COOSA RIVER PCB TMDL ENVIRONMENTAL SAMPLING PLAN

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TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 FIELD SAMPLING PLAN 1
2.1 SAMPLING OBJECTIVES 1
2.2 SAMPLE STATION LOCATIONS 1
2.3 SAMPLING PROCEDURES 1
2.3.1 Surface Water
2.3.2 Sediment
2.3.3 Fish

2.4 SAMPLING EQUIPMENT DECONTAMINATION 3

3.0 PROJECT MANAGEMENT 4

4.0 QUALITY ASSURANCE AND QUALITY CONTROL 4

5.0 PROJECT SCHEDULE AND DELIVERABLES 5

LITERATURE CITED

TABLES
1. Sample Station Locations
2. Analytes, Sample Containers, Preservatives, Holding Times and Detection Limits
3. Coosa River PCB TMDL Study Data Quality Objectives

APPENDICES
1. Collection of Fish for Tissue Sampling
2. Safety Plan

1.0 INTRODUCTION

The US Environmental Protection Agency's Region 4 Science and Ecosystem Support Division (SESD) has been tasked by the Region 4 Water Management Division (WMD) to provide data for use in the derivation of a polychlorinated biphenyls (PCB's) total maximum daily load (TMDL) for the segment of the Coosa River from Rome, GA to Lake Logan Martin near Pell City, AL. (Figure 1)

2.0 FIELD SAMPLING PLAN

2.1 SAMPLING OBJECTIVES

The objective of this effort is to obtain current environmental data necessary to provide input to the PCB TMDL modeling process for the segment of Coosa River from Rome, Georgia to Lake Logan Martin near Pell City, Alabama.

2.2 SAMPLE STATION LOCATIONS

Fish tissue samples will be collected at seven stations and sediment samples will be collected at 15 stations. Due to personnel and laboratory constraints, the sampling will be conducted during several different weeks:

Date	Media
11/18/02-11/22/02	Fish and sediment
12/02/02-12/06/02	Fish
12/09/02-12/13/02	Sediment

Table 1 contains a list of the sample stations and a description of their locations. Sample station locations may be changed due to field conditions. Samples will be analyzed for PCB's and other related parameters (Table 2).

2.2.1 Fish Tissue

There will be three sample sites on the Coosa River within the state of Georgia from Rome to the Alabama state line. The upstream sample collection site will be above the Mayo's Bar Lock and Dam structure and just downstream of the confluence of the Etowah River and the Oostanaula River, as close as possible to River Mile 2. The second site will be below Hwy 100. The third site will be at Brushy Branch/Fosters Bend near the State line. There will be two sample sites within Lake Weiss. The first will be in the vicinity of Poole's Ferry near Channel Marker 101. The second will be upstream of the dam forebay in the vicinity of Bay Springs Marina. Two samples site will be located on the Coosa River downstream of the Weiss Dam Powerhouse. The first will be in upper Neely Henry Reservoir in the vicinity of Croft Ferry near Murrycross, AL. The second will be in the vicinity of Interstate 20 bridge in Logan Martin Reservoir. Fish will be collected from areas conducive to the technique employed, typically expected to be electrofishing, as close as possible to the target sample locations. Actual coordinates will be obtained at sample locations using boat mounted or hand held GPS (global positioning system) units. Coordinates will be taken from the approximate center of areas or stretches electrofished. The accuracy of SESD GPS equipment, assuming selective availability remains disabled by the US Department of Defense (DOD), is currently approximately 10 meters for handheld non-differentially corrected units and 1 meter for boat-mounted real time differentially-corrected units (Trimble 1998, White House Press Release 2000). When coordinates cannot be taken in the field they will be defined for areas sampled using Street Atlas USA (DeLorme 1998).

2.2.2 Sediment

Sediment samples will be collected in depositional areas, targeting fine particulates. Prior to the study, velocity measurements using an acoustic dopplar current profiler will be made along the Coosa River from Rome, Georgia to the Georgia-Alabama state line. The velocity measurements will be taken into consideration when targeting depositional areas for sample locations. Six samples will be collected in the Coosa River from Rome, Georgia to the Georgia-Alabama state line. Four sediment samples will be collected from Lake Weiss. One sample will be collected from the Coosa River between Lake Weiss and Neely Henry Lake. Two samples will be collected from Neely Henry Lake and one from the Coosa River between Neely Henry Lake and Logan Martin Lake. One sample will be collected from Logan Martin Lake. Sediment samples will be collected within the same vicinity of the fish tissue whenever possible. GPS coordinates will be recorded using hand-help units for each sediment sample location.

2.3 SAMPLING PROCEDURES

Information on sampling methods for sediments and fish is provided in the following subsections. The analyses to be conducted on each environmental medium, the participating laboratory, container and preservative specifics, holding times and required detection limits are summarized in Table 2. All samples will be collected, processed, and handled in accordance with US EPA 1996b and US EPA 2002.

2.3.1 Surface Water

Ambient water quality parameters including pH, conductivity, dissolved oxygen, and temperature will be measured using a YSI 6920 multi-probe sonde. Calibration and use of the instrument will be performed in accordance with SESD Ecological Assessment Branch (EAB) standard operating procedures (SOPs) (US EPA 2002) and the manufacturer's instructions.

2.3.3 Fish

A Scientific Collection Permit has been obtained from the Georgia Department of Natural Resources, Wildlife Resources Division and the Alabama Department of Conservation and Natural Resources for collecting fish. Fish will be collected using boat-mounted electrofishing equipment whenever possible. If collection is not possible in this way, then backpack electrofishing equipment, block nets, dip nets and angling may be employed. Collection, processing, preservation, and transport or shipping of fish and fish samples will follow Appendix 1 guidance, adapted from US EPA (1995).

Since the TMDL will be based on human exposure to PCBs via fish consumption, legal-sized fish of species normally caught for human consumption will be targeted for collection. At each station efforts will be made to collect five trophic level 4 fish (top preditor) and five trophic level 3 fish (bottom feeder). The trophic level 4 fish (the larger, primarily piscivorous, secondary carnivores) may include largemouth bass, spotted bass, white bass, striped bass, hybrid (white x striped) bass, chain pickerel, redfin (grass) pickerel, and bowfin. Trophic level 3 fish (primary carnivores) may include catfish (channel, blue, white, flathead, etc.), bullheads (black, yellow and brown), and Smallmouth Buffalo.

Immediately after collection, fish will be chilled on wet ice. Fish will either be fileted in the field or they will be driven to the US EPA Region 4 Science and Ecosystem Support Division (SESD) Laboratory in Athens, GA for fileting.

Processing in either case will follow general guidance described in US EPA (1995) and the standard operating procedures specific to SESD (EPA 2002 Section 12). Fish will be fileted and and the filets frozen within 48 hours of collection. The two skin-on filets including belly flap from each fish, homogenized together, will constitute one fish sample. For scaleless fish (catfish or bullheads), the sample will consist of skinned filets. Filets will be homogenized using a high speed blender and dry ice. Five fish samples will be analyzed for PCB aroclors from each station for each trophic level. Three fish tissue samples from each trophic level from each station will be analyzed for PCB congeners. The PCB congener analysis will be performed on the three largest fish from each trophic level. Homogenized fish samples will remain frozen in-house for analysis at SESD.

2.3.2 Sediment

Sediment samples will be collected from a boat using a vibracoring device. The vibracorer will be advanced to a depth of five feet or to refusal, whichever occurs first. Samples will be collected at discrete intervals from the corer: 1) 0" - 6"; 2) 6" - 24"; 3) 24" - 36"; 4) 36" - 48"; 5) 48" - 60". If the vibracorer is not able to advance five feet through the sediment, the first sample will be collected from 0" - 6" and 6" - 24" and every foot thereafter. Sediment samples will be analyzed for PCBs (aroclors only), total organic carbon, percent volatile residue, percent moisture, and particle size distribution.

2.4 SAMPLING EQUIPMENT DECONTAMINATION

Sampling and processing equipment will be laboratory cleaned, wrapped in aluminum foil and sealed in plastic prior to sampling activities in accordance with the guidance in US EPA (1996b). Decontamination of sampling materials in the field, if needed, will follow this ordered procedure:

1. non-phosphate Liqui-Nox detergent wash
2. potable water rinse
3. organic free water rinse
4. solvent rinse (isopropanol)
5. organic free water rinse

3.0 PROJECT MANAGEMENT

The environmental field sampling effort will be managed through the Ecological Assessment Branch, SESD, with the support of the Water Quality Planning and Assessment Branch, WMD. Bill Melvile, WMD, is the project manager, and will be using this data in TMDL modeling. Lonnie Dorn and Laura McGrath are co-project leaders. Phyllis Meyer will be task leader for fish tissue processing. Lonnie Dorn and Alan Auwarter will be responsible for the fish collection. Data collected during field sampling activities will be managed and stored by the sampling team members. Upon completion of sampling activities, all documents/records obtained during the field investigation will be delivered to the project leaders who will organize, label, and maintain them during preparation of the data report. Upon completion of the report, project records will be submitted to the SESD Records Room. All original analytical data and supporting documentation, e.g., raw data, QA/QC records, calculations, etc., will be maintained by the ASB laboratory according to US EPA 2000. Access to analytical results for this project shall be available to EPA project team members through the Region 4 Laboratory Information Management System (R4LIMS). Where necessary, electronic or hard copies have been and will be provided to interested parties through the project manager.

Samples collected for chemical analysis will be maintained by the SESD Analytical Support Branch. If no additional testing has been requested by the end of the project data reporting date, with the approval and concurrence of the project manager, arrangements will be made for disposal through the US EPA laboratory waste disposal system.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality control (QC) procedures will be used in the field and laboratory to ensure that reliable data are obtained. When performing this field sampling effort for PCBs, special precaution will be taken to prevent the cross-contamination of sampling equipment, sample bottles, and other equipment that could compromise sample integrity.

One duplicate and one split sample will be collected for every ten sediment samples that are collected and submitted to the laboratory. The locations for duplicate and split sample collection will be determined by the field team leaders. Fifteen stations will be sampled as part of this collection, therefore, one duplicate and one split sample will be collected.

If it is necessary to clean and decontaminate equipment in the field, field equipment rinse blanks will be collected to demonstrate that the equipment is free of contamination.

All field screening and analytical instruments will be calibrated and maintained in accordance with US EPA relevant protocols (2000), SOPs (2002, 1996b) and manufacturer instructions. The results from all instrument calibration and maintenance activities will be recorded in bound logbooks in accordance with the procedures outlined in US EPA 2002.

5.0 PROJECT SCHEDULE AND DELIVERABLES

The Project Manager will be given verbal status reports and electronic and hard copy reports as data become available. Once data validation is complete, final data will be provided to the WMD project manager as soon as available, and as part of a final data report.

SESD Project Milestones:

11/12/02 - 11/15/02	Reconniassance for target collection sites.
11/18/02 - 11/22/02	Sampling begins
12/09/02 - 12/13/02	All samples to analytical laboratories.
03/01/03	SESD-generated data back to EAB project leaders.
04/01/03	Final Report to WMD.

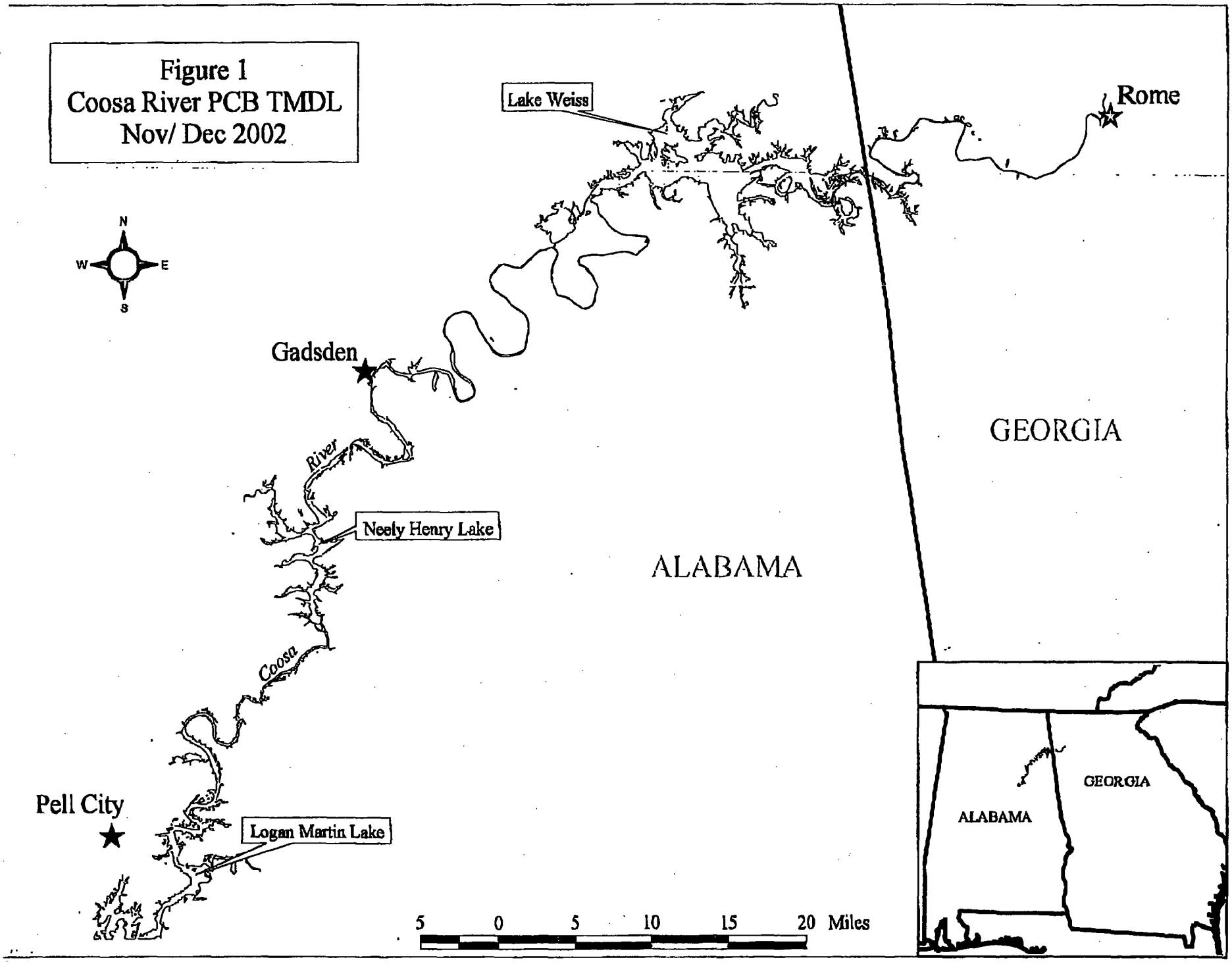
Figure 1
Coosa River PCB TMDL
Nov/ Dec 2002
N
W
E
S
Lake Weiss
Rome
Gadsden
GEORGIA
River
Neely Henry Lake
ALABAMA
Coosa
Pell City
Logan Martin Lake
5 0 5 10 15 20 Miles
GEORGIA
ALABAMA

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TABLES

Table 1
Sample Station Locations
Coosa River PCB TMDL
Nov/Dec, 2002

Sample Identification	Station Location
SCR1a	Sediment sample Coosa River above Horseleg creek, 0"-6".
SCR1b	Sediment sample Coosa River above Horseleg creek, 6"-24".
SCR1c	Sediment sample Coosa River above Horseleg creek, 24"-36".
SCR1d	Sediment sample Coosa River above Horseleg creek ,36"-48".
SCR1e	Sediment sample Coosa River above Horseleg creek, 48"-60".
CR1LMB1	Largemouth Bass fish sample Coosa River below Horseleg cr.
CR1LMB2	Largemouth Bass fish sample Coosa River below Horseleg cr.
CR1LMB3	Largemouth Bass fish sample Coosa River below Horseleg cr.
CR1LMB4	Largemouth Bass fish sample Coosa River below Horseleg cr.
CR1LMB5	Largemouth Bass fish sample Coosa River below Horseleg cr.
CR1SMB1	Smallmouth Buffalo fish sample Coosa River below Horseleg cr.
CR1SMB2	Smallmouth Buffalo fish sample Coosa River below Horseleg cr.
CR1SMB3	Smallmouth Buffalo fish sample Coosa River below Horseleg cr.
CR1SMB4	Smallmouth Buffalo fish sample Coosa River below Horseleg cr.
CR1SMB5	Smallmouth Buffalo fish sample Coosa River below Horseleg cr.
SCR2a	Sediment sample Coosa River below Horseleg creek, 0"-6".
SCR2b	Sediment sample Coosa River below Horseleg creek, 6"-24".
SCR2c	Sediment sample Coosa River below Horseleg creek ,24"-36".
SCR2d	Sediment sample Coosa River below Horseleg creek, 36"-48".
SCR2e	Sediment sample Coosa River below Horseleg creek, 48"-60".
SCR3a	Sediment sample Coosa River above Lock and Dam, 0"-6".
SCR3b	Sediment sample Coosa River above Lock and Dam, 6"-24".

Sample Identification	Station Location
SCR3c	Sediment sample Coosa River above Lock and Dam, 24"-36".
SCR3d	Sediment sample Coosa River above Lock and Dam, 36"-48".
SCR3e	Sediment sample Coosa River above Lock and Dam, 48"-60".
SCR4a	Sediment sample Coosa River above Hwy 100, 0"-6".
SCR4b	Sediment sample Coosa River above Hwy 100, 6"-24".
SCR4c	Sediment sample Coosa River above Hwy 100, 24"-36".
SCR4d	Sediment sample Coosa River above Hwy 100, 36"-48".
SCR4e	Sediment sample Coosa River above Hwy 100, 48"-60".
CR2LMB1	Largemouth Bass fish sample Coosa River below Hwy 100.
CR2LMB2	Largemouth Bass fish sample Coosa River below Hwy 100.
CR2LMB3	Largemouth Bass fish sample Coosa River below Hwy 100.
CR2LMB4	Largemouth Bass fish sample Coosa River below Hwy 100.
CR2LMB5	Largemouth Bass fish sample Coosa River below Hwy 100.
CR2SMB1	Smallmouth Buffalo fish sample Coosa River below Hwy 100.
CR2SMB2	Smallmouth Buffalo fish sample Coosa River below Hwy 100.
CR2SMB3	Smallmouth Buffalo fish sample Coosa River below Hwy 100.
CR2SMB4	Smallmouth Buffalo fish sample Coosa River below Hwy 100.
CR2SMB5	Smallmouth Buffalo fish sample Coosa River below Hwy 100.
SCR5a	Sediment sample Coosa River below Hwy 100, 0"-6".
SCR5b	Sediment sample Coosa River below Hwy 100, 6"-24".
SCR5c	Sediment sample Coosa River below Hwy 100, 24"-36".
SCR5d	Sediment sample Coosa River below Hwy 100, 36"-48".
SCR5e	Sediment sample Coosa River below Hwy 100, 48"-60".
CR3LMB1	Largemouth Bass fish sample Coosa River @ Brushy Branch.
CR3LMB2	Largemouth Bass fish sample Coosa River @ Brushy Branch.

Sample Identification	Station Location
CR3LMB3	Largemouth Bass fish sample Coosa River @ Brushy Branch.
CR3LMB4	Largemouth Bass fish sample Coosa River @ Brushy Branch.
CR3LMB5	Largemouth Bass fish sample Coosa River @ Brushy Branch.
CR3SMB1	Smallmouth Buffalo fish sample Coosa River @ Brushy Branch.
CR3SMB2	Smallmouth Buffalo fish sample Coosa River @ Brushy Branch.
CR3SMB3	Smallmouth Buffalo fish sample Coosa River @ Brushy Branch.
CR3SMB4	Smallmouth Buffalo fish sample Coosa River @ Brushy Branch.
CR3SMB5	Smallmouth Buffalo fish sample Coosa River @ Brushy Branch.
SCR6a	Sediment sample Coosa River @ Brush Branch. 0"-6"
SCR6b	Sediment sample Coosa River @ Brush Branch. 6"-24"
SCR6c	Sediment sample Coosa River @ Brush Branch. 24"-36"
SCR6d	Sediment sample Coosa River @ Brush Branch. 36"-48"
SCR6e	Sediment sample Coosa River @ Brush Branch. 48"-60"
LW1LMB1	Largemouth Bass fish sample Lake Weiss @Poole's Ferry
LW1LMB2	Largemouth Bass fish sample Lake Weiss @Poole's Ferry
LW1LMB3	Largemouth Bass fish sample Lake Weiss @Poole's Ferry
LW1LMB4	Largemouth Bass fish sample Lake Weiss @Poole's Ferry
LW1LMB5	Largemouth Bass fish sample Lake Weiss @Poole's Ferry
LW1CCF1	Channle Catfish tissue sample Lake Weiss@ Poole's Ferry.
LW1CCF2	Channle Catfish tissue sample Lake Weiss@ Poole's Ferry.
LW1CCF3	Channle Catfish tissue sample Lake Weiss@ Poole's Ferry.
LW1CCF4	Channle Catfish tissue sample Lake Weiss@ Poole's Ferry.
LW1CCF5	Channle Catfish tissue sample Lake Weiss@ Poole's Ferry.
SLW1a	Sediment sample Lake Weiss @ Poole's Ferry, 0"-6"
SLW1b	Sediment sample Lake Weiss @ Poole's Ferry, 6"-24"

Sample Identification	Station Location
SLW1c	Sediment sample Lake Weiss @ Poole's Ferry, 24"-36"
SLW1d	Sediment sample Lake Weiss @ Poole's Ferry, 36-48"
SLW1e	Sediment sample Lake Weiss @ Poole's Ferry, 48"-60"
SLW2a	Sediment sample Lake Weiss @ Kirks Grove, 0"-6"
SLW2b	Sediment sample Lake Weiss @ Kirks Grove, 6"-24"
SLW2c	Sediment sample Lake Weiss @ Kirks Grove, 24"-36"
SLW2d	Sediment sample Lake Weiss @ Kirks Grove, 36"-48"
SLW2e	Sediment sample Lake Weiss @ Kirks Grove, 48"60"
SLW3a	Sediment sample Lake Weiss @Hwy 9, 0"-6"
SLW3b	Sediment sample Lake Weiss @Hwy 9, 6"-24"
SLW3c	Sediment sample Lake Weiss @Hwy 9, 24"-36"
SLW3d	Sediment sample Lake Weiss @Hwy 9, 36"-48"
SLW3e	Sediment sample Lake Weiss @Hwy 9, 48"-60"
LW2LMB1	Largemouth Bass fish sample Lake Weiss @ Bay Springs.
LW2LMB2	Largemouth Bass fish sample Lake Weiss @ Bay Springs.
LW2LMB3	Largemouth Bass fish sample Lake Weiss @ Bay Springs.
LW2LMB4	Largemouth Bass fish sample Lake Weiss @ Bay Springs.
LW2LMB5	Largemouth Bass fish sample Lake Weiss @ Bay Springs.
LW2CCF1	Channle Catfish tissue sample Lake Weiss @ Bay Springs.
LW2CCF2	Channle Catfish tissue sample Lake Weiss @ Bay Springs
LW2CCF3	Channle Catfish tissue sample Lake Weiss @ Bay Springs
LW2CCF4	Channle Catfish tissue sample Lake Weiss @ Bay Springs
LW2CCF5	Channle Catfish tissue sample Lake Weiss @ Bay Springs
SLW4a	Sediment sample Lake Weiss @ Bay Springs. 0"6"
SLW4b	Sediment sample Lake Weiss @ Bay Springs. 6"-24"

Sample Identification	Station Location
SLW4c	Sediment sample Lake Weiss @ Bay Springs. 24"-36"
SLW4d	Sediment sample Lake Weiss @ Bay Springs. 36"-48"
SLW4e	Sediment sample Lake Weiss @ Bay Springs. 48"-60"
UNHLMB1	Largemouth Bass fish sample Coosa River @ Croft Ferry.
UNHLMB2	Largemouth Bass fish sample Coosa River @ Croft Ferry.
UNHLMB3	Largemouth Bass fish sample Coosa River @ Croft Ferry.
UNHLMB4	Largemouth Bass fish sample Coosa River @ Croft Ferry.
UNHLMB5	Largemouth Bass fish sample Coosa River @ Croft Ferry.
UNHCCF1	Channnel Catfish sample Coosa River @ Croft Ferry.
UNHCCF2	Channnel Catfish sample Coosa River @ Croft Ferry.
UNHCCF3	Channnel Catfish sample Coosa River @ Croft Ferry.
UNHCCF4	Channnel Catfish sample Coosa River @ Croft Ferry.
UNHCCF5	Channnel Catfish sample Coosa River @ Croft Ferry.
SUNHa	Sediment sample Upper Neely Henry @ Croft Ferry. 0"-6".
SUNHb	Sediment sample Upper Neely Henry @ Croft Ferry. 6"-24"
SUNHc	Sediment sample Upper Neely Henry @ Croft Ferry. 24"-36"
SUNHd	Sediment sample Upper Neely Henry @ Croft Ferry. 36"-48"
SUNHe	Sediment sample Upper Neely Henry @ Croft Ferry. 48"-60"
SNH1a	Sediment sample Neely Henry @ Tidmore Bend. 0"-6"
SNH1b	Sediment sample Neely Henry @ Tidmore Bend. 6"-24"
SNB1c	Sediment sample Neely Henry @ Tidmore Bend. 24"-36"
SNH1d	Sediment sample Neely Henry @ Tidmore Bend. 36"-48'
SNH1e	Sediment sample Neely Henry @ Tidmore Bend. 48"-60"
SNH2a	Sediment sample Neely Henry below I-759. 0"-6"
SNH2b	Sediment sample Neely Henry below I-759. 6"-24"

Sample Identification	Station Location
SNH2c	Sediment sample Neely Henry below I-759. 24"-36"
SNH2d	Sediment sample Neely Henry below I-759. 36"-48"
SNH2e	Sediment sample Neely Henry below I-759. 48"-60"
SNH3a	Sediment sample Neely Henry dam @River mile 1. 0"-6"
SNH3b	Sediment sample Neely Henry dam @River mile 1. 6"-24"
SNH3c	Sediment sample Neely Henry dam @River mile 1. 24"-36"
SNH3d	Sediment sample Neely Henry dam @River mile 1. 36"-48"
SNH3e	Sediment sample Neely Henry dam @River mile 1. 48"-60"
LMLMB1	Largemouth Bass fish sample Logan Martin @ I-20.
LMLMB2	Largemouth Bass fish sample Logan Martin @ I-20.
LMLMB3	Largemouth Bass fish sample Logan Martin @ I-20.
LMLMB4	Largemouth Bass fish sample Logan Martin @ I-20.
LMLMB5	Largemouth Bass fish sample Logan Martin @ I-20.
LMCCF1	Channel Catfish sample Logan Martin @ I-20.
LMCCF2	Channel Catfish sample Logan Martin @ I-20.
LMCCF3	Channel Catfish sample Logan Martin @ I-20.
LMCCF4	Channel Catfish sample Logan Martin @ I-20.
LMCCF5	Channel Catfish sample Logan Martin @ I-20.
SLMa	Sediment sample Logan Martin @ I-20. 0"-6"
SLMb	Sediment sample Logan Martin @ I-20. 6"-24"
SLMc	Sediment sample Logan Martin @ I-20. 24"-36"
SLMd	Sediment sample Logan Martin @ I-20. 36"-48"
SLMe	Sediment sample Logan Martin @ I-20. 48"-60"

Table 2
Analytes, Sample Containers, Preservatives and Holding Times
Coosa River PCB TMDL
Nov/Dec, 2002

MATRIX	ANALYSIS	LAB	BOTTLE/ CONTAINER	PRESERVATIVE	HOLDING TIMES	MQL	METHODS
SEDIMENT							
	PCB aroclor	EPA	8 oz. glass	Ice	14 days to extract 35 day to analyze	10 µg/kg	
	Volatile Residue Particle Size Distribution	EPA	500 ml whirl pak	frozen	not specified	not specified	Std. Methods 2540g (20th ed.)
FISH							
	PCB aroclor PCB congeners % Lipid	EPA	aluminum foil, plastic or glass	frozen	180 days to analyze	50 µg/kg 5 µg/kg	

Table 3
Coosa River PCB TMDL Sampling Plan
Data Quality Objectives

STEP	DATA QUALITY OBJECTIVES		DESCRIPTION
1	State the Problem	• Identify members of the planning team • Identify the primary decision maker of the planning team and define each member's role and responsibility during the DQO phase • Develop a concise description of the problem • Specify the available resources and relevant deadlines for the study.	Planning Team Bill Melville, WD, Project Requestor Laura McGrath*, SESD-EAB, Co-Project Leader Lonnie Dorn*, SESD-EAB, Co-Project Leader Bill Cosgrove, SESD-ASB, Analytical Team Leader * - Primary decision makers Description of Problem Water Management Division needs data regarding the concentration of PCBs in the sediments and fish tissue in the Coosa River, Lake Weiss, H. Neely Henry Lake and Logan Martin Lake for establishing TMDLs. The data will be used in a water quality model for TMDL determinations. Available Resources and Deadlines Personnel from EAB will conduct sampling during the weeks of November 18, 2002, November 2, 2002 and December 9, 2002. Analytical results from the ASB will be provided to the project leader by March 1, 2003. A final report will be provided to the project requestor by April 1, 2003.
2	Identify the Decision	• Identify the principal study question • Define the alternative actions that could result from resolution of the principal study question. • Combine the principal study question and the alternative actions into a decision statement. • Organize multiple decisions.	Principal Study Question What are the PCB concentrations in the sediment and fish tissue in the Coosa River, Lake Weiss, H. Neely Henry Lake, and Logan Martin Lake? Alternative Actions A TMDL will be determined for the water bodies of interest for this study. The presence or absence of PCBs could affect the 303(d) listing of the water bodies. Decision Statement No decision will be made based solely on the data collected during this study. The data will be incorporated into a water quality model for TMDL determination.

3	Identify Inputs to the Decision	• Identify the information that will be required to resolve the decision statement. • Determine the sources for each item of information identified. • Identify the information that is needed to establish the action level. • Confirm that appropriate analytical methods exist to provide the necessary data.	<u>Required Information</u> • PCB concentrations in sediments • Percent moisture of sediment • Percent volatile residue in sediment • Particle size distribution in sediment • PCB concentrations in fish tissue • Percent lipids in fish tissue <u>Sources for Required Information</u> Samples will be collected and analyzed for the previously listed media. State environmental agencies may have data regarding PCB concentrations in fish for the Coosa River, Lake Weiss, H. Neely Henry Lake, and Logan Martin Lake. <u>Action Level Establishment</u> Not applicable. No action will be taken based solely on the data collected during this study. The data will be incorporated into a water quality model. <u>Analytical Methods</u> Appropriate analytical methods exist and will be presented in the study plan along with detection limits. All samples will be analyzed for PCB aroclors. The largest three fish from each trophic level at each station will be analyzed for PCB congeners. Sediment samples will be collected at discreet, vertical intervals from the sediment surface to five feet below the sediment surface, provided sufficient sediment depth exists. The first interval will be from 0"- 6". The second interval will be from 6"- 24". The remaining intervals will be collected every 12".

4	Define the Study Boundaries	• Specify the characteristics that define the population of interest. • Define the spatial boundary of the decision statement. • Define the temporal boundary of the problem. • Define the scale of decision making. • Identify practical constraints on data collection.	<u>Population of Interest</u> PCB concentrations in sediment and fish tissue. <u>Spatial Boundary</u> Coosa River at the confluence of the Etowah and Oostanaula Rivers in Rome, GA to the Georgia/Alabama state line. Lake Weiss, H. Neely Henry Lake, and Logan Martin Lake in Alabama. <u>Temporal Boundary</u> Due to personnel and laboratory constraints, the study will be conducted as three phases. The first phase will consist of sample collection in the Coosa River and Lake Weiss during the week of 11/18/02. The second phase will consist of fish tissue sample collection in H. Neely Henry and Logan Martin Lakes during the week of 12/09/02. The third phase will consist of sediment sample collection in H. Neely Henry and Logan Martin Lakes during the week of 12/09/02. <u>Scale of Decision Making</u> TMDLs will be determined for each water body based on the segments listed on the 303(d) list of impaired water bodies from each state. <u>Data Collection Constraints</u> • Inclement weather • High flows from rain
5	Develop a Decision Rule	• Specify the statistical parameter that characterizes the population (the parameter of interest). • Specify the action level for the study. • Develop a decision rule.	Not applicable. No decision will be made based solely on the data collected during this study. Data will be used in a water quality model for development of a TMDL.
6	Specify Tolerable Limits on Decision Errors	• Determine the possible range of the parameter of interest. • Identify the decision errors and choose the null hypothesis. • Specify a range of possible parameter values where the consequences of decision errors are relatively minor (gray region). • Assign probability limits to points above and below the gray region that reflect the tolerable probability for the occurrence of decision errors.	Not applicable due to authoritative sampling design.

7	Optimize the Design for Obtaining Data	• Review the DQO outputs and existing environmental data. • Develop general data collection design alternatives. • Formulate the mathematical expressions needed to solve the design problems for each data collection design alternative. • Select the optimal sample size that satisfies the DQOs for each data collection design alternative. • Select the most resource-effective data collection design that satisfies all of the DQOs. • Document the operational details and theoretical assumptions of the selected design in the sampling and analysis plan.	Not applicable due to authoritative sampling design.

APPENDIX 1

COLLECTION OF FISH FOR TISSUE SAMPLING

SECTION 12
TISSUE SAMPLING

PERFORMANCE OBJECTIVE:

- To collect a representative tissue sample from the surface water or area of interest.

12.1 Introduction

Tissue sampling techniques and equipment are designed to minimize effects on the chemical and physical integrity of the sample. The collection techniques described in this section should provide tissue samples that are suitable for use in ecological assessments, Total Maximum Daily Loads (TMDL) and other studies for which tissues are needed for chemical analysis.

The physical location of the investigator when collecting a sample may dictate the equipment to be used. If tissue samples are required from a wadeable waterbody, backpack electrofishing or seining is possible. Physical barriers could hinder the use of a seine net, making backpack electrofishing a more desirable technique. If the stream is too deep to wade, boat electrofishing, nets or hook and line techniques may be used to collect the sample. Current, velocity and conductivity will determine which technique is best. Because boat electrofishing is more time efficient and less destructive of the fish community, it is the preferred technique. However, if water at the sampling location has extremely high (>1300 μS) or low (< 20 μS) conductivity making electrofishing ineffective, then nets or hook and line techniques may be used to collect the sample.

12.2 Collection Techniques for Fish and Shellfish

12.2.1 Backpack Electrofishing

A sample may be collected using backpack electrofishing equipment when the surface water source is accessible by wading. All samplers must be familiar with safe electrofishing techniques including wearing chest waders and insulated gloves. A typical 24 volt backpack electrofisher must have an operating range for conductivity that allows collecting fish in the water source to be sampled. The elecrofishing unit must also be capable of producing pulsed DC current. The electrofishing unit must be set on the lowest voltage setting that allows fish to be stunned without injury. The electrofishing unit must have a tip-over safety switch as well as other engineered safety features. A commercially built model of electrofisher is preferred due to the inherent safety features designed into the unit by the manufacturer. All members of the sampling crew be certified in CPR as well as First Aid. Consult the operating manual for specific instructions on electrofishing units. Scientific collection permits are required to collect fish.

The samplers should collect fish by moving in an upstream direction collecting targeted fish

species from any available habitat. Fish stunned by the electrofisher are collected with dip nets and held in a bucket of water until euthanized on ice, or released if not needed for the study.

12.2.2 Seine Nets

A sample may also be collected using a seine net when the surface water source is accessible by wading. The samplers should seine in an upstream direction collecting targeted fish species from any available habitat. The selection of seine mesh size and length depends on the species being targeted and stream size. The mesh size of the seine must be small enough to capture the smallest targeted species. The length of the seine should be long enough to span the width of the water body being sampled without having extra material. In some cases net that exceeds the stream or cove width may be rolled around the seine pole/handle to keep it from getting in the way. The seine must be tall (deep) enough to keep fish from swimming over the top or under the bottom of the net. Typical seine dimensions are 10-20 feet long by 3 feet tall (deep) with a mesh opening of 3/8 of an inch.

Fish collected with a seine net are removed by the samplers wearing latex gloves and may be held in a bucket of water until euthanized on ice or released if not needed.

12.2.3 Boat Electrofishing

A sample may be collected using a boat electrofisher when the surface water source is not accessible by wading. A typical boat electrofisher must have an operating range for conductivity that will carry adequate current to stun fish in the water body to be sampled. The elecrofishing unit must also be capable of producing pulsed DC current. The electrofishing unit should be set on the lowest voltage setting that allows fish to be stunned without injury. The electrofishing unit must have a positive activated foot power control switch as well as other engineered safety features. A commercially built electrofisher model is preferred to a home-made device due to the inherent safety features designed into the unit by the manufacturer. All samplers must be familiar with safe electrofishing techniques including using net poles made of an insulating material such as fiberglass, wearing personal flotation devices, and wearing insulated lineman gloves. All members of the sampling crew should be certified in CPR as well as First Aid. See operating manual for the specific make and model of electrofishing unit being used for specific information on how to operate it. Scientific collection permits are required when collecting fish.

Fish that are stunned by the electrofisher are collected with dip nets, placed in a clean plastic bag and euthanized on wet ice.

12.2.4 Gill Nets

When fish samples are desired from a water source where conductivity is too high or too low to electrofish or where multiple targeted fish species are needed the use of gill nets is possible. Unlike electrofishing gill nets to a certain extent are non selective in the capture of fish. A mesh size must be selected that allows for the capture of the targeted fish species while minimizing the catch of unwanted species. Placement of gill nets in the waterbody should optimize the chances of collecting the targeted species of fish therefore knowledge of fish habitats and behavior is

critical to collecting the desired sample. Gill nets must be checked once per hour when they are deployed to minimize the capture of unwanted species. Gill nets should not be placed in a manner which would cause entanglement in boat propellers or hinder boat traffic. Samplers should always be within sight of gill nets deployed. Fish are removed from the gill net by samplers wearing latex gloves.

When fish are removed from the net, they are euthanized (if not already dead) in a clean plastic bag on wet ice.

12.2.5 Hook and Line

When fish samples are desired from a water source where electrofishing and gill nets are unsuitable, hook and line angling can be used to collect a sample. Most standard angling gear is suitable for collecting fish in this manner. Knowledge of fish habitats and behavior is critical to collecting the desired sample. If live bait is used to catch fish an aliquot of the bait being used must be analyzed for the same contaminants as the fish tissue samples. Fish caught with hook and line techniques must be handled by samplers wearing latex gloves.

12.2.6 Shellfish (crabs, shrimp, etc.) Collection Using Cast Nets

A standard cast net is suitable for collection of shrimp or crab from a water body. Knowledge of shellfish habitats and behavior is critical to collecting the desired sample. Net mesh size must be small enough to collect targeted species. A typical cast net should be about as tall as the sampler throwing it and have a mesh opening of 3/8 of an inch. Scientific collection permits are required to collect shellfish. A valid state fishing license may also be required.

12.2.7 Crab Collection Using Traps

Traps are usually the best method to collect crabs. Knowledge of crab behavior and habitat preferences improves the likelihood of obtaining the necessary sample. A typical trap can be baited with dead fish, deployed and left undisturbed for a number of hours to provide sufficient time for targeted species to enter the trap. Traps should be checked approximately every 12 hours to minimize overcrowding of the crabs and resultant cannibalization, or trap loss from tidal changes. Traps should have an attached buoy identifying it as U.S. EPA equipment. Scientific collection permits are required to collect crabs for field studies. A valid state fishing license may also be required.

APPENDIX 2

SAFETY PLAN

SAFETY PLAN	
Site Name: **Coosa River PCB TMDL**	Contact:
Address: **Rome, GA**	
Phone Number: **N/A**	
Purpose of Visit: **Sediment and fish tissue sample collection.**	
Proposed Date of Work: 11/18/02-11/22/02; 12/02/02-12/06/02; 12/09/02-12/3/02	
Directions to Site: **See attached maps.**	

SITE INVESTIGATION TEAM:

PERSONNEL *	SAFETY CATEGORY	RESPONSIBILITIES
Laura McGrath	**D**	**Co-Project Leader/Sample Team Leader**
Lonnie Dorn	**D**	**Co-Project Leader/Sample Team Leader**
Allan Auwarter	**D**	**Sample Team Leader**
Bobbi Berrang	**D**	**Sampler**
Phyllis Meyer	**D**	**Sampler**
Bill Bokey	**D**	**Sampler**
Ron Weldon	**D**	**Sampler**
Brian Striggow	**B**	**Sampler**
Morris Flexner	**D**	**Sampler**
Lynn Wellman	**D**	**Sampler**
Carolyn Thompson	**D**	**Sampler**

* All employees have been trained/medically monitored in accordance with OSHA 29 CFR 1910.120 requirements and US-EPA Region IV Field Health and Safety Manual, 1990 edition.

PLAN PREPARATION:

Prepared by:	Laura McGrath	Date
Reviewed/Approved by:	Phyllis Meyer	Date
Section Chief:	Philip Murphy	Date

EMERGENCY INFORMATION:

Local Resources:

Ambulance (Name):	Phone: **911**
Hospital (Name):	Phone: **911**
Police (Local or State):	Phone: **911**
Fire Department:	Phone: **911**

Office Resources:

OFFICE/POINT of CONTACT	WORK PHONE	HOME PHONE
EAB Office - Marilyn Vidmar	(706) 355-8701	
EPA - Emergency Response - Atlanta	(404) 562-8700	
SHEM - Betty Kinney	(706) 355-8511	
EAB Safety Officer - Phyllis Meyer	(706) 355-8709	
Chief, EAB - Bill Bokey	(706) 355-8604	(706) 549-2611
Chief, EES - Philip Murphy	(706) 355-8711	(706) 546-7895

EMERGENCY CONTACTS:

Poison Control Center	Phone: (800) 282-5846
National Response Ctr (ENVIRONMENTAL EMERGENCY ONLY)	Phone: (800) 424-8802

Directions to Hospital (Attach Map if Available): **Multiple locations will be visited**
throughout Georgia and Alabamb. See attached maps for nearest hospital based on
site.

Hospital Maps

AREA 1 - Rome, GA – Cossa River & Eastern Lake Weiss

Floyd Medical Center
304 Turner McCall Blvd
Rome, GA
(706) 802-4100

AREA 2 - Gadsden, AL – Western Lake Weiss & Neely Henry Lake

Riverview Regional Medical Center
600 S. Third Street
Gadsden, AL
(256) 543-5200

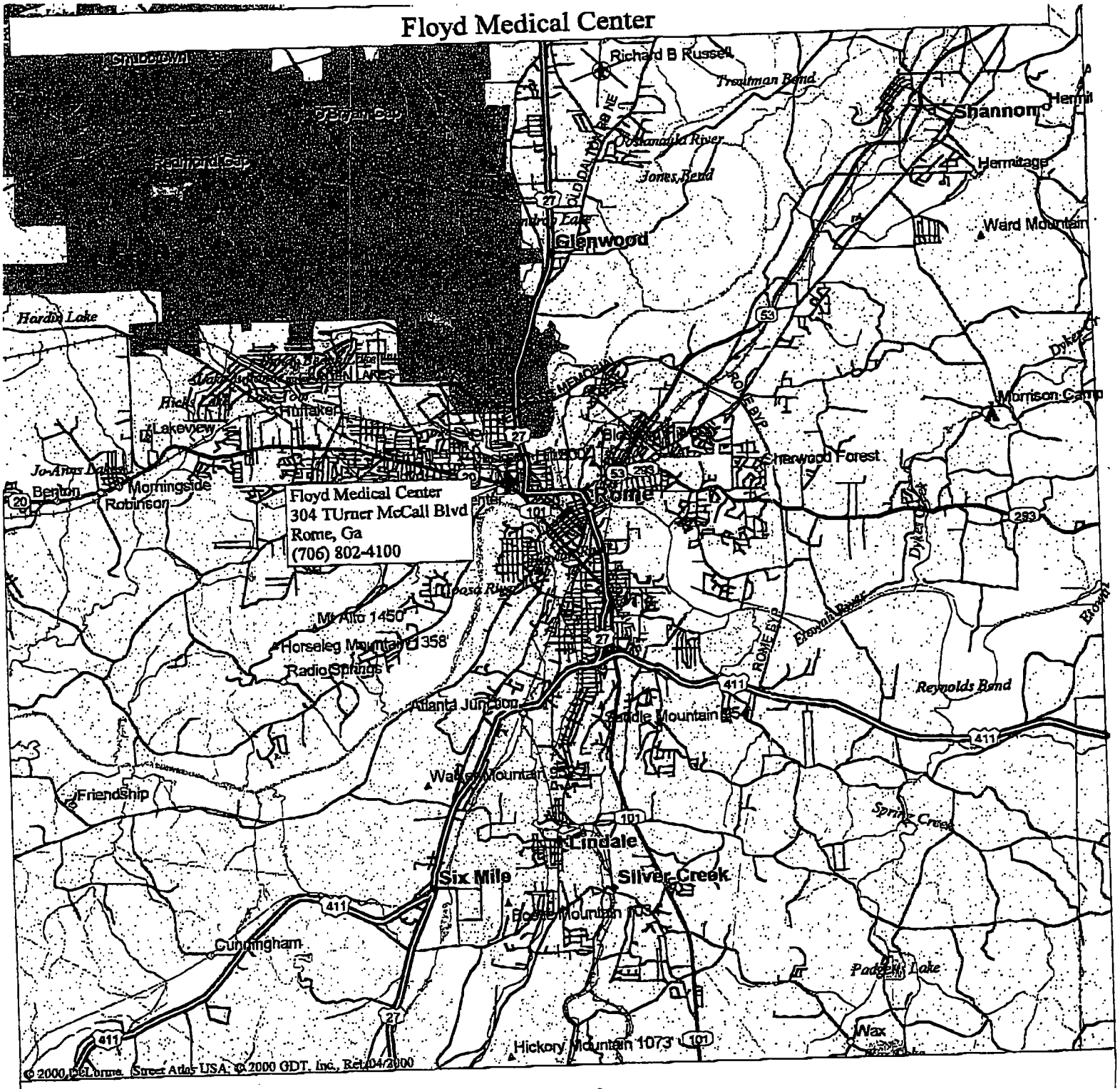
AREA 3 - Pell City, AL – Logan Martin Lake

St. Clair Regional Hospital
2805 Hospital Drive
Pell City, AL
(205) 338-3301

Cell Phone Numbers

Laura McGrath	(706) 338-2865
Lonnie Dorn	(706) 338-2841
Alan Auwarter	(706) 338-2867
Phyllis Meyer	(706) 338-2873
Morris Flexner	(706) 338-2874

Floyd Medical Center



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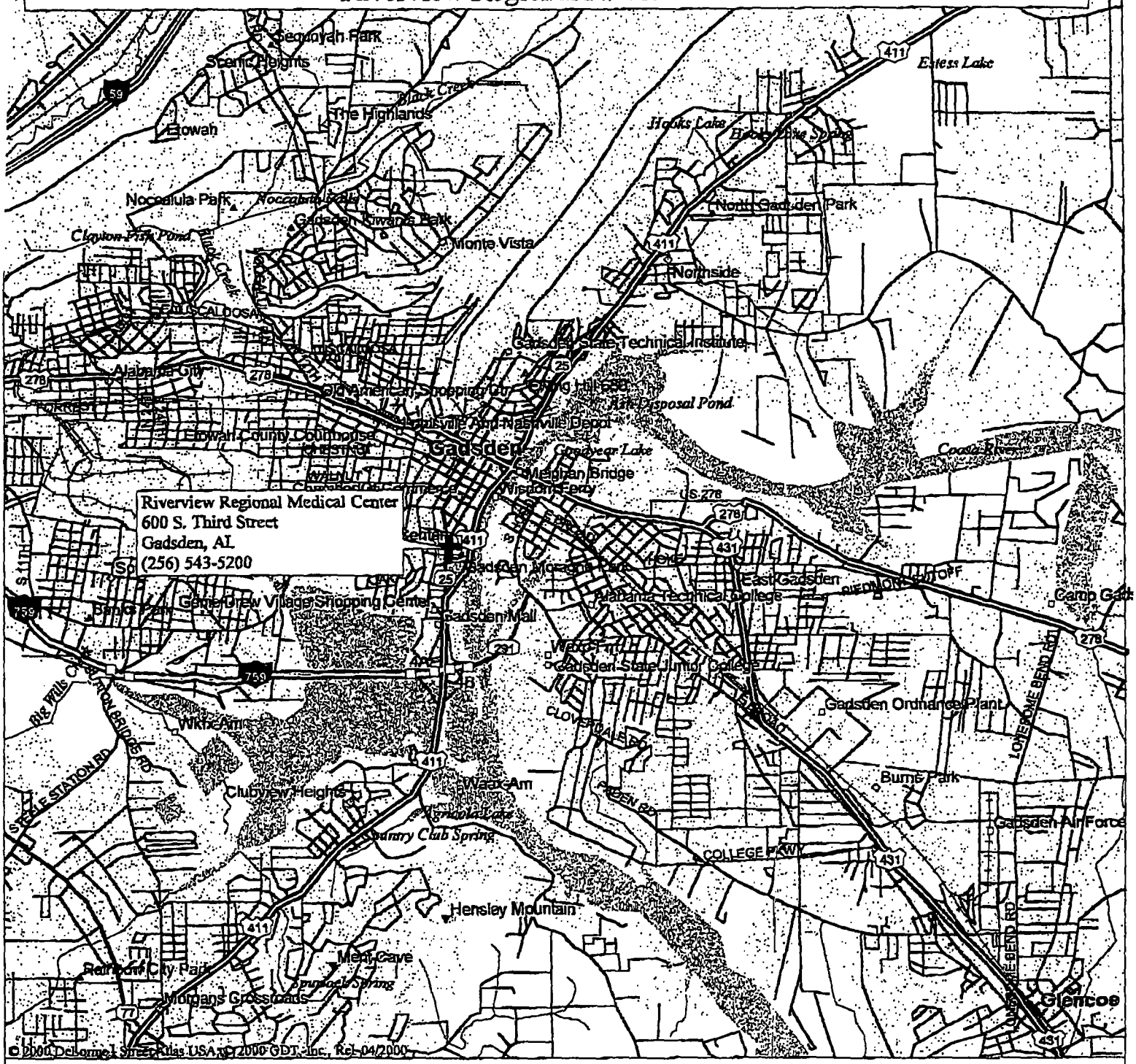
2 Miles

2 KM

- Local Road
- Major Connector
- State Route
- Trail
- US Highway
- Utility/Pipe
- Railroad
- Point of Interest
- Small Town
- Large City
- Airfield
- Summit
- Geographic Feature
- Hospital
- Campground
- Locale

Riverview Regional Medical Center



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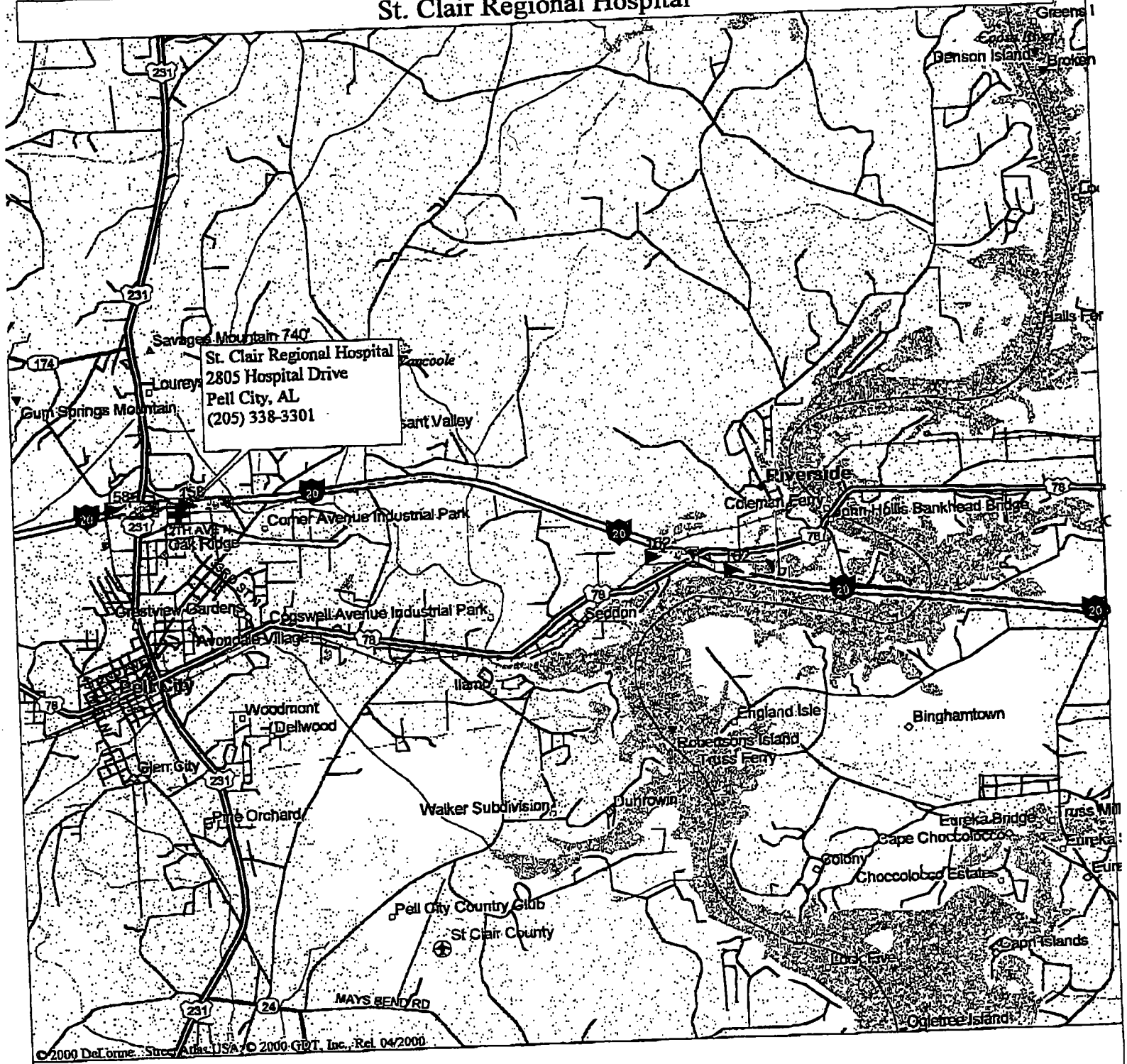
1 Miles

2 KM

- Local Road
- Major Connector
- State Route
- Interstate/Limited Access
- US Highway
- Exit
- Utility/Pipe
- Railroad
- Point of Interest
- Small Town
- Large City
- Summit
- Geographic Feature
- Hospital
- Park/Reservation
- Locale

St. Clair Regional Hospital



Mag 13.00
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1 Miles

2 KM

- Local Road
- Major Connector
- State Route
- Interstate/Limited Access
- US Highway
- Exit
- Utility/Pipe
- Railroad
- Point of Interest
- County Seat
- Small Town
- Airfield
- Summit
- Geographic Feature
- Exit/Gas
- Exit/Lodging