

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 Alabama 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:

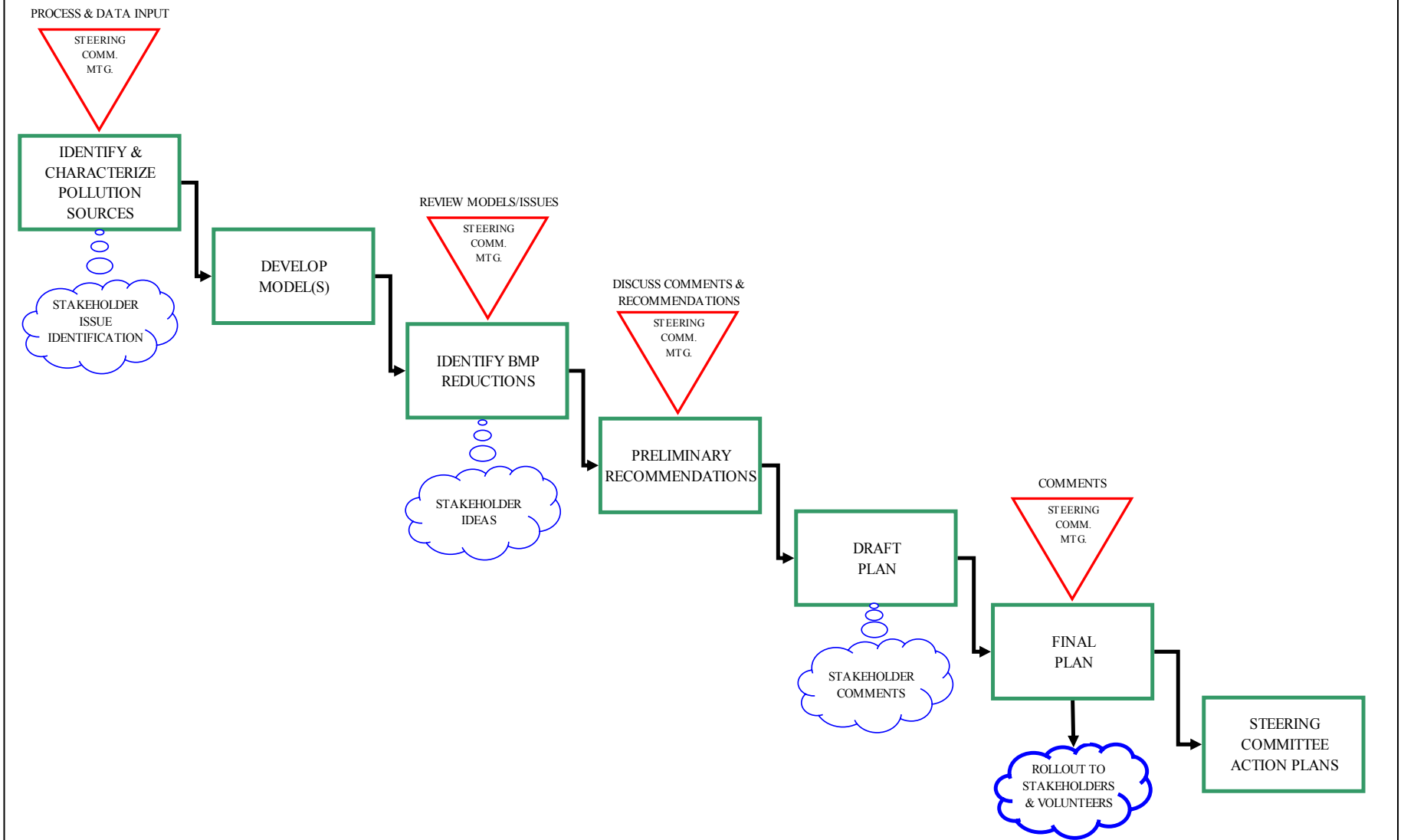
- the environmental and socioeconomic settings and resources of the Alabama River Basin are described
- current environmental resource data and information are utilized to better understand the status of the basin
- resource concerns and issues in the basin are described utilizing stakeholder identified 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 Alabama River Basin. Participants at the sub-basin meetings received presentations on current water quality issues in their basin, sub-basin 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



Background in the Alabama River Basin

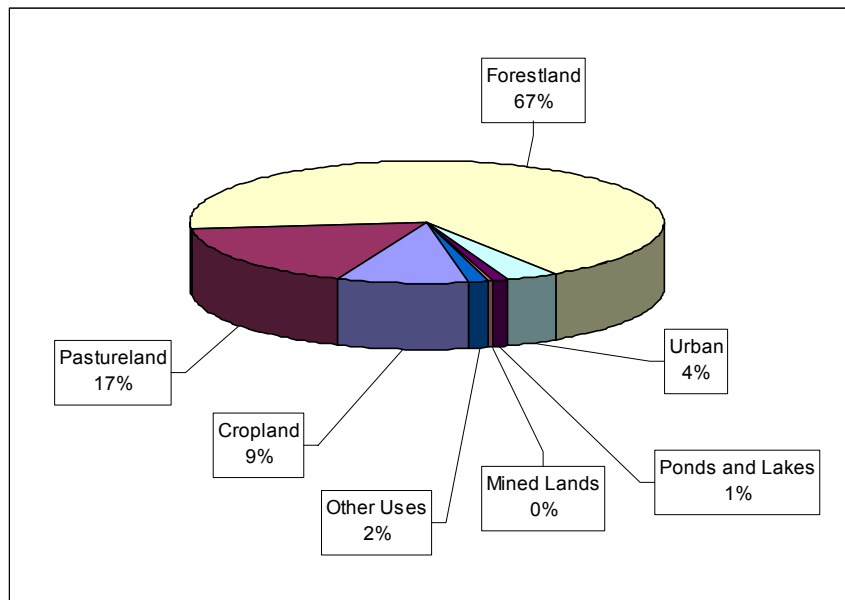
The Alabama River basin is located in southwestern Alabama. Its headwaters descend the Piedmont region of lower Appalachia and gather the flows from three major rivers: the Cahaba and Coosa Rivers to the north, and the Tallapoosa River to the northeast. Generally flowing in a northeast to southwest direction through the State's capitol, Montgomery, the Alabama River joins the Tombigbee south of Jackson, Alabama, forming the Mobile River, which drains southward into the Gulf of Mexico.

There are 61 sub-watersheds (11-digit cataloging sub-units) in the Alabama River Basin associated with its major tributaries. Major tributaries include Autauga Creek, Catoma Creek, Swift Creek, Woodruff Reservoir, Pintala Creek, Mulberry Creek, Swamp Creek, Cedar Creek, Barren Creek, Chilatchee Creek, Pursley Creek, Big Flat Creek, and Little River.

Land use in the Alabama River Basin is dominated by forests. Over two-thirds of the land in the basin is in forest, while seventeen percent is in pastureland and nine percent is in cropland. This pattern in land use is reflected throughout the river basin, with forests dominating land use in an increasing percentage from the Upper Basin to the Lower Basin. Urban development is greatest in the Upper Alabama Basin, comprising about eight percent of total land use. About 98 to 99 percent of the land use in the Middle and Lower Basins is rural in nature.

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.

Land Use in the Alabama River Basin



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. Within the Alabama River Basin several counties are within the top ten leading producers of these commodities: 1) Lowndes (peanuts) 2) Monroe (peanuts and cotton) 3) Montgomery (cattle).

Catfish farming is a major source of income in Central Alabama, with several of the top ranking counties in the Alabama River Basin: Dallas (#2), Montgomery (#8), Perry (#4), and Wilcox (#13). Total annual sales reached a peak for the entire state in 2003-2004, at \$85.2 million with 200 operations and a total water surface area dedicated to the crop of 25,400 acres.

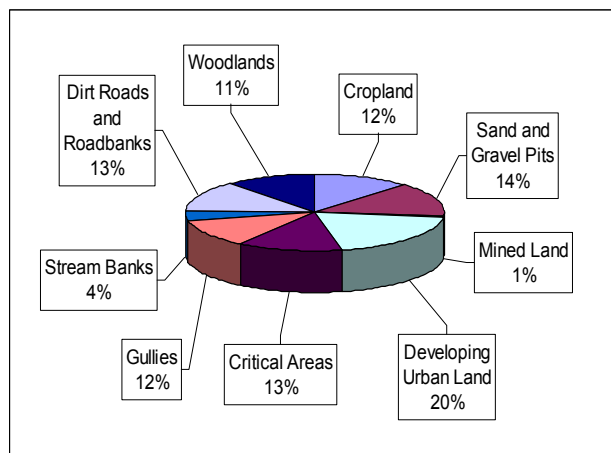
U.S. Census population projections for Alabama show that the state's population will steadily increase from 4.45 million in 2000 to over 5.2 million in 2025. If recent trends in population growth provide any indication of where this growth will occur, then much of the population will occur in the proximity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

Resource Concerns

Several waterbodies within the Alabama River Basin are impaired and subject to a mandated water quality restoration plan or TMDL, subject to or are scheduled for TMDL development. There are no TMDLs scheduled for the Alabama River Basin in Fiscal Year 2004 (ADEM, 2005). Catoma Creek, which is listed for two impairments – organic enrichment (OE)/dissolved oxygen (DO) and pathogens, is scheduled for two TMDL in 2002 and 2007, respectively.¹ The Three Mile Branch TMDL for pesticides (dieldrin) is scheduled for 2007. All of the listed segments for the Alabama River have a draft TMDL for OE/DO.

Subwatershed impairment potential was determined by the local Soil and Water Conservation Districts (1998) and augmented with current construction stormwater authorizations by ADEM (2002). Twenty-nine percent of the total impairment in the Alabama River Basin was attributed to forestry practices, with pasture runoff and row crops a close second and third as sources of nonpoint pollution. In the Upper and Middle Alabama River basins, pasture runoff and row crops, along with forestry practices, were the primary sources of nonpoint pollution impairment. Forestry practices were the dominant source of impairment (72%) in the Lower Alabama River Basin, with row crops a distant second source.

Sediment loading estimates for the Alabama River Basin



¹ The draft OE/DO TMDL for Catoma Creek was drafted in 2002 and will be finalized and submitted to EPA in 2005.

Data on sediment loading estimates (in units of tons per year) was 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. While developing urban land is the dominant source of sediment loading in the Upper Alabama River Basin, primarily from the Hudson Creek subwatershed, it is a minor source of sediment in the Middle and Lower Alabama River Basins. In the Middle Alabama River Basin, dirt roads and roadbanks are estimated to provide the most sediment (23 percent), followed by cropland (19 percent) and forestlands (18 percent). In the Lower Alabama River Basin, forestlands are the dominant source of sediment (27 percent), followed by cropland (18 percent), dirt roads and roadbanks (15 percent), and sand and gravel pits (13 percent).

Based on stakeholder input, agency data and information sources, we developed a listing of the primary resource management concerns and issues in the Alabama River Basin. These are summarized below. Basin plan goals and strategies were developed to address these concerns and issues.

Primary Resource Management Concerns

• sediment and nutrient loading from forestry practices	• wetland and aquatic habitat destruction
• sediment and nutrient loading from pastureland	• sediment loading from urban land development
• sediment, nutrient, and pesticide loading from cropland	• sediment loading from sand and gravel pits
• sediment and nutrient loading from aquaculture	• sediment loading from critical areas
• nonpoint source impairment from sedimentation	• gully erosion
• soil erosion from roads, roadbanks and new road construction	• road crossings and boat ramp litter problems
• animal husbandry / waste management impacts	• septic tank nutrient and pathogen loading
• livestock access to streams	• river traffic management
• livestock overgrazing of pastureland	• dumping garbage from boats
• pesticides, bacteria and other organisms in surface waters	• integrating management lessons from other watersheds
• stormwater runoff with toxics and pathogenic bacteria	• outreach and education on watershed protection and restoration
• mining and excavation impacts on surface waters	• technology transfer for BMPs across industries
• failing septic systems in the Black Belt Region	• invasive species (e.g., water hyacinth in Dannelly Reservoir)

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 Alabama River Basin, where management efforts are most needed, are identified in this plan as Targeted Subwatersheds.

These Targeted Subwatersheds are those identified by ADEM as priority subwatersheds in their Surface Water Quality Screening Assessment of the Alabama River Basin, published by ADEM (2000); those subwatersheds with a "high" potential for nonpoint source pollution impairment; or those subwatersheds with segments identified by ADEM as impaired on their §303(d) surface water impairment list. These areas are recommended as priority areas where management actions should be taken.

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.

Based on the resource concerns and issues identified in the plan by the stakeholders and agencies, we established the following goals to address these sets of concerns, bulleted beneath each goal.

Plan Goals and the Concerns They Address

<p>GOAL: <i>Reduce nonpoint source pollution from agricultural activities - cropland, pastureland, and animal husbandry</i></p>	<p>GOAL: <i>Reduce nonpoint source pollution from roads, roadbanks, and new road construction</i></p>
<ul style="list-style-type: none"> • livestock access to streams • 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 and pathogens in surface waters 	<ul style="list-style-type: none"> • soil erosion from roads and roadbanks • gully erosion
<p>GOAL: <i>Reduce nonpoint source pollution from forestry</i></p>	<p>GOAL: <i>Reduce pollution from urban and residential areas</i></p>
<ul style="list-style-type: none"> • sediment loading from land • nutrient runoff from land • erosion and sediment from logging roads • gully erosion on hillsides 	<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 and toxics
<p>GOAL: <i>Reduce nonpoint source pollution from aquaculture operations</i></p>	<p>GOAL: <i>Reduce nonpoint source pollution from mining activities</i></p>
<ul style="list-style-type: none"> • nutrient loading from ponds • bacteria loading from ponds 	<ul style="list-style-type: none"> • sediment loading from sand and gravel pits • mining and excavation impacts on surface waters
	<p>GOAL: <i>Protect and restore wetlands and fish and wildlife habitat</i></p>
	<ul style="list-style-type: none"> • wetland and aquatic habitat destruction
	<p>GOAL: <i>Improve river recreation management</i></p>
	<ul style="list-style-type: none"> • river traffic management • dumping garbage from boats • boat ramp litter problems

Although not directly related to specific resource issues in the basin there are several additional goals included in this plan. These goals are:

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

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 last three goals are critical to the implementation and success of this river basin plan. Each goal is addressed individually, and strategies are established to achieve each 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 Alabama 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 sub-basin 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.

There are several strategic steps to be taken for implementing this basin management plan. These strategic ‘next steps’ are:

- ***Adopt and distribute the Alabama River Basin Management Plan.*** After its adoption by the ACWP the Plan can be used as an outreach and education tool. Presentation of the Plan to sub-basin groups throughout the Basin will provide a common framework for participants to engage in within and amongst the various subbasins.
- ***Expand stakeholder involvement in the sub-basins and Alabama-Tombigbee Steering Committee.*** These steps are necessary to help the ACWP and the Alabama-Tombigbee Steering Committee to increase the number of its participants over time.

- ***Focus state and federal grant funding on targeted subwatersheds.*** 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 promote functioning citizen volunteer water quality monitoring programs like 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 should be invited to participate in assessing local waters.
- ***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

AAGC	Alabama Association of General Contractors	EWP	Emergency Watershed Protection Program
ACES	Alabama Cooperative Extension System	FIP	Forestry Incentives Program
ACOE	United States Army Corps of Engineers	FSA	Farm Services Agency
ACWP	Alabama Clean Water Partnership	FWPCA	Federal Water Pollution Control Act
ADCNR	Alabama Department of Conservation and Natural Resources	GIS	Geographical Information System
ADAI	Alabama Department of Agriculture and Industry	GSA	Geological Survey of Alabama
ADECA	Alabama Department of Economic and Community Affairs	ICFAA	International Center for Fisheries and Allied Aquaculture – Auburn University
ADEM	Alabama Department of Environmental Management	IPM	Integrated Pest Management
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	
AWWA	Alabama Water Watch Association	-FS	United States Department of Agriculture – Forest Service
BCA	Business Council of Alabama	USDA	
BMP	Best Management Practices	-NRCS	Natural Resources Conservation Service
CAFO	Concentrated Animal Feeding Operation	USDI	United States Department of the Interior
CBEP	Community Based Environmental Protection	USEPA	United States Environmental Protection Agency
CRP	Conservation Reserve Program (USDA NRCS)	USFS	United States Forest Service
CVA	Clean Vessel Act	USFWS	United States Fish and Wildlife Service
CWA	Clean Water Act	USGS	United States Geological Survey
CWAP	Clean Water Action Plan	UWA	University of West Alabama
DO	Dissolved Oxygen	WHIP	Wildlife Habitat Incentives Program
DC	District Conservationist	WMA	Watershed Management Authority
EMAP	Environmental Monitoring Assessment Program	WRP	Wetlands Reserve Program
EPA	Environmental Protection Agency	WWTP	Waste Water Treatment Plant
EQIP	Environmental Quality Incentives Program (USDA NRCS)		