

EXECUTIVE SUMMARY

In the winter of 2003, the Alabama Clean Water Partnership (ACWP) engaged the services of Kleinschmidt Associates, a national energy and water resources consultant with an office in Birmingham, Alabama, to prepare basin management plans for the Alabama and Tombigbee River basins. The development of the basin management plans was made possible by the United States Environmental Protection Agency (EPA) with Clean Water Act Section 319 funding through Alabama's Nonpoint Source Management Program, which is administered by the Alabama Department of Environmental Management. Project oversight was provided by the Alabama-Tombigbee Steering Committee and the Statewide Coordinator of the ACWP.

Purpose

The primary purpose of basin management plans is to examine environmental conditions in the areas associated with the mainstem and all tributaries of major river basins, and to develop through stakeholder input the supported solutions to the resource concerns that are identified. Basin management plans are created based on EPA's 'key elements' of a watershed protection plan and rely primarily on stakeholder input and existing resource data to assess water resource issues and concerns. For the Tombigbee River Basin Plan, watershed-based sediment and nutrient loading models were utilized to provide estimates and predictions of loading reductions brought about by identified best management practices (BMPs). The plans also integrate information regarding the conservation of endangered species and their corresponding habitats as identified in the U.S. Fish and Wildlife Service's '*Recovery Plan for the Mobile River Basin Aquatic Ecosystem*'.

This plan was developed through a sequential process where:

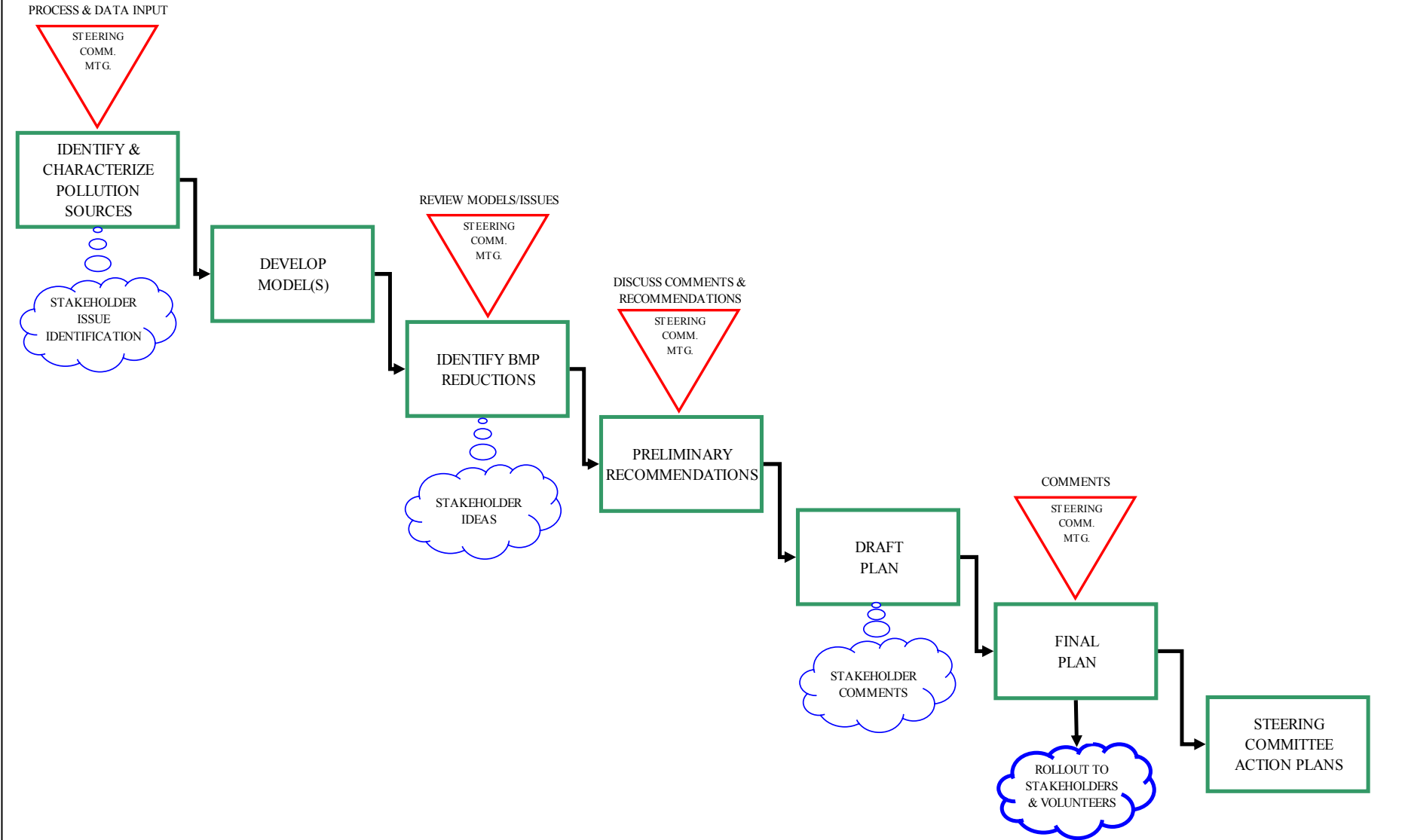
- the environmental and socioeconomic settings and resources of the Tombigbee River Basin are described
- current environmental resource data and information are utilized to better understand the status of the basin

- resource concerns and issues in the basin are described utilizing stakeholder identified concerns and those identified through agency studies
- goals and strategies are developed to address and solve these identified issues and concerns
- a framework for moving forward is described, so that this plan can be implemented and the management and resource issues and problems can be solved.

Stakeholder involvement is integral to the development of this river basin plan. A stakeholder and public participation program was designed to build on past efforts of the ACWP and the Alabama/Tombigbee Steering Committee. The creators of the stakeholder outreach components were the ACWP's consultants, Kleinschmidt Associates, and the Alabama Pulp and Paper Council (APPCO), which is a founding partner in the ACWP and has a history of sponsoring efforts to manage the Alabama and Tombigbee.

Stakeholder input is the cornerstone to a successful basin management plan for the Tombigbee River Basin. Participants at the subbasin meetings received presentations on current water quality issues in their basin, subbasin and watersheds and they were asked to respond with questions and to engage in facilitated discussions to voice the concerns they had about the rivers and tributaries of their community. Participants were encouraged to elaborate on problems they perceived in the watershed and to suggest possible remedies for these issues. These sessions allowed for direct input from watershed stakeholders that wished to be a part of the basin management planning process. The stakeholder involvement process is depicted below.

PROJECT MILESTONES & STAKEHOLDER INPUT OPPORTUNITIES



The Tombigbee River Basin – Background Information

The Tombigbee River Basin occupies an area of approximately 13,767 square miles between the states of Alabama and Mississippi, 7,693 square miles in Alabama and 6,075 square miles in Mississippi. The main stem of the river joins with the Black Warrior at Demopolis, Alabama and then continues due south to join the Alabama River, south of Jackson, Alabama and drains into the Mobile River, which flows into the Gulf of Mexico.

The Tombigbee River Basin includes two (2) subbasin components: Upper and Lower Tombigbee River Subbasins. The Upper Tombigbee River and its subbasin run mostly in a north-south direction in western central Alabama. It reaches north from its confluence with the Black Warrior River near Demopolis, AL well into Mississippi and Lee, Tishomingo, Lowndes, Clay, Monroe, and Itawamba Counties. It consists of six watersheds: Upper Tombigbee, Buttahatchee, Luxapallila, Middle Tombigbee-Lubbub, Sipsey, and Noxubee. The Lower Tombigbee River and its subbasin run from the confluence of the Upper Tombigbee and Black Warrior Rivers in a southerly direction to the confluence with the Alabama River in southeastern Alabama. It consists of three watersheds: Middle Tombigbee-Chickasaw, Sucarnoochee, and Lower Tombigbee.

There are 44 sub-watersheds (11-digit cataloging sub-units) in the Upper Tombigbee River Basin and 42 sub-watersheds in the Lower Tombigbee River Basin. Major tributaries as with these sub-watersheds include Alamuchee Creek, Sucarnoochee River, Chickasaw Bogue Creek, Bashi Creek, Turkey Creek, Bassetts Creek, Lewis Creek, Buttahatchee River, Coal Fire Creek, Sipsey River, and Noxubee River. Map 1 attached depicts the location of the subbasins and their hydrologic sub-units and Appendix A contains a complete list of tributaries and their watersheds within the Tombigbee River Basin.

The Tombigbee River Basin is approximately 79% percent forested with over 2.5 million acres of forestland. It should be of no surprise that forestry is by far Alabama's largest industry. Compared to the rest of the Nation, Alabama boasts the second largest commercial forest with over two-thirds of the state (22.9 million acres) forested. In fact, Alabama's forestland covers more acres than the size of Connecticut, Delaware, Maryland, Massachusetts, New Hampshire,

and Rhode Island combined. It is estimated that 71% of these forested lands are owned by private, non-industrial land owners. Forestry generates approximately \$13 billion for Alabama each year and employs approximately 10% of State's total work force.

Between the years 2003-2004, the total statewide farm and forestry receipts were over \$4.54 billion. The top five farm commodities for cash receipts were (1) poultry (63%), (2) cattle and calves, (3) greenhouse, sod, and nursery products, (4) cotton, and (5) peanuts (Alabama Agricultural Statistics Service, 2004). Together, these five commodities comprise 90% of the total commodity receipts. Forestry dominates in the Tombigbee River Basin but several counties are within the top ten leading producers for hogs: Pickens (#2), Sumter (#4) and Washington (#10). Catfish is also a major commodity produced in the Tombigbee Basin.

U.S. Census population projections for Alabama show that the state's population will steadily increase from 4.45 million in 2000 to over 5.2 million in 2025. If recent trends in population growth provide any indication of where this growth will occur, then much of the population will occur in the proximity of the major population centers of Birmingham, Huntsville, Mobile, Montgomery and Tuscaloosa.

Resource Concerns in the Subwatersheds of the Tombigbee River Basin and the Percentage of the Basin with each Concern

<i>Resource Concerns in the Subwatershed</i>	Tombigbee River Basin	Upper Tombigbee River Basin	Lower Tombigbee River Basin
Excessive erosion on cropland	18%	29%	7%
Gully erosion on agricultural land	20%	26%	14%
Road and roadbank erosion	56%	64%	49%
Poor soil condition (cropland)	5%	7%	2%
Excessive animal waste applied to land	8%	14%	2%
Excessive pesticides applied to land	4%	7%	0%
Excessive sediment from cropland	16%	29%	5%
Excessive sediment from roads/road banks	54%	79%	30%
Excessive sediment from urban development	11%	14%	7%
Inadequate management of animal wastes	14%	24%	5%
Nutrients in surface waters	16%	24%	9%
Pesticides in surface waters	6%	7%	5%
Bacteria and other organisms in surface waters	31%	48%	14%
Low dissolved oxygen in surface waters	5%	2%	7%
Livestock are overgrazing pastures	61%	83%	40%
Livestock Commonly have access to streams	74%	86%	63%

In the Upper Tombigbee River Subbasin, 55.7 miles of streams are on Alabama's approved 2002 303d List of Impaired waters (Table 5.4a). One waterbody, Olin Basin, is listed for the Lower Tombigbee. No TMDLs have been prepared for these waters as of the date of this plan's preparation except for the Olin Basin, which is subject to a clean up effort under Superfund.

Subwatershed impairment potential was determined by the local Soil and Water Conservation Districts (1998) and augmented with current construction stormwater authorizations by ADEM (2003). Impairment potential is a rating that provides an indication of the potential for current and future nonpoint pollution from various sources *without proper management*. Proper management, in this context, means that appropriate best management practices (BMPs) are implemented and maintained.

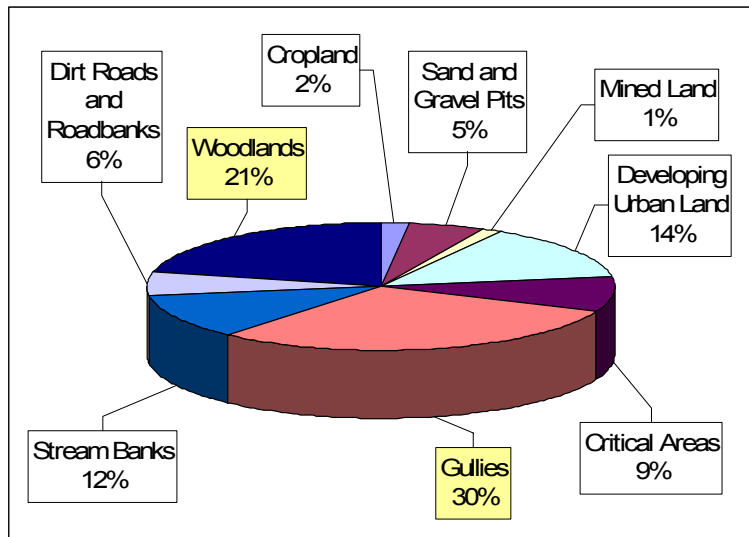
Data on sediment loading estimates (in units of tons per year) were taken from the Alabama Soil and Water Conservation Committee database that is published on the web. This information was provided by the local Soil and Water Conservation Districts. Estimates were provided for 9 sediment erosion sources:

- Cropland
- Mined land
- Critical areas
- Stream banks
- Sand and gravel pits
- Developing urban land¹
- Gullies
- Dirt roads and road banks
- Woodlands

Sediment loading in the Tombigbee River Basin is estimated to come largely from gully erosion (30 percent), followed by woodlands (21 percent), developing urban land (14 percent), and stream banks (12 percent).

¹ Developing urban land is rural land that is being converted through development to concentrated residential or urban land.

Sediment loading Contribution by Use for the Tombigbee River Basin



A listing of the primary management concerns is provided below. This list is based on the previous summaries of stakeholder concerns derived from public meetings, the impairment potential for subwatersheds as determined by the local Soil and Water Conservation Districts, resource concerns for subwatersheds as developed by the local Soil and Water Conservation Districts, and sediment loading rates as provided by the Alabama Soil and Water Conservation Committee on the web. Many of the concerns or issues were cited from several of these information sources.

Primary Resource Management Concerns

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| <ul style="list-style-type: none"> • sediment and nutrient loading from forestry practices • sediment and nutrient loading from pastureland • sediment, nutrient, and pesticide loading from cropland • sediment and nutrient loading from aquaculture • nonpoint source impairment from sedimentation • soil erosion from roads, road banks and new road construction • animal husbandry / waste management impacts • livestock access to streams | <ul style="list-style-type: none"> • sediment loading from streambank erosion • sediment loading from urban land development • sediment loading from sand and gravel pits • gully erosion • fish abundance and fisheries diversity in the Tombigbee River; aquatic biodiversity in the Buttahatchee River in Alabama and Mississippi • septic tank nutrient and pathogen loading • road crossings and boat ramp problems • river traffic management |
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| <ul style="list-style-type: none"> • livestock overgrazing of pastureland • pesticides, bacteria and other organisms in surface waters • mining and excavation impacts on surface waters | <ul style="list-style-type: none"> • dumping from boats • integrating management plans and efforts across Alabama and Mississippi • technology transfer for BMPs across industries |
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These are the major resource issues in the Tombigbee River Basin. Other concerns discussed in other sections of this plan may be significant on a local or subwatershed scale, but are not widespread concerns across the river basin. These more localized concerns should not be ignored at the subwatershed management scale, and management efforts toward those concerns should be pursued as opportunities arise.

The central themes of this river basin management plan are to (1) identify the primary resource management needs of the basin, (2) identify the highest priority areas in the basin where efforts are most needed, (3) develop management recommendations that address those needs, and (4) identify implementation opportunities and mechanisms for those recommendations. The highest priority areas in the Tombigbee River Basin, where management efforts are most needed, are identified in this plan as Targeted Subwatersheds.

These priority areas, referred to as Targeted Subwatersheds in this plan, are those subwatersheds identified by ADEM as priority subwatersheds in their Surface Water Quality Screening Assessment of the Escatawpa River, Mobile Bay, and Upper and Lower Tombigbee River Basins - 2001, published by ADEM (2003); those subwatersheds with a "high" potential for nonpoint source pollution impairment, as determined by the Soil and Water Conservation Districts and published by ADEM (2003) or those subwatersheds with segments identified by ADEM as impaired on their 303(d) surface water impairment list.

Plan Recommendations

Watershed modeling for targeted subwatersheds was utilized to predict the benefits from the implementation of several BMPs for selected land uses. The Environmental Protection Agency (EPA) STEPL (Spreadsheet Tool for the Estimation of Pollutant Load) watershed model was utilized for each targeted subwatershed for estimating the loading of sediments, nitrogen, and phosphorus to surface waters. Modeling was done before incorporating BMPs, and after the

implementation of specific BMPs for forestry, cropland, and pastureland land uses. The predicted reductions in sediment, nitrogen, and phosphorus loading through BMP implementation were derived from the model. These results provide a measure by which to evaluate the level of improvement in water quality through load reductions that result from implementation of BMPs.

While the targeted subwatersheds identified in this plan should be prioritized for action, management efforts should not be neglected in other subwatersheds as well. Available funding should be directed to the subwatersheds most in need, as appropriate, based on requirements and restrictions dictated by the funding source.

The primary resource concerns and issues expressed by watershed stakeholders, and those derived from existing subwatershed and river basin studies and data, were outlined in the previous section of the plan. The remainder of this river basin management plan is devoted to identifying goals and strategies that address those concerns and issues so that they are corrected. These strategies will involve restoration, protection, and education projects or tasks focused on attaining a specific goal. In the list below, eight basin goals have been developed that address these basin resource concerns and issues.

Basin Management Goals and the Concerns / Issues they Address

GOAL: <i>Reduce nonpoint source pollution from agricultural activities - cropland, pastureland, and animal husbandry</i>	GOAL: <i>Reduce nonpoint source pollution from roads, road banks, and new road construction</i>
<ul style="list-style-type: none"> • livestock access to streams, and streambank erosion • nutrient runoff from pasture & cropland • sediments from pasture and cropland • gully erosion and erosion from critical areas • animal waste management impacts • livestock overgrazing of pastureland • pesticides, bacteria and pathogens in surface waters 	<ul style="list-style-type: none"> • soil erosion from roads and road banks • gully erosion
GOAL: <i>Reduce nonpoint source pollution from forestry</i>	GOAL: <i>Reduce pollution from urban and residential areas</i>
<ul style="list-style-type: none"> • sediment loading from land 	<ul style="list-style-type: none"> • septic tank and sewage treatment nutrient loading and pathogens • soil erosion from new road construction • soil erosion from land clearing and construction activities • sediment loading from urban land development • stormwater runoff – pathogens, bacteria and toxics
	GOAL: <i>Reduce nonpoint source pollution from</i>

<ul style="list-style-type: none"> • streambank erosion from riparian buffer loss • nutrient runoff from land • erosion and sediment from logging roads • thermal stress in streams from riparian canopy cover • gully erosion on hillsides 	<i>mining activities</i>
	<ul style="list-style-type: none"> • sediment loading from sand and gravel pits • mining and excavation impacts on surface waters
GOAL: <i>Reduce nonpoint source pollution from aquaculture operations</i>	GOAL: <i>Protect and restore aquatic habitat and aquatic species diversity, with a focus on fish and mussel species in Alabama and Mississippi.</i>
<ul style="list-style-type: none"> • nutrient loading from ponds • bacteria loading from ponds 	<ul style="list-style-type: none"> • wetland and aquatic habitat destruction • loss of fish and mussel species diversity
	GOAL: <i>Improve river recreation management</i>
	<ul style="list-style-type: none"> • river traffic management and bank erosion • dumping from boats • boat ramp problems

Several additional goals are included in this plan that are not directly related to specific resource management issues. These goals are:

GOAL: Promote resource education and outreach, and watershed awareness of issues in the river basin. Promote volunteer activities throughout the watershed.

GOAL: Promote watershed management technology transfer across industries and across Alabama and Mississippi. Coordinate watershed planning, restoration and conservation efforts between Alabama and Mississippi.

GOAL: Continue to track resource trends in the river basin to measure progress in restoration and protection efforts, and identify new resource concerns and issues.

GOAL: Develop a framework in the river basin to implement the projects and tasks in this plan at the subwatershed level.

These latter goals are critical to the implementation and success of this river basin plan. In the following pages, each goal will be addressed individually, and strategies will be established to achieve the goal. For each strategy, specifics are provided regarding:

- the agencies or groups that are integral to implementing the strategy,
- the timeframe or priority of the strategy,
- a qualitative assessment of the level of funding needed for the strategy,
- monitoring needs,
- and performance indicators by which to gauge the success of implementing the strategy.

Next Steps

Implementing this Basin Management Plan for the Tombigbee River requires funding, time, and motivated people. The process of creating this plan began with an assessment of current conditions. This plan considers the information and data from the assessment in order to map out management measures. Implementation occurs when financial and human resources are targeted to complete planned actions to achieve specific goals and objectives as outlined by the planning phase. This plan shall be adopted and embraced by the subbasin stakeholders, Alabama Tombigbee Steering Committee and Alabama Clean Water Partnership. From that point on it will become a “living” document that shall be annually updated.

- ***Adopt and distribute the Tombigbee River Basin Management Plan.*** The basin management plan can be used as an outreach and education tool. It shall first be presented to the subbasin stakeholders throughout the Basin and then adopted by the Alabama and Tombigbee Steering Committee and the State ACWP as the central planning document for the basin.

- ***Expand stakeholder involvement in the subbasins and Alabama-Tombigbee Steering Committee.*** These steps may help the ACWP and the Alabama-Tombigbee Steering Committee increase the number of its participants over time.
 - Plan stakeholder meetings based on the convenience of the target participants. Consider these following factors: Time of day vs. schedule of target audience; travel time/distance to meeting.
 - Avoid the “just another meeting” syndrome by building meetings around a provocative program including special speakers/presentations, actual work assignments, etc. Always meet with a purpose!
 - Work with stakeholders to establish the most effective meeting frequency.
 - Find local sponsorship of the meetings. Are their local businesses or organizations that have a strong and/or influential following in the community that will attract a crowd?

- Build off ongoing efforts that have momentum. The Mississippi Chapter of The Nature Conservancy, Big Black – Tombigbee – Tennessee River Basins Group, and the Natural Resources Initiative of Northern Mississippi represent established efforts to work across state borders to more effectively manage the Tombigbee River Basin.
 - Instead of forming a new group, try to fit a watershed sub-group or standing agenda item into an existing business, social or faith-based group. Unless there is a groundswell of activity, then it will be difficult to sustain a group on a singular “watershed” based agenda.
 - Coordinate the distribution of information through the regional or state headquarters of the many organizations that send representatives to the subbasin meetings. Quarterly meetings focusing on grassroots issues and implementation could occur in Montgomery or other central population centers. Organizational representatives may be charged with the distribution of information, documents, etc.
- ***Focus state and federal grant funding on targeted sub-watersheds.*** This plan sets priorities for action in that the modeling provides a scientific basis to direct management activities.
 - ***Increase the number of water quality monitoring sites throughout the Basin.*** The most effective way to get people involved in managing the basin *and* to collect much-needed water quality data is to Alabama Water Watch. Additional state and federal governmental resources for staff to expand existing monitoring is also imperative. Lastly, when private landowners can play a role, they, too, should be asked to participate in assessing local waters. The Category 2 and 3 waters shall be the top priority for these efforts.
 - ***Teach the Watershed Language.*** The value of educating people about water quality issues and watershed protection is beyond limit. At some point in the learning process people realize that they play a part in the management process. Water Festivals, television-based watershed education (“Storm Team Reports”), and

classroom programs are necessary parts of a comprehensive watershed education campaign.

- ***Focus conservation and restoration efforts on threatened and endangered aquatic ecosystems.*** This Plan was written to be consistent with the goals and objectives of the *Recovery Plan for the Mobile River Basin Aquatic Ecosystem*. There are several stream segments delineated in the Basin that harbor imperiled species. These segments are priorities for protection.

COMMONLY USED ACRONYMS AND ABBREVIATIONS

303d	Section 303 of the Clean Water Act	EQIP	Environmental Quality Incentives Program (USDA NRCS)
305b	Section 305 of the Clean Water Act	EWP	Emergency Watershed Protection Program
AAGC	Alabama Association of General Contractors	FIP	Forestry Incentives Program
ACES	Alabama Cooperative Extension System	FSA	Farm Services Agency
ACOE	United States Army Corps of Engineers	FWPCA	Federal Water Pollution Control Act
ACWP	Alabama Clean Water Partnership	GIS	Geographical Information System
ADCNR	Alabama Department of Conservation and Natural Resources	GSA	Geological Survey of Alabama
ADAI	Alabama Department of Agriculture and Industry	ICFAA	International Center for Fisheries and Allied Aquaculture – Auburn University
ADECA	Alabama Department of Economic and Community Affairs	IPM	Integrated Pest Management
ADEM	Alabama Department of Environmental Management	MSDEQ	Mississippi Department of Environmental Quality
ADIR	Alabama Department of Industrial Relations	NMFS	National Marine Fisheries Service
ADOT	Alabama Department of Transportation	NOAA	National Oceanic and Atmospheric Administration
ADPH	Alabama Department of Public Health	NPDES	National Pollutant Discharge Elimination System
AEC	Alabama Environment Council	NPL	National Priority List
AEMC	Alabama Environmental Management Commission	NPS	Nonpoint Source
AFA	Alabama Forestry Association	NRCS	Natural Resources Conservation Service
AFC	Alabama Forestry Commission	NWI	National Wetland Inventory of the USFWS
AFO	Animal Feeding Operation	OSDS	Onsite Sewage Disposal System
AHBA	Alabama Home Builders Association	OSM	United States Bureau of Mines – Office of Surface Mining
ALFA	Alabama Farmers Federation	RC&D	Resource Conservation and Development
ANHP	Alabama Natural Heritage Program	SMZ	Streamside Management Zone
APC	Alabama Power Company	SWCC	Soil and Water Conservation Committee
APPCO	Alabama Pulp and Paper Council	SWCD	Soil and Water Conservation District
ARA	Alabama Rivers Alliance	SWCS	Soil and Water Conservation Society
ASG	Alabama Sea Grant Extension Program	SWCP	State Wetland Conservation Plan
ASMC	Alabama Surface Mining Commission	SWCS	Soil and Water Conservation Society
ASWCC	Alabama Soil and Water Conservation Committee	TMDL	Total Maximum Daily Load
ASWCD	Alabama Soil and Water Conservation Districts	TNC	The Nature Conservancy of Alabama
AU	Auburn University	TSI	Trophic State Index
AWF	Alabama Wildlife Federation	TVA	Tennessee Valley Authority
AWPCA	Alabama Water Pollution Control Act	USACE	U.S. Army Corps of Engineers (a.k.a. ACOE)
AWRI	Alabama Water Resources Institute	USDA	United States Department of Agriculture
AWW	Alabama Water Watch	USDA-FS	United States Department of Agriculture – Forest Service
AWWA	Alabama Water Watch Association	USDA-NRCS	Natural Resources Conservation Service
BCA	Business Council of Alabama	USDI	United States Department of the Interior
BMP	Best Management Practices	USEPA	United States Environmental Protection Agency
CAFO	Concentrated Animal Feeding Operation	USFS	United States Forest Service
CBEP	Community Based Environmental Protection	USFWS	United States Fish and Wildlife Service
CRP	Conservation Reserve Program (USDA NRCS)	USGS	United States Geological Survey
CVA	Clean Vessel Act	UWA	University of West Alabama
CWA	Clean Water Act	WHIP	Wildlife Habitat Incentives Program
CWAP	Clean Water Action Plan	WMA	Watershed Management Authority
DO	Dissolved Oxygen	WRP	Wetlands Reserve Program
DC	District Conservationist	WWTP	Waste Water Treatment Plant
EMAP	Environmental Monitoring Assessment Program		
EPA	Environmental Protection Agency		