178
42	AL0051764	UNION GROVE JUNIOR HIGH SCHOOL	34.397222	-86.443611
43	AL0058220	CENTRAL SCHOOL	34.900797	-87.794506
44	AL0051691	BUCKHORN HIGH SCHOOL	34.870619	-86.456669
45	AL0066354	HAZEL GREEN SCHOOL	34.939489	-86.566083
46	AL0060089	MCRAE'S LAUNDERAMA AND MHP	34.919386	-86.442744
47	AL0051756	CLAYSVILLE JUNIOR HIGH SCHOOL	34.405556	-86.296389
48	AL0049719	GUNTER'S LANDING LAGOON	34.394722	-86.275556
49	AL0042960	LAKESIDE RESORT WWTP	34.418978	-86.259725
50	AL0042366	RIVER BEND MARINA	34.431389	-86.255833
51	AL0024627	LAKE GUNTERSVILLE STATE PARK	34.386442	-86.231781
52	AL0051012	CROSSVILLE HIGH SCHOOL STP	34.289717	-85.996353

Table TN-4 (cont.)

53	AL0048402	CROSSVILLE HEALTH CARE INC. STP	34.300681	-85.9878
54	AL0050989	GERALDINE HIGH SCHOOL STP	34.353056	-86.005278
55	AL0048615	NORTHEAST ALABAMA STATE JR COLLEGE	34.544408	-85.909336
56	AL0051004	SYLVANIA HIGH SCHOOL STP	34.564992	-85.816644
57	AL0048534	SYLVANIA LOW RENT HOUSING PROJECT	34.571833	-85.798081
58	AL0049450	HENAGAR HOUSING PROJECT STP	34.627761	-85.761681
59	AL0044962	DOVER MILLS STP	34.687125	-85.844264
60	AL0027821	I-59 WELCOME CENTER	34.712222	-85.556944
61	AL0043851	IDER HIGH SCHOOL STP	34.718269	-85.6751
62	AL0054241	CAMP MARANATHA	34.916667	-85.767778
63	AL0056197	NORTH JACKSON HOSPITAL STP	34.914442	-85.771489

Table TN-5
Tennessee River Basin Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude	Treatment
1	AL0020192	Albertville Eastside WWTP	Turkey Creek	34.268889	-86.191667	Advanced
2	AL0056626	Arab Gilliam Creek WWTP	Gilliam Creek	34.331111	-86.523056	Advanced
3	AL0023329	Ardmore WWTP	Piney Creek	34.986111	-86.854167	Secondary
4	AL0020206	Athens WWTP	Town Creek	34.771944	-86.95	Advanced
5	AL0020991	Bridgeport Lagoon	Tennessee River	34.930278	-85.696389	Secondary
6	AL0022594	Cherokee WWTP	Tennessee River	34.814444	-87.941667	Secondary
7	AL0048585	Courtland WWTP	Big Nance Creek	34.668056	-87.32	Secondary
8	AL0061549	Crossville Industrial Park WWTP	Groundwater	34.275	-85.958333	Advanced
9	AL0048593	Decatur Dry Creek WWTP	Tennessee River	34.636111	-86.985833	Secondary
10	AL0021113	Falkville HCR Lagoon	Flint Creek	34.3675	-86.928889	Secondary
11	AL0023884	Florence Cypress Creek WWTP	Tennessee River	34.777222	-87.696944	Secondary
12	AL0020150	Guntersville WWTP	Tennessee River	34.3725	-86.294167	Secondary
13	AL0027685	Gurley WWTP	Sand Branch	34.692778	-86.388889	Advanced
14	AL0054674	Hartselle WWTP	Shoal Creek	34.408333	-86.941667	Secondary
15	AL0056057	Henagar WWTP	South Sauty Creek	34.62953	-85.746083	Advanced
16	AL0062944	Hollywood Lagoon	Tennessee River	34.700556	-85.926111	Secondary
17	AL0056855	Huntsville Aldridge Creek WWTP	Tennessee River	34.591667	-86.555556	Secondary
18	AL0055042	Huntsville Big Cove WWTP	Flint River	34.642222	-86.466944	Secondary
19	AL0057428	Huntsville Chase (#3) WWTP	Flint River	34.787222	-86.494444	Secondary
20	AL0058394	Huntsville Spring Branch WWTP	Tennessee River	34.582778	-86.586111	Secondary
21	AL0049531	Huntsville West Area WWTP	Tennessee River	34.552222	-86.762222	Secondary
22	AL0047562	Ider Housing Project WWTP	Koger Creek	34.7	-85.675556	Secondary
23	AL0055450	Knox Creek Plantation WWTP	Knox Creek	34.756667	-86.773889	Advanced
24	AL0056847	Leighton WWTP	Town Creek	34.725278	-87.433889	Advanced
25	AL0056278	Littleville WWTP	Stinking Bear Creek	34.584722	-87.6825	Advanced
26	AL0020672	Moulton WWTP	Crow Branch	34.505278	-87.298889	Advanced
27	AL0024180	Muscle Shoals WWTP	Pond Creek	34.761944	-87.639167	Secondary
28	AL0023761	New Hope Lagoon	Paint Rock River	34.531667	-86.3875	Secondary
29	AL0053228	Owens Cross Roads WWTP	Flint River	34.586944	-86.466111	Secondary
30	AL0056812	Phil Campbell WWTP	Mill Creek	34.336944	-87.705833	Advanced
31	AL0060577	Priceville WWTP	Tennessee River	34.553333	-86.849167	Secondary
32	AL0042765	Rainsville WWTP	Piney Creek	34.479444	-85.868056	Advanced
33	AL0021245	Red Bay WWTP	Bear Creek	34.47	-88.141667	Secondary
34	AL0027987	Russellville WWTP	Mud Creek	34.49	-87.728056	Advanced
35	AL0054461	Scottsboro Goosepond WWTP	Tennessee River	34.573611	-86.078333	Secondary
36	AL0031372	Scottsboro Southside WWTP	Tennessee River	34.6	-86.033333	Secondary
37	AL0053619	Section WWTP	UT to Tennessee River	34.580833	-85.9925	Secondary
38	AL0050121	Sheffield WWTP	Tennessee River	34.758333	-87.719333	Secondary
39	AL0021351	Stevenson WWTP	Crow Creek	34.861389	-85.831389	Secondary
40	AL0048631	Sylvania Industrial Park WWTP	Chaney Creek	34.444444	-85.808333	Advanced
41	AL0066974	Town Creek WWTP	Tennessee River	34.710556	-87.426111	Secondary
42	AL0068233	Town Of Elkmont Lagoon	Elk River	34.868056	-86.868056	Secondary
43	AL0057100	Tuscumbia WWTP	Tennessee River	34.756389	-87.721111	Secondary
44	AL0060526	Woodville WWTP	Yellow Branch	34.625	-86.266667	Advanced

Table TN-6
Tennessee River Basin Mining NPDES Dischargers

Index	Company	Facility	NPDES Permit	Latiitude	Longitude	NRCS SUBWATERSHED
1	AL Select Inc.	Bledsoe Mine #1	AL0069647	34.96	-85.845556	06030001-060
2	Alabama Land and Mineral Corp.	7500 Mine	AL0031089	34.333333	-87.620833	06030006-010
3	Alabama Land and Mineral Corp.	Spruce Pine Washer	AL0031135	34.38	-87.713889	06030006-040
4	Alabama Land and Mineral Corp.	Warhurst Mine	AL0029734	34.348056	-87.630556	06030006-010
5	APAC-Alabama Inc./Ashburn & Gray Division	Lang Sand Plant	AL0061263	34.3275	-86.4	06030001-310
6	APAC-Alabama Inc./Ashburn & Gray Division	Whitaker Pit	AL0068438	34.508333	-86.391667	06030002-100
7	Bar Coal Inc.	Bledsoe Mine No.1	AL0069124	34.958611	-85.845833	06030001-060
8	Bar Coal Inc.	Higdon Mine	AL0058505	34.86638889	-85.634167	06030001-080
9	Black Eagle Minerals L.C.	Pride Transloader	AL0041092	34.725	-87.8	06030005-230
10	Blount Springs Sand and Gravel Inc.	Mack Creek Quarry	AL0070718	34.339444	-86.993889	06030002-330
11	C & H Mining Company Inc.	Plant #1	AL0000060	34.335	-86.370278	06030001-310
12	Clanton Classic Stone	Clanton Classic Stone	AL0070181	34.965278	-87.602778	06030005-090
13	Faulkville Quarry Jim Gipson dba	Faulkville Quarry	AL0067709	34.389722	-86.887778	06030002-330
14	Flatrock Mining Corp., Inc.	Limestone Plus	AL0070092	34.517222	-87.515278	06030005-040
15	General Shale Products Corporation	Madison County Clay Pit	AL0062707	34.579722	-86.570556	06030002-230
16	General Shale Products Corporation	Marshall County Shale Pit	AL0058360	34.430278	-86.519722	06030002-110
17	Guntersville Marine Inc.	Guntersville Terminal & Harbor Serv	AL0048755	34.348611	-86.281111	06030001-300
25	Haley Brothers & Partridge Coal Inc.	Ford Mine	AL0069396	34.293611	-87.769722	06030006-010
19	Holland Company Inc.	Russellville Quarry	AL0022519	34.395833	-87.645833	06030006-040
20	Hoover Inc.	Allsboro Quarry	AL0040894	34.716667	-88.116667	06030006-070
21	Hoover Inc.	Decatur Quarry	AL0059960	34.575833	-87.059167	06030002-380
22	Hoover Inc.	Huntsville Quarry	AL0054933	34.791667	-86.633333	06030002-240
23	Mountainbrook Coal Company Inc.	Mine #1	AL0062693	34.781944	-85.688333	06030001-160
24	Mountainbrook Coal Company Inc.	Mine #2	AL0063975	34.85	-85.635833	06030001-080
25	Mountainbrook Coal Company Inc.	Mine #3	AL0067822	34.793611	-85.722222	06030001-080
26	North Alabama Sand & Gravel Inc.	EDSU Sand Plant	AL0068900	34.399722	-87.671667	06030006-040
27	Rogers Group Inc.	Belgreen Sand & Gravel Plant	AL0062464	34.466667	-87.868056	06030006-040
28	Rogers Group Inc.	Moulton Quarry	AL0066991	34.448333	-87.379167	06030005-010
29	Rogers Group Inc.	Tuscumbia Quarry	AL0024384	34.666667	-87.623889	06030005-210

Table TN-6 (cont.)

Index	Company	Facility	NPDES Permit	Latiitude	Longitude	NRCS SUBWATERSHED
30	Spruce Pine Sand & Gravel Company	Spruce Pine Pit	AL0059081	34.376944	-87.738611	06030006-030
31	Tennessee Valley Authority	Fabius Coal Mines	AL0042404	34.770833	-85.742778	06030001-160
32	Tennessee Valley Authority	Fabius Coal Preparation Plant	AL0000469	34.775	-85.795833	06030001-160
33	Tennessee Valley Limestone Inc.	Reed Quarry	AL0070262	34.473333	-87.641944	06030006-040
34	Vulcan Materials Company	Cherokee Quarry	AL0056391	34.744444	-87.933333	06030005-240
35	Vulcan Materials Company	Huntsville Quarry	AL0055964	34.778611	-86.629167	06030002-240
36	Vulcan Materials Company	Lacon Quarry	AL0041891	34.341944	-86.897778	06030002-330
37	Vulcan Materials Company	Scottsboro Quarry	AL0000256	34.627778	-86.083333	06030001-190
38	Vulcan Materials Company	Trinity Quarry	AL0041921	34.625	-87.093056	06030002-410
39	Vulcan Materials Company	Tuscumbia Quarry	AL0000264	34.704722	-87.722222	06030005-210

Table TN-7
Tennessee River Basin Data

Station		TN01	TN01	TN01	TN01	TN01	TN02	TN02	TN02	TN02	TN02	TN03
Sampling Date		6/20/96	7/17/96	8/15/96	9/4/96	10/22/96	6/20/96	7/18/96	8/15/96	9/4/96	10/22/96	6/20/96
Sampling Time		2:12 PM	11:59 AM	2:52 PM	2:39 PM	3:06 PM	3:58 PM	9:36 AM	2:25 PM	3:04 PM	3:39 PM	3:04 PM
Total Water Depth	ft	2	1.5	1	4	2	1.5	2	1	2	2	2
Depth of Sample	ft	0	0.75	0.5	2	1	0	1	1	1	1	0
Air Temperature	°C	32.7	28		25	21	34.4	26		26	20	33.3
Water Temperature	°C	29	27		25	17	29	26		25	16	30.8
pH	s.u.	7.95	6.66	6.7	7.49	7.34	7.74	7.05	6.48	7.41	7.57	7.91
Dissolved Oxygen	mg/L	12.2	11.2	10.3	11	10.03	7.8	4.5	6.7	10	6.8	9.3
Flow	cfs*											
Conductivity	mmhos					218					280	
Cond at 25 °C	mmhos					257					338	
Turbidity	ntu											
BOD5	mg/L	1.4		0.1K		1.4	1.6		1.2		1.1	2.85
NH3-N	mg/L	0.008		0.012		0.1K	0.034		0.099		0.1K	0.005K
TKN	mg/L	0.158		0.26		0.17	0.252		0.421		0.15K	0.253
NO2+NO3-N	mg/L	1.591		0.919		1.8	1.312		0.952		1.5	0.078
PO4-P	mg/L	0.05K		0.108		0.05K	0.05K		0.088		0.06	0.084
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN03	TN03	TN03	TN03	TN04	TN04	TN04	TN04	TN04	TN05	TN05
Sampling Date		7/31/96	8/29/96	9/24/96	10/22/96	6/20/96	7/16/96	8/28/96	9/4/96	10/23/96	6/20/96	7/18/96
Sampling Time		2:20 PM	3:02 PM	2:06 PM	4:20 PM	12:15 PM	12:42 PM	11:45 AM	12:20 PM	3:06 PM	12:22 PM	12:45 PM
Total Water Depth	ft	2	1	2	2	7	10	10	10	10	6.5	6.5
Depth of Sample	ft	1	0.5	1	1	0	5	5	5	5	0	3.25
Air Temperature	°C	28	30	30	20	33.3	29	30	28	20	33.3	29
Water Temperature	°C	25	27	22.5	16	30.1	28	23	25	17	32	32
pH	s.u.	7.12	7.59	7.32	7.95	7.92	6.49	7.24	7.29	7.23	7.54	7.54
Dissolved Oxygen	mg/L	7.2	6	6.9	7.9	12.2	8.5	8.7	11.5	9.83	9.7	9.7
Flow	cfs*											
Conductivity	mmhos		357					405		170		
Cond at 25 °C	mmhos		344					421		201		
Turbidity	ntu		38					14.6		17		
BOD5	mg/L		1.4			1.6		0.6		1	5.5	
NH3-N	mg/L		0.015		0.1K	0.005K		0.015		0.1	0.005	
TKN	mg/L		0.26		0.15K	0.177		0.17		0.15K	0.507	
NO2+NO3-N	mg/L		0.67		1.1	0.854		0.74		1.51	0.018	
PO4-P	mg/L		0.18		0.05K	0.172		0.27		0.2	0.098	
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN05	TN05	TN05	TN06	TN06	TN06	TN06	TN06	TN07	TN07	TN07
Sampling Date		8/28/96	9/4/96	10/24/96	6/20/96	7/16/96	8/28/96	9/4/96	10/23/96	6/20/96	7/16/96	8/28/96
Sampling Time		1:42 PM	1:49 PM	2:14 PM	11:26 AM	4:14 PM	10:58 AM	11:42 AM	2:34 PM	10:03 AM	1:32 PM	10:25 AM
Total Water Depth	ft	5	7	10	1	1.5	2	2	2	2	2	2
Depth of Sample	ft	2.5	3.5	5	0	0.75	1	1	1	0	1	1
Air Temperature	°C	25	29	20	26.1	30	31	27	19	25.5	29	25
Water Temperature	°C	28	27	16	29	28	27	30	17	29.2	28	24
pH	s.u.	7.9	8.32	8.19	6.9	7.13	6.72	6.9	6.74	6.53	6.95	6.4
Dissolved Oxygen	mg/L	12	12.5	11.97	6.3	11.5	7	7.6	7.47	6.5	7.8	7.8
Flow	cfs*											
Conductivity	mmhos	405		110			472		115			168
Cond at 25 °C	mmhos	383		133			455		136			171
Turbidity	ntu	9.2		17.3			16.2		16.9			6.2
BOD5	mg/L	4		2	6.5		1.8		3	1.3		0.7
NH3-N	mg/L	0.015		0.1	0.119		0.015		0.1	0.013		0.015
TKN	mg/L	0.25		0.41	0.713		0.95		0.7	0.233		0.222
NO2+NO3-N	mg/L	0.03		9	4.55		4		3.2	0.933		0.62
PO4-P	mg/L	0.17		0.22	0.321		0.45		0.26	0.223		0.09
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN07	TN08	TN08	TN08	TN08	TN08	TN09	TN09	TN09	TN09	TN09
Sampling Date		10/23/96	6/19/96	7/25/96	8/29/96	9/24/96	10/31/96	6/19/96	7/25/96	8/29/96	9/24/96	10/31/96
Sampling Time		1:40 PM	12:26 PM	1:10 PM	11:06 AM	11:24 AM	11:30 AM	1:48 PM	2:02 PM	12:07 PM	9:26 AM	1:23 PM
Total Water Depth	ft		1.5	3	2	2.5	2	1	1	0.5	1	1
Depth of Sample	ft		0	1.5	1	1.25	1	0.5	0.5	0.25	0.5	0.5
Air Temperature	°C	20	32.2	28	30	26	22	33.8	28	32	21	23
Water Temperature	°C	18	25.3	25	24	18	15.3	29	27	24	18.3	16.7
pH	s.u.	6.97	6.8	7.57	7.2	7.38	7.31	6.83	7.33	7.25	6.1	7.13
Dissolved Oxygen	mg/L	8.76	8	10	9.5	9.3	10.3	11.2	10.2	10.1	8.5	9.95
Flow	cfs*											
Conductivity	mmhos	75	51.3		112		75	133.2		224		110
Cond at 25 °C	mmhos	87	51		114		92	124		228		131
Turbidity	ntu	3.4	3.2		4.8		4.1	3.4		6		4
BOD5	mg/L		1.6		0.5		1.4	1.6		0.4		1.1
NH3-N	mg/L	0.1	0.005		0.015		0.16	0.008		0.015		0.44
TKN	mg/L	0.15K	0.157		0.15		0.66	0.163		0.15		0.61
NO2+NO3-N	mg/L	1.17	0.332		0.23		1.1	0.189		0.24		1.2
PO4-P	mg/L	0.05K	0.05K		0.1		0.05K	0.05K		0.12		0.05K
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN10	TN10	TN10	TN10	TN10	TN11	TN11	TN11	TN11	TN11	TN12
Sampling Date		6/26/96	7/24/96	8/22/96	9/30/96	10/29/96	6/26/96	7/24/96	8/22/96	9/30/96	10/29/96	6/19/96
Sampling Time		12:06 PM	1:30 PM	1:02 PM	12:25 PM	11:43 AM	11:38 AM	1:06 PM	12:41 PM	12:53 PM	12:06 PM	3:04 PM
Total Water Depth	ft	0.5	0.5	0.5	0.5		0.5	0.5		0.5		1
Depth of Sample	ft	0.25	0.25	0.25	0.25		0.25	0.25		0.25		0.5
Air Temperature	°C	27.7	29	30	23	24	27.7	24	30	24	24	33.3
Water Temperature	°C	28	27.2	24.3	16	18.3	27	27	24.3	16.8	18.3	28.3
pH	s.u.	6.65	6.78	6.9	6.53	6.5	6.7	6.97	6.2	6.47	5.53	7.31
Dissolved Oxygen	mg/L	6	6.1	5.2	8.02	7.87	7.2	7.5	6.3	8.53	8.58	8.8
Flow	cfs*											
Conductivity	mmhos			94.1		445			824		55	183
Cond at 25 °C	mmhos			95		510			835		63	172
Turbidity	ntu			10.1		40			64		2.8	5.4
BOD5	mg/L	0.4		1.6		0.2	0.1		1.1		0.5	2
NH3-N	mg/L	0.086		0.023		0.1	0.145		0.266		0.1K	0.17
TKN	mg/L	0.337		0.303		0.15K	0.178		0.181		0.69	0.189
NO2+NO3-N	mg/L	0.026		0.01K		1.36	0.012		0.014		0.15	0.127
PO4-P	mg/L	0.549		0.04K		0.05K	0.115		0.04K		0.05K	0.57
Fe	mg/L			3.15	7.41	4.68			6	1.13	0.95	
Mn	mg/L			0.63	3.81	4.99			5.31	0.11	0.13	
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN12	TN12	TN12	TN12	TN13	TN13	TN13	TN13	TN13	TN14	TN14
Sampling Date		7/25/96	8/29/96	9/24/96	10/31/96	6/19/96	7/25/96	8/29/96	9/24/96	10/31/96	6/19/96	7/25/96
Sampling Time		3:10 PM	1:02 PM	10:18 AM	2:24 PM	2:31 PM	2:45 PM	12:33 PM	9:50 AM	1:50 PM	11:21 AM	10:05 AM
Total Water Depth	ft	1	1	1	1	0.5	1	1	2	1	0.5	0.5
Depth of Sample	ft	0.5	0.5	0.5	0.5	0.25	0.5	0.5	1	0.5	0	0.25
Air Temperature	°C	28	30	24	22	33.3	29	33	22	22	29.4	22
Water Temperature	°C	29	26	20.3	17.7	29.1	28	28	22.3	17.7	29.8	22
pH	s.u.	7.48	7.67	7.17	7.58	7.41	7.54	7.18	7.2	7.58	6.83	6.5
Dissolved Oxygen	mg/L	8.5	8.5	7.96	9.35	9.2	9.4	8.4	8.04	9.35	7.9	5.8
Flow	cfs*											
Conductivity	mmhos		292		195	209		344		230	65.7	
Cond at 25 °C	mmhos		287		227	194		325		267	60	
Turbidity	ntu		8		7.8	3.7		6.6		3.1	4.5	
BOD5	mg/L		0.5		0.9	1.9		0.5		1.2	2.2	
NH3-N	mg/L		0.015		0.2	0.04		0.015		0.34	0.08	
TKN	mg/L		0.15		0.45	0.173		0.36		0.68	0.348	
NO2+NO3-N	mg/L		0.15		0.15	0.044		0.02		0.1K	0.829	
PO4-P	mg/L		0.11		0.05K	0.05K		0.9		0.05K	0.242	
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN14	TN14	TN14	TN15	TN15	TN15	TN15	TN15	TN16	TN16	TN16
Sampling Date		8/29/96	9/24/96	10/31/96	6/19/96	7/25/96	8/29/96	9/24/96	10/31/96	6/19/96	7/31/96	8/29/96
Sampling Time		8:40 AM	1:08 PM	10:21 AM	10:37 AM	10:30 AM	9:05 AM	12:51 PM	9:48 AM	8:53 AM	3:10 PM	3:28 PM
Total Water Depth	ft				0.5	0.5	5	4	7	0.3	0.5	
Depth of Sample	ft				0.25	0.25	2.5	2	3.5	0.16	0.25	
Air Temperature	°C	22	30	6.87	29.4	24	24	25	18	26.1	24	33
Water Temperature	°C	25	20.3	7	26.2	22	24	17.8	15.9	28.5	24	28
pH	s.u.	5.68	7.44	6.87	6.49	6.7	6.58	7.07	6.5	6.8	7.6	7.83
Dissolved Oxygen	mg/L	7.4	7.23	7	5.8	4.25	6.2	6.23	5.13	8.7	9.2	12
Flow	cfs*											
Conductivity	mmhos	64.5		35	941		1206		360	690		608
Cond at 25 °C	mmhos	65		53	920		1229		436	647		575
Turbidity	ntu	5.2		5.1	5.2		9.6		10.3	15.1		33
BOD5	mg/L	1.9		2.2	1.8		0.2		0.31	2.6		1.5
NH3-N	mg/L	0.015		0.28	0.074		0.015		0.1K	0.096		0.015
TKN	mg/L	0.36		0.1K	0.157		0.15		0.7	0.349		0.19
NO2+NO3-N	mg/L	0.46		1.81	0.083		0.06		1.21	0.214		0.05
PO4-P	mg/L	0.13		0.05K	0.05K		0.11			0.069		0.13
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN16	TN16	TN17	TN17	TN17	TN17	TN17	TN18	TN18	TN18	TN18
Sampling Date		9/24/96	10/24/96	6/19/96	7/17/96	8/29/96	9/24/96	10/24/96	6/27/96	7/17/96	8/28/96	9/23/96
Sampling Time		2:25 PM	9:25 AM	9:21 AM	1:05 PM	3:46 PM	2:37 PM	9:43 AM	10:35 AM	4:00 PM	3:22 PM	3:27 PM
Total Water Depth	ft		2	0.66	1.5	1	1	1	0.66	10	0.5	1.5
Depth of Sample	ft		1	0.33	0.75	0.5	0.5	0.5	0.33	5	0.25	0.75
Air Temperature	°C	30	20	27.7	32	30	30	20	33.8	32	30	24
Water Temperature	°C	22.5	13.6	27.2	28	28	21.7	13.6	28.2	29	27	20.9
pH	s.u.	7.45	7.39	6.3	7.15	7.59		7.57	6.63	7.18	7.57	6.29
Dissolved Oxygen	mg/L	9.2	8.46	6.5	10.2	10		8.46	9.8	8.5	12.5	9.08
Flow	cfs*											
Conductivity	mmhos		395	533		705		325			608	
Cond at 25 °C	mmhos		505	512		667		415			586	
Turbidity	ntu		9.5	3.1		13.3		16.7			4.2	
BOD5	mg/L		1.8	1.8		1.1		1.7	0.1K		0.9	
NH3-N	mg/L		0.1K	0.065		0.015		0.1K	0.007		0.015	
TKN	mg/L		0.15K	0.32		0.16		0.15K	0.164		0.15	
NO2+NO3-N	mg/L		0.15	0.255		0.13		1.32	0.475		0.4	
PO4-P	mg/L		0.05K	0.172		0.13		0.08	0.287		0.11	
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN18	TN19	TN19	TN19	TN19	TN20	TN20	TN20	TN20	TN20	TN20
Sampling Date		10/24/96	6/27/96	8/28/96	9/23/96	10/24/96	6/6/96	7/11/96	7/25/96	8/6/96	8/29/96	9/12/96
Sampling Time		1:08 PM	9:55 AM	3:46 PM	4:14 PM	12:38 PM	11:30 AM	10:30 AM	12:21 PM	11:15 AM	10:32 AM	11:00 AM
Total Water Depth	ft	1	10.5	10	10	10			0.5			
Depth of Sample	ft	0.5	5	5	5	5			0.25			
Air Temperature	°C	20	33.8	25	25	22	32	26	27	36	25	29
Water Temperature	°C	15.8	29.1	27	21.9	13	25	24	26	28.2	27	25
pH	s.u.	7.75	7.24	7.42	7.59	7.57	7.97	7.15	7.37	7.4	7.09	6.9
Dissolved Oxygen	mg/L	10.5	9.2	9	8.09	10.3	8.7	8.3	8.5	7.6	9.8	7.8
Flow	cfs*											
Conductivity	mmhos	70		905		99	59.6	66.9		128.5	129	91.3
Cond at 25 °C	mmhos	85		872		128	60	68		121	124	91
Turbidity	ntu	2.1		10.7		12.1				1.7	1.7	4.3
BOD5	mg/L	0.9	0.1K	0.9		1.1		1.4		0.6	0.5	0.7
NH3-N	mg/L	0.1K	0.047	0.015		0.1K					0.015	
TKN	mg/L	0.15K	0.196	0.15		0.47		0.2		0.2	0.27	0.1K
NO2+NO3-N	mg/L	0.1K	0.432	0.34		1.13		0.294		0.284	0.29	0.288
PO4-P	mg/L	0.05K	0.237	0.12		0.05K		0.05K		0.04K	0.1	0.04K
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L											
Alkalinity	mg/L											
TOC	mg/L											

Table TN-7 (cont.)

Station		TN20	TN20	TN20	TN21	TN21	TN21	TN21	TN21	TN21	TN22	TN23
Sampling Date		9/24/96	10/17/96	10/31/96	6/6/96	7/11/96	8/6/96	8/29/96	9/12/96	10/17/96	8/22/96	8/22/96
Sampling Time		12:11 PM	11:30 AM	10:57 AM	11:15 AM	10:00 AM	10:50 AM	9:52 AM	10:25 AM	10:45 AM	11:04 AM	2:00 PM
Total Water Depth	ft	0.5	1	1						2		
Depth of Sample	ft	0.25	0.5	0.5				15		1		
Air Temperature	°C	24	31	25	29	26	36.5	28	28	31	27	28
Water Temperature	°C	22	19.4	17.5	23.3	24.8	28.6	26	26	20.3	26	30
pH	s.u.	7.37	7.31	7.15	7.53	7.4	7.5	6.4	6.9	6.94	8.2	7.9
Dissolved Oxygen	mg/L	9.25	8.86	9.82	8.5	7.8	7.8		7.9	7.37		
Flow	cfs*			73								
Conductivity	mmhos		70	73	67.1	54.4	129.7	112	80.6	50	167	157
Cond at 25 °C	mmhos		78	85	69	55	121	110	79	55	164	143
Turbidity	ntu			2.4				1.6	3.8		4	3
BOD5	mg/L		0.6	0.7		1.3			1.1	0.4		
NH3-N	mg/L			0.1K				0.03				
TKN	mg/L			0.65		0.4	0.4	0.33	0.2			
NO2+NO3-N	mg/L		0.1	0.13		0.163	0.052	0.14	0.072	0.1		0.12
PO4-P	mg/L		0.05K	0.05K		0.05K	0.04K	0.12	0.04K	0.05K		
Fe	mg/L											
Mn	mg/L											
Fecal Coliform	mg/L		94							1		
Alkalinity	mg/L							16			65	63
TOC	mg/L							5.03			2.46	2.71

Table TN-7 (cont.)

Station		TN24	TN25	TN26	TN27	TN28
Sampling Date		8/13/96	8/13/96	8/13/96	8/15/96	8/15/96
Sampling Time		2:00 PM	4:08 PM	2:38 PM	12:30 PM	4:10 PM
Total Water Depth	ft					
Depth of Sample	ft	15	25	15	15	25
Air Temperature	°C	28	30	28	27	29
Water Temperature	°C	29	28	28	28	28
pH	s.u.	7.9	7.6	7.51	7.3	8.6
Dissolved Oxygen	mg/L					
Flow	cfs*					
Conductivity	mmhos					
Cond at 25 °C	mmhos					
Turbidity	ntu					
BOD5	mg/L					
NH3-N	mg/L	0.015K	0.015	0.015K	0.015K	0.015K
TKN	mg/L	0.15K	0.15K	0.15K	0.27	0.15K
NO2+NO3-N	mg/L	0.06	0.24	0.2	0.05	0.02
PO4-P	mg/L	0.08	0.06	0.03	0.04	0.03
Fe	mg/L					
Mn	mg/L					
Fecal Coliform	mg/L					
Alkalinity	mg/L	55	60	58	60	57
TOC	mg/L	2.76	2.3	2.38	2.94	2.81

Table TN-8
Tennessee River Basin Public Water Supply Intake Data

Station	TN22			TN23			TN24			TN25		
Date	8/22/96			8/22/96			8/13/96			8/13/96		
Time	11:04 AM			2:00 PM			2:00 PM			4:08 PM		
NO_2-NO_3		mg/L		0.120	mg/L		0.060	mg/L		0.240	mg/L	
TOC	2.46	mg/L		2.71	mg/L		2.76	mg/L		2.30	mg/L	
Alkalinity	65	mg/L		63	mg/L			mg/L		60	mg/L	
Specific Conductance	167	um/cm		157	um/cm			um/cm			um/cm	
Turbidity	4	NTUs		3	NTUs			NTUs			NTUs	
1,2-Dibromo-3-chloropropane	0.0200	ug/L	U	0.0200	ug/L	U	0.0200	ug/L	U	0.0200	ug/L	U
Ethylene dibromide	0.0200	ug/L	U	0.0200	ug/L	U	0.0200	ug/L	U	0.0200	ug/L	U
1,1,1,2-Tetrachloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1,1-Trichloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1,2,2-Tetrachloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1,2-Trichloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloroethane	0.5000	ug/L	U	0.5000	ug/L		0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloropropene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2,3-Trichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2,3-Trichloropropane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2,4-Trimethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2-Dichloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,3,5-Trimethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,3-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,3-Dichloropropene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
2,2-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Tetrachlorethylene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromochloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromodichloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Benzene	1.2000	ug/L		0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromomethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
cis-1,2-Dichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chlorodibromomethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromoform	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chloroform	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Carbon tetrachloride	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Dibromomethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Dichlorodifluoromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Dichloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Ethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Fluorotrichloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Hexachlorobutadiene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Isopropylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
m-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
m & p Xylene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Naphthalene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
n-Butylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
n-Propylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
o-Chlorotoluene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
o-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U

Table TN-8 (cont.)

Station	TN26			TN27			TN28		
Date	8/13/96			8/15/96			8/15/96		
Time	2:38 PM			12:30 PM			4:10 PM		
NO_2-NO_3	0.200	mg/L		0.050	mg/L		0.020	mg/L	
TOC	2.38	mg/L		2.94	mg/L		2.81	mg/L	
Alkalinity	58	mg/L		60	mg/L		57	mg/L	
Specific Conductance		um/cm			um/cm			um/cm	
Turbidity		NTUs			NTUs			NTUs	
1,2-Dibromo-3-chloropropane	0.0200	ug/L	U	0.0200	ug/L	U	0.0200	ug/L	U
Ethylene dibromide	0.0200	ug/L	U	0.0200	ug/L	U	0.0200	ug/L	U
1,1,1,2-Tetrachloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1,1-Trichloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1,2,2-Tetrachloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1,2-Trichloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,1-Dichloropropene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2,3-Trichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2,3-Trichloropropane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2,4-Trimethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2-Dichloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,2-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,3,5-Trimethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,3-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
1,3-Dichloropropene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
2,2-Dichloropropane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Tetrachlorethylene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromochloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromodichloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Benzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromomethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
cis-1,2-Dichloroethylene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chlorodibromomethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chloroethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Bromoform	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chloroform	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Chloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Carbon tetrachloride	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Dibromomethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Dichlorodifluoromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Dichloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Ethylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Fluorotrichloromethane	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Hexachlorobutadiene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Isopropylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
m-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
m & p Xylene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
Naphthalene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
n-Butylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
n-Propylbenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
o-Chlorotoluene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U
o-Dichlorobenzene	0.5000	ug/L	U	0.5000	ug/L	U	0.5000	ug/L	U

Table TN-8 (cont.)

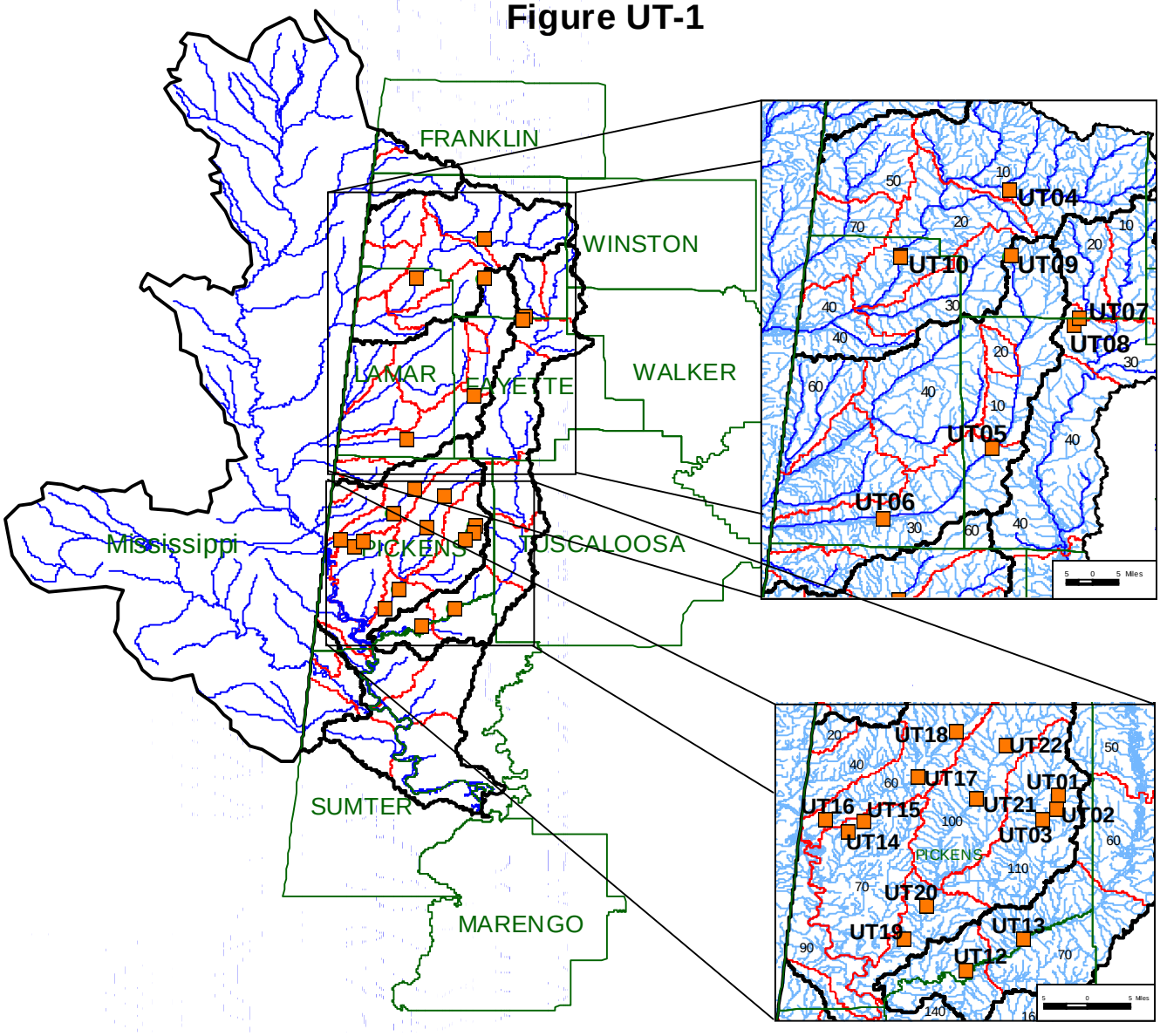
Station	TN22		TN23		TN24		TN25	
o-Xylene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
p-Chlorotoluene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
p-Dichlorobenzene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
p-Isopropyltoluene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Secbutylbenzene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Styrene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
t-1,2-Dichloroehtylene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Tertbutylbenzene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Trichloroethylene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Toluene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Vinyl Chloride	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Diquat	0.440 ug/L	U	0.440 ug/L	U	0.440 ug/L	U	0.440 ug/L	U
2,4-D	0.0500 ug/L	U	0.0500 ug/L	U	0.0500 ug/L	U	0.0500 ug/L	U
Dalapon	1.3000 ug/L	U	1.3000 ug/L	U	1.3000 ug/L	U	1.3000 ug/L	U
Dicamba	0.8100 ug/L	U	0.8100 ug/L	U	0.8100 ug/L	U	0.8100 ug/L	U
Dinoseb	0.1900 ug/L	U	0.1900 ug/L	U	0.1900 ug/L	U	0.1900 ug/L	U
Pentachlorophenol	0.0760 ug/L	U	0.0760 ug/L	U	0.0760 ug/L	U	0.0760 ug/L	U
Picloram	0.1400 ug/L	U	0.1400 ug/L	U	0.1400 ug/L	U	0.1400 ug/L	U
Silvex	0.0400 ug/L	U	0.0400 ug/L	U	0.0400 ug/L	U	0.0400 ug/L	U

Table TN-8 (cont.)

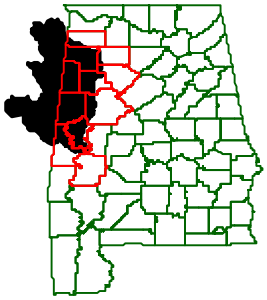
Station	TN26		TN27		TN28	
o-Xylene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
p-Chlorotoluene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
p-Dichlorobenzene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
p-Isopropyltoluene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Secbutylbenzene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Styrene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
t-1,2-Dichloroehtylene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Tertbutylbenzene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Trichloroethylene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Toluene	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Vinyl Chloride	0.5000 ug/L	U	0.5000 ug/L	U	0.5000 ug/L	U
Diquat	0.440 ug/L	U	0.440 ug/L	U	0.440 ug/L	U
2,4-D	0.0500 ug/L	U	0.0500 ug/L	U	0.0500 ug/L	U
Dalapon	1.3000 ug/L	U	1.3000 ug/L	U	1.3000 ug/L	U
Dicamba	0.8100 ug/L	U	0.8100 ug/L	U	0.8100 ug/L	U
Dinoseb	0.1900 ug/L	U	0.1900 ug/L	U	0.1900 ug/L	U
Pentachlorophenol	0.0760 ug/L	U	0.0760 ug/L	U	0.0760 ug/L	U
Picloram	0.1400 ug/L	U	0.1400 ug/L	U	0.1400 ug/L	U
Silvex	0.0400 ug/L	U	0.0400 ug/L	U	0.0400 ug/L	U

Upper Tombigbee River Basin

Figure UT-1



1996
Upper Tombigbee River Basin
Clean Water Strategy
Sampling Stations



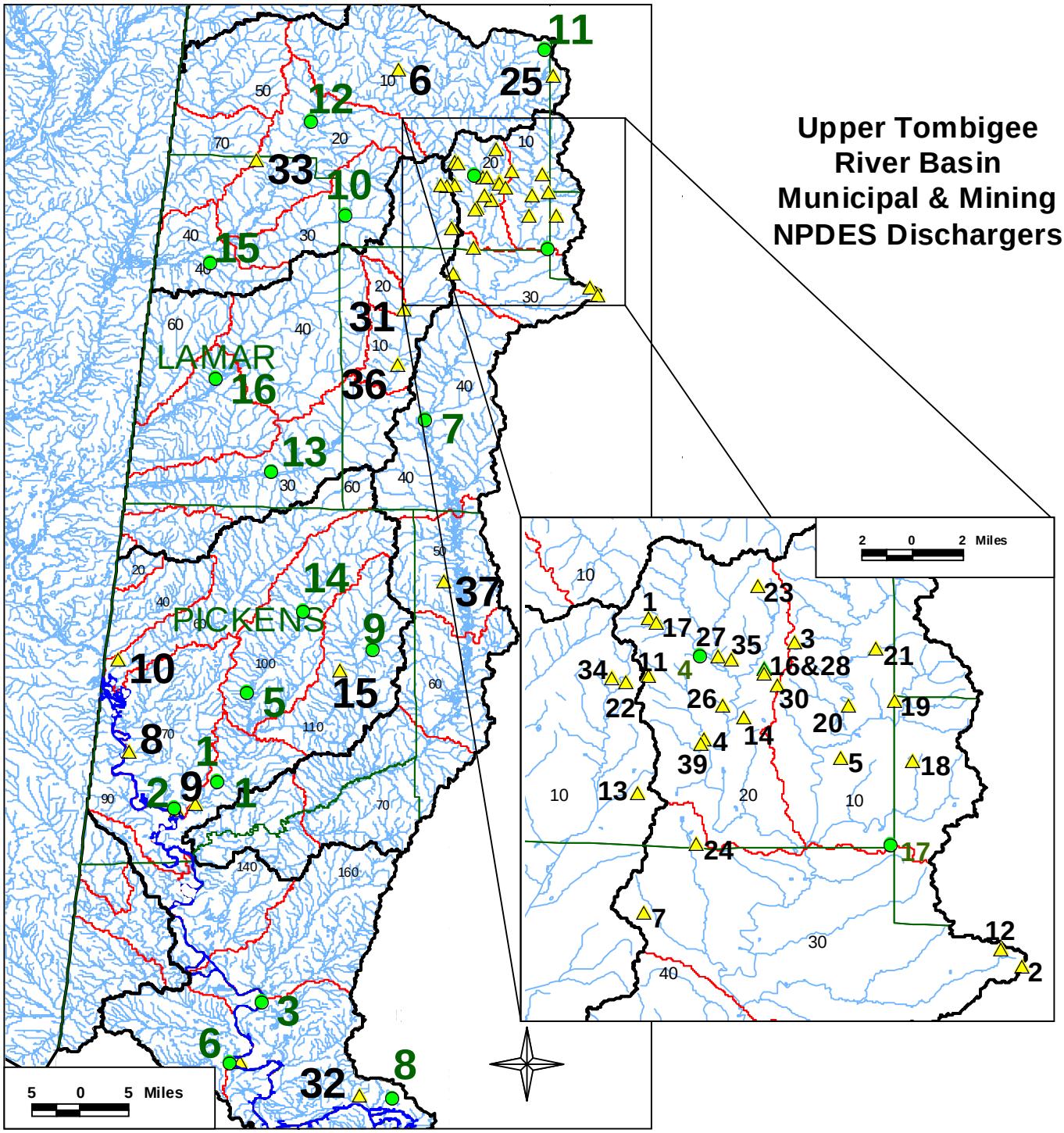
CWS Stations
Upper Tombigbee River Basin Mainstems, Reservoirs & USEPA RF1
USEPA RF3
Counties
USGS Cataloging Units
USDA-NRCS Subwatersheds

10 0 10 Miles

N

ADEM-Water Quality Section 1998

Figure UT-2



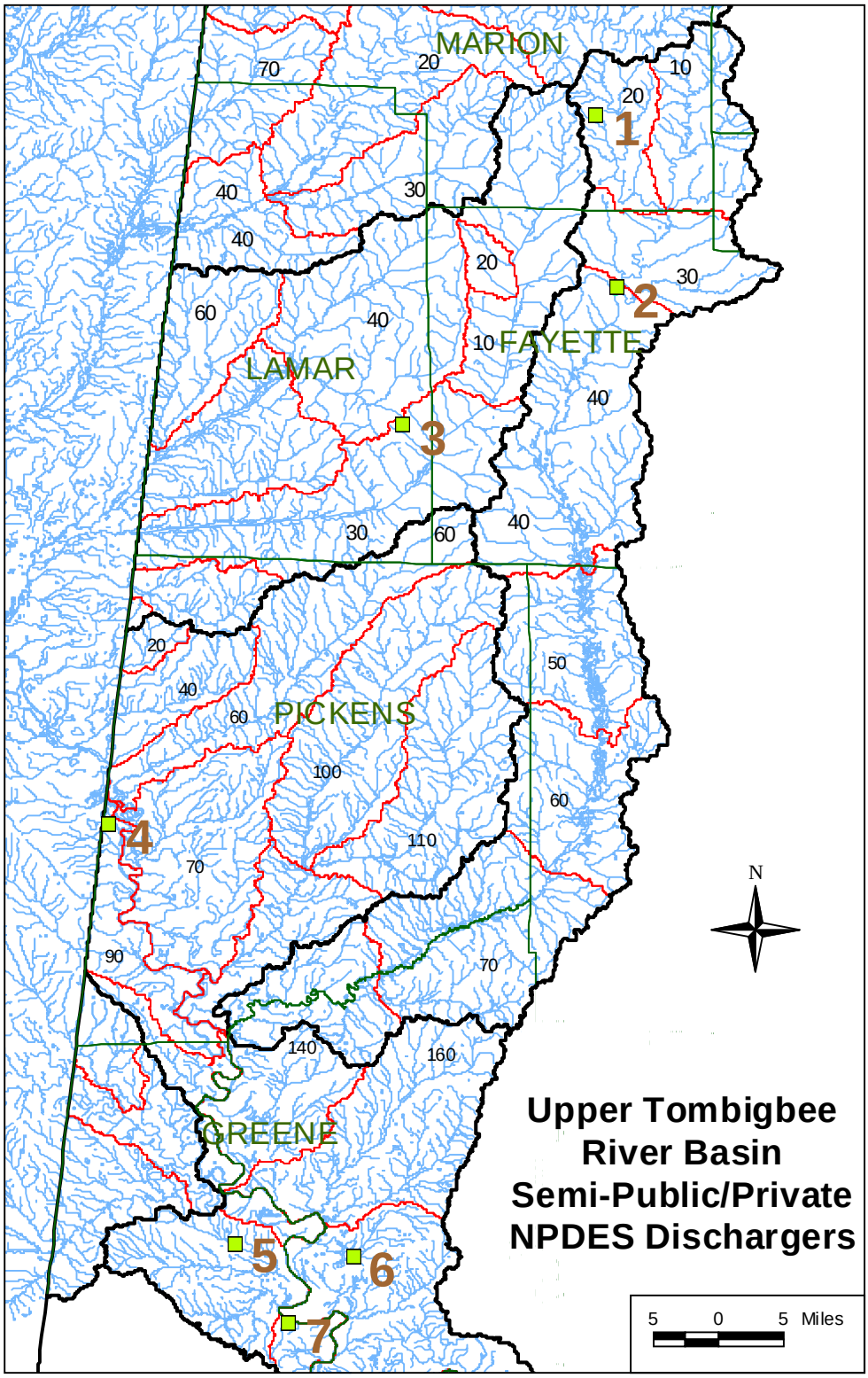
Municipal NPDES Dischargers

1 Haleyville South WWTP
2 Hamiton WWTP
3 Brilliant WWTP
4 Winfield WWTP
5 Guin Beaver Creek Lagoon
6 Sulligent WWTP
7 Vernon Yellow Creek Lagoon
8 Fayette WWTP
9 Millport Lagoon
10 Reform WWTP
11 Gordo Lagoon
12 Carrollton HCR Lagoon
13 Aliceville East Lagoon
14 Aliceville West Lagoon
15 Boligee Lagoon
16 Epes WWTP
17 Forkland Lagoon

Upper Tombigbee River Basin
Mining NPDES Dischargers

1 Abston Construction Co., Inc.
2 AL Land & Mineral Co., Inc.-Stovall
3 AL Land & Mineral Co., Inc.-Gum Springs Mine
4 AL Land & Mineral Co., Inc.-Marion South Mine
5 AL Land & Mineral Co., Inc.-Mine #10
6 American Olean Tile Co.-Mims Clay Pit
7 B&K Resources
8 Baldwin Sand & Gravel Co.-Pit #2
9 Baldwin Sand & Gravel Co.-Pit #3
10 Baldwin Sand & Gravel Co.-Pit #4
11 Big Mitch Prep Co., Inc.
12 Birmingham Coal & Coke Co., Inc.
13 Blue Ridge Sand & Gravel Inc.
14 Bonanza Cola Inc.
15 Boral Bricks Inc.
16 Brilliant Coal Sales Inc.
17 Busha Coal Co., Inc.
18 C&H Mining Co., Inc.
19 Carbon Tech Mining Corp.-Natual Bridge Mine
20 Carbon Tech Mining Corp.-North Goodwin Creek Mine
21 Drummond Co., Inc.
22 Dulin Energies Inc.
23 Egypt Contracting Co., Inc.
24 Glen Allen Rail Inc.
25 Haley Bros. & Partridge Coal Inc.-Ford Mine
26 Haley Bros. & Partridge Coal Inc.-Hoggle Ridge Mine
27 Haley Bros. & Partridge Coal Inc.-Poplar Springs Mine
28 Haley Bros. & Partridge Coal Inc.-Prep. Plant #2
29 IMAC Energy Inc.
30 Live Oak Sand & Gravel Co., Inc.
31 Marion Co. Rock
32 Riley Bros. Construction Co., Inc.
33 River City Industries Inc.
34 Robison, Joe
35 Rock City Coal & Equipment Inc.-Dulin Mine
36 Rock City Coal & equipment Inc.-Mine #5
37 S.T. Bunn Construction Co., Inc.
38 Sipsey Valley Sand & Gravel Inc.
39 Sumter Sand & Gravel C.A. Boyd
40 Triton Coal Co., Inc.

Figure UT-3



1 Brilliant High School
2 Hubbertville High School
3 Riverdoc's WWTP
4 Bigbee Valley Recreational Area
5 Wendy Hills Subdivision
6 Arrowood Apartments
7 Port Epes Industrial Complex

Table UT-1
1996 Upper Tombigbee River Basin CWS Stations

Station	Waterbody Name	Station Description	Latitude	Longitude
UT01	Little Bear Creek	Culvert on Co. Rd. 4	33.33492	-87.8925
UT02	Little Bear Creek	US 82 Bridge east of Gordo by pump station	33.31211	-87.89753
UT03	Little Bear Creek	Co. Rd. 9 Bridge at AL Hwy 86	33.29633	-87.91969
UT04	Luxapallila Creek	Marion Co. Rd. 69 at Winfield (SE 1/4, S13, T13S, R13W)	33.918056	-87.836944
UT05	Luxapallila Creek	Fayette Co. Rd. 37 NW of Covin (SE 1/4, S4, T16S, R13W)	33.69222	-87.8956
UT06	Luxapallila Creek	AL Hwy. 17 at Millport (SW 1/4, S14, T17S, R15W)	33.574722	-88.08333
UT07	Stud Horse Creek	Unnamed Fayette Co. Rd. at Glen Allen (NW 1/4, S24, T13S, R12W)	33.915	-87.7525
UT08	Stud Horse Creek	AL Hwy 129 S of Glen Allen (SW 1/4, S7, T14S, R12W)	33.846944	-87.734167
UT09	Buttahatchee River	US Hwy 278 at Hamilton (NE 1/4, S2, T11S, R13W)	34.106111	-87.989167
UT10	Buttahatchee River	Lamar Co. Rd. 16 E of Hinson Springs (NW 1/4, S18, T12S, R14W)	34.018611	-88.053611
UT11	Buttahatchee River	AL Hwy 17 N of Sulligent (NE 1/4, S19, T13S, R15W)	33.919167	-88.146667
UT12	Sipsey River	Co. Rd. 23 (new Co. Rd. 181)	33.05344	-88.03947
UT13	Sipsey River	Co. Rd. 156 Bridge	33.10283	-87.95025
UT14	Woolbank Creek	Dirt road off Co. Rd. 12 by Hogslat	33.27656	-88.22822
UT15	Woolbank Creek	2nd dirt road to right off Co. Rd. 12	33.29197	-88.20367
UT16	Coal Fire Creek	AL Hwy 14 Bridge north of Pickensville	33.29386	-88.26589
UT17	Coal Fire Creek	1st bridge - Coal Fire Cr	33.36469	-88.11836
UT18	Coal Fire Creek	Coal Fire US	33.43611	-88.0575
UT19	Lubbub Creek	AL Hwy 14 Bridge southeast of Aliceville	33.10258	-88.14053
UT20	Lubbub Creek	Co. Rd. 24	33.15561	-88.10419
UT21	Lubbub Creek	Going south, 1st left turn past Reform Temple 1st bridge	33.32836	-88.02347
UT22	Lubbub Creek	Western most of 3 bridges on dirt road off Co. Rd. 3	33.41483	-88.97686

Table UT-2
Upper Tombigbee River Basin Use Support

Station	Waterbody Name	From	To	Monitored or Evaluated	Support Status	Miles
UT01	Little Bear Creek	UT01	Its source	M	Partial	3.9
UT02	Little Bear Creek	UT02	UT01	M	Full	1.6
UT03	Little Bear Creek	UT03	UT02	M	Full	1.7
UT04	Luxapallila Creek	UT04	Its source	M	Full	9.9
UT05	Luxapallila Creek	UT05	UT04	E	Full	16.7
UT06	Luxapallila Creek	UT06	UT05	M	Full	14.6
UT07	Stud Horse Creek	UT07	To spillway	E	Full	0.3
UT08	Stud Horse Creek	UT08	UT07	M	Full	5.5
UT09	Buttahatchee River	UT09	Clifty Cr	M	Partial	8.3
UT10	Buttahatchee River	UT10	UT09	M	Full	11.4
UT11	Buttahatchee River	UT11	UT10	M	Full	15
UT12	Sipsey River	UT12	UT13	M	Full	12.3
UT13	Sipsey River	UT13	Malone Mill Cr	M	Full	16.9
UT14	Woolbank Creek	UT14	UT15	M	Full	2.2
UT15	Woolbank Creek	UT15	Its source	M	Full	5
UT16	Coal Fire Creek	UT16	UT17	M	Full	11.2
UT17	Coal Fire Creek	UT17	UT18	M	Full	7.3
UT18	Coal Fire Creek	UT18	Its source	M	Full	15.3
UT19	Lubbub Creek	UT19	UT20	M	Full	6.8
UT20	Lubbub Creek	UT20	Bear Cr	M	Full	5
UT21	Lubbub Creek	UT21	UT20	M	Full	7.6
UT22	Lubbub Creek	UT22	Its source	M	Full	10.1

Table UT-3
Upper Tombigbee River Basin Municipal NPDES Dischargers

Index	NPDES Permit	Facility	Receiving Waters	Latitude	Longitude	Treatment
1	AL0020770	Aliceville East Lagoon	Lubbub Creek	33.114722	-88.131944	Secondary
2	AL0056332	Aliceville West Lagoon	Tombigbee River	33.076667	-88.198333	Secondary
3	AL0068616	Boligee Lagoon	Tombigbee River	32.785833	-88.065833	Secondary
4	AL0057169	Brilliant WWTP	UT to Little New River	34.025386	-87.747312	Advanced
5	AL0020907	Carrollton HCR Lagoon	Lubbub Creek	33.25	-88.088611	Secondary
6	AL0061999	Epes WWTP	Tombigbee River	32.694167	-88.115278	Secondary
7	AL0054640	Fayette WWTP	Sipsey River	33.660278	-87.820556	Secondary
8	AL0070518	Forkland Lagoon	Tombigbee River	32.641389	-87.871111	Secondary
9	AL0061981	Gordo WWTP	Little Bear Creek	33.312778	-87.900278	Advanced
10	AL0052272	Guin Beaver Creek Lagoon	Beaver Creek	33.967222	-87.940833	Secondary
11	AL0059455	Haleyville South WWTP	Moore Creek	34.215	-87.640833	Advanced
12	AL0048372	Hamilton WWTP	Buttahatchee River	34.106944	-87.992222	Secondary
13	AL0049115	Millport Lagoon	Luxapallila Creek	33.581111	-88.051944	Secondary
14	AL0020915	Reform WWTP	Lubbub Creek	33.372222	-88.004444	Advanced
15	AL0020826	Sulligent WWTP	Bogue Creek	33.895833	-88.145278	Advanced
16	AL0024368	Vernon Yellow Creek Lagoon	Yellow Creek	33.720833	-88.136111	Secondary
17	AL0023400	Winfield WWTP	UT to Luxapallia Creek	33.916667	-87.6375	Secondary

Table UT-4
Upper Tombigbee River Basin Semi-Public/Private NPDES Dischargers

Index	Facility	NPDES Permit	Latitude	Longitude
1	BRILLIANT HIGH SCHOOL	AL0057151	34.0194	-87.765422
2	HUBBERTVILLE HIGH SCHOOL	AL0051322	33.828686	-87.742261
3	RIVERDOC'S WWTP	AL0067156	33.677222	-87.978889
4	BIGBEE VALLEY RECREATION AREA	AL0056731	33.235814	-88.303906
5	WENDY HILLS SUBDIVISION	AL0043648	32.771678	-88.164628
6	ARROWWOOD APARTMENTS	AL0047821	32.757625	-88.034672
7	PORT EPES INDUSTRIAL COMPLEX	AL0062456	32.683603	-88.105383

Table UT-5
Upper Tombigbee River Basin Mining NPDES Dischargers

INDEX	COMPANY	FACILITY	NPDES PERMIT	LATITUDE	LONGITUDE	NRCS SUBWATERSHED
1	Abston Construction Co. Inc.	Kivette Mine	AL0068543	34.047222	-87.776667	03160105-010
2	Alabama Land and Mineral Corp.	Stovall Files 2355 & 2400 Mines	AL0058718	33.8475	-87.563056	03160107-030
3	Alabama Land and Mineral Corp.	Gum Springs Mine	AL0057444	34.033333	-87.693333	03160107-010
4	Alabama Land and Mineral Corp.	Marion South Mine	AL0070629	33.978056	-87.744722	03160107-020
5	Alabama Land and Mineral Corporation	Mine #10	AL0067636	33.967222	-87.666667	03160107-010
6	American Olean Tile Company Inc.	Mims Clay Pit	AL0059099	34.184722	-87.863611	03160103-010
7	B & K Resources	B & K Sand & Gravel	AL0066877	33.878611	-87.779167	03160107-030
8	Baldwin Sand & Gravel Company	Pit #2	AL0064882	33.1625	-88.266667	03160106-070
9	Baldwin Sand & Gravel Company	Pit #3	AL0069264	33.083333	-88.166667	03160106-020
10	Baldwin Sand and Gravel Company	Pickens County Pit #4	AL0070408	33.3	-88.283333	03160106-070
11	Big Mitch Prep. Co. Inc.	Pull Tight Washer	AL0041866	34.013611	-87.776667	03160107-020
12	Birmingham Coal & Coke Co. Inc.	Howard Mine	AL0059633	33.856944	-87.575	03160107-030
13	Blue Ridge Sand & Gravel Inc.	Blue Ridge Pit	AL0059650	33.947222	-87.783333	03160105-010
14	Bonanza Coal Inc.	Poplar Springs Mine	AL0062596	33.99	-87.7225	03160107-020
15	Boral Bricks Inc.	Delta Brick Clay Mining Facility	AL0062235	33.283333	-87.95	03160106-110
16	Brilliant Coal Sales Inc.	Coal Fire Prep Plant	AL0041564	34.018056	-87.711111	03160107-020
17	Busha Coal Company Inc.	Wilson Mine #1 & 2	AL0048984	34.045	-87.7725	03160105-010
18	C & H Mining Company Inc.	Freeman Branch Mine	AL0061646	33.965556	-87.625	03160107-010
19	Carbon Tech Mining Corporation	Natural Bridge Mine	AL0060321	34	-87.636111	03160107-010
20	Carbon Tech Mining Corporation	North Goodwin Creek Mine	AL0062111	33.996667	-87.662778	03160107-010
21	Drummond Company Inc.	Natural Bridge Mine	AL0002453	34.029444	-87.646389	03160107-010
22	Dulin Energies Inc.	East Branch Mine	AL0060411	34.01	-87.789722	03160107-020
23	Egypt Contracting Company Inc.	Mine #7	AL0069361	34.065556	-87.714722	03160107-010
24	Glen Allen Rail Inc.	Glen Allen Rail Siding	AL0022047	33.917778	-87.749444	03160105-010
25	Haley Brothers & Partridge Coal Inc.	Hoggle Ridge Mine	AL0051365	34.175278	-87.630278	03160103-010
26	Haley Brothers & Partridge Coal Inc.	Poplar Springs Mine	AL0053384	33.996667	-87.734722	03160107-020
27	Haley Brothers & Partridge Coal Inc.	Preparation Plant #2	AL0032328	34.025	-87.737222	03160107-020
28	IMAC Energy Inc.	Black Creek Mine #2	AL0055425	34.015833	-87.711111	03160107-020

Table UT-5 (cont.)

INDEX	COMPANY	FACILITY	NPDES PERMIT	LATITUDE	LONGITUDE	NRCS SUBWATERSHED
29	Live Oak Sand & Gravel Co. Inc.	Aliceville Pit #1	AL0068934	33.075	-88.195833	03160106-120
30	Marion County Rock	Marion County Rock	AL0070289	34.008611	-87.702778	03160107-010
31	Riley Brothers Construction Co. Inc.	Riley Sand and Gravel Operation	AL0069183	33.825	-87.852778	03160105-010
32	River City Industries Inc.	Seldon Pit	AL0060879	32.645278	-87.921111	03160106-190
33	Robison Joe	Robison Sand & Gravel Pit	AL0069302	34.049444	-88.075	03160103-020
34	Rock City Coal & Equipment Inc.	Dulin Mine	AL0049999	34.0125	-87.797778	03160107-020
35	Rock City Coal & Equipment Inc.	Mine #5	AL0045144	34.023889	-87.729444	03160107-020
36	S.T. Bunn Construction Co. Inc.	Fayette Plant Excavation Site	AL0067610	33.743333	-87.864167	03160105-010
37	Sipsey Valley Sand & Gravel Inc.	Sipsey Valley Pit	AL0066613	33.416944	-87.792778	03160107-050
38	Sumter Sand & Gravel C.A. Boyd	Epes Pit	AL0064645	32.695833	-88.100278	03160106-190
39	Triton Coal Company Inc.	Marion South Mine	AL0062260	33.975278	-87.747222	03160107-020

Table UT-6
Upper Tombigbee River Basin Data

Station		UT01	UT01	UT01	UT01	UT01	UT02	UT02	UT02	UT02	UT02	UT03
Sampling Date		6/27/96	7/30/96	8/22/96	9/27/96	10/23/96	6/26/96	7/30/96	8/22/96	9/27/96	10/23/96	6/27/96
Sampling Time		2:45 PM	3:10 PM	2:20 PM	1:10 PM	1:50 PM	3:45 PM	3:55 PM	2:45 PM	1:25 PM	2:05 PM	3:05 PM
Total Water Depth	ft		4.4	4	4	2		5.47	4	4	4	
Depth of Sample	ft		2.2	2	1.5	2		5	2	1.5	2	
Air Temperature	°C	30	33	32	17	25	33	30	32	17	26	32
Water Temperature	°C	27	28	24.1	22.9	15.5	27.5	25.8	23.8	22.8	15	28
pH	s.u.	6.34	6.43	6.28	6.31	4.35	6.6	6.62	6.7	6.49	5.89	6.73
Dissolved Oxygen	mg/L	4.2	4.1	2.5	4.7	6.34	6.4	6.6	6.7	6.83	8.71	5.7
Flow	cfs*											
Conductivity	mmhos	55	38	50	40	40	61	41	55	40	30	66
Cond at 25 °C	mmhos	53	36	51	42	49	58	40	56	42	37	62
Turbidity	ntu											
BOD5	mg/L		1	2		1.3		1.8	3.6		1.8	
NH3-N	mg/L		0.06	0.005K		0.1K		0.063	0.005K		0.1K	
TKN	mg/L		0.426	0.329		0.15K		0.387	0.576		0.15K	
NO2+NO3-N	mg/L		0.167	0.07		1.6		0.31	0.491		1.9	
PO4-P	mg/L		0.106	0.099		0.05K		0.104	0.048		0.05K	

Table UT-6 (cont.)

Station		UT03	UT03	UT03	UT03	UT04	UT04	UT04	UT04	UT04	UT05	UT05
Sampling Date		7/30/96	8/22/96	9/27/96	10/23/96	6/28/96	7/30/96	8/26/96	9/25/96	10/30/96	7/30/96	8/26/96
Sampling Time		3:35 PM	2:00 PM	12:55 PM	1:30 PM	10:55 AM	3:16 PM	2:16 PM	2:22 PM	3:23 PM	1:45 PM	12:51 PM
Total Water Depth	ft	5.8	4.45	3	3	1	1	1	1	1	2	1
Depth of Sample	ft	5	2.2	1.5	1.5	0.5	0.5	0.5	0.5	0.5	1	0.5
Air Temperature	°C	32	32	18	25	25.5	23	34	30	22	24	32
Water Temperature	°C	25.6	21.7	23	13.9	27.2	28	27	23.7	20.3	29	25
pH	s.u.	6.63	6.55	6.46	6.31	6.8	6.9	6.96	7.01	7.07	6.87	6.93
Dissolved Oxygen	mg/L	6.2	5.4	5.44	7.25	10.8	10.2	10	7.7	8.41	10.3	8.5
Flow	cfs*											
Conductivity	mmhos	42	60	50					43.6	35		
Cond at 25 °C	mmhos	42	64	52					45	38		
Turbidity	ntu								8.3	7.9		
BOD5	mg/L	1	2.1		1.6		0.5		0.5	0.1K	0.5	
NH3-N	mg/L	0.045	0.01		0.1K		0.015		0.026	0.16	0.045	
TKN	mg/L	0.388	0.356		0.15K		0.251		0.174	0.56	0.254	
NO2+NO3-N	mg/L	0.248	0.274		1.95		0.457		0.51	1.5	0.375	
PO4-P	mg/L	0.091	0.07		0.05K		0.045		0.03K	0.05K	0.057	

Table UT-6 (cont.)

Station		UT05	UT05	UT06	UT06	UT06	UT06	UT06	UT07	UT07	UT07	UT07
Sampling Date		9/25/96	10/30/96	6/27/96	7/30/96	8/26/96	9/25/96	10/30/96		7/30/96	8/26/96	10/30/96
Sampling Time		12:53 PM	1:44 PM	3:02 PM	12:49 PM	11:56 AM	12:53 PM	12:57 PM		2:50 PM	1:50 PM	2:52 PM
Total Water Depth	ft	1.5	2	4	4	2	3	2.5			0.5	
Depth of Sample	ft	0.75	1.5	0	2	1	1.5	1.75			0.25	
Air Temperature	°C	31	23	34.4	22	38	30	22	28	25	32	23
Water Temperature	°C	21.8	20.5	29	28	25	21.3	20.8	19.8	26	25	18.8
pH	s.u.	7.05	7.15	7.2	7.08	6.78	7.09	7.2	7.17	7.17	7.19	6.95
Dissolved Oxygen	mg/L	8.42	8.85	10.5	11.9	8.7	8.5	8.64	8.1	10.5	8.3	8.28
Flow	cfs*											
Conductivity	mmhos	46.5	35				9.9	35	20.9			15
Cond at 25 °C	mmhos	50	38				11	38	23			17
Turbidity	ntu	17.7	16.6				20.9	23	9.9			8.8
BOD5	mg/L	0.4	1.3		1.1		0.3	1	0.3	0.7		1.5
NH3-N	mg/L	0.035	0.1K		0.05		0.01	0.1K	0.005K	0.008		0.1K
TKN	mg/L	0.181	0.67		0.516		0.236	0.75	0.1K	0.146		0.21
NO2+NO3-N	mg/L	0.445	1.6		0.261		0.336	1.8	0.08	0.131		0.15
PO4-P	mg/L	0.043	0.08		0.218		0.054	0.05K	0.03K	0.045		0.05K

Table UT-6 (cont.)

Station		UT08	UT08	UT08	UT08	UT08	UT09	UT09	UT09	UT09	UT09	UT10
Sampling Date		6/28/96	7/30/96	8/26/96	9/25/96	10/30/96	6/28/96	7/30/96	8/26/96	9/25/96	10/30/96	6/27/96
Sampling Time		11:50 AM	1:41 PM	1:35 PM	1:34 PM	2:30 PM	9:37 AM	9:55 AM	9:56 AM	3:10 PM	10:47 AM	1:20 PM
Total Water Depth	ft	0.5	0.5	1			2	2	1	2	1.5	2
Depth of Sample	ft	0	0.25	0.5			0	1	0.5	1	0.75	0
Air Temperature	°C	29.4	25	34	31	23	25.5		28	30	21	34.4
Water Temperature	°C	27	26	26	20.8	19.5	27		24	20.7	19.3	29
pH	s.u.	6.67	6.92	7.5	7.14		7.35	5.93	7.38	7.14	7.09	6.8
Dissolved Oxygen	mg/L	9.8	11.8	8.3	8.1		9.5	8.9	8	9.11	8.87	8
Flow	cfs*											
Conductivity	mmhos				34.8	28				46	35	
Cond at 25 °C	mmhos				38	31				50	39	
Turbidity	ntu				5.7	5.6				13.1	10.7	
BOD5	mg/L		0.4		0.3	1.5		1		0.2	1	
NH3-N	mg/L		0.017		0.017	0.1K		0.018		0.021	0.1K	
TKN	mg/L		0.168		0.1K	0.4		0.223		0.15	0.52	
NO2+NO3-N	mg/L		0.2		0.153	1.01		0.275		0.286	1.49	
PO4-P	mg/L		0.04K		0.03K	0.05K		0.04K		0.03K	0.05K	

Table UT-6 (cont.)

Station		UT10	UT10	UT10	UT10	UT11	UT11	UT11	UT11	UT11	UT12	UT12
Sampling Date		7/30/96	8/26/96	9/25/96	10/30/96	6/27/96	7/30/96	8/26/96	9/25/96	10/30/96	6/11/96	7/18/96
Sampling Time		11:07 AM	10:16 AM	10:25 AM	11:36 AM	2:10 PM	11:40 AM	11:15 AM	11:08 AM	12:03 PM	10:00 AM	1:30 PM
Total Water Depth	ft	2	1.5	2	2	5	5	4	0.5	7		9.35
Depth of Sample	ft	1	0.75	1	1	0	2.5	2	0.25	3.5		5
Air Temperature	°C	25	28	28	21	34.4	24	32	24	22	35	30.5
Water Temperature	°C	27	25	21.8	19.7	29	27	26	16.8	20.1	27	24.2
pH	s.u.	6.73	6.79	7.7	7.31	6.8	6.42	6.96	6.47	7.13	6.35	6.84
Dissolved Oxygen	mg/L	9.1	7.8	7.9	8.52	8.4	10.2	7.6	8.53	8.12	7.3	7.1
Flow	cfs*											
Conductivity	mmhos			57.4	39				20	34	70	65.6
Cond at 25 °C	mmhos			61	43				24	38	67	67
Turbidity	ntu			20	18.5				47	19.3		
BOD5	mg/L	0.8		0.4	0.2		0.9		0.3	1		1.7
NH3-N	mg/L	0.057		0.068	0.1K		0.03		0.044	0.1K		0.016
TKN	mg/L	0.285		0.235	0.75		0.38		0.248	0.64		0.326
NO2+NO3-N	mg/L	0.347		0.3	1.61		0.205		0.229	2.12		0.202
PO4-P	mg/L	0.147		0.054	0.12		0.101		0.082	0.08		0.05K

Table UT-6 (cont.)

Station		UT12	UT12	UT12	UT13	UT13	UT13	UT13	UT13	UT14	UT14	UT14
Sampling Date		8/15/96	9/3/96	10/22/96	6/11/96	7/18/96	8/15/96	9/3/96	10/22/96	6/11/96	7/18/96	8/15/96
Sampling Time		1:00 PM	1:45 PM	11:10 AM	2:45 PM	10:10 AM	10:00 AM	1:00 PM	11:40 AM	1:15 PM	12:30 PM	11:30 AM
Total Water Depth	ft	6.8	10	7.5		13.2	12.4	14	12.5		1.75	1.5
Depth of Sample	ft	3.4	5	4		5	5	5	5		0	0.75
Air Temperature	°C	31	37	27	38	30	27	33	26	33	31	32
Water Temperature	°C	27	25.3	17.2	25.8	26.1	26	25.5	17.1	23.1	24.2	25
pH	s.u.	6.9	6.98	6.87	6.97	6.85	7.13	6.95	6.59	7.08	6	6.88
Dissolved Oxygen	mg/L	7.2	7	9.47	7.6	6.7	6.8	6.8	9.48	8.3	7.1	6.6
Flow	cfs*											
Conductivity	mmhos	126	103.9	71	75	60.1	134	132.1	30	28	25.6	52.9
Cond at 25 °C	mmhos	121	103	83	74	59	131	131	35	29	26	53
Turbidity	ntu											
BOD5	mg/L	0.5		0.6		1.4	1		0.7		1.6	0.9
NH3-N	mg/L	0.019		0.1K		0.035	0.018		0.1K		0.056	0.033
TKN	mg/L	0.231		0.15K		0.328	0.229		0.15K		0.279	0.274
NO2+NO3-N	mg/L	0.186		1.01		0.182	0.18		1.02		0.165	0.094
PO4-P	mg/L	0.045		0.05K		0.05K	0.078		0.05K		0.05K	0.053

Table UT-6 (cont.)

Station		UT14	UT14	UT15	UT15	UT15	UT15	UT15	UT16	UT16	UT16	UT16
Sampling Date		9/3/96	10/22/96	6/11/96	7/10/96	8/15/96	9/3/96	10/22/96	6/11/96	7/18/96	8/15/96	9/3/96
Sampling Time		11:35 AM	1:15 PM	1:45 PM	12:00 PM	11:15 AM	11:55 AM	1:00 PM	12:45 PM	1:00 PM	12:00 PM	11:20 AM
Total Water Depth	ft	2	1.75		0.75	0.67	8	1.5		3.55	3.9	4
Depth of Sample	ft	1	1		0	0.33	4	1		2	1.5	2
Air Temperature	°C	33	30	37	31.5	30	33	26	33	31	31.5	33
Water Temperature	°C	23.4	16.6	24	24.2	24.9	24.7	16.9	22.5	25.2	26	25.2
pH	s.u.	6.95	6.58	7.05	6.71	6.83	6.9	6.64	6.8	6.67	6.72	7.28
Dissolved Oxygen	mg/L	6.7	5.42	8.1	7.5	7.5	7	6.3	7.4	7	7.1	6.9
Flow	cfs*											
Conductivity	mmhos	71.2	30	28	25.3	57.6	70.5	15	25	20.2	40.9	48.2
Cond at 25 °C	mmhos	73	36	29	26	58	71	18	26	20	40	48
Turbidity	ntu											
BOD5	mg/L		2.2		1.7	0.9		1.8		1.7	0.8	
NH3-N	mg/L		0.1K		0.042	0.007		0.1K		0.021	0.026	
TKN	mg/L		0.15K		0.253	0.227		0.15K		0.323	0.295	
NO2+NO3-N	mg/L		1.2		0.112	0.078		1.97		0.174	0.142	
PO4-P	mg/L		0.05K		0.05K	0.04K		0.05K		0.05K	0.064	

Table UT-6 (cont.)

Station		UT16	UT17	UT17	UT17	UT17	UT17	UT18	UT18	UT18	UT18	UT18
Sampling Date		10/22/96	6/27/96	7/30/96	8/22/96	9/27/96	10/23/96	6/27/96	7/30/96	8/22/96	9/27/96	10/23/96
Sampling Time		1:30 PM	11:15 AM	12:31 PM	12:20 PM	10:40 AM	10:40 AM	12:00 PM	1:10 PM	11:40 AM	11:10 AM	11:30 AM
Total Water Depth	ft	5.5		2.1	2.1	2	2.6		1.3	0.76	2	2.3
Depth of Sample	ft	3		1.05	1	1.5	1.6		0.6	0	1.5	1.5
Air Temperature	°C	26	31.5	31.5	31	19	19	31	35	31	19	20
Water Temperature	°C	15.9	25.3	25	21.4	23.5	14	23.7	25.3	19.8	21.8	13.4
pH	s.u.	6.87	6.6	6.78	6.48	8.18	7.21	6.34	6.39	6.08	7.18	6.46
Dissolved Oxygen	mg/L	9.3	6.75	6.8	7.2	7.08	8.36	6.85	6.9	7.8	6.25	8.01
Flow	cfs*											
Conductivity	mmhos	22	25	21	20	20	20	20	21	28	20	20
Cond at 25 °C	mmhos	27	25	21	21	21	25	21	21	31	21	26
Turbidity	ntu											
BOD5	mg/L	1		1	1.3		2.4		1	1.4		2.7
NH3-N	mg/L			0.01	0.005K		0.1K		0.02	0.012		0.1K
TKN	mg/L	0.15K		0.293	0.215		0.15K		0.269	0.276		0.15K
NO2+NO3-N	mg/L	1.96		0.105	0.145		1.6		0.131	0.191		1.95
PO4-P	mg/L	0.05K		0.083	0.04K		0.05K		0.054	0.04K		0.05K

Table UT-6 (cont.)

Station		UT19	UT19	UT19	UT19	UT19	UT20	UT20	UT20	UT20	UT20	UT21
Sampling Date		6/11/96	7/18/96	8/15/96	9/3/96	10/22/96	6/11/96	7/18/96	8/15/96	9/3/96	10/22/96	6/27/96
Sampling Time		10:30 AM	10:45 AM	12:25 PM	1:25 PM	10:40 AM	11:20 AM	11:30 AM	10:30 AM	12:35 PM	12:30 PM	1:20 PM
Total Water Depth	ft		6	6.8	10	6.5		3	3.1	5	4	
Depth of Sample	ft		3	3.4	5	4		1.5	1.5	2.5	2	
Air Temperature	°C	32	30	31	35	27	37	32	31	31	26	31.5
Water Temperature	°C	22	22.6	25.9	25.1	17.1	23	24.3	25.6	24.1	15.9	26.8
pH	s.u.	6.6	6.53	6.71	6.94	7.5	7.04	6.7	6.87	6.89	6.55	6.38
Dissolved Oxygen	mg/L	7.7	7.4	7.5	6.9	9.83	7.5	6.9	6.7	6.9	9.24	4.05
Flow	cfs*											0
Conductivity	mmhos	30	25	53.5	57.2	25	35	25	53.5	59.1	25	40
Cond at 25 °C	mmhos	32	26	53	57	29	36	25	53	60	30	39
Turbidity	ntu											
BOD5	mg/L		1.8	0.7		1		1.8	1.1		1.1	
NH3-N	mg/L		0.012	0.029		0.1K		0.03	0.036		0.1K	
TKN	mg/L		0.475	0.374		0.15K		0.412	0.399		0.15K	
NO2+NO3-N	mg/L		0.14	0.086		1.6		0.12	0.078		1.75	
PO4-P	mg/L		0.05K	0.063		0.05K		0.05K	0.069		0.05K	

Table UT-6 (cont.)

Station		UT21	UT21	UT21	UT21	UT22	UT22	UT22	UT22	UT22
Sampling Date		7/30/96	8/22/96	9/27/96	10/23/96	6/27/96	7/30/96	8/22/96	9/27/96	10/23/96
Sampling Time		1:40 PM	1:00 PM	11:35 AM	11:55 AM	12:35 PM	2:10 PM	11:00 AM	12:05 PM	12:30 PM
Total Water Depth	ft	0.85	5.48	8	4.33		7.7	0.71	2	2
Depth of Sample	ft	0.4	2.5	5	2		5	0	1.5	1
Air Temperature	°C	37	30.5	19	24	32.5	35	30	19	24
Water Temperature	°C	25.9	23.4	23.6	15.4	25.8	26.4	20.9	22.5	13.7
pH	s.u.	6.55	6.37	6.77	6.11	6.49	6.48	6.37	6.51	6.27
Dissolved Oxygen	mg/L	6.7	4.2	5.7	6.42	6.55	5.2	7.4	7.1	8.32
Flow	cfs*									
Conductivity	mmhos	21	40	25	20	24	30	28	15	20
Cond at 25 °C	mmhos	21	41	26	24	24	29	30	16	26
Turbidity	ntu									
BOD5	mg/L	1	1.9		1.6		1.2	1.6		2
NH3-N	mg/L	0.032	0.037		0.1K		0.031	0.01		0.1K
TKN	mg/L	0.281	0.393		0.15K		0.461	0.284		0.15K
NO2+NO3-N	mg/L	0.078	0.119		2.08		0.036	0.123		2
PO4-P	mg/L	0.047	0.041		0.05K		0.086	0.04K		0.09

Appendix III
Tennessee Valley Authority
North Alabama Water Quality Survey 1997
Summary Information

Figure TVAWQ97-1

Tennessee River Basin Water Quality Study 1997
Sampled by the Tennessee Valley Authority

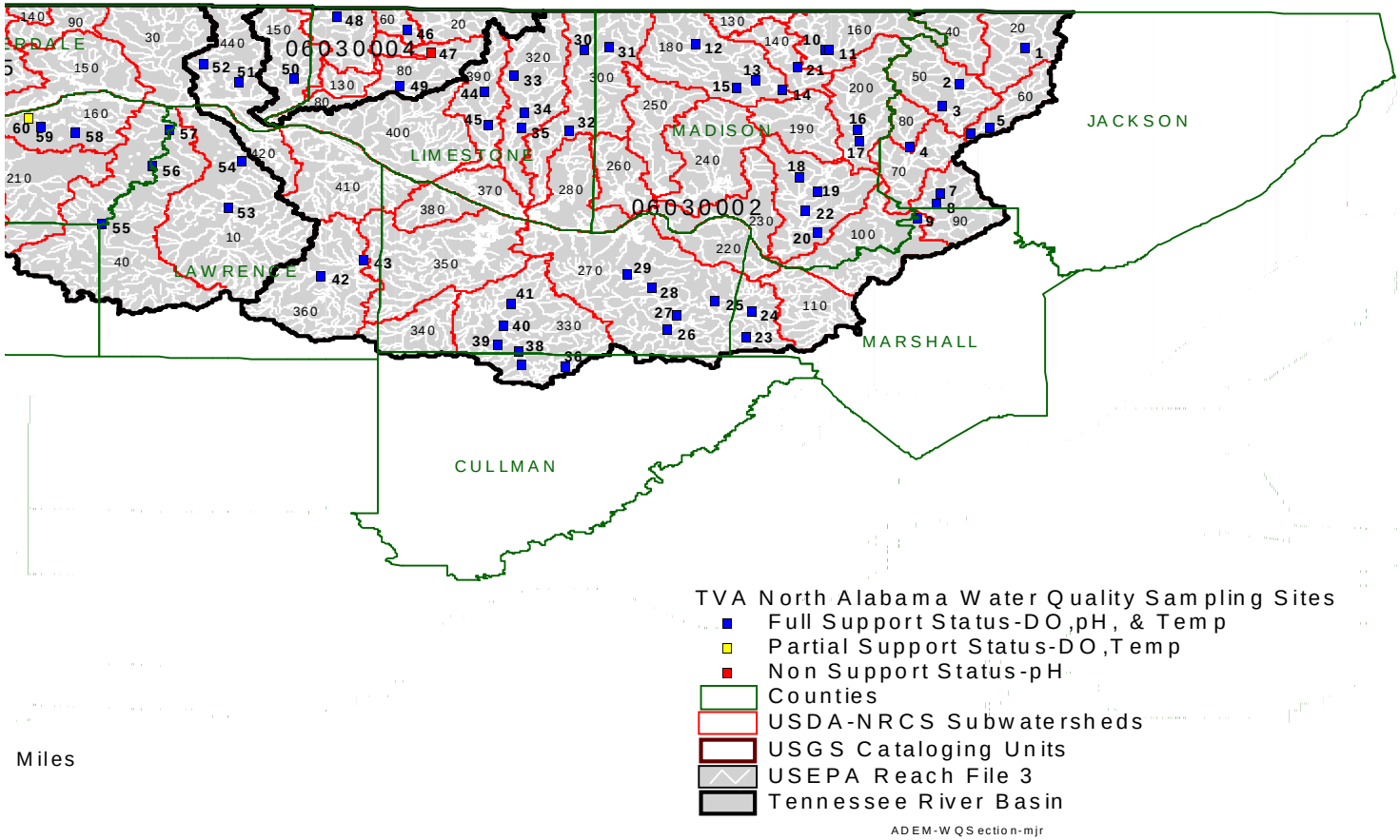


Table TVAWQ97-1

TVA Water Quality Summarry Table for Dissolved Oxygen, Temperature, and pH

Data Collected June through October 1997 by TVA

Index	Stream Name	TVA Station	Support Status Temp	Support Status DO	Support Status pH	Latitude	Longitude	RF3 R/S* miles in Watershed
TVAWQ97-1	HURRICANE CREEK 2.7	539401	Full	Full	Full	34.91603	-86.1389	51.67
TVAWQ97-2	LICK FORK 1.0	638401	Full	Full	Full	34.84436	-86.2368	22.04
TVAWQ97-3	DRY CREEK 1.0	336801	Full	Full	Full	34.80132	-86.2636	17.56
TVAWQ97-4	CLEAR CREEK 0.7	230501	Full	Full	Full	34.71939	-86.3115	16.67
TVAWQ97-5	GUESS CREEK 3.6	464101	Full	Full	Full	34.75854	-86.1928	38.09
TVAWQ97-6	GUESS CREEK	464102	Full	Full	Full	34.74545	-86.2210	5.45
TVAWQ97-7	YELLOW BRANCH 1.9	1246001	Full	Full	Full	34.6264	-86.2656	16.13
TVAWQ97-8	YELLOW BRANCH	1246002	Full	Full	Full	34.60664	-86.2710	1.94
TVAWQ97-9	PAINT ROCK RIVER 21	842101	Full	Full	Full	34.57983	-86.3017	52.91
TVAWQ97-10	HESTER CREEK 0.1	500501	Full	Full	Full	34.91441	-86.4406	55.48
TVAWQ97-11	MOUNTAIN FORK 3.9	789102	Full	Full	Full	34.91246	-86.4336	30.8
TVAWQ97-12	BRIER FORK 13.5	137001	Full	Full	Full	34.92563	-86.6345	21.75
TVAWQ97-13	BRIER FORK 4.8	137002	Full	Full	Full	34.85343	-86.5431	46
TVAWQ97-14	BRIER FORK 1.4	137003	Full	Full	Full	34.83225	-86.5019	29.08
TVAWQ97-15	BEAVERDAM CREEK 2.7	58001	Full	Full	Full	34.83766	-86.5712	54.35
TVAWQ97-16	HURRICANE CREEK	539202	Full	Full	Full	34.75333	-86.3914	38.65
TVAWQ97-17	HURRICANE CREEK 5.4	539201	Full	Full	Full	34.73167	-86.3883	3.02
TVAWQ97-18	BIG COVE CREEK 1.4	87201	Full	Full	Full	34.65928	-86.4780	13.95
TVAWQ97-19	GOOSE CREEK 1.3	440201	Full	Full	Full	34.62973	-86.4525	12.55
TVAWQ97-20	YELLOW BANK CREEK 1.2	1245702	Full	Full	Full	34.54893	-86.4524	5.41
TVAWQ97-21	FLINT RIVER 41.7	401503	Full	Full	Full	34.87962	-86.4811	19.31
TVAWQ97-22	FLINT RIVER 12.1	401502	Full	Full	Full	34.59392	-86.4687	17.83
TVAWQ97-23	MILL POND CREEK 1.3	762801	Full	Full	Full	34.34091	-86.5580	20.89
TVAWQ97-24	LITTLE COTACO CREEK 4.5	650501	Full	Full	Full	34.39316	-86.5505	6.15
TVAWQ97-25	HUGHES CREEK 1	532801	Full	Full	Full	34.4133	-86.6040	26.66
TVAWQ97-26	WEST FORK COTACO CREEK 4.9	1177002	Full	Full	Full	34.35533	-86.6760	37.45
TVAWQ97-27	WEST FORK COTACO CREEK 1.5	1177001	Full	Full	Full	34.3848	-86.6633	40.58
TVAWQ97-28	COTACO CREEK 14.5	264702	Full	Full	Full	34.43967	-86.7006	43.19
TVAWQ97-29	TOWN CREEK 2.1	1150301	Full	Full	Full	34.46489	-86.7368	42
TVAWQ97-30	LITTLE LIMESTONE CREEK 1.4	664001	Full	Full	Full	34.91212	-86.8001	32.85
TVAWQ97-31	LIMESTONE CREEK 34	640905	Full	Full	Full	34.91974	-86.7640	42.65
TVAWQ97-32	LIMESTONE CREEK 17	640903	Full	Full	Full	34.75172	-86.8231	32.07
TVAWQ97-33	PINEY CREEK 25	877303	Full	Full	Full	34.86157	-86.9072	54.8
TVAWQ97-34	PINEY CREEK 18.2	877302	Full	Full	Full	34.78835	-86.8898	13.32
TVAWQ97-35	FRENCH MILL CREEK 0.3	412401	Full	Full	Full	34.75645	-86.8953	9.77
TVAWQ97-36	EAST FORK FLINT 10.4	354401	Full	Full	Full	34.28375	-86.8286	15.19
TVAWQ97-37	ROCK CREEK 0.7	955701	Full	Full	Full	34.28643	-86.8950	9.21
TVAWQ97-38	INDIAN CREEK 0.4	547001	Full	Full	Full	34.3119	-86.8997	8.42
TVAWQ97-39	SALLY MIKE CREEK 1.4	995701	Full	Full	Full	34.32806	-86.9310	14.81
TVAWQ97-40	ROBINSON CREEK 0.2	953101	Full	Full	Full	34.36357	-86.9224	14.16
TVAWQ97-41	CEDAR CREEK 2.5	208701	Full	Full	Full	34.4076	-86.9119	30.88
TVAWQ97-42	ELAM CREEK 0.9	365801	Full	Full	Full	34.46417	-87.1958	47.43
TVAWQ97-43	FLAT CREEK 1.6	395701	Full	Full	Full	34.496	-87.1317	16.31
TVAWQ97-44	SWAN CREEK 13.3	1114602	Full	Full	Full	34.83081	-86.9511	25.8
TVAWQ97-45	SWAN CREEK	1114603	Full	Full	Full	34.76262	-86.9465	32.73
TVAWQ97-46	SHOAL CREEK 3.2	1028101	Full	Full	Full	34.95256	-87.0673	13.14
TVAWQ97-47	SULPHUR CREEK 2	1109401	Full	Full	Non	34.908	-87.0304	22.82
TVAWQ97-48	SUGAR CREEK 12.2	1105301	Full	Full	Full	34.98017	-87.1745	34.7
TVAWQ97-49	BIG CREEK 3	87501	Full	Full	Full	34.84043	-87.0780	17.06
TVAWQ97-50	ANDERSON CREEK 5	12201	Full	Full	Full	34.85451	-87.2370	61.73
TVAWQ97-51	FIRST CREEK 4.6	391001	Full	Full	Full	34.84982	-87.3206	16.98
TVAWQ97-52	SECOND CREEK 7	1011801	Full	Full	Full	34.88544	-87.3734	65.1
TVAWQ97-53	BIG NANCE CREEK B	BNC-B	Full	Full	Full	34.59889	-87.3356	5.43
TVAWQ97-54	BIG NANCE CREEK A	BNC-A	Full	Full	Full	34.69056	-87.3142	29.59
TVAWQ97-55	TOWN CREEK C	TC-C	Full	Full	Full	34.56583	-87.5244	7.25
TVAWQ97-56	TOWN CREEK B	TC-B	Full	Full	Full	34.68222	-87.4508	35.76
TVAWQ97-57	TOWN CREEK A	TC-A	Full	Full	Full	34.75417	-87.4244	15.28
TVAWQ97-58	POND CREEK C	PC-C	Full	Full	Full	34.74889	-87.5647	2.38
TVAWQ97-59	POND CREEK B	PC-B	Full	Full	Full	34.75944	-87.6175	unknown
TVAWQ97-60	POND CREEK A	PC-A	Partial	Partial	Full	34.77722	-87.6347	4.46
Total Miles Monitored/Evaluated								**1519.64**

***** Totals for Rivers and Stream RF3 segments only

Table TVAWQ97-2
Geographical Information

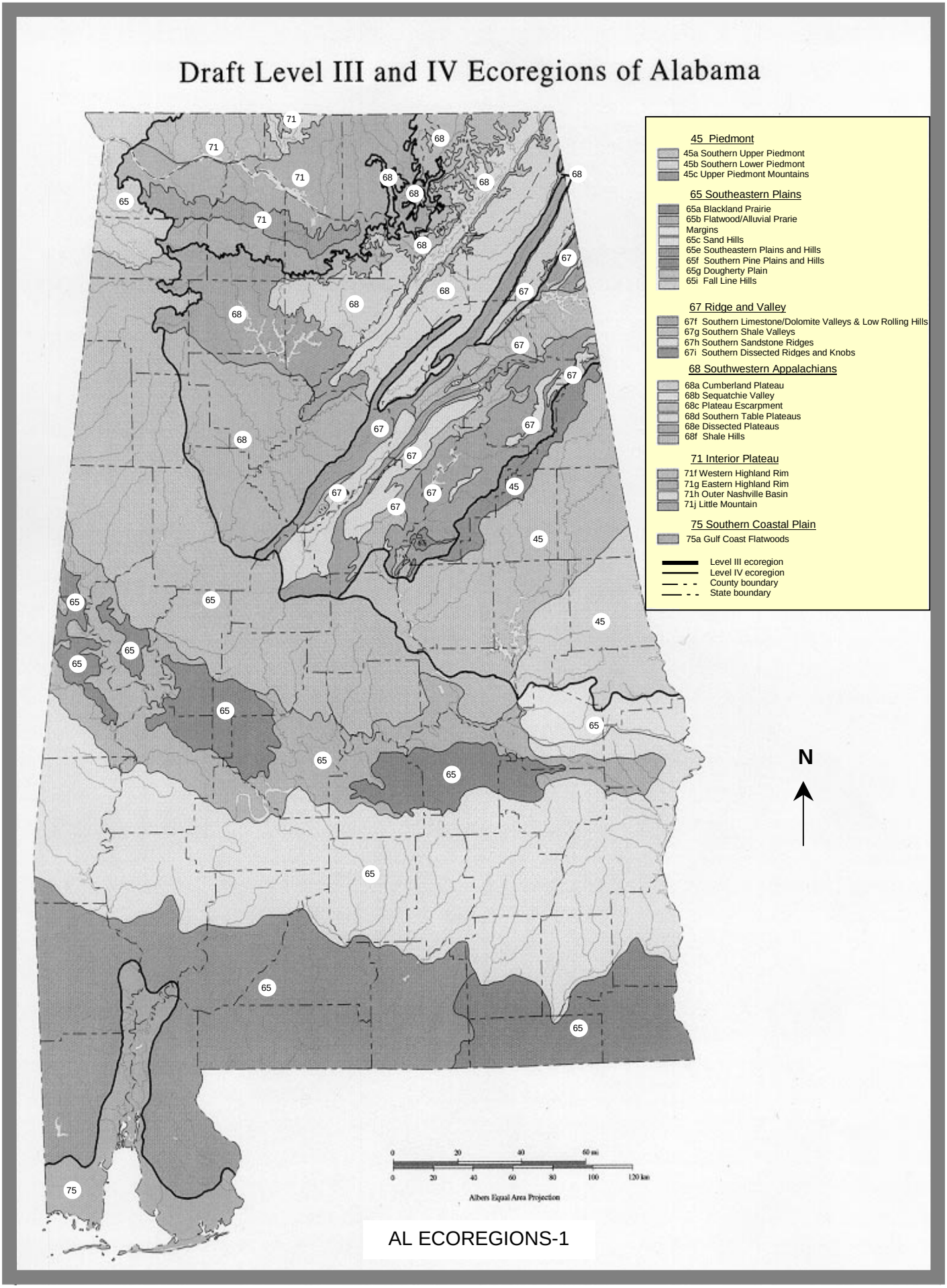
Index	County	Station Description	Ecoregion	Drainage Area	Elevation	USGS Quad 7.5 min. series	USDA-NRCS Subwatershed
TVAWQ97-1	Jackson	James Medley's Place	SW Appalachians	45	660	88-NW, Estill Fork	06030002-020
TVAWQ97-2	Jackson	Hwy 65 Bridge Crossing	SW Appalachians	18	640	88-SW, Princeton	06030002-050
TVAWQ97-3	Jackson	Bridge on Hwy 65 South of Hwy 4	SW Appalachians	14	620	81-SE, Hollytree	06030002-050
TVAWQ97-4	Jackson	Highway 65	SW Appalachians	17	600	82-NE, Paint Rock	06030002-080
TVAWQ97-5	Jackson	Private Land off Co. Rd. 20	SW Appalachians	27	630	88-SW, Princeton	06030002-060
TVAWQ97-6	Jackson	Private Land off Co. Rd. 20	SW Appalachians		610	89-NW, Lim Rock	06030002-060
TVAWQ97-7	Jackson	First Bridge on Hwy 8	SW Appalachians	14	590	82-NE, Paint Rock	06030002-090
TVAWQ97-8	Jackson	Highway 63	SW Appalachians	15.2	585	82-SE, Grant	06030002-090
TVAWQ97-9	Marshall	Butler Mill Road Bridge	Interior Plateau	387	580	82-SE, Grant	06030002-100
TVAWQ97-10	Madison	Above Confl. w/ Mountain Fork @ New Market Bridge	Interior Plateau	39	710	81-NW, New Market	06030002-160
TVAWQ97-11	Madison	Above Confl. w/ Hester Creek @ New Market Bridge	Interior Plateau	32	710	81-NW, New Market	06030002-160
TVAWQ97-12	Madison	Brier Fork Road Bridge	Interior Plateau	28	781	74-NW, Toney	06030002-180
TVAWQ97-13	Madison	Meridianville Bottom Road Bridge	Interior Plateau	54	700	74-SE, Meridianville	06030002-180
TVAWQ97-14	Madison	Private Prop: Henry Hovezak; Nauger Rd off Winchester	Interior Plateau	109	670	74-SE, Meridianville	06030002-180
TVAWQ97-15	Madison	Highway 431 Bridge	Interior Plateau	34.4	710	74-SE, Meridianville	06030002-180
TVAWQ97-16	Madison	Gurley Pike Bridge	SW Appalachians		635	81-SW,Maysville	06030002-200
TVAWQ97-17	Madison	Mountain Lane off Salty Bottom Rd.	SW Appalachians	52	620	82-NW, Moontown	06030002-200
TVAWQ97-18	Madison	Old Highway 431 Bridge	Interior Plateau	9	600	82-NW, Moontown	06030002-210
TVAWQ97-19	Madison	Old Highway 431 Bridge	Interior Plateau	13	590	82-NW, Moontown	06030002-210
TVAWQ97-20	Madison	Hobbs Island Road Bridge	Interior Plateau	8	570	82-SW, New Hope	06030002-210
TVAWQ97-21	Madison	O Patterson Rd Bridge (Walela Canoe)	Interior Plateau	130	680	81-NW, New Market	06030002-140
TVAWQ97-22	Madison	Owens Cross Road (Chickasaw Canoe)	Interior Plateau	513	570	82-SW, New Hope	06030002-210
TVAWQ97-23	Marshall	Matt Morrow Road Bridge	Interior Plateau	11	860	76-SE, Hulaco	06030002-270
TVAWQ97-24	Marshall	Saylor's Gap Road Bridge	Interior Plateau	4	580	76-NE, Newsome Sinks	06030002-270
TVAWQ97-25	Morgan	Pines Ridge Road	Interior Plateau	12	570	76-NE, Newsome Sinks	06030002-270
TVAWQ97-26	Morgan	County Rd. Bridge	Interior Plateau	25	585	76-SW, Lawrence Cove	06030002-270
TVAWQ97-27	Morgan	Downstream of Hwy 67 Bridge	Interior Plateau	51	580	76-NE, Newsome Sinks	06030002-270
TVAWQ97-28	Morgan	NE of Lynntown, Co Hwy 73	Interior Plateau	159	560	76-NW, Center Grove	06030002-270
TVAWQ97-29	Morgan	Antioch Road	Interior Plateau	36	560	76-NW, Center Grove	06030002-270
TVAWQ97-30	Limestone	Informal Vehicle Crossing	Interior Plateau	26	750	67-NE, Ardmore	06030002-300
TVAWQ97-31	Madison	Hwy 53 Bridge	Interior Plateau	29	760	67-NE, Ardmore	06030002-300
TVAWQ97-32	Limestone	Hwy 72 Bridge	Interior Plateau	115	620	67-SE, Capshaw	06030002-300
TVAWQ97-33	Limestone	Black Road (Co. Rd. 86) Bridge	Interior Plateau	35	700	67-SW, Athens	06030002-320
TVAWQ97-34	Limestone	Pepper Road Bridge	Interior Plateau	60	600	67-SW, Athens	06030002-320
TVAWQ97-35	Limestone	Cambridge Lane Bridge	Interior Plateau	7	630	67-SW, Athens	06030002-320
TVAWQ97-36	Cullman	Bridge Crossing NE of Providence	Interior Plateau	9	900	69-SE, Eva	06030002-330

Table TVAWQ97-2
Geographical Information (cont.)

TVAWQ97-37	Cullman	Hurricane Creek Park off Hwy 31	Interior Plateau	6	660	69-SW, Falkville	06030002-330
TVAWQ97-38	Morgan	Highway 31 Bridge (at Stuckey's)	Interior Plateau	4	600	69-SW, Falkville	06030002-330
TVAWQ97-39	Morgan	Upstream of Lacon Rd. ; off gravel rd.	Interior Plateau	6	600	69-SW, Falkville	06030002-330
TVAWQ97-40	Morgan	Upstream of Bridge at Falkville Lagoon	Interior Plateau	9	580	69-SW, Falkville	06030002-330
TVAWQ97-41	Morgan	Cedar Rd. Bridge	Interior Plateau	7	590	69-NW, Hartselle	06030002-330
TVAWQ97-42	Lawrence	County Rd 86	Interior Plateau	29	600	62-NW, Oakville	06030002-360
TVAWQ97-43	Lawrence	Old Molton Road Bridge(Co Rd 61)	Interior Plateau	9	600	62-NW, Oakville	06030002-360
TVAWQ97-44	Limestone	Between Elkton Rd Bridge & Muddy Creek Confl.	Interior Plateau	20	705	67-SW, Athens	06030002-390
TVAWQ97-45	Limestone	Strain Rd Bridge	Interior Plateau		630	67-SW, Athens	06030002-390
TVAWQ97-46	Limestone	Shoal Creek Road Bridge	Interior Plateau	58	570	60-NE, Salem	06030004-060
TVAWQ97-47	Limestone	Easter Ferry Road Bridge	Interior Plateau	15	570	60-NE, Salem	06030004-080
TVAWQ97-48	Limestone	Sugar Creek Road Bridge	Interior Plateau	136	600	60-NW, Union Hill	06030004-120
TVAWQ97-49	Limestone	Townsend Ford Road Bridge	Interior Plateau	13	590	60-SE, Ripley	06030004-080
TVAWQ97-50	Lauderdale	Snake Road Bridge	Interior Plateau	48	560	60-SW, Cairo	06030004-150
TVAWQ97-51	Lauderdale	Ford on Turner Lane	Interior Plateau	14	590	53-SE, Rogersville	06030002-440
TVAWQ97-52	Lauderdale	County Road 76 Bridge	Interior Plateau	39	580	53-NE, Lexington	06030002-440
TVAWQ97-53	Lawrence	County Rd. 151	Interior Plateau		560	54-SE, Masterson	06030005-010
TVAWQ97-54	Lawrence	Downstream of Alt 72 Bridge	Interior Plateau		550	54-NE, Courtland	06030005-010
TVAWQ97-55	Lawrence	County Rd. 131	Interior Plateau			45-SE, Old Bethel	06030005-040
TVAWQ97-56	Lawrence	Alt 72 bridge	Interior Plateau			54-NW, Town Creek	06030005-040
TVAWQ97-57	Lawrence	HWY 184 bridge	Interior Plateau		520	53-SW, Wheeler Dam	06030005-040
TVAWQ97-58	Colbert	Marathler Lane Bridge	Interior Plateau			45-NE, Leighton	06030005-160
TVAWQ97-59	Colbert	Pepi Drive	Interior Plateau			44-SE, Wilson Dam	06030005-160
TVAWQ97-60	Colbert	Off Hwy 133	Interior Plateau			44-SW, Florence	06030005-160

Appendix IV
Alabama Ecoregions

Figure AL ECOREGIONS-1



AL ECOREGIONS-1

The Purpose of Alabama's Subregionalization of Its Ecoregions:

To develop a useful geographical framework that categorizes the large section of Alabama north of the fall line into logical units of similar geology, soils, land use/land cover and water quality.

Ecoregions have been delineated at a national scale by Omernik (1987). While these cursory regions are appropriate for regional or national assessments, they are not directly transferable to state level resource management concerns for many parts of the country. In 1990, as part of an EPA funded joint project with the State of Mississippi (ADEM/MOPC 1995), one of Alabama's ecoregions (Southeastern Plains) was refined and subdivided to allow a more explicit definition of attainability and aquatic life uses. Five Alabama ecoregions remain to be refined and subregionalized. The ecoregional framework has been used by several other states and is being developed for use in others, to meet present and future requirements of USEPA's Water Quality Standards Regulation in the development of biological criteria. The development of these ecological regions is important because the structure and function of many aquatic biological communities vary in differing ecological areas.

Following ecoregionalization, establishment of the reference condition requires the selection of least impacted reference sites in the ecological regions. Characterization of biotic communities inhabiting these reference sites establishes baseline, best attainable reference conditions of each subregion. Once the reference condition is established, an assessment of biological integrity and habitat evaluation performed at potentially impacted sites will be compared to reference site conditions for a determination of relative impact. If impairment is found, the diagnoses of cause will lead to the implementation of a control (e.g., best management practices). Continued monitoring should determine the effectiveness of intervention on an impacted site or ensure that the surface water maintains or improves in quality at unimpacted sites (USEPA 1990). Over time, biological criteria will be established based on the reference conditions.

Hydrologic units and/or river basins are useful for locating, storing, indexing and inventorying hydrologic data. However, river basins simply do not correspond to patterns in vegetation, soils, landforms, landuse and other characteristics that control or reflect spatial variations in surface water quality. Ecoregions, on the other hand, do correspond to patterns in the mosaic of geographic factors that cause spatial differences in water quality. As such, they are necessary for structuring water quality management plans and strategies. However, basins will continue to serve as the framework for determining the contributions of factors associated with the quality and quantity of water at any given point on a stream or river. (Omernik and Griffith, 1991)

As part of this project, candidate wadeable stream reference sites will be selected in the remaining ecoregions. Data collected at reference sites will be useful for developing ecoregion-specific biological water quality criteria. Ecoregion frameworks have a profound influence on the effectiveness of assessment and management of many water resource problems, particularly nonpoint source pollution impacts. Information collected at reference sites provide an effective tool for sorting impacts in nonpoint source studies, assessing the effects of various best management practices, identifying high-quality waters, and managing areas to preserve biological diversity. This project will also foster interstate cooperation in delineating ecoregions and in selecting and sampling reference sites in shared ecoregions and subregions.

National Ecoregion Project Scope

The approach the USEPA has used to compile ecoregion maps is based on the premise that ecological regions can be identified through the analysis of the patterns and the composition of biotic and abiotic characteristics that affect or reflect differences in ecosystem quality and integrity (Wiken 1986, Omernik 1987, 1995). These characteristics include geology, physiography, vegetation, climate, soils, land use, wildlife and hydrology. The relative importance of each characteristic varies from one ecological region to another.

A Roman numerical hierarchical scheme has been adopted for different levels of ecological regions. Level I is the coarsest level, dividing North America into 15 Ecological regions with Level II dividing the continent into 51 regions. At level III, the continental United States contains 98 regions (USEPA 1995). Level IV is a further subdivision of Level III ecoregions.

For Alabama, the Level III ecoregions originally developed by Omernik (1987) will be revised and Level IV subregions will be defined using methods outlined by Omernik (1987, 1995) Griffith et al. (1994) and Gallant et al. (1989). The scale of ecoregion delineation will be 1:250,000. Other regional ecological classifications developed by federal or state agencies, and/or university researchers, such as those for the USDA Forest Service's National Hierarchical Framework of Ecological Units, will be reviewed, evaluated, and incorporated into the regionalization where appropriate. The process of collecting the data to be used in refining and defining the regions, as well as selecting reference sites, will be a collaborative effort involving the USEPA National Health and Ecological Effects Research Laboratory (EPA-NHEERL) at Corvallis, USEPA Region IV and state resource agency personnel from Alabama and neighboring states (where possible). As has been the case in other states where this level of ecoregion development has recently been undertaken, efforts will be made to involve other federal resource management agencies with the goal of reaching consensus on ecoregion delineation and to meet the goals of the national federal interagency effort to develop a common ecoregion framework.

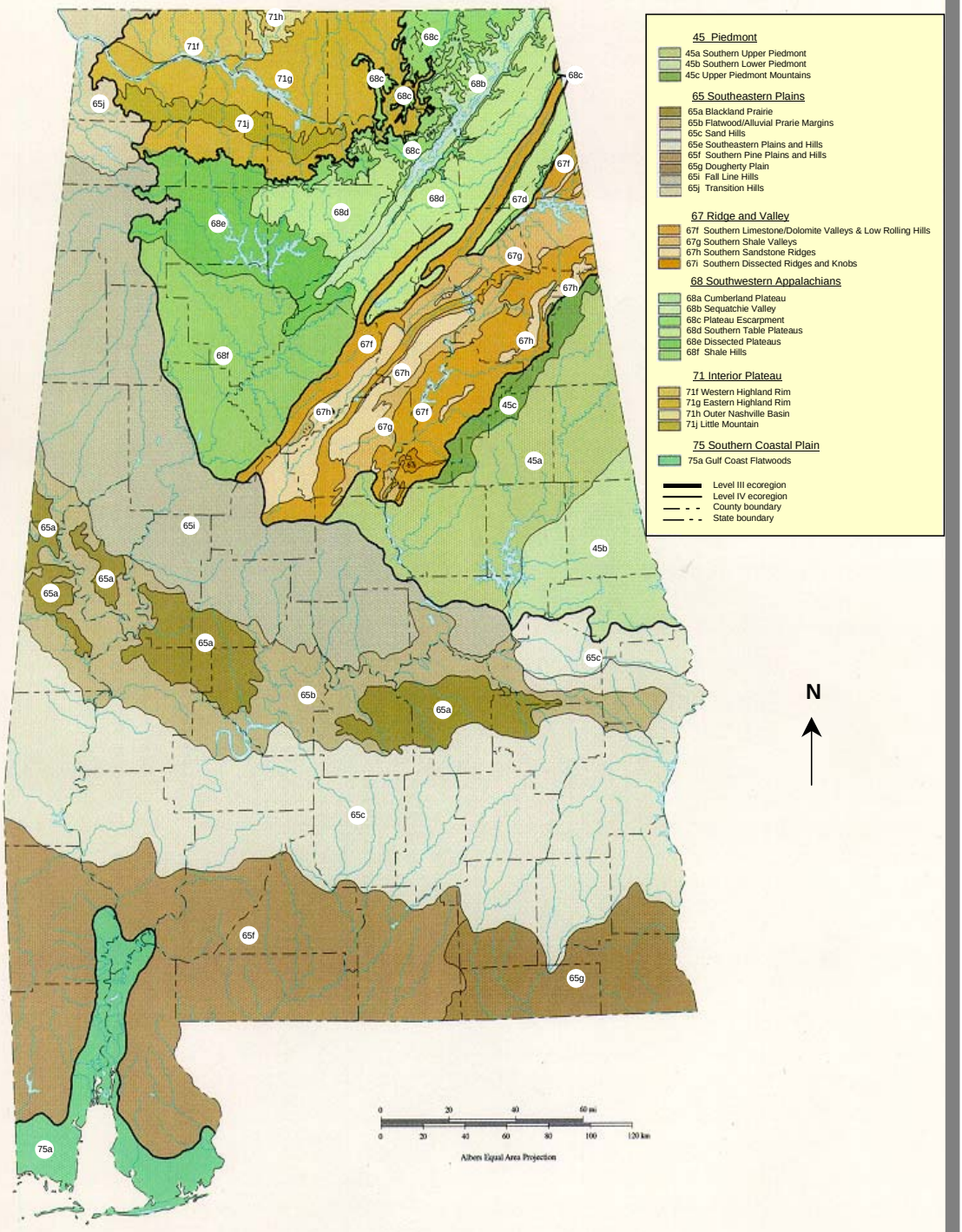
Jim Omernik, USEPA-NHEERL-Corvallis, will assume the lead in drafting ecoregions, selecting the initial set of candidate reference sites, and reviewing existing reference sites to ensure consistency across state borders and with other subregionalization and reference site projects ongoing in the southeast. Considerable dependence, however will be put on the expert judgement from state and local resource agency personnel.

The ADEM will execute an interagency agreement/contract with NRCS who will provide the technical guidance position. This position will be located in Corvallis so that the ecoregion/subregion delineation project can be coordinated by Jim Omernik. The oversight of EPA-NHEERL-Corvallis and Jim Omernik is vital to maintain the consistency with the overall development of the ecoregion approach and its fit with the interagency effort to develop a common ecological framework.

An initial project meeting was held for the purpose of facilitating interaction among the eventual users of the regional framework (i.e., state and federal resource

agency personnel), state and regional experts on ecosystems and ecosystem components, and the USEPA-NHEERL-Corvallis geographers. Review workshops will be held after the first drafts of subregions have been delineated in order to review the regions, suggest modifications and discuss reference site issues. Field reconnaissance will be carried out with cooperating state and regional agency resource personnel and scientists.

Draft Level III and IV Ecoregions of Alabama



Appendix V

The Executive Summary

from

Alabama's

Wetlands Conservation and Management Initiative
(WCAMI)

Volume I

Summary Report on Alabama Wetlands

FINAL REPORT

GEOLOGICAL SURVEY OF ALABAMA

Ernest A. Mancini
State Geologist

Environmental Geology Division

WETLANDS CONSERVATION AND MANAGEMENT INITIATIVE (WCAMI)

David J. Davies, Editor

Volume 1

SUMMARY REPORT ON ALABAMA WETLANDS

Authorship and Contributions to WCAMI By

David J. Davies[1], Kathryn M. Flynn[2], David R. Hicks[2], Richard L. Hummell[1], Marcia A. Irvin[1], Robert H. Jones[2], B. Graeme Lockaby[2], Daureen Nesdill[2], Andrew K. Rindsberg[1], Judy P. Stout[3], Lawrence D. Teeter[2], and René Vance[3]

Prepared by the [1]Geological Survey of Alabama in partial fulfillment of State of Alabama Department of Environmental Management Contract No. 93C035303.
Cooperating agencies were [2]Auburn University and the [3]Marine Environmental Sciences Consortium.

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Tuscaloosa, Alabama
1995

The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government or the State of Alabama.

All reviewers of this report should satisfy themselves as to the accuracy of all data, maps, diagrams, tables, and interpretations made.

WETLANDS CONSERVATION AND MANAGEMENT INITIATIVE SUMMARY REPORT ON ALABAMA WETLANDS

EXECUTIVE SUMMARY

The purpose of the Wetlands Conservation and Management Initiative was to conduct a comprehensive assessment of national and statewide issues regarding wetlands with the goal of enhancing wetlands conservation and management in Alabama. Wetlands are a vital natural resource for the economic wellbeing of Alabama; however, currently, wetlands conservation and management in Alabama are uncoordinated and fragmented. This is due in large measure to the lack of agreement until recently at the federal level as to what constitutes a wetland; the lack of federal incentives to states to manage wetlands; the constraints, differing definitions, and conditions under which management could be conferred; and the lack of funding support. The Wetlands Conservation and Management Initiative summarized Alabama wetlands status and trends, with the intent of providing options to facilitate development of a future comprehensive wetlands management plan.

The study was conducted as a cooperative effort between the state of Alabama and the federal government which jointly funded the project. Key participants in the project were the funding/oversight agencies (the U.S. Environmental Protection Agency and the Alabama Department of Environmental Management), the cooperating work agencies (the Geological Survey of Alabama, Auburn University, and the Marine Environmental Science Consortium), and the members of the Wetlands Technical Advisory Committee, who provided input during project development and reviewed the Draft Final Report.

The cooperating work agencies developed a bibliography with selected annotations of literature dealing with wetlands issues as they relate to Alabama. More than 4,000 citations were incorporated in the printed and electronic versions of the bibliography representing 18 important wetlands topics. From this literature, status and trends of Alabama wetlands, current regulatory procedures, socioeconomic impacts, and other important issues can be evaluated. In particular, the specific work elements outlined for the WCAMI were addressed in the summary report. In addition, the

cooperators developed the largest available listing of possible wetlands interest groups for Alabama, including more than 500 public and private contacts. A survey/questionnaire was sent to each group to request their views on wetlands issues.

Wetlands of Alabama and comparable states were evaluated from two primary perspectives: technical scientific knowledge of Alabama wetlands, and present regulation and governmental policies regarding wetlands. For both, the published literature and other sources were evaluated and present status determined, and appropriate information summarized in the present report. In addition, sources of more detailed information were delineated for each topic. In many cases, contacts were made with public agencies to determine the current status of their regulatory and management activities.

Aspects of technical knowledge regarding Alabama wetlands that were evaluated include the location, characteristics, functions and values of the state's wetlands. In particular, Alabama wetlands were discussed within a framework of the state's physiographic provinces, regional geology, climate, and hydrology. These characteristics are important in controlling the large-scale distribution of wetland types. Alabama contains five physiographic provinces, each containing various subdivisions, ranging from the low lying Gulf Coastal Plain to the Valley and Ridge province of the Appalachian Mountains. Each has distinctive topographic expression and geology, and thus contains different types of localities suitable for wetlands development. The National Weather Service has divided the state into eight climatic divisions with varying temperature and precipitation regimes. Alabama enjoys a temperate to subtropical climate, with a mean annual temperature cline from near 60°F along the Tennessee border to near 66°F along the coast. Seasonality is much more pronounced in the northern portion of the state. Precipitation is generally high in Alabama, almost all in the form of rain. Average annual rainfall ranges from less than 50 inches in parts of the Blackbelt to over 64 inches in parts of coastal Alabama, which is one of the highest mean annual rainfalls in the conterminous U.S. The generalized state water budget indicates an average rainfall of 55 inches; 33 inches is lost to evaporation and transpiration while 22 inches comprises stream outflow. On average, seven inches per year goes to ground-water recharge and later discharge. Alabama contains 14 major

drainage areas, mostly within the Tennessee and Mobile River Basins, and many lakes. Discharge varies substantially between drainage basins, as well as seasonally and among years.

Soil characteristics necessary for wetlands determinations, and their distribution within the state, were also determined. The Natural Resource Conservation Service (formerly the Soil Conservation Service) has divided the state into eight major soil groups, and has updated its list of hydric soils. Some information exists on the flora, fauna and ecology of southeastern wetlands; many commercially important species, as well as threatened and endangered species, rely on wetlands for part or all of their life cycle. Additional research is needed on Alabama wetlands biology.

Land use in Alabama in 1982 was evaluated by the Soil Conservation Service, which reported that the state contained nearly 950,000 acres of open water bodies. The Soil Conservation Service also divided the state into eight Major Land Resource Areas, geographic areas characterized by a particular pattern of soils, climate, topography, water resources, and land uses. A 1985 report by the Soil Conservation Service and Alabama Department of Economic and Community Affairs indicated that wetlands made up 11.4 percent of Alabama, with the Coastal Plain/Blackland Prairie Major Land Resource Area containing over 15 percent of its area in wetlands. The 1985 report also indicated that 97.6 percent of the state was privately owned, with nearly 90 percent devoted to agricultural or forestry use.

Various wetlands definitions were compared and contrasted; most definitions used by federal and state governments are similar and require the presence of one or more indicators of wetland soils, flora, or hydrology. A variation of the definition of wetlands developed by Cowardin and others (1979) was used in U.S. Army Corps of Engineers (1987), a federal delineation manual presently used by many agencies. The National Acacemy of Sciences (1995) summarized existing definitions, and proposed a definition for future use. Key ecological functions for Alabama wetlands (e.g., the role of wetlands in the environment) were described, including various hydrological, biogeochemical and biological functions.

Values to Alabama society for each function were delineated, including enhancing water quality, protecting water supply, flood control, protecting shorelines and streambanks, habitat for desirable

plant and animal species including many of economic importance, biological productivity including food for other desirable species, recreation including hunting/fishing and hiking, and educational values. The relative importance of the functions and values performed by different types of wetlands was shown to vary; thus a decrease in acreage of one wetland type may have a significant impact on society. Wetlands were shown to be very important to the future economic development of Alabama. While specific dollar values for Alabama wetlands are not available, nonetheless the state's wetlands are extremely valuable to many industries including forestry, commercial seafood production, and recreational hunting and fishing.

The status of assessment techniques for functions and values was evaluated. Goals of functional assessment may include how well a particular wetland will provide a desired outcome, such as habitat for game species. Several functional assessment techniques were compared, including Wetland Evaluation Technique, Habitat Suitability Index, and Habitat Evaluation Procedure; these and others may be suitable under differing environmental and economic constraints. Procedures to determine dollar values of wetlands were evaluated; no dollar values are available for the overall Alabama wetland resource. At present, technical information on Alabama wetlands is incomplete, and the general patterns of functions, biological and biogeochemical cycles need further study.

Procedures commonly used for classifying and delineating wetlands were compared at the federal and state level, both for Alabama and other states. Most classifications focus only on wetlands taxonomy; the hierarchical approach of Cowardin and others (1979) is used by the National Wetlands Inventory and some other state and federal programs. New techniques include the Primary Indicators method of Tiner (1993a), an outgrowth of the Cowardin and others (1979) scheme that does not require detailed descriptions of plant communities or soil types, and the Hydrogeomorphic Classification of Brinson (1993a), which emphasizes geomorphic setting, water source, and hydrodynamics. Based on differences in hydrology, there are three general types of wetlands found within the state: those in estuarine fringe settings, riparian or flow-through systems, and depressional systems relying on precipitation or ground-water flow.

Areas defined as wetlands for jurisdictional purposes vary among the states. In some states, not all areas that meet existing ecological definitions of a wetland meet the requirement for a jurisdictional definition. In Alabama, coastal wetlands are classified using information obtained from studies by the U.S. Department of Agriculture, U.S. Army Corps of Engineers, and the Alabama Department of Economic and Community Affairs. In other states, former land use and the location of an inland wetland (contiguous to flowing water or isolated) are characteristics used to determine jurisdictional wetlands.

Several methodologies have been developed to delineate wetlands for the purpose of regulation pursuant to Section 404 of the Clean Water Act; this has often led to confusion and controversy. Not all wetlands are considered as jurisdictional or regulated wetlands. At present, the most commonly accepted procedures are those in the 1987 U.S. Army Corps of Engineers delineation manual and the third edition of the National Food Security Act Manual. A Memorandum of Understanding exists among federal agencies regarding use of these procedures.

The status of wetlands mapping for the state showed that whereas some areas have been appropriately mapped, many others have not. Several federal and state programs have partially mapped wetlands; the National Wetlands Inventory is the primary program. As of October, 1994, 74 percent of the Alabama quadrangles have finalized National Wetlands Inventory maps. Of the eight states within the U.S. Environmental Protection Agency Region IV, four have finalized more than 75 percent of their National Wetlands Inventory maps, and five have completed statewide Land Use - Land Cover maps. Alabama has completed neither.

An evaluation of the status and trends of wetland acreage in the state and U.S. indicated that Alabama and the nation as a whole have lost much of their wetland acreage since colonization, much of it in the last few decades. More than half the wetlands have been lost nationwide (Watzin and Gosselink, 1992). Alabama has lost about 50 percent of its wetlands (McPherson, 1993), experiencing a decrease from 7.6 to 3.8 million acres, or approximately 12 percent of the entire state area. Losses in a Huntsville Advanced Identification project were conservatively estimated to be 70 percent between 1947 and 1993. Within Alabama, most studies have evaluated status and trends of wetlands in the

coastal zone. Approximately 35 percent of Alabama's coastal wetlands were lost between 1956 and 1979; this rate is much higher than national trends. The size and health of wetlands are affected by many human and natural activities; a significant percentage of the losses can be attributed to human activities.

The federal and state statutory framework dealing with wetlands was examined and shown to be largely uncoordinated and fragmented. At the federal level, four types of statutes are important: (1) those that relate to navigation and pollution control; (2) coastal zone management; (3) flood and agricultural management; and (4) recreation and wildlife. The earliest important federal statute is Section 10 of the Rivers and Harbors Act, which dealt with navigable waters. The single most important federal statute relating to wetlands is the Clean Water Act; however, there is no comprehensive federal wetlands act. No federal statute regulates wetlands with the primary goal being to limit wetland alteration. As modified by court cases, this Act now interprets wetlands to be included in the broader definition of "waters of the United States." Section 404 of this Act is a primary mechanism for regulating some activities in wetlands; it requires the U.S. Army Corps of Engineers to regulate by permit the discharge of dredge and fill materials into "waters of the United States." Permits may be denied for a variety of reasons relating to unacceptable adverse impacts. There is at present a large, unresolved controversy regarding whether such permit denial constitutes a governmental taking of private property for which there must be governmental compensation. Section 401 of the Clean Water Act requires states to certify compliance of federal permits or licenses with state water quality requirements, which may be more stringent than federal requirements.

Other federal laws are also applicable in certain cases. The Coastal Zone Management Act allows states to prepare plans for the conservation and environmentally sound development of the coastal zone. Several federal laws contain provisions that may provide funding or assistance in acquiring, managing, restoring, or enhancing coastal wetlands. Several laws and executive orders dealing with flood control and agricultural management provide assistance in floodplain management. Other laws promote the conservation of wildlife and necessary habitats, often in conjunction with state programs.

At the federal level, programmatic regulation of wetlands is fragmented, with the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Natural Resources Conservation Service (formerly the Soil Conservation Service), and other agencies responsible for various aspects of regulation. The U.S. Army Corps of Engineers is the regulatory agency charged with ensuring compliance with the wetland provisions of Section 404 of the federal Clean Water Act, with oversight review authority by the U.S. Environmental Protection Agency and other agencies. A series of Memoranda of Understanding have delineated specific responsibilities of each agency. In many cases, permits are required before wetland alteration can occur; however a series of regional and national general permits exist. Nearly all permit applications for alterations to regulated wetlands are ultimately approved, some after modification or mitigation is required. The Natural Resources Conservation Service regulates wetlands through its administration of the Food Security Act. A Memorandum of Understanding between federal agencies states that wetland delineations will be made on agricultural land by the Natural Resources Conservation Service in consultation with the U.S. Fish and Wildlife Service. These delineations will be accepted by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers for the purposes of Section 404 jurisdiction determinations. The U.S. Fish and Wildlife Service developed a wetlands priority conservation plan, administers the North American Waterfowl Management Program, and reviews various other agency actions.

A recent report to Congress by the U.S. Department of the Interior (Goldstein and Hartmann, 1994) evaluated the impact of present federal programs on wetlands. This report showed that many federal subsidies in three major categories (agricultural, urban development, and resource development) decrease wetlands acreage, functions or values at a net cost to the American taxpayer. Thus, many federal or joint federal-state programs may benefit particular groups while subsidizing wetlands degradation. Generally, state programs have not been so intensively evaluated.

State statutes related to wetlands regulation vary significantly, from states with very detailed wetlands protection statutes, to other states where wetlands are only marginally protected by other statutes such as water quality acts. Ten states have adopted the definition of wetlands used by the

U.S. Army Corps of Engineers found in Cowardin and others (1979), or use the current federal manual for delineation. At present, twelve states apply a "no net loss" of wetlands goal. Many states, including Alabama, are cooperating with the U.S. Environmental Protection Agency to develop a state wetlands management plan. Tennessee has recently adopted a wetlands management plan, the Tennessee Wetlands Conservation Strategy; many of its recommendations could be easily modified for use in Alabama.

The state of Alabama has no specific statute for the protection of wetlands. The state also has no nondegradation policy for wetlands, nor is there a policy of no net loss of wetlands. The Alabama Water Pollution Control Act and the Alabama Water Resources Act are presently interpreted by the Alabama Department of Environmental Management such that many wetland areas may be regulated as "waters of the state" for preservation of water quality. Nonetheless, wetlands are not regulated by the state of Alabama to preserve their unique wetland characteristics nor values.

Alabama state regulatory authority is uncoordinated and fragmented. The lack of a comprehensive statutory mandate limits and fragments the authority of state agencies, as does the lack of staff time devoted to wetlands issues. Only those coastal wetlands at an elevation below 10 feet are specifically covered. The remainder of the state's wetlands are regulated only insofar as their alteration affects water quality. Some other compared states have more effective, comprehensive, and user-friendly regulatory structures. The Alabama Department of Environmental Management reviews permit applications for water quality pursuant to Section 401 of the Clean Water Act, and can deny certification if water quality violations would occur. Alabama is one of 18 states that have explored assumption of the Section 404 permitting process; Alabama decided not to assume this program. The Alabama Department of Economic and Community Affairs is the primary coastal wetland management agency through the Alabama Coastal Area Management Program. This program, however, regulates only those areas seaward of the 10 foot elevation contour line. The Alabama Department of Environmental Management implements the permitting, regulatory and enforcement functions of this Program. Three of four types of special management areas under the Program permit uses that preserve, enhance or restore the natural functions of wetlands, and may

deny uses that degrade the integrity and natural functions of wetlands. Other Alabama state and local agencies have limited responsibility to evaluate, and in some cases regulate, uses of wetlands. For example, under the Alabama Coastal Area Management Program, local agencies may promulgate land use regulations, codes and ordinances; however, these must be determined by the Alabama Department of Environmental Management to be consistent with the Program's regulations and policies.

At present, there are several localized programs for wetland preservation and conservation in Alabama, including federal-local and federal-state initiatives. Huntsville is engaged in an Advance Identification of Wetlands Program with the U.S. Environmental Protection Agency; other high-risk areas targeted for Advance Identification have also been determined. The federal Coastal Barrier Resource System includes several areas in coastal Alabama; continued development in these areas is discouraged by the lack of some federal subsidies. Other projects have been submitted for funding under such programs as the Coastal Wetlands Planning, Protection and Restoration Act and the Alabama Forever Wild Program.

One of the major problems with the present federal and state regulatory framework is that in many cases user groups cannot easily determine if a property contains wetlands, nor their responsibilities in obtaining various state and federal permits; thus there is often a negative perception of the importance of wetlands by landowners.

Mitigation and mitigation banking are required in Section 404 permit decisions by the U.S. Army Corps of Engineers. Mitigation ranges from avoidance of adverse impacts to compensation. Mitigation banking, a relatively new form of compensatory mitigation, permits off-site "banking" of wetland preservation credits to be used in cases of unavoidable impact. Banks should be in place and properly functioning before credits can be used in exchange for wetland losses. Several possible benefits associated with mitigation banking were delineated, although potential problems were also pointed out.

There are few nonregulatory incentives for wetlands protection and management in Alabama. Mitigation and other nonregulatory approaches are much more widely used in some compared

states. The effectiveness of coastal mitigation projects was evaluated by Stout (1990c), indicating that many to date have not been successful. Likewise, in spite of some specific efforts detailed in the present report, Alabama is not a leader in wetlands education activities, especially for adult users and public employees. Educational materials on wetlands are common; however, few of these are specific to Alabama.

Based on the existing information, the Wetlands Conservation and Management Initiative indicates a series of problems regarding Alabama wetlands management, conservation, and protection, especially for inland and isolated wetlands. In many cases, state action or encouragement, often involving minimal dollar expense or staff time, could assist in resolving these problems. For each problem elucidated, possible general recommendations were delineated, divided into those applicable statewide, and those specifically for coastal Alabama. Future studies should determine specific mechanisms and, if necessary, legislation to implement the present general recommendations as well as projected cost estimates. Statewide recommendations were divided into three categories: wetlands management, wetlands evaluation, and nonregulatory approaches. These statewide changes include broad recommendations including the development and implementation of the proposed Alabama State Wetlands Conservation Plan, implementation of antidegradation and no net loss/net gain policies, development of a statewide mitigation plan, and more explicit incorporation of wetlands into the definition of state waters. More specific recommendations include implementation of a watershed-based approach to wetlands protection; adoption of procedures to classify, categorize, and inventory state wetlands; and implementation of water quality and narrative biological criteria for wetlands. Coastal Alabama recommendations include expansion of the Alabama Coastal Area Management Plan for the entire coastal zone, a requirement that permits be required regardless of size of the proposed alteration, and coordination of mitigation efforts between state and federal agencies.

Implementation costs for wetlands programs in other states were evaluated in order to provide order of magnitude estimates for implementation in Alabama. However, a future study should determine specific cost estimates for each recommendation of the Wetlands Conservation and

Management Initiative. In addition, the present study discusses the procedures used by Tennessee to gain consensus in developing and implementing the Tennessee Wetlands Conservation Strategy. Similar procedures could be beneficial in developing broad-based support for the proposed Alabama State Wetlands Conservation Plan.

By adopting the comprehensive set of wetlands recommendations of the Wetlands Conservation and Management Initiative, Alabama will begin to address significant problems facing the general public, landowners, and regulatory agencies. The recommendations are designed to more effectively protect Alabama's wetlands resources, while ensuring property rights and streamlining present regulatory procedures. These recommendations, while designed for circumstances unique to Alabama, are similar to recommendations already implemented in the Tennessee Wetlands Conservation Strategy. Unless Alabama implements an effective comprehensive wetlands conservation plan, it will continue to rapidly lose its valuable wetland resources.

Appendix VI
Alabama Upland Alamap Sampling Program

Alabama's Upland Alamap Program (summary from Appendix I ASSESS)

The Upland ALAMAP program (ADEM 1996d) is designed to enhance the current ambient monitoring program developed during the 1970's. First, stations in the historical ambient monitoring program were generally selected to monitor trends in water quality downstream of specific existing point sources. Therefore, the data collected at each of these sites represents only the area sampled and cannot be extrapolated to predict water quality at other similar size streams with any known level of uncertainty. To augment this type of monitoring, 50 stations will be selected statewide each year by EPA-Gulf Breeze using a probabilistic (random) design (Summers and Engle 1996). The data collected at these stations will statistically represent all upland stream miles and the level of uncertainty in the water quality estimates can be quantified. (Summers and Engle 1996). This type of assessment will be used in the 305(b) Water Quality Report to Congress to address overall State water quality.

Second, the historical ambient monitoring program required collection of water quality samples on a monthly basis at each of the stations in addition to water column metals samples on a quarterly basis. Statistical analysis of historical data by FOD and EPA Gulf Breeze suggests that sampling of water quality parameters on a quarterly schedule would have shown the same trends in water quality over time (ADEM 1996e, Summers and Engle 1996). Historically, water samples have been collected and analyzed for metal content. Metals have not been detected in the water column samples at ambient monitoring locations where metals have been detected in fish tissue or sediment samples. The modification of the historical ambient monitoring sampling schedule to a June/August/October Schedule for water quality and an annual sediment sample, where appropriate, will allow additional locations to be assessed with little additional expenditure of resources. Data from the historical ambient monitoring stations can be used to update the CWA 303(d) list and to monitor site specific trends in water quality.

Third, many of the stations in the historical ambient monitoring program were chosen in the 1970's to monitor specific pollution sources. These stations are generally concentrated in watersheds in the Birmingham area. An evaluation of each site was conducted to determine if the rational for monitoring the site is still applicable and if the information generated is of use to the Department. After this re-evaluation of each of the historical stations, only those stations of value to the Department were retained in the historical network.

And Fourth, EPA-Gulf Breeze is statistically analyzing the parameters at each historical ambient monitoring station to evaluate and select those that are most useful in determining status and trends and the least redundant (Summers and Engle 1996). A minimum core set of environmental indicator parameters (EPA 1996b) will be collected as well as others specific to each station.

Table 6-Upland Alamap97

ID#	Watershed	Stream Name	Mileage to DS Segment	Rf3rchid	Segment(s) Tributary To	Flow
AR01U1	Alabama River	UT to Alabama River	1.84	03150201 1442 0.00	23	0.40J
AR02U1	Alabama River	Sullivan Branch	3.84	03150203 92 2.24	28	0.00
AR03U1	Alabama River	Bear Creek	18.53	03150203 14 10.82	13 & 15	1.44J
AR04U1	Alabama River	Wallers Creek	0.07	03150204 865 0.00	11	7.77J
BW01U1	Black Warrior	Duck River	17.72	03160109 19 15.22	9	1.64J
BW02U1	Black Warrior	Wade Creek	1.58	03160111 565 1.22	564	11.84J
BW03U1	Black Warrior	Butler Branch	0.51	03160113 1023 0.00	53	0.74J
CA01U1	Cahaba River	Mahan Creek	13.82	03150202 22 10.70	21	8.89J
CH01U1	Chattahoochee River	UT to Snapper Creek	0.11	03130002 777 0.00	780	*ws
CH02U1	Chattahoochee River	UT to Snake Creek	3.04	03130003 1442 0.00	44	0.22J
CH03U1	Chattahoochee River	UT to Peterman Creek	0.26	03130004 591 0.00	23	1.65J
CO01U1	Coosa River	East Fork of Little River	8.84	03150105 44 6.71	43	17.75J
CO02U1	Coosa River	Little Canoe Creek	11.5	03150106 58 5.29	40	4.73J
CO03U1	Coosa River	UT to Hatchet Creek	2.58	03150107 1135 2.46	1134	0.56J
CO04U1	Coosa River	Peckerwood Creek	5.72	03150107 51 5.53	48 & 49	5.78J
CO05U1	Coosa River	Chestnut Creek	2.14	03150107 82 1.63	17	17.02J
CP01U1	Chipola River	Buck Creek	4.14	03130012 944 2.91	18	21.13J
CW01U1	Choctawhatchee River	UT to Whitewater Creek	1.17	03140202 1432 0.00	350	0.10J
CW02U1	Choctawhatchee River	Sandy Branch	0.65	03140201 1145 0.00	7	2.69J
EB01A1	Escambia River	Crossway Creek	4.43	03140304 834 2.85	30	*ws
EB01U1	Escambia River	Mannings Creek	10.87	03140301 18 9.91	14	0.52J
EB02U1	Escambia River	McQuagee Mill Creek	1.33	03140302 398 0.00	661	5.07J
EB03U1	Escambia River	Patsaliga Creek	10.07	03140302 130 9.40	107	70J
EB04U1	Escambia River	UT to Patsaliga Creek	0.05	03140302 129 0.00	107	0.97J
EB05U1	Escambia River	UT to Conecuh River	0.14	03140304 916 0.00	3	
EB06U1	Escambia River	Conecuh River	1.72	03140304 2 1.08	1	
LT01U1	Lower Tombigbee River	Alamuchee Creek	0.89	03160202 21 0.08	19	20.53J
LT02U1	Lower Tombigbee River	Santa Bogue Creek	9.87	03160203 35 7.01	20 & 55	60.18J
MR01U1	Mobile River	UT to Big Chippewa Lake	1.73	03160204 832 2.87	835	
MR02U1	Mobile River	Red Gully	0.75	03160205 391 0.00	9	0.37
MR03U1	Mobile River	Polecat Creek	6.79	03160205 6 5.70	5	0.94
TA01A1	Tallapoosa River	UT to Cane Creek	3.23	03150108 406 2.38	38	1.02J
TA01U1	Tallapoosa River	Hunter Creek	0.43	03150109 530 0.12	39	
TA02U1	Tallapoosa River	UT to Ledbetter Creek	0.56	03150110 976 0.00	975	0.18J
TA03U1	Tallapoosa River	UT to Wauxamaka Creek	0.71	03150110 1017 0.00	1013	0.10J

Table 6-Upland Alamap97 (cont.)

ID#	Watershed	Stream Name	Mileage to DS Segment	Rf3rchid	Segment(s) Tributary To	Flow
˙A04U1	Tennessee River	Slaughter Creek	0.8	03150110 14 0.30	12	0.41J
˙E01A1	Tallapoosa River	Rock Creek	5.75	06030006 24 4.22	6	5.77J
˙E01U1	Tennessee River	Muddy Fork of Big Nance Cr	0.25	06030005 65 0.00	64	5.51J
˙E02A1	Tennessee River	Crawford Creek	2.47	06030002 1901 0.62	26	0.10J
˙E02U1	Tennessee River	UT to Bakers Creek	2.37	06030002 2090 0.00	2089	
˙E03U1	Tennessee River	UT to Stinking Bear Creek	0.1	06030005 1529 0.00	1526	2.27J
˙E04U1	Tennessee River	UT of Bullen Branch	0.32	06030006 402 0.00	401	0.21J
˙E05U1	Tennessee River	McDaniel Creek	20.81	06030002 27 14.14	26	16.25J
˙E06U1	Tennessee River	Crowdabout Creek	0.95	06030002 115 0.74	32	0.91J
˙E07U1	Tennessee River	Bear Creek	49.95	06030006 8 45.07	7	*nw
˙E08U1	Tennessee River	Mill Creek	7.27	06030002 35 6.57	33	0.27J
JT01U1	Upper Tombigbee River	Yellow Creek	8.6	03160105 10 5.79	8	*ws
JT02U1	Upper Tombigbee River	Luxapallila Creek	20.99	03160105 4 25.29	4	*nw
JT03U1	Upper Tombigbee River	UT to Sneads Creek	0.03	03160103 1123 0.00	1122	0.03J
JT04U1	Upper Tombigbee River	Cow Creek	2.97	03160106 1122 0.26	14	0.10J
JT05U1	Upper Tombigbee River	Caney Creek	2.99	03160108 41 2.05	30	0.05J

ws	Wetland system. No flow taken.
nw	Not Wadeable. No flow taken.
*	Oxbow; @ sampling point unwadeable & non-flowing. No alternative sampling point.
**	Conecuh River not wadeable at this site.
***	Dry Creek Bed. No samples collected.
****	Stream location submerged under Lake Martin.
*****	Unable to locate either the tributary or Bakers Creek.
	pH value consistent with wetland system

New road construction in area. No flow in stream beds.

Figure Upland Alamap-1

1997 Alamap
Ambient Surface Water Riverine Sampling Stations

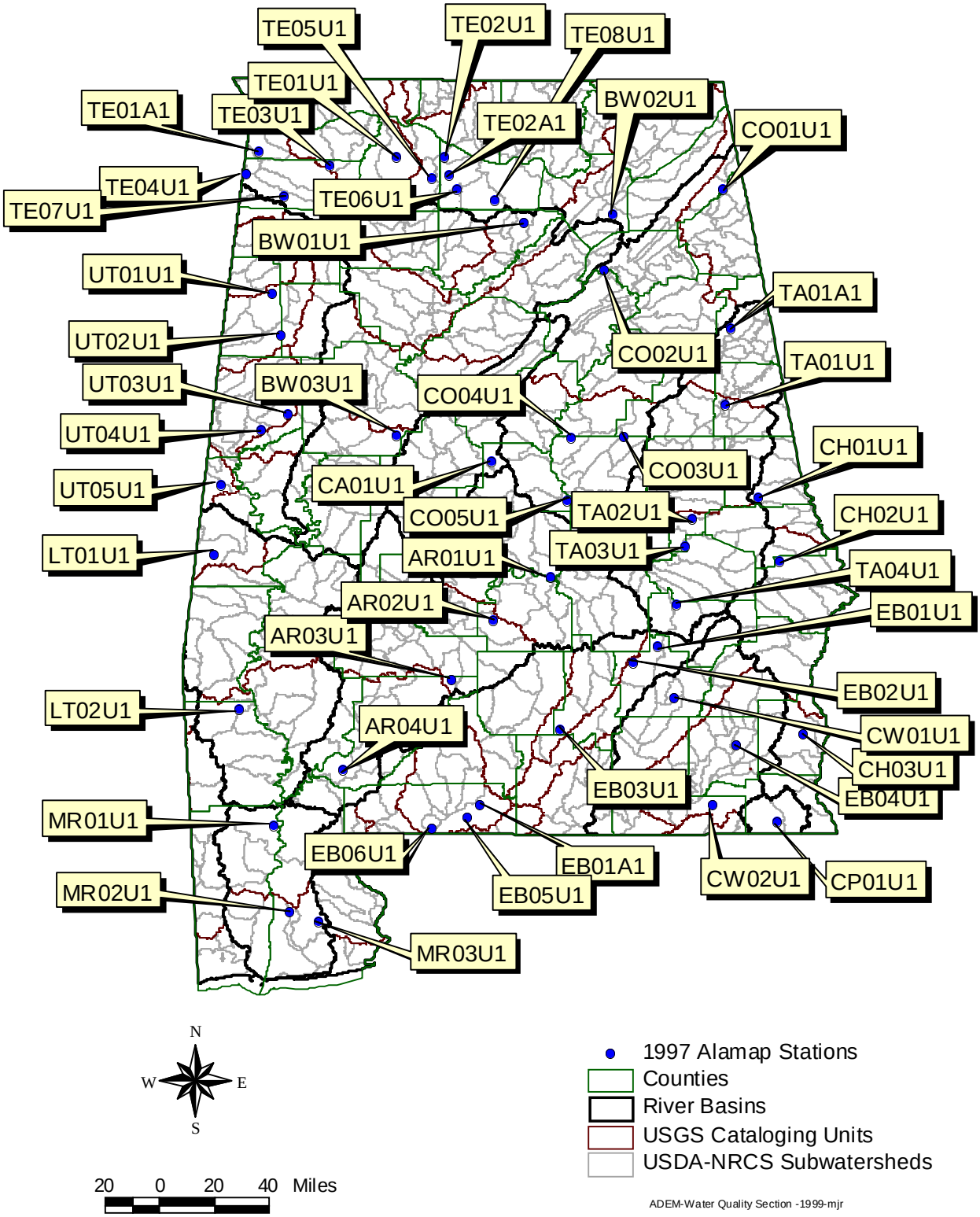


Table Upland Alamap98

Station	Waterbody	Latitude	Longitude
AR01U2-33	tributary to Valley Creek	32.64763	-86.99446
AR02U2-25	tributary to Bogue Chitto Creek	32.36005	-87.35627
AR03U2-8	Chilatchee Creek	32.20201	-87.35448
AR04U2-16	Halls Branch	32.15404	-86.72843
AR05U2-28	Waller Creek	32.20903	-86.23464
AR06U2-18	Bear Creek	31.81594	-87.03687
AR07U2-2	Bear Creek	31.80991	-87.04410
AR08U2-10	Little River	31.27958	-87.47771
AR09U2-39	Brickyard Creek	31.27675	-87.72438
BW01A2-59	Hagood Creek	34.34439	-87.40217
BW02A2-41	Splunge Creek	34.01036	-87.46177
BW03U2-48	Opossum Creek	33.48161	-86.92424
BW04U2-37	Black Warrior River	33.95243	-86.82374
BW05U2-5	Smith Branch	34.23397	-86.65518
BW06U2-38	Big Mud Creek	34.14328	-86.30753
CA01U2-46	Peavine Creek	33.26387	-86.79817
CH01U2-13	tributary to Chattahoochee River	31.41460	-85.07862
CO01U2-55	tributary to Choccolocco Creek	33.63674	-85.76006
CW01U2-23	Double Creek	31.93792	-85.72425
CW02U2-26	Judy Creek	31.59134	-85.62143
CW03U2-34	Judy Creek	31.52828	-85.58690
CW04U2-7	East Fork of Choctawhatchee River	31.44653	-85.39175
EB01U2-40	tributary to Persimmon Creek	31.80570	-86.58508
EB02U2-9	Double Branch	31.79480	-86.02436
EB03U2-21	Patsaliga Creek	31.70043	-86.29698
EB04U2-45	tributary to Rocky Creek	31.64055	-86.73509
EB05U2-52	tributary to Duck Creek	31.59771	-86.89005
EB06U2-29	Pigpen Creek	31.46511	-86.25214
EB07U2-15	tributary to Little Escambia Creek	31.22653	-87.20948
EB08U2-1	tributary to Conecuh River (oxbow)	31.07968	-86.95596
EB09U2-20	tributary to Dry Creek	31.04343	86.35538
EB10A2-27	tributary to Hobbs Branch	31.02560	-87.38738
EW01A2-42	tributary to Pierce Creek	30.69103	-88.27529
EW02U2-30	tributary to Franklin Creek	30.47929	-88.30398

Table Upland Alamap98 (cont.)

Station	Waterbody	Latitude	Longitude
LT01U2-3	Alamuchee Creek	32.47746	-88.29582
LT02U2-24	Tuckabum Creek	32.17882	-88.21900
LT03U2-32	Bates Creek	31.22515	-88.15960
MR01A2-14	Drinking Branch	30.97167	-88.23827
MR02U2-6	Tensaw River	30.75468	-87.92017
PE01U2-12	tributary to Indian Creek	30.86137	-87.65486
PE02U2-11	tributary to Perdido River	30.76767	-87.59345
TA01U2-31	tributary to Enitachopco Creek	33.27158	-85.86880
TA02U2-22	tributary to Chatahospee Creek	32.95091	-85.48939
TA03U2-4	tributary to Ledbetter Creek	32.66092	-85.76764
TA04U2-49	tributary to Calebee Creek	32.42421	-85.71284
TE01U2-58	tributary to Dunkin Creek	34.52361	-87.77056
TE02U2-35	Cypress Creek	34.83264	-87.71534
TE03U2-51	White Branch	34.96183	-87.30565
TE04U2-56	Davis Branch	34.97612	-86.78467
TE05U2-50	Flint River	34.58150	-86.46838
TE06U2-54	Dry Creek	34.96367	-86.36238
TE07U2-44	tributary to Paint Rock River	34.65436	-86.34405
TE08U2-53	Coal Creek	34.21453	-86.05300
TE09U2-43	tributary to Traylor Branch	34.40933	-85.96529
TE10U2-47	Burkhalter Creek	34.75129	-85.64973
UT01U2-19	Buttahatchee Creek	34.12531	-87.79512
UT02U2-57	tributary to Flurry Branch	34.05405	-87.90001
UT03U2-36	Turkey Creek	33.79938	-87.86789
UT04U2-17	Sipsey River	33.50791	-87.76970

Table Upland Alamap98 (cont.)

Station	Waterbody	Flow or Comments
AR01U2-33	tributary to Valley Creek	Standing Pools of approximately 2 inches depth; No flow, no Habitat Assessment, no samples.
AR02U2-25	tributary to Bogue Chitto Creek	Stream bed dry; No flow, no Habitat Assessment, no samples.
AR03U2-8	Chilatchee Creek	0.34J
AR04U2-16	Halls Branch	Stream bed dry; No flow, no Habitat Assessment, no samples.
AR05U2-28	Waller Creek	0.03J
AR06U2-18	Bear Creek	Station Inaccessible, Private property; No flow, no Habitat Assessment, no samples, no GPS, no pictures.
AR07U2-2	Bear Creek	0.6
AR08U2-10	Little River	Stream bed dry; No flow, no Habitat Assessment, no samples.
AR09U2-39	Brickyard Creek	Stream bed dry; No flow, no Habitat Assessment, no samples.
BW01A2-59	Hagood Creek	No Flow Measured
BW02A2-41	Splunge Creek	39.4J
BW03U2-48	Opossum Creek	No Flow Measured
BW04U2-37	Black Warrior River	No Measurable Flow
BW05U2-5	Smith Branch	No Measurable Flow
BW06U2-38	Big Mud Creek	No Measurable Flow
CA01U2-46	Peavine Creek	No Flow Measured
CH01U2-13	tributary to Chattahoochee River	Station Inaccessible, Private property; No flow, no Habitat Assessment, no samples, no GPS, no pictures.
CO01U2-55	tributary to Choccolocco Creek	0.03J
CW01U2-23	Double Creek	Stream bed dry; No flow, no Habitat Assessment, no samples.
CW02U2-26	Judy Creek	5.66J
CW03U2-34	Judy Creek	17.08J
CW04U2-7	East Fork of Choctawhatchee River	45.51J
EB01U2-40	tributary to Persimmon Creek	0.11J
EB02U2-9	Double Branch	1.43J
EB03U2-21	Patsaliga Creek	31.09J
EB04U2-45	tributary to Rocky Creek	0.00 - Standing Pools
EB05U2-52	tributary to Duck Creek	0.00 - Standing Pools
EB06U2-29	Pigpen Creek	0.10K
EB07U2-15	tributary to Little Escambia Creek	0.19
EB08U2-1	tributary to Conecuh River (oxbow)	2.2
EB09U2-20	tributary to Dry Creek	0.00 - Standing Pools
EB10A2-27	tributary to Hobbs Branch	0.00 - Standing Pools
EW01A2-42	tributary to Pierce Creek	1.8

Table Upland Alamap98 (cont.)

Station	Waterbody	Flow or Comments
EW02U2-30	tributary to Franklin Creek	Stream bed dry; No flow, , no samples.
LT01U2-3	Alamuchee Creek	28.07J
LT02U2-24	Tuckabum Creek	11.80J
LT03U2-32	Bates Creek	14.3
MR01A2-14	Drinking Branch	0.00 - Standing Pools
MR02U2-6	Tensaw River	Non-wadeable stream
PE01U2-12	tributary to Indian Creek	0.13
PE02U2-11	tributary to Perdido River	Stream bed dry; No flow, no Habitat Assessment, no samples.
TA01U2-31	tributary to Enitachopco Creek	0.51J
TA02U2-22	tributary to Chatahospee Creek	0.06J
TA03U2-4	tributary to Ledbetter Creek	0.25J
TA04U2-49	tributary to Calebee Creek	Stream bed dry; No flow, no Habitat Assessment, no samples.
TE01U2-58	tributary to Dunkin Creek	No Flow Measured
TE02U2-35	Cypress Creek	3.50
TE03U2-51	White Branch	159.10
TE04U2-56	Davis Branch	No Flow Measured
TE05U2-50	Flint River	No Measurable Flow
TE06U2-54	Dry Creek	No Flow Measured
TE07U2-44	tributary to Paint Rock River	Stream bed dry; No flow, no Habitat Assessment, no samples.
TE08U2-53	Coal Creek	Stream bed dry; No flow, no Habitat Assessment, no samples.
TE09U2-43	tributary to Traylor Branch	Standing Pools of approximately 2 inches depth; No flow, no Habitat Assessment, no samples.
TE10U2-47	Burkhalter Creek	Stream bed dry; No flow, no Habitat Assessment, no samples.
UT01U2-19	Buttahatchee Creek	37.60
UT02U2-57	tributary to Flurry Branch	Stream bed dry; No flow, no Habitat Assessment, no samples.
UT03U2-36	Turkey Creek	No Flow Measured
UT04U2-17	Sipsey River	

Figure Upland Alamap-2

1998 Alamap
Ambient Surface Water Riverine Sampling Stations

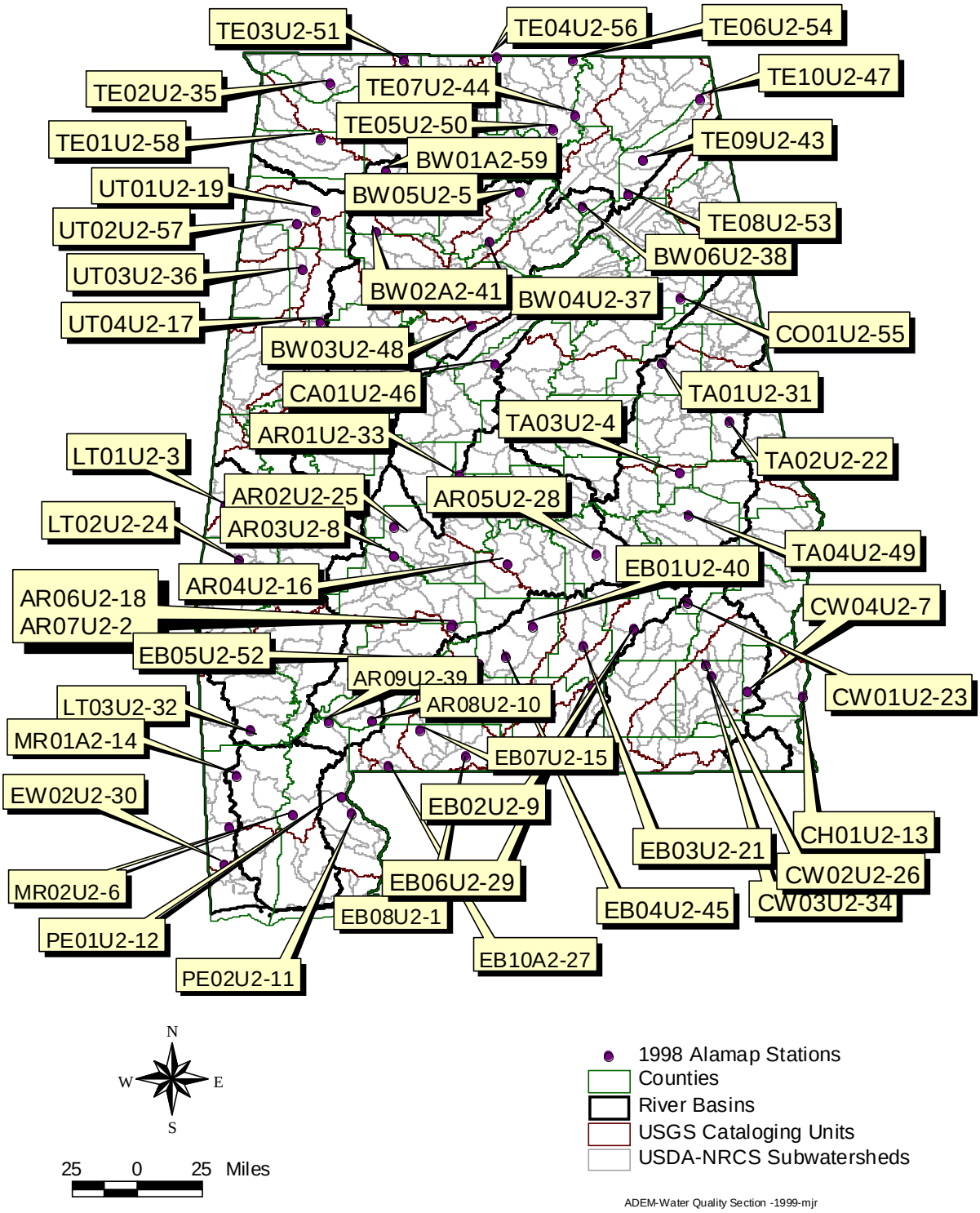


Table Upland Alamap99

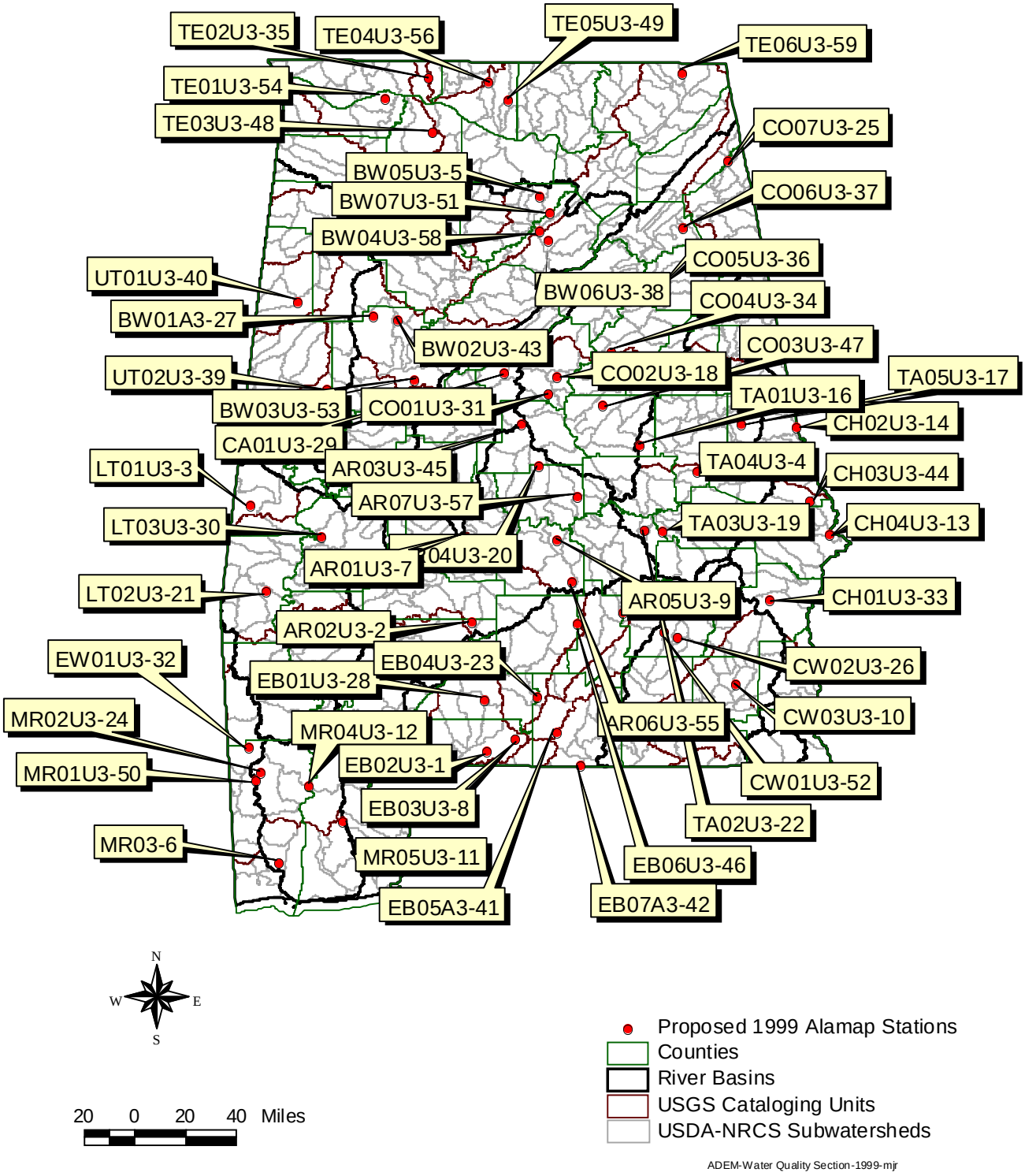
ID#	Stream Name	Latitude	Longitude
AR01U3-7	Alabama River	32.28587	-87.08593
AR02U3-2	Bear Creek	31.81039	-87.04239
AR03U3-45	Pate Creek	32.93536	-86.76225
AR04U3-20	Indian Creek	32.69360	-86.66857
AR05U3-9	Tallawassee Creek	32.27655	-86.56011
AR06U3-55	Cherry Creek	32.04370	-86.47149
AR07U3-57	Pierce Creek	32.52634	-86.44309
BW01A3-27	North River	33.54923	-87.60152
BW02U3-43	McDuff Spring Branch	33.52661	-87.46216
BW03U3-53	Tributary to Kepple Creek	33.18799	-87.36608
BW04U3-58	Williams Creek	34.03341	-86.65972
BW05U3-5	Duck River	34.23310	-86.65490
BW06U3-38	Dry Creek	33.97350	-86.60890
BW07U3-51	Hurricane Creek	34.13599	-86.60217
CA01U3-29	Beaverdam Creek	33.22783	-86.86285
CH01U3-33	Tributary to Leak Creek	31.94090	-85.35538
CH02U3-14	Hardley Creek	32.91896	-85.19993
CH03U3-44	Tributary to Hospilika Creek	32.49781	-85.12713
CH04U3-13	Uchee Creek	32.31326	-85.01039
CO01U3-31	Mud Creek	33.10540	-86.60754
CO02U3-18	Beeswax Creek	33.20598	-86.55860
CO03U3-47	Stewart Branch	33.04545	-86.30358
CO04U3-34	Tributary to Talladega Creek	33.34165	-86.25564
CO05U3-36	Tributary to Cane Creek	33.69422	-85.94555
CO06U3-37	Tributary to Coosa River	34.04654	-85.84366
CO07U3-25	Little River	34.42696	-85.59003
CW01U3-52	Tributary to Walnut Creek	31.75504	-85.95182
CW02U3-26	Whitewater Creek	31.72784	-85.87190
CW03U3-10	West Fork of Choctawhatchee River	31.45433	-85.54118
EB01U3-28	Tributary to Murder Creek	31.37069	-86.97059
EB02U3-1	Tributary to Conecuh River (oxbow)	31.07966	-86.95592
EB03U3-8	Poley Creek	31.14593	-86.79613
EB04U3-23	Pigeon Creek	31.38366	-86.67158
EB05A3-41	Tributary to Shady Bend Creek	31.18862	-86.56204
EB06U3-46	Fayette Branch	31.80565	-86.44153
EB07A3-42	Tributary to Horsehead Creek	31.00071	-86.42831
EB08U3-15	Patsaliga Creek	31.86561	-86.18181
EW01U3-32	Tributary to Bennett Creek	31.09712	-88.30807
LT01U3-3	Alamuchee Creek	32.47608	-88.30009
LT02U3-21	Middle Tallawampa Creek	31.98937	-88.21381
LT03U3-30	Greer Branch	32.29778	-87.89646
MR01U3-50	Mill Branch	30.91019	-88.26906
MR02U3-24	Sweetwater Branch	30.95727	-88.24454
MR03-6	Fowl River	30.44873	-88.14303
MR04U3-12	Tributary to Big Briar Creek	30.87884	-87.97137
MR05U3-11	Tributary to Threemile Creek	30.68443	-87.77580
TA01U3-16	Tributary to Chapman Creek	32.81773	-86.08719
TA02U3-22	Miller Creek	32.33107	-86.06798
TA03U3-19	Old Town Creek	32.32736	-85.95912
TA04U3-4	Tributary to Ledbetter Creek	32.66609	-85.76680
TA05U3-17	Chatahospee Creek	32.93362	-85.50934

Table Upland Alamap99 (cont.)

ID#	Stream Name	Latitude	Longitude
TE01U3-54	Shegog Creek	34.78083	-87.53636
TE02U3-35	First Creek	34.90424	-87.28709
TE03U3-48	Sinking Creek	34.59721	-87.26806
TE04U3-56	Swan Creek	34.88189	-86.94965
TE05U3-49	Tributary to Limestone Creek	34.77500	-86.83584
TE06U3-59	Tributary to Wimberly Branch	34.92833	-85.85267
UT01U3-40	Cooper Creek	33.62667	-88.03224
UT02U3-39	Tributary to Taylor Creek	33.13440	-87.86740

Figure Upland Alamap-3

Proposed 1999 Alamap
Surface Water Riverine Sampling Stations

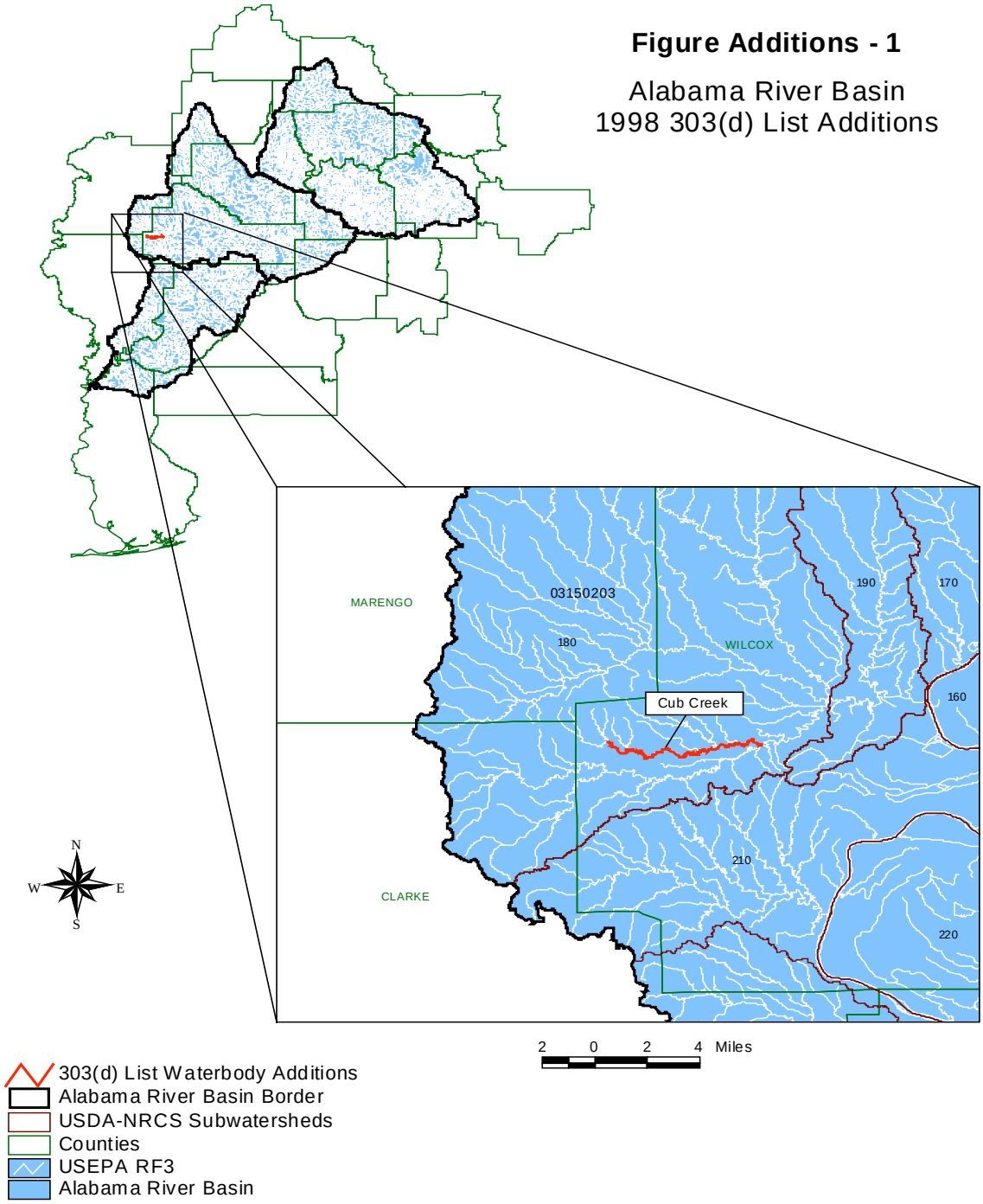


Appendix VIII
Additions to the 1998 303(d) List by ADEM

Note: All Waterbody Additions were mapped as Red which usually indicates a Non Support Status. Please refer to the tables following the maps for the correct support status (either Non or Partial). Waterbody ID No.s, as included with the previous 114 303(d) segments in Part VII, will be included with these segments in the near future for use with the ADB and the new Water Quality Database.

Figure Additions - 1

Alabama River Basin
1998 303(d) List Additions



303(d) List Waterbody Additions
Alabama River Basin Border
USDA-NRCS Subwatersheds
Counties
USEPA RF3
Alabama River Basin

Table Additions-1
Alabama River Basin Additions to the 1998 303(d) by ADEM

Waterbody Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)	305(b) Listed Causes
Cub Creek	Alabama	Wilcox	8.11	Mouth (Cub Creek at the confluence with Beaver Creek) SW1/4, S27, T12N, R5E	31.97506	87.56587	Source of annual stream flow. SW1/4, S26, T12N, R4E	31.97807	87.6502	Fish & Wildlife	nutrients, organic enrichment/D.O.

Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
Yes	1988	ADEM	Non	Yes	X	X	X	Yes

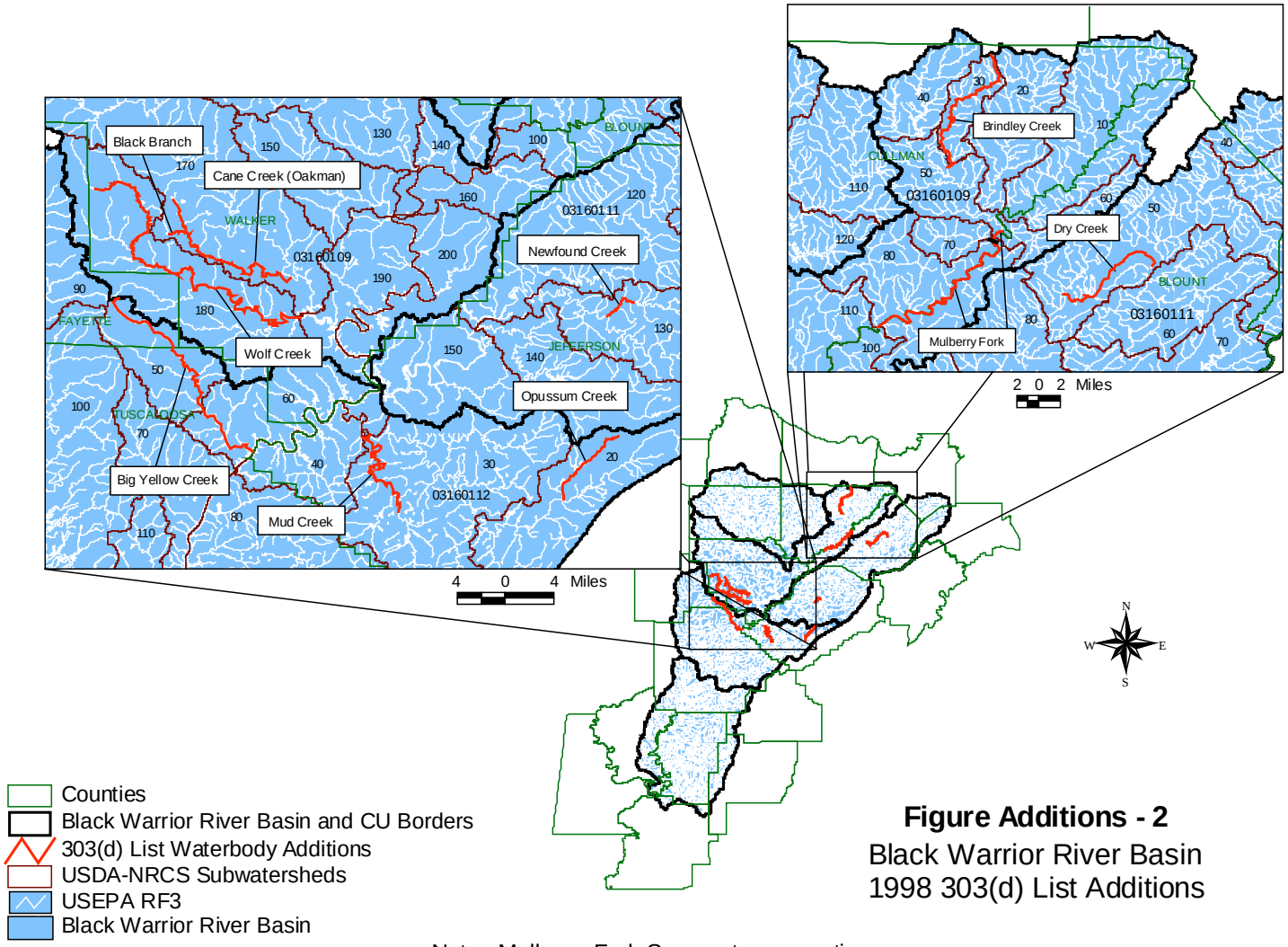


Figure Additions - 2
Black Warrior River Basin
1998 303(d) List Additions

Note: Mulberry Fork Segments are contiguous

Table Additions – 2
Black Warrior River Basin Additions to the 1998 303(d) List by ADEM

Stream Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)
Big Yellow Creek	Black Warrior	Tuscaloosa	20.7	Mouth (Big Yellow Creek at the confluence with Bankhead Lake) SW1/4, S27, T12N, R5E	33.47754	87.33689	Source of annual stream flow. NE1/4, S17, T16S, R9W	33.65862	87.49422	Swimming, Fish & Wildlife
Black Branch	Black Warrior	Walker	1.29	Mouth (Black Branch at the confluence with Shelton Branch) SW1/4, S18, T15S, R8W	33.73723	87.41444	Source of annual stream flow. SE1/4, S14, T15S, R6W	33.73525	87.4344	Fish & Wildlife
Brindley Creek	Black Warrior	Cullman	16.3	Mouth (Brindley Creek at the confluence with Brogden River) NE1/4, S29, T10S, R2W	34.14526	86.76882	Source of annual stream flow. SE1/4, S35, T8S, R2W	34.29205	86.71079	Public Water Supply
Cane Creek (Oakman)	Black Warrior	Walker	14.7	Mouth (Cane Creek at the confluence with Lost Creek) NE1/4, S5, T14S, R6W	33.68452	87.29097	Source of annual stream flow. NE1/4, S36, T14S, R6W	33.77542	87.43194	Fish & Wildlife, Agricultural & Industrial Water Supply
Dry Creek	Black Warrior	Blount	11.2	Mouth (Dry Creek at the confluence with Locust Fork) NW1/4, S23, T12S, R1W	33.97838	86.615	Source of annual stream flow. SE1/4, S2, T12S, R1W	34.01572	86.49942	Fish & Wildlife
Mud Creek	Black Warrior	Jefferson	5.05	Mouth (Mud Creek at the confluence with Valley Creek) SE 1/4, S6, T18S, R6W	33.49808	87.19636	Big Branch NW 1/4, S10, T19S, R6W	33.40796	87.16258	Fish & Wildlife
Mulberry Fork - Warrior River	Black Warrior	Blount	18	Mouth (Mulberry Fork at the confluence with Marriott Creek) SE 1/4, S4, T13S, R3W	33.93549	86.85974	Mud Creek SE1/4, S26, T11S, R2W	34.04880	86.70887	Fish & Wildlife
Mulberry Fork - Warrior River	Black Warrior	Blount	1.25	Mouth (Mulberry Fork at the confluence with Mud Creek) SE 1/4, S26, T11S, R2W	34.0488	86.70887	Broglen River SE1/4, S24, T11S, R2W	34.06129	86.69601	Fish & Wildlife
Newfound Creek	Black Warrior	Jefferson	3.01	Mouth (Newfound Creek at the confluence with Five Mile Creek) SW1/4, S13, T16S, R4W	33.63855	86.91601	Impoundment SE1/4, S7,T16S,R3W	33.65593	86.88452	Fish & Wildlife
Opossum Creek	Black Warrior	Jefferson	8	Mouth (Opossum Creek at the confluence with Valley Creek) SW1/4, S33, T18S, R4W	33.42172	86.96778	Its source SW1/4, S6,T18S,R3W	33.50013	86.89831	Industrial Operations
Wolf Creek	Black Warrior	Walker	37.2	Mouth (Wolf Creek at the confluence with Lost Creek) NW1/4, S21, T16S, R7W	33.63788	87.27954	Wolf Creek at the Highway 102 Bridge NW1/4, S31,T14S,R9W	33.78891	87.52266	Fish & Wildlife

Table Additions-2 (cont.)

Stream Name	305(b) Listed Causes	Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
Big Yellow Creek	metals, pH, siltation	Yes	1979 - 1985, 1988	USGS, ADEM	Non	Yes	X	X	X	Yes
Black Branch	metals, pH, siltation, other habitat alterations	Yes	1996 - 1997	Auburn Fisheries Cooperative Research Center	Non	Yes	X	X	X	Yes
Brindley Creek	ammonia, nutrients, organic enrichment/D.O., pathogens	Yes	1997	Golden Rod Water Intake, NPS Assessment (ADEM)	Partial	Yes	X	X	X	Yes
Cane Creek (Oakman)	metals, nutrients, pH, siltation, organic enrichment/D.O.	Yes	1988, 1993, 1997	ADEM, EPA	Partial	Yes	X	X	X	Yes
Dry Creek	ammonia, nutrients, organic enrichment/D.O., pathogens	Yes	1988, 1991	ADEM	Partial	Yes	X	X	X	Yes
Mud Creek	pH, siltation	Yes	1974 - 1983	USGS	Non	Yes	X	X	X	Yes
Mulberry Fork - Warrior River	nutrients	Yes	1972 - 1983, 1988, 1996	USGS, ADEM	Non	Yes	X	X	X	Yes
Mulberry Fork - Warrior River	nutrients	Yes	1988	ADEM	Non	Yes	X	X	X	Yes
Newfound Creek	None listed.	Yes	1986	ADEM	Partial	Yes	X	X	X	Yes
Opossum Creek	toxicity, pesticides, priority organics, nonpriority organics, metals, nutrients, pH, oil and grease	Yes	1985, 1996, 1997	ADEM, EPA	Non, D.O. only	Yes	X	X		Yes
Wolf Creek	metals, pH, siltation, other habitat alterations	Yes	1996	ADEM	Partial	Yes	X	X	X	Yes

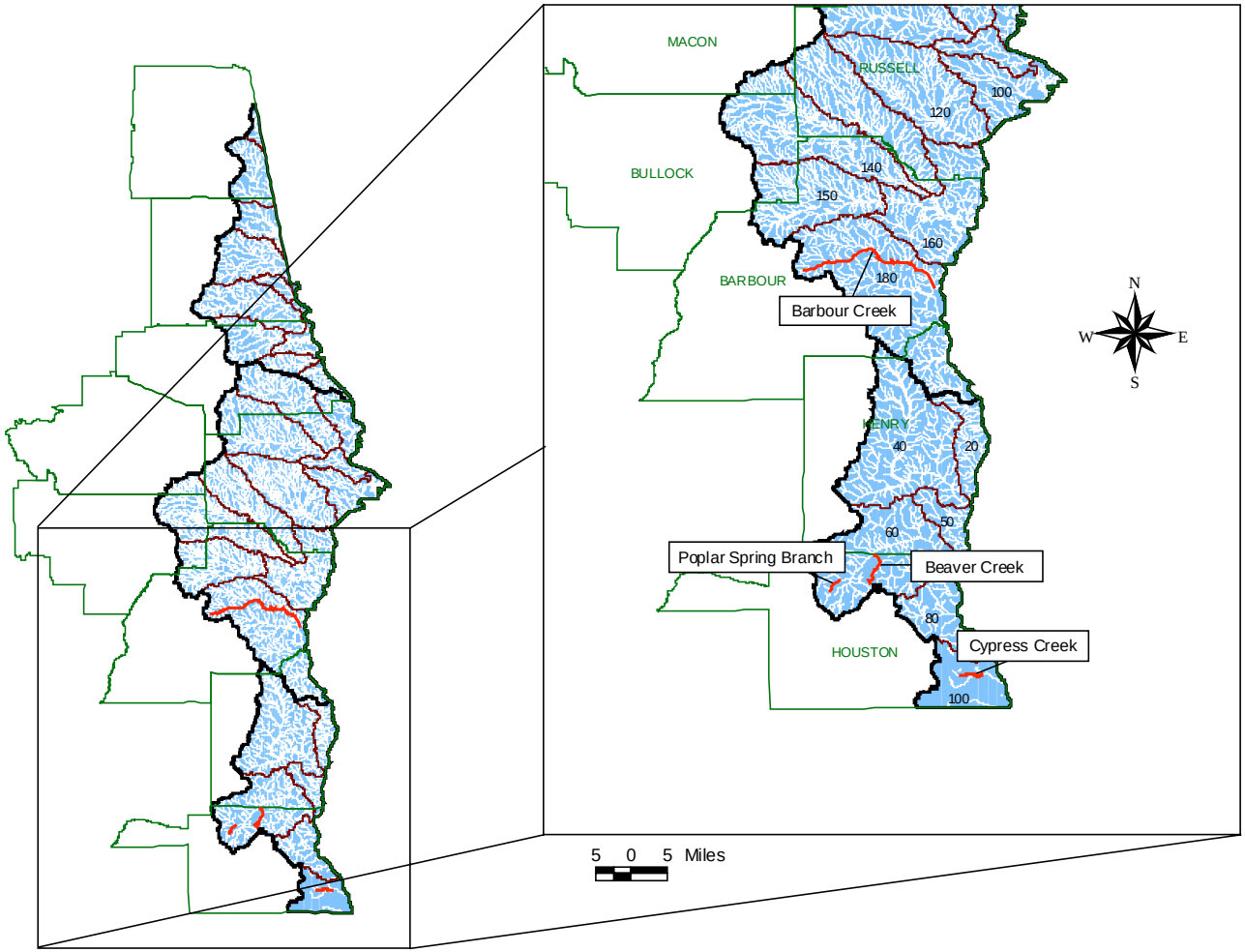


Figure Additions-3

Chattahoochee River Basin
1998 303(d) List Additions

303(d) List Waterbody Additions
Counties
Chattahoochee River Basin and CU Borders
USDA-NRCS Subwatersheds
USEPA RF3
Chattahoochee River Basin

Table Additions –3
Chattahoochee River Basin Additions to the 1998 303(d) List by ADEM

Stream Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)
Barbour Creek	Chattahoochee	Barbour	21.9	Mouth (Barbour Creek at the confluence with Walter F. George Reservoir/Chattahoochee River) SW1/4, S17, T10N, R29E	31.84472	-85.15472	Source of annual stream flow. SW1/4, S3, T10N, R26E	31.87867	-85.41493	Fish & Wildlife
Poplar Spring Branch	Chattahoochee	Houston	2	Mouth (Poplar Spring Branch at the confluence with Omusee Creek) SW1/4, S4, T3N, R27E	31.25641	-85.34322	Ross Clark Circle NW1/4, S17, T3N, R27E	31.23451	-85.36239	Fish & Wildlife
Cypress Creek	Chattahoochee	Houston	2.97	Mouth (Cypress Creek at the confluence with Bryans Creek) SW1/4, S7, T1N, R8W	31.06799	-85.05881	Source of annual stream flow. SE1/4, S11, T1N, R9W	31.06612	-85.10268	Fish & Wildlife
Beaver Creek	Chattahoochee	Houston	5.12	Mouth (Beaver Creek at the confluence with Omusee Creek) NW1/4, S19, T4N, R28E	31.30786	-85.27339	Source of annual stream flow. SE1/4, S1, T3N, R27E	31.25307	-85.28243	Fish & Wildlife

Table Additions-3 (cont.)

Stream Name	305(b) Listed Causes	Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
Barbour Creek	siltation, organic enrichment/D.O.	Yes	1987	ADEM	Non	Yes	X	X	X	Yes
Poplar Spring Branch	pH	Yes	1984	ADEM	Non	Yes	X			Yes
Cypress Creek	organic enrichment/D.O., nutrients	Yes	1984, 1986	ADEM	Partial	Yes	X	X	X	Yes
Beaver Creek	organic enrichment/D.O., nutrients	Yes	1977 - 1986	ADEM	Non	Yes	X	X	X	Yes

Figure Additions-3

Choctawhatchee River Basin
1998 303(d) List Additions

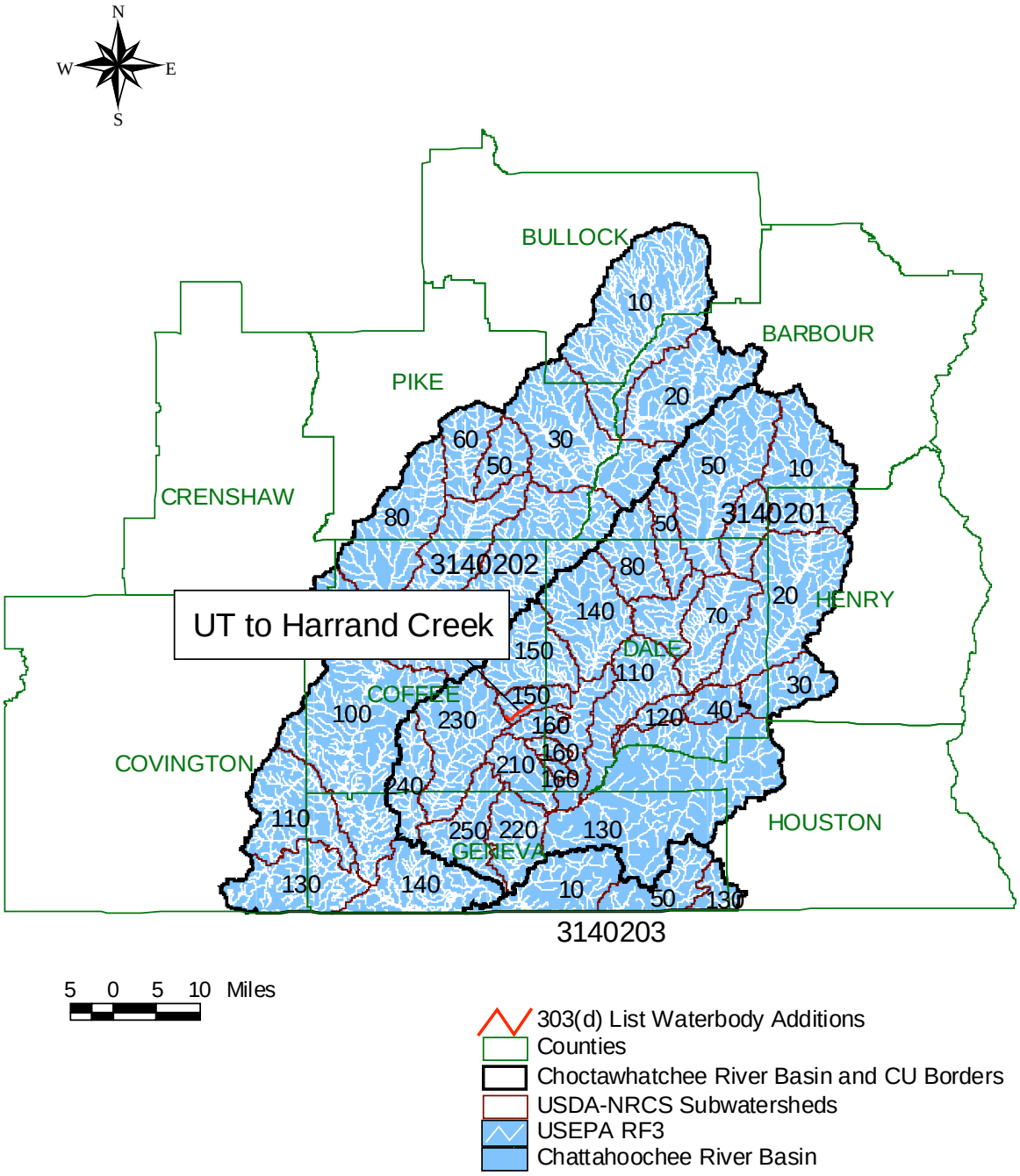


Table Additions-4
Choctawhatchee River Basin Additions to the 1998 303(d) List by ADEM

Stream Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)
UT to Harrand Creek	Choctawhatchee	Coffee	4	Mouth (UT at the confluence with Harrand Creek) SE1/4, S2, T4N, R22E	31.3438	85.81353	Source of annual stream flow. NW1/4, S16, T4N, R22E	31.3219	85.85611	Fish & Wildlife

Table Additions-4 (cont.)

Stream Name	305(b) Listed Causes	Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
UT to Harrand Creek	organic enrichment/D.O., nutrients	Yes	1985, 1986	ADEM	Partial	Yes	X	X	X	Yes

Table Additions-5
Coosa River Basin Additions to the 1998 303(d) List by ADEM

Stream Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)
UT to Lake Weiss	Coosa	Cherokee	2							Fish & Wildlife

Table Additions-4 (cont.)

Stream Name	305(b) Listed Causes	Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
UT to Lake Weiss	ammonia, nutrients, organic enrichment/D.O., pathogens	Yes	1987	ADEM (Nonpoint Source Assessment)	Non	Yes	X	X	X	Yes

Figure Additions-5

Perdido-Escambia River Basin
1998 303(d) List Additions

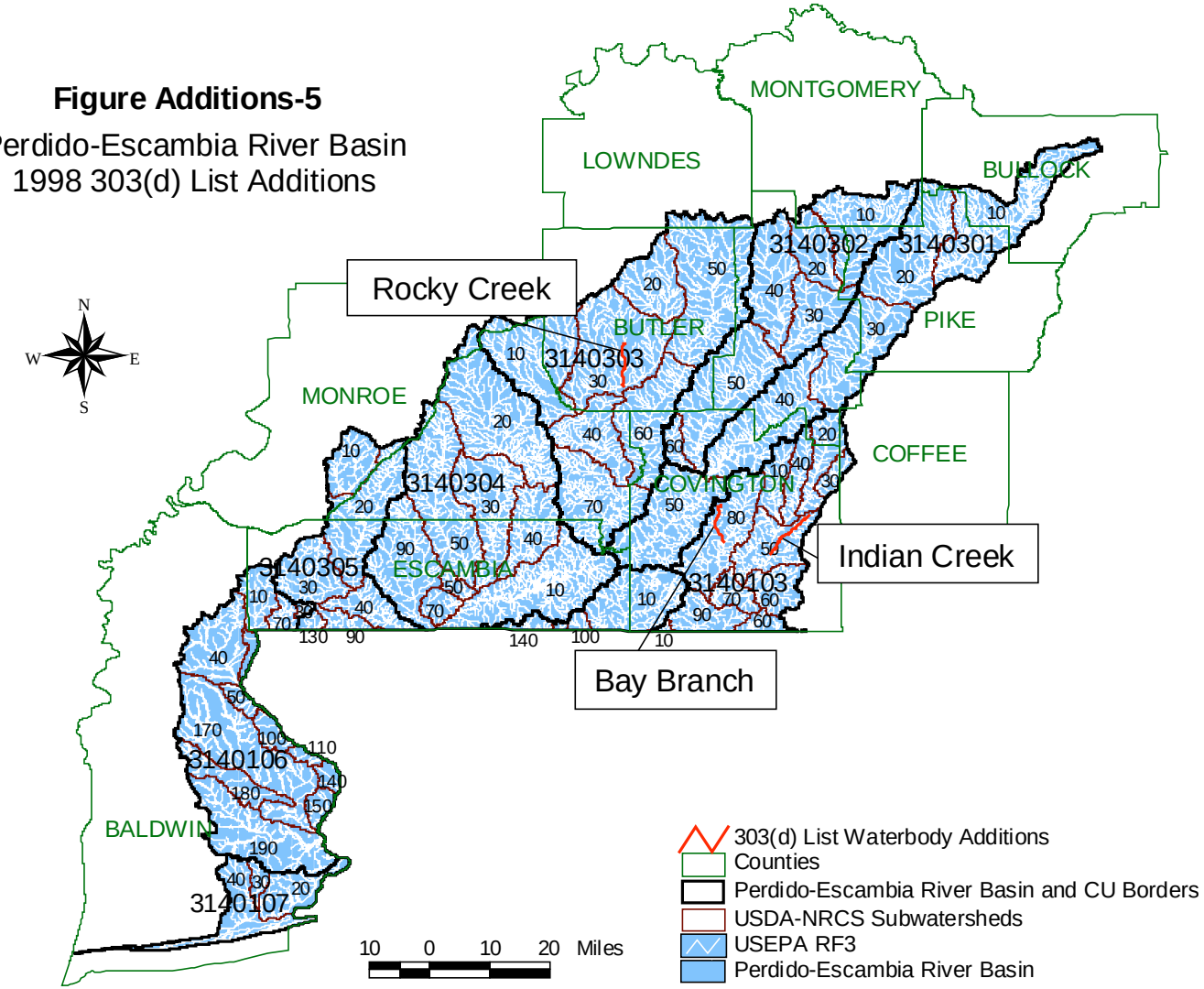


Table Additions-6
Perdido-Escambia River Basin Additions to the 303(d) List by ADEM

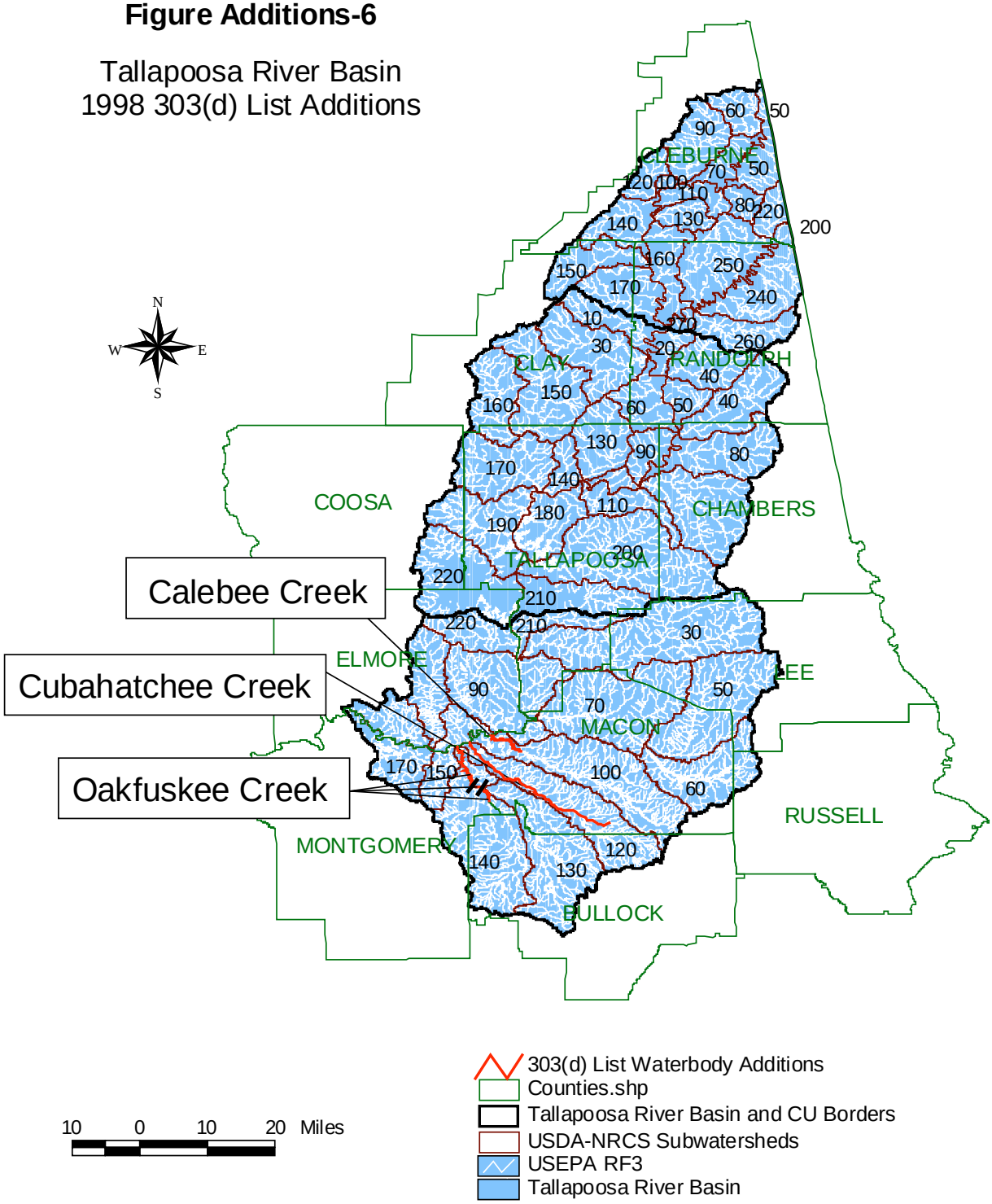
Stream Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)
Bay Branch	Perdido - Escambia	Covington	7	Mouth (Bay Branch at the confluence with Five Runs Creek) SW1/4, S20, T3N, R16E	31.2082	86.47374	Source of annual stream flow. SE1/4, S19, T4N, R16E	31.2971	86.48197	Fish & Wildlife
Indian Creek	Perdido - Escambia	Covington	9	Mouth (Indian Creek at the confluence with Yellow River) SW1/4, S33, T3N, R17E	31.1819	86.36017	Source of annual stream flow. NE1/4, S32, T4N, R18E	31.2715	86.26892	Fish & Wildlife
Rocky Creek	Perdido - Escambia	Butler	8	Mouth (Rocky Creek at the confluence with Persimmon Creek) SW1/4, S12, T7N, R13E	31.5848	86.71544	USGS Gage station # 02372860 at county road bridge SW1/4, S1, T8N, R13E	31.6856	86.71166	Fish & Wildlife

Table Additions-6 9cont.)

Stream Name	305(b) Listed Causes	Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
Bay Branch	organic enrichment/D.O., nutrients, pathogens	Yes	1986	ADEM	Non	Yes	X	X	X	Yes
Indian Creek	organic enrichment/D.O., nutrients	Yes	1985	ADEM	Non	Yes	X	X	X	Yes
Rocky Creek	toxicity	Yes	1986, 1990	ADEM, Union Camp, EPA	Non	Yes	X	X	X	Yes

Figure Additions-6

Tallapoosa River Basin
1998 303(d) List Additions



Note: Oakfuskee segments are contiguous

Table Additions-7
Tallapoosa River Basin Additions to the 303(d) List by ADEM

Stream Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)
Calebee Creek	Tallapoosa	Macon	7	Mouth (Calebee Creek at the confluence with Tallapoosa River) NW1/4, S22, T17N, R21E	32.44303	85.94656	Fork of Calebee Creek SE1/4, S31, T17N, R22E	32.40817	85.88522	Fish & Wildlife
Cubahatchee Creek	Tallapoosa	Macon	30.6	Mouth (Cubahatchee Creek at the confluence with Tallapoosa River) SW1/4, S30, T17N, R21E	32.42712	85.996	Source of annual stream flow. SE1/4, S25, T4N, R23E	32.25541	85.69679	Swimming, Fish & Wildlife
Oakfuskee Creek	Tallapoosa	Macon	10	Mouth (Oakfuskee (Line) Creek at the confluence with Tallapoosa River) NE1/4, S35, T17N, R20E	32.41909	86.02295	Johnsons Creek SW1/4, S30, T16N, R21E	32.33454	85.98842	Fish & Wildlife
Oakfuskee Creek	Tallapoosa	Macon	2.1	Johnsons Creek SW1/4, S30, T16N, R21E	32.33454	85.98842	Old Town Creek NW1/4, S33, T16N, R21E	32.32999	85.9677	Fish & Wildlife
Oakfuskee Creek	Tallapoosa	Macon	3	Old Town Creek NW1/4, S33, T16N, R21E	32.32999	85.9677	Panther Creek NE1/4, S9, T15N, R21E	32.30213	85.95419	Fish & Wildlife

Table Additions –7 (cont.)

Stream Name	305(b) Listed Causes	Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
Calebee Creek	siltation, other habitat alteration	Yes	1996	ADEM	Non	Yes	X	X	X	Yes
Cubahatchee Creek	siltation, other habitat alteration	Yes	1996	ADEM	Non	Yes	X	X	X	Yes
Oakfuskee Creek	siltation, flow alteration, other habitat alteration	Yes	1996	ADEM	Partial	Yes	X	X	X	Yes
Oakfuskee Creek	siltation	Yes	1996	ADEM	Partial	Yes	X	X	X	Yes
Oakfuskee Creek	siltation	Yes	1996	ADEM	Partial	Yes	X	X	X	Yes

Figure Additions-7

Tennessee River Basin
1998 303(d) List Additions

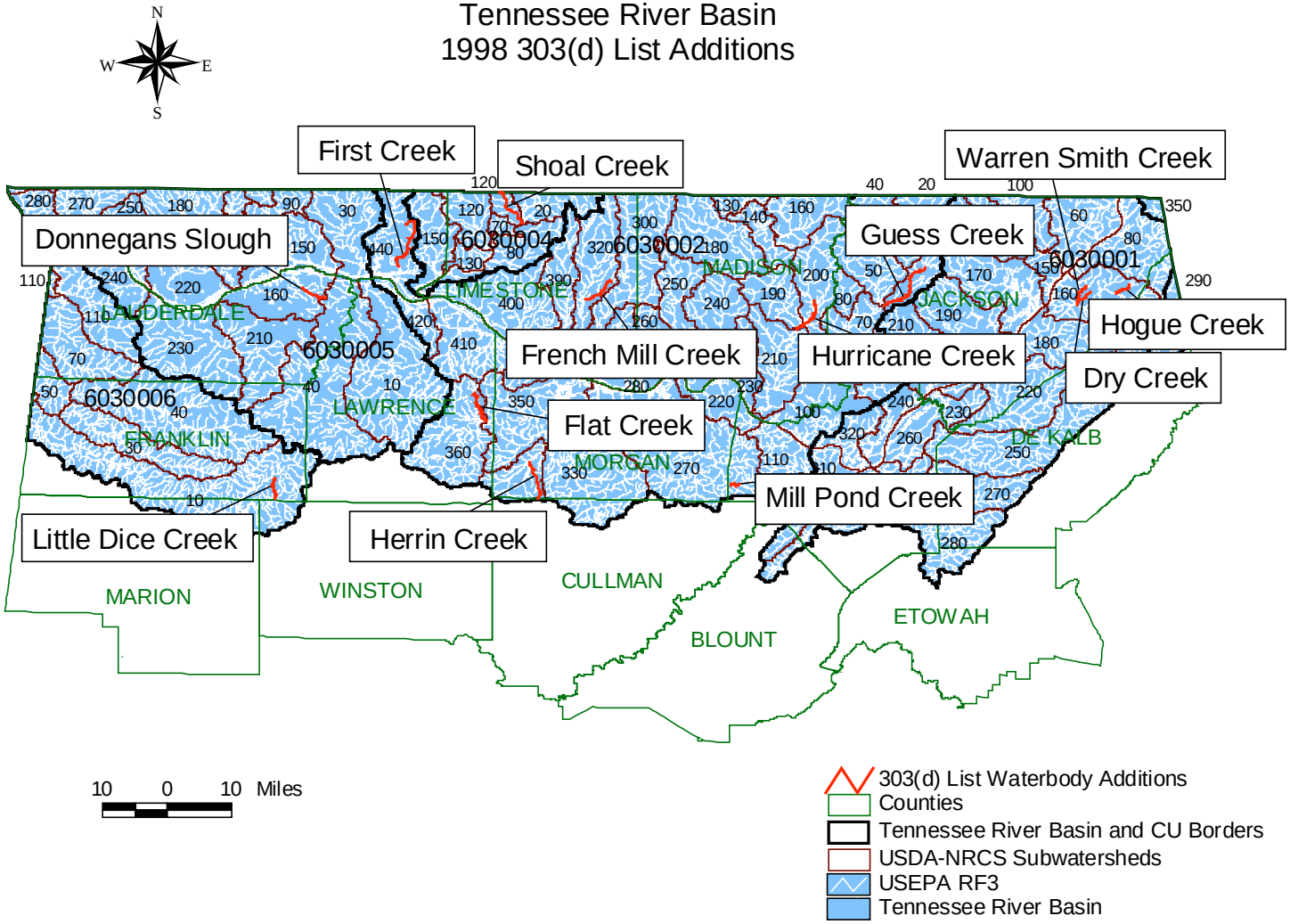


Table Additions-8
Tennessee River Basin Additions to the 303(d) List by ADEM

Stream Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)
Donnegans Slough (Shegog Creek)	Tennessee	Colbert	15	Mouth (Shegog Creek at the confluence with McKiernan Creek) NW1/4, S24, T3S, R10W	34.78258	87.54011	Its Source SW1/4, S28, T3S, R9W	34.75914	87.48629	Fish & Wildlife
Dry Creek	Tennessee	Jackson	8	Mouth (Dry Creek at the confluence with Coon Creek) SE 1/4, S26, T3S, R8E	34.74515	85.79567	Dry Creek at Warren Smith Creek SW1/4, S11, T3S, R8E	34.78526	85.77477	Fish & Wildlife
First Creek	Tennessee	Lauderdale	1.6	First Creek at the Hwy 72 Bridge SE 1/4, S36, T2S, R8W	34.83294	87.32268	Its Source NE1/4, S31, T1S, R7W	34.92477	87.30524	Swimming, Fish & Wildlife
Flat Creek (includes previously listed segment)	Tennessee	Lawrence	7.27	Mouth(Flat Creek at confluence with Flint Creek) NE1/4, S35, T6S, R6W	34.484333	87.126167	Its Source NW 1/4, S10, T6S, R6W	34.546	87.1516667	Fish & Wildlife
French Mill Creek	Tennessee	Limestone	4.9	Mouth (French Mill Creek at the confluence with Piney Creek) NE1/4, S25, T3S, R4W	34.75649	86.90022	UT in Pine Swamp NE1/4, S9, T3S, R3W	34.79646	86.84339	Fish & Wildlife
Guess Creek	Tennessee	Jackson	5.2	Mouth (Guess Creek at the confluence with Paint Rock River) SW1/4, S29, T3S, R4E	34.74497	86.22854	Bee Branch NE1/4, S31, T2S, R5E	34.82888	86.13805	Fish & Wildlife
Herrin Creek	Tennessee	Morgan	6.17	Mouth (Herrin Creek at the confluence with Crowdabout Creek) SE1/4, S35, T7S, R5W	34.39203	87.02825	Its Source SW1/4, S30, T8S, R4W	34.31186	86.99684	Fish & Wildlife
Hogue Creek	Tennessee	Jackson	2.41	Mouth (Hogue Creek at the confluence with Flat Rock Creek) SE1/4, S17, T3S, R9E	34.77048	85.70871	Its Source SE1/4, S3, T3S, R9E	34.78827	85.67665	Fish & Wildlife
Hurricane Creek	Tennessee	Madison	7.7	Mouth (Hurricane Creek at the confluence with Flint River) NW1/4, S16, T4S, R2E	34.6892	86.42697	Hurrincane Creek at Gurley Pike Road Bridge SE1/4, S3, T3S, R9E	34.75295	86.39147	Fish & Wildlife
Little Dice Creek (Branch)	Tennessee	Franklin	4	Mouth (Little Dice Branch at the confluence with Bear Creek) SE1/4, S32, T8S, R10W	34.31188	87.60116	Its Source NW1/4, S16, T8S, R10W	34.35732	87.59919	Fish & Wildlife
Mill Pond Creek	Tennessee	Marshall	1.24	Mouth (Mill Pond Creek at the confluence with Hog Jaw Creek) NW1/4, S18, T8S, R1E	34.34074	86.57477	Hog Jaw Creek at confluence with Gillam and Perkins Creeks NE1/4, S17, T8S, R1E	34.34176	86.55553	Fish & Wildlife
Shoal Creek	Tennessee	Limestone	5.5	Mouth (Shoal Creek at the confluence with Elk River) SE1/4, S27, T1S, R5W	34.93001	87.04274	Alabama/Tennessee state line NW1/4, S6, T1S, R5W	34.9966	87.09446	Fish & Wildlife
Warren Smith Creek	Tennessee	Jackson	3	Dry Creek SW1/4, S11, T3S, R8E	34.78526	85.77477	Ross Branch/Cnty Rd 81 SW1/4, S1, T3S, R8E	34.801	86.75624	Fish & Wildlife

Table Additions –8 (cont.)

Stream Name	305(b) Listed Causes	Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
Donnegans Slough (Shegog Creek)	ammonia, nutrients, siltation, organic enrichment/D.O.	Yes	1988	ADEM	Non	Yes	X	X	X	Yes
Dry Creek	metals, pH, siltation	Yes	1980, 1985-1988, 1991	USGS, ADEM	Non	Yes	X	X	X	Yes
First Creek	toxicity	Yes	1997	TVA	Non, pathogens only	Yes	X	X	X	Yes, pathogens
Flat Creek (includes previously listed segment)	ammonia, nutrients, siltation, organic enrichment/D.O.	Yes	1997	TVA	Non	Yes	X	X	X	Yes
French Mill Creek	toxicity	Yes	1997	TVA	Non, pathogens only	Yes	X	X	X	Yes, pathogens
Guess Creek	toxicity	Yes	1997	TVA	Non, D.O., pathogens	Yes	X	X	X	Yes
Herrin Creek	ammonia, nutrients, siltation, organic enrichment/D.O.	Yes	1992	ADEM	Non	Yes	X	X	X	Yes
Hogue Creek	nutrients, pH, organic enrichment/D.O.	Yes	1986, 1987	ADEM	Non	Yes	X	X		Yes
Hurricane Creek	organic enrichment/D.O.	Yes	1997	TVA	Non, pathogens only	Yes	X	X		Yes
Little Dice Creek (Branch)	siltation	Yes	1982, 1996	TVA, ADEM	Partial	Yes	X	X	X	Yes
Mill Pond Creek	siltation	Yes	1997	TVA	Non, pathogens only	Yes	X	X	X	Yes, pathogens
Shoal Creek	toxicity	Yes	1997	TVA	Non, pathogens only	Yes	X	X		Yes, pathogens
Warren Smith Creek	pH, siltation	Yes	1986, 1987	ADEM	Non	Yes	X	X	X	Yes

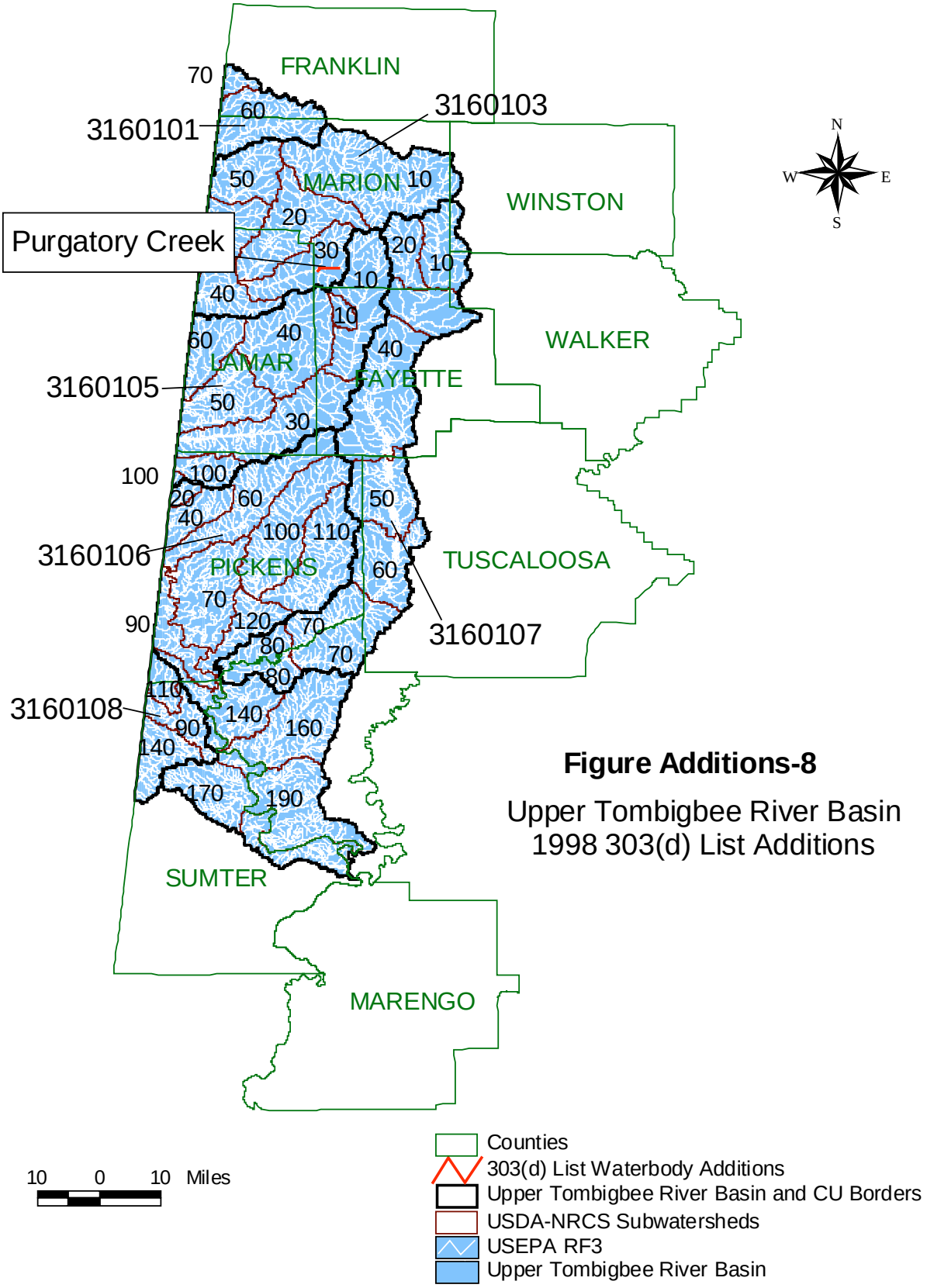


Figure Additions-8

Upper Tombigbee River Basin
1998 303(d) List Additions

Table Additions-9
Upper Tombigbee River Basin Additions to the 303(d) List by ADEM

Stream Name	River Basin	County	Size Mon.	From	Latitude	Longitude	To	Latitude	Longitude	Designated Use(s)
Purgatory Creek	Upper Tombigbee	Marion	3	Mouth (Purgatory Creek at the confluence with Wickett Creek) NE1/4, S6, T13S, R13W	33.95795	87.94211	Purgatory Creek at confluence with Hughes and Reedy Branch SW1/4, S34, T12S, R13W	33.9632	87.89454	Public Water Supply, Fish & Wildlife

Table Additions –9 (cont.)

Stream Name	305(b) Listed Causes	Is Data Available?	Date(s) of Data	Source of Data	Indicated Compliance	Additional Monitoring?	Field	Water Chemistry	Biology	Include on 1998 §303(d) List?
Purgatory Creek	pH	Yes	1988	ADEM	Non	Yes	X	X	X	Yes

Appendix IX
The Alabama Water Watch Program

"There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success than to take the lead in the introduction of a new order of things."

W. Edwards Fleming

Alabama Water Watch
The First Five Years
1992-1997

The following text is by Dr. William Deutsch, Alabama Water Watch Program Manager, Department of Fisheries, Auburn University, except where cited otherwise.

Alabama is a water-rich state, with more than 75,000 miles of streams, 3.6 million acres of wetlands and 490,000 acres of lakes, ponds and reservoirs. Three of our waterbodies are of the best quality in America, classified as "Outstanding Natural Resource Water." Alabama streams also have some of the highest aquatic biodiversity in the world, including the second-greatest variety of fishes in the nation.

Scores of public drinking water sources are from Alabama rivers and lakes, and the state is ranked second in navigable waterways and sixth in hydropower generation.

Many of our water resources have been polluted and degraded, however, and it is a challenge for government and the citizens of Alabama to protect and restore our aquatic heritage. Although the Clean Water Act has accomplished much in reducing pollution from point sources such as discharge pipes, much work remains to be done in the area of nonpoint source pollution…that which enters our waters from broad areas of both urban and rural land.

"In 1819, when Alabama entered the Union, its leaders designed a great seal that featured the State's waterways. In adopting this symbol, they affirmed their belief that the future of Alabama lay with its rivers. It did, and still does."

(Harvey Jackson III, Rivers of History)

Program Design and Goals

Scores of citizen groups interested in conserving lakes and streams have sprung up in Alabama in recent years. They include home and boat owner associations, environmental and canoe clubs and school groups. The Alabama Water Watch began in late 1992 and is dedicated to helping interested groups become more aware of their aquatic resource and test water as part of a statewide, citizen volunteer water monitoring program. Citizens can not only collect valuable water quality information, but the knowledge and experience they gain in doing so will be a major factor leading to better water quality and better water policy in Alabama.

Water Watch is one way for citizens to become **globally aware and locally active** in conserving their environment. The program is **grassroots** in that citizen groups have the privilege and responsibility to actively plan their own agenda and use of the water information they collect. It is also holistic in that citizens are encouraged to be aware of and involved in the ecological, socio-economic and political aspects of a watershed. This philosophy is summarized in a quote by David Orr:

> "Civic education for the sustainable management of food, energy, water, materials and waste can only occur if people have a part in these decisions and understand the consequences."

Training Workshops

One of the most important activities of Water Watch, and the first step of citizen involvement, is the six-hour basic certification workshop in which volunteers are trained in the program's goals and use of a specially designed water test kit. About half of the workshop time is spent in the field with "hands on" water monitoring by the participants.

Upon completion of the workshop, volunteers become certified water quality monitors and may begin testing water at a specific stream or lake site of their choosing. Sites are selected that are usually abundant and diverse, with differing tolerances to pollution, and the story they have to tell is a good supplement to the moment-in-time water chemistry tests of the citizen monitors.

An environmental game called BIO-ASSESS was invented and developed through the Water Watch program to simulate bioassessment and watershed evaluation in the classroom. It serves to teach basic aquatic ecology and prepare monitors for real life biological assessment. The BIO-ASSESS game has been widely distributed throughout Alabama, several other states and in other countries.

Bacteriological Monitoring

The public is rightfully concerned with health and safety of the water they drink and come into contact with trough recreation. Bacteriological monitoring has become an important of Water Watch to address these concerns and it has generated much interest among established and new citizen groups. Relatively new and simple techniques of analyzing water for *E. coli* and total coliform bacteria have been introduced through Water Watch workshops and, even within the first months of use, citizens have detected and resolved several contamination problems in Alabama.

Monitors have identified a variety of problems such as a broken sewer pipe, sewage runoff from a mobile home park and a malfunctioning wastewater treatment plant. Many problems were corrected without the intervention of regulatory agencies,

saving the state time and money and exemplifying positive things that citizen monitors can do. In additions to analyzing bacteria in streams, some citizen volunteers have tested public swimming beaches and drinking water from wells.

Case Study – Summer 1996

A citizen monitor from the Coastal Plain of Alabama was trained in bacteriological testing at an AWW workshop and found high concentrations of *E. coli* in the stream near his home. By sampling in various stretches of the stream, he determined that the problem was coming from a wastewater treatment plant. This plant had been damaged during Hurricane Opal, and was operating out of compliance with their permit. The monitor called ADEM and, after some initial some initial skepticism, an ADEM scientist came to investigate. The findings of the citizen monitor were confirmed with ADEM bacteriological tests, and the problem was resolved.

Keeping the Data Credible

A critically important aspect of a citizen monitoring program is to keep the data credible through effective Quality Assurance/Quality Control (QA/QC). When the Water Watch program began, there was little precedent for a statewide, citizen data QAQC plan. Water Watch developed such a plan and it was one of the first protocols in the nation to receive approval from the U.S. Environmental Protection Agency.

The essence of the QA/QC plan is to provide adequate training and equipment for data collection, with annual recertification of test kits and monitors. Our goal is to implement a plan that is not intimidating to monitors, but is sufficiently stringent to keep the data valid and useful.

The Water Watch data quality coordinator checks data submitted by monitors before and after it is entered into the citizen database. Test kits are calibrated through side-by-side comparisons with water analyses in a certified chemistry laboratory, and the calibrated kits and chemical standards are used in recertification sessions with the monitors. All chemical reagents are replaced in citizen kits annually to ensure their freshness and reliability. Citizen monitors are encouraged to play an active role in striving for high quality data and they readily accept the need for periodic evaluations of their performance. A key slogan in our efforts is, "No information is better than Wrong information."

Program Progress

After five years of the Water Watch program, there continues to be a ground swell of interest from the citizens. Within the first two years of Water Watch, nearly 50 citizen groups participated in training workshops. By late 1997, volunteers were monitoring more than 250 sites on 130 streams and lakes. More than 2,500 citizens have become certified water monitors, and 40% of the 74 active groups were led by elementary and secondary educators. Two staff positions were added to the program in 1996 to meet the demands of rapid growth. A monitor coordinator provides regular contact with citizen groups and facilitates training and statewide activities. An education coordinator designs materials and activities to meet the specific needs of teachers.

Water Watch activities have been recently implemented in the rural, southwestern quadrant of the state and in the degraded Village Creek watershed of inner city Birmingham. These efforts, largely with African-American citizens, have made

Water Watch more inclusive of all Alabamians, and they emphasize an environmental justice theme within the program.

Alabama Water Watch Association

In 1993, several active citizen monitoring groups formed a non-profit affiliation called the Alabama Water Watch Association. The association works closely with the Water Watch program, and advocates better water quality and better policy from the grassroots perspective. The association has a growing citizen leadership, maintains a board of directors that is representative of all major watersheds in Alabama and regularly meets as a citizen advisory council with ADEM Water Division personnel.

Citizen Water Quality Data

A major goal of Water Watch is to build a credible, volunteer monitor database that will describe the trends of stream and lake quality. Is a particular waterbody getting better? getting worse? How and why? What should be done to restore it or protects it? Healthy skepticism asks the question "How reliable are citizen data and how can they best be used?" After several months of monitoring a given site, the citizen information begins to speak for itself to answer these questions.

In an increasing number of cases, citizen data have shown to agree with historical research data of universities and government agencies. Citizen data often reflect the natural condition of a stream or lake determined by watershed soil type and geology. For example, the expected alkalinity, pH and hardness of many waterbodies in Alabama's sandy-soil Coastal Plain are considerably less than in the northern part of the state where limestone is common. Citizen-based Water Quality information has clearly detected these watershed-scale difference. Agreement between citizen and research data at the watershed or "macro" level lends credence to what volunteers can do, just as the Water Watch QA/QC program verifies the accuracy of monitors and test kits at the personal or "micro" level.

Citizen data are regularly summarized, graphed, mapped and presented in ways that are useable to monitors, regulatory agencies, planners and policy makes. This information has been used to correct pollution problems that need immediate attention, as well as to build a case for needed stream upgrades and protection. Even if volunteer testing of a site reveals high water quality water, continued monitoring is important to establish a baseline for future trend analysis and provide a standard for cleaning up nearby polluted sites.

Connections to Other Environmental Programs

The Alabama Water Watch has many connections with other environmental programs, including some in other countries, which makes the "Think Globally, Act Locally" slogan relevant and motivating. A monitoring program in the Philippines, sponsored by the U.S. Agency for International Development, was modeled after Alabama Water Watch, but also developed techniques and approaches that have helped citizen monitors in Alabama. Water Watch has occasionally facilitated meetings among international visitors, citizen monitors, and other environmental organizations in Alabama and Georgia. Closer to home, Water Watch partners with monitors of shared watersheds in neighboring states. In fact, one of the largest and most active groups in Water Watch is located in the upper Coosa River Watershed of Alabama and Georgia. This underscores our goal of being watershed focused instead of being restricted by

political demarcations…water ignores County and state borders and so do citizen monitors!

Future Directions

The Alabama Water Watch program exemplifies the strong interest and commitment of citizens to protect and conserve our streams and lakes, and it stands at a crossroads for its continuation. Positive interactions and possible collaborations with state agencies including ADEM, the Alabama Cooperative Extension System and local and state representatives, as well as environmental, industrial, civic and commodity groups will be needed to accomplish the Water Watch goals and keep the program strong and growing.

Environmental policy makers and regulators stand to benefit from the large pool of citizen information that serves as a "first alert" to water quality conditions, particularly in a time of shrinking government budgets. In turn, it is vitally important that community officials and water-related agencies recognize the role of citizen monitors as stake holders in natural resource management, and creatively become more responsive to the public's ideas and solutions to environmental problems.

Like the legend of the group of blind men describing the elephant, there has been a wide range of perceptions about the Alabama Water Watch. A challenging goal is to improve and communicate all aspects of Water Watch in an integrated way that fosters increasing diversity of participants and sustainability of the program. The future of Alabama Water Watch largely rests on the willingness of dedicated citizens to make a difference with water…the "fluid of the 21st Century."

What You Can Do

- Share this information about Alabama Water Watch with others
- Consider your role in volunteer Water Quality monitoring and protection as a citizen, a planner, administrator or policy maker
- Contact the Alabama Water Watch office at the toll free phone number: **1-888-844-4785** or by writing:

Alabama Water Watch
Department of Fisheries
Auburn University, AL 36849

To download the full version of:

Alabama Water Watch
The First Five Years
1993-1997

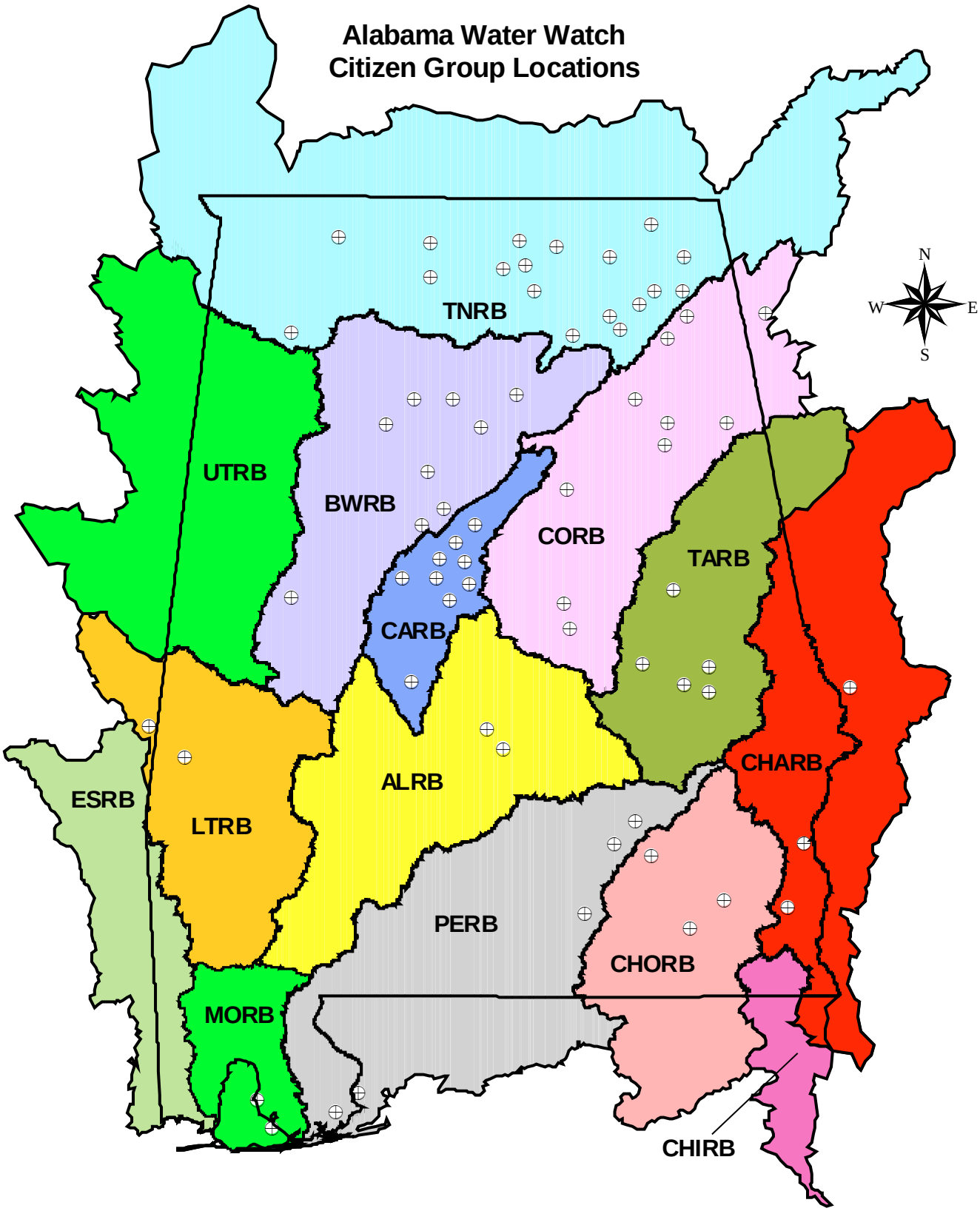
see the Alabama Water Watch Program Webpage at
http://www.auburn.edu/aww/index.htm

The Alabama Water Watch Logo

Our logo is an aquatic insect called a Caddisfly. This particular caddisfly is named Hydropsyche, and is an important member of stream communities throughout Alabama. The name **Hydro*psyche** means **Water*spirit**. It is, therefore, a fitting symbol of the new and growing "spirit" of involvement, enthusiasm and concern for Alabama's water resources that citizens have shown through the Water Watch program.

Figure AWW-1

Alabama Water Watch Citizen Group Locations



ALRB - Alabama River Basin
BWRB - Black Warrior River Basin
CARB - Cahaba River Basin
CHARB - Chattahoochee River Basin
CHIRB - Chipola River Basin
CHORB - Choctawhatchee River Basin
CORB - Coosa River Basin
ESRB - Escatawpa River Basin
LTRB - Lower Tombigbee River Basin
MORB - Mobile River Basin
PERB - Perdido-Escambia River Basin
TARB - Tallapoosa River Basin
TNRB - Tennessee River Basin
UTRB - Upper Tombigbee River Basin

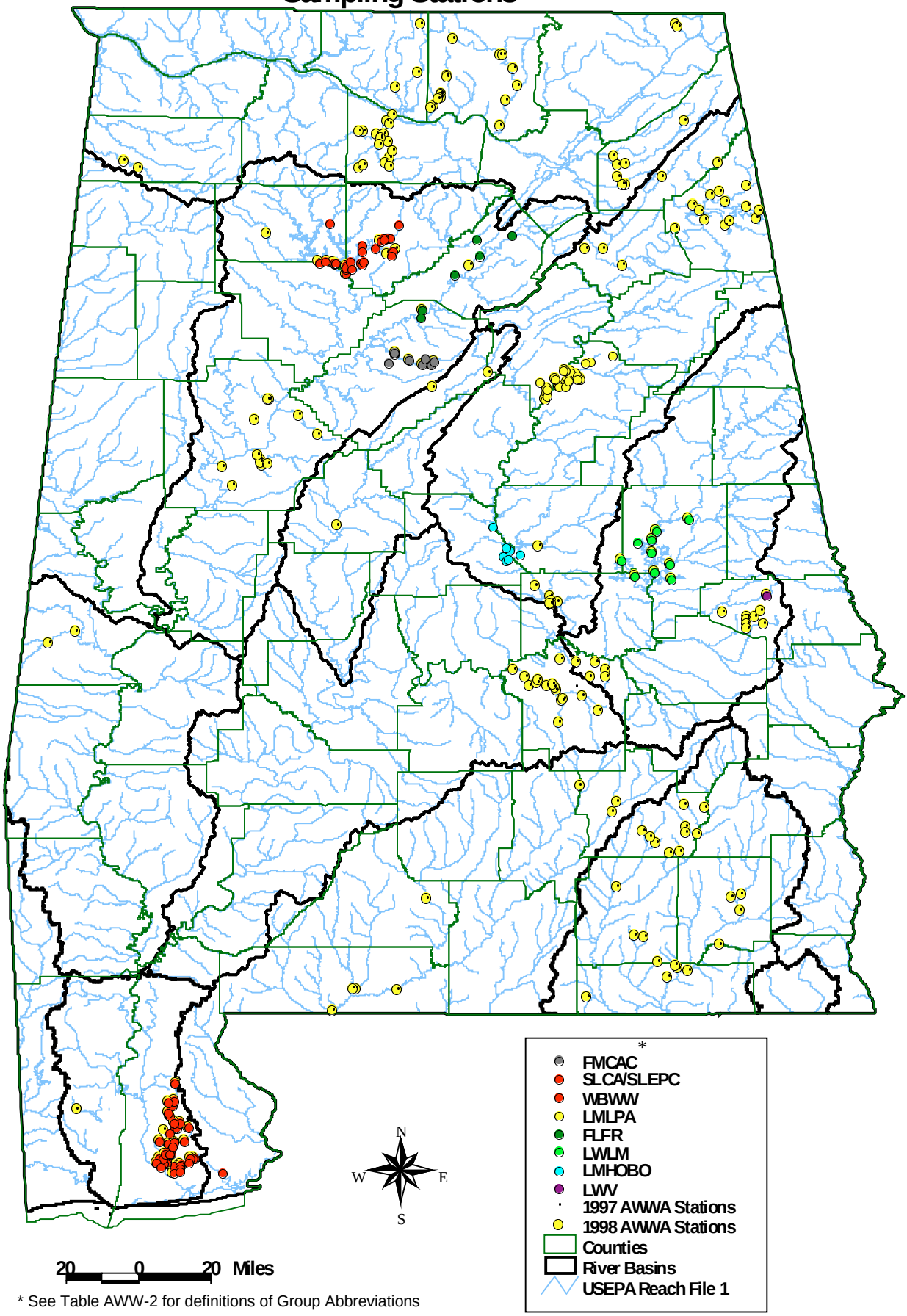
20 0 20 Miles

⊕ Alabama Water Watch Group

ADEM-WQ Section-1999-mjr

Figure AWW-2

Alabama Water Watch Association Sampling Stations



* See Table AWW-2 for definitions of Group Abbreviations

ADEM WQ Section-1999-mjr

ADEM Narrative

Figure AWW-2 has been added to show the phenomenal growth of sampling sites during 1997 and 1998 as well as the overall statewide coverage that presently exists within the Alabama Water Watch program. Figure AWW-2 is slightly misrepresentative of established groups/stations. For example, the sampling sites in the Montgomery area have been sampled prior to 1997 and 1998 (separate Arcview shape files were not obtained for all established stations prior to 1997). Unfortunately, this growth in volunteers and sampling is inversely related to the decline in federal and State funding during the past few years.

Screening of Water Watch data indicates a high degree of Full Use Support for some of the parameters for which Alabama has established specific criteria. Some of the dissolved oxygen measurements made by volunteers are higher than those obtained by ADEM and other agencies. Volunteer monitors usually sample closer to the surface of larger waterbodies (reservoirs), where dissolved oxygen has a higher concentration. This is done for safety and economic reasons. Mid-depth stainless steel dissolved oxygen samplers, or devices equivalent, are expensive and are used mainly by professionals. Also, a large percentage of Alabama's smaller streams are hard to access and are excellent habitats for poisonous snakes.

ADEM continues to work closely with the Alabama Water Watch program with meetings scheduled between respective staff and volunteers on a quarterly basis. Water Watch is presently moving its database and GIS information to Arcview 3.1 to improve data transfer with the Department and other agencies/organizations.

Table AWW-1
Alabama Water Watch Association Groups/Individuals

River Basin	Group
Alabama	Lanier High School
	Montgomery Water Watch
Black Warrior	Birmingham Environmental Clearinghouse
	Camp McDowell
	Corner FFA
	Five Mile Creek Action Committee
	Friends of Mulberry Fork
	Friends of Village Creek
	Hanceville High School Envirothon Team
	Hannah & Davis Creek Preservation Society
	Oak Grove School Biology Club
	Oakdale Elementary School
	Pinson Elementary School
	Sierra Club
	Smith Lake Civic Association
	Smith Lake Environmental Preservation Committee
	Stroker's Paddle Club
	Turkey Creek Water Watch
	Westlawn Middle School
Cahaba	Acmar Moody Environmental Justice Society
	Alabama Environmental Council
	Beardley's
	Cahaba Basin Project/Judson College
	Cahaba River Authority
	Cahaba River Society
	Creek View Elementary School
	Friends of Buck Creek Watershed
	Friends of Shades Creek
	Helena Elementary School
	Hewitt-Trussville Junior High School
	Indian Springs School
	Kernan/Quinn
	Leeds Elementary School
	Montevallo Area Water Watch
	Montevallo Elem. School
	Mountain Brook Elem. School
	Oak Mountain Elementary School
	Old Mill Trace Homeowners Association
	Pelham High School
	Sierra Club, Cahaba Group
	Thompson Middle School
	Vestavia Hills Elementary Central

Table AWW-1 (cont.)

River Basin	Group
Chattahoochee	Lake Eufaula Alabama Water Watch Staff Eufaula Coast Guard Auxilliary Omusee Creek Group Three Rivers Coast Guard Auxilliary
Coastal Plains Basins (Chipola, Choctawhatchee, Perdido-Escambia)	Brewton Water Quality Team Charles Henderson High School Coastal Plain Streams Water Watch CPYRWMA Dale County Water Watch Dennis Patterson Florala High School Perdido Bay Water Watch Perdido High School Tri-State Paddlers Troy State Arboretum Troy State Univ. CERS WBWW Wolf Bay Water Watch Zion Chapel School
Coosa	Anniston Museum of Natural History Boys and Girls Club of Calhoun County Brown Creek Water Watch Cedar Creek Water Watch Concerned Cit. Better Environ. Coosa River Society -includes Gadsden High School -includes Southside High School Coosa River Basin Initiative DeSoto State Park Elvin Hill Elementary School Fort Payne Middle School Fort Payne FFA Fort Payne High School Science Friends of Ballplay Basin Friends of Buck Creek Friends of Hatchet Creek Friends of Little River Friends of Terrapin Creek Judy Owings Lake Jordan HOBO Lake Mitchell HOBO Logan Martin Lake Protection Association Nature's Classroom NW Georgia High School Rome Adopt-A-Stream Sam Piccolo Shelby County High School Thompson Middle School

Table AWW-1 (cont.)

River Basin	Group
Mobile	Baywatch
	Dog River Clearwater Revival
	University of South Alabama Eco-Club
	Environmental Studies Ctr
	Fairhope Middle School
	Indian Springs Community Council
	Weeks Bay Water Watch
Tallapoosa	Auburn Univ. Wildlife Society
	Auburn Area
	Alabama Water Watch Staff
	Chewacla Water Watch
	E Cubed
	Environmental Awareness Organization
	Friends of Hodnett Creek
	Lake Watch of Lake Martin
	Lake Wedowee Property Owners Assoc.
	League of Women Voters
	Montgomery Water Watch
	Save Our Saugahatchee
	Southern Union Community College
	Wrights Mill Road Elem. School
Tennessee	Academy of Science & Foreign Language
	Bear Creek Education Center
	Bob Jones High School
	Bridgeport Middle School
	Chris Hyde
	Cotaco School Environmental Club
	Crossville High School
	Decatur High School Field Studies
	Douglas Middle School
	Flint Creek Citizens
	Flint River Action Team
	Fort Payne High School Science
	Geraldine High School Science
	Geraldine FFA
	Girl Scout Troop 490
	Hanceville H.S. Envirothon Team
	Horizon High Ecology Club
	Huntsville City Schools
	Ider High School
	North Alabama Sierra Club
	Oak Park Middle School
	Paint Rock River Initiative
	Pisgah High School FFA
	Plainview High School
	RSVP, Marshall County
	Sand Mountain Water Watch
	Sardis High School

Table AWW-1 (cont.)

River Basin	Group
Tennessee	Scottsboro FFA Section FFA Shoals Creek Water Watch Stevenson Middle School Sylvania FFA Sylvania High School Trout Unlimited #639 Valley Head School Wheeler Lake Water Watch
Tombigbee (Lower & Upper)	East Mississippi Community College Jackson High School Smith Lake Environmental Preservation Committee Livingston University Sumter Co. High School University of West Alabama

Note: Many of the individuals/smaller groups in Table AWW-1 have associated with larger, local groups.

Table AWW-2
Alabama Water Watch Groups Submitting Data from October 1, 1997 to September 30, 1998

GROUP NAME	Abbreviation
Alabama	
Lanier High School	LHS
Montgomery Water Watch	MWW
Black Warrior	
Birmingham Environmental Clearinghouse	BECH
Camp McDowell	CM
Five-Mile Creek Action Committee	FMCAC
Friends of Locust Fork River	FLFR
Hanceville High School Envirothon Team	HANCE
Sierra Club	SIERRA
Smith Lake Civic Association	SLCA
Smith Lake Environmental Preservation Committee	SLEPC
Stroker's Paddle Club	SPC
Cahaba	
ACMAR/Moody Environmental Justice Society	ACMAR
Alabama Environmental Council	AEC
Friends of Buck Creek Watershed	FBCW
Indian Springs School	ISS
Montevallo Area Water Watch	MAWW
Mountain Brook Elem. School	MBES
Pelham High School Science Club	PHS
Sierra Club, Cahaba Group	SCCG
Vestavia Hills Elementary Central	VHEC
Chattahoochee	
Eufaula Coast Guard Auxiliary	EUFGA
Omusee Creek Group	OMUSEE
Three Rivers Coast Guard Auxiliary	TRCGA
Coastal Plain Streams*	
Charles Henderson High School	CHHS
Coastal Plain Streams Water Watch	CPSWW
Choctawhatchee/Pea & Yellow River Watershed Mgt. Authority	CPYRWMA
Dale County Water Watch	DCWW
Florala High School	FHS
Perdido Bay Water Watch	PERDI
Troy State CERS	TSCERS
Weeks Bay Water Watch (see also Mobile)	WBWW
Wolf Bay Watershed Watch	WOLF
Coosa	
Boys and Girls Club of Calhoun County	BGCCC
Coosa River Basin Initiative	CRBI
Coosa River Society	COOSRS
DeSoto State Park	DESOTO
Fort Payne High School FFA	FPFFA
Friends of Ballplay Basin	FBB
Friends of Terrapin Creek	TERRA
Lake Jordan HOBO	LJHOBO
Lake Mitchell HOBO	LMHOBO
Logan Martin Lake Protection Association	LMLPA

Table AWW-2 (cont.)

GROUP NAME	Abbreviation
Mobile	
Baywatch	BAY
Weeks Bay Water Watch	WBWW
Tallapoosa	
Chewacla Water Watch	CHEW
Lake Watch of Lake Martin	LWLM
Lake Wedowee Property Owners Association	LWPOA
League of Women Voters	LWV
Montgomery Water Watch (see also Alabama)	MWW
Save Our Saugahatchee	SOS
Tennessee	
Academy for Science & Foreign Language	ASFL
Bear Creek Education Center	BCED
Bridgeport Middle School	BMS
Douglas Middle School	DOUGMS
Flint Creek Citizens	FCC
Flint River Action Team	FRAT
Geraldine High School FFA	GFFA
Geraldine High School Science Club	GHS
Horizon High Ecology	HHE
Huntsville City Schools	HUNT
Ider High School	IHS
Oak Park Middle School	OPMS
Paint Rock River Initiative	PRRI
Plainview High School	PVHS
Shoal Creek Water Watch	SCWW
Stevenson Middle School	STEVMS
Sylvania High School FFA	SYLFFA
Valley Head School	VALLEY
Tombigbee (Lower and Upper)	
East Mississippi Community College	EMCC
Smith Lake Enviro. Pres. Comm. (see also Warrior)	SLEPC
University of West Alabama	UWAL

* See Table AWW-1 for River Basins in Alabama's Coastal Plain

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