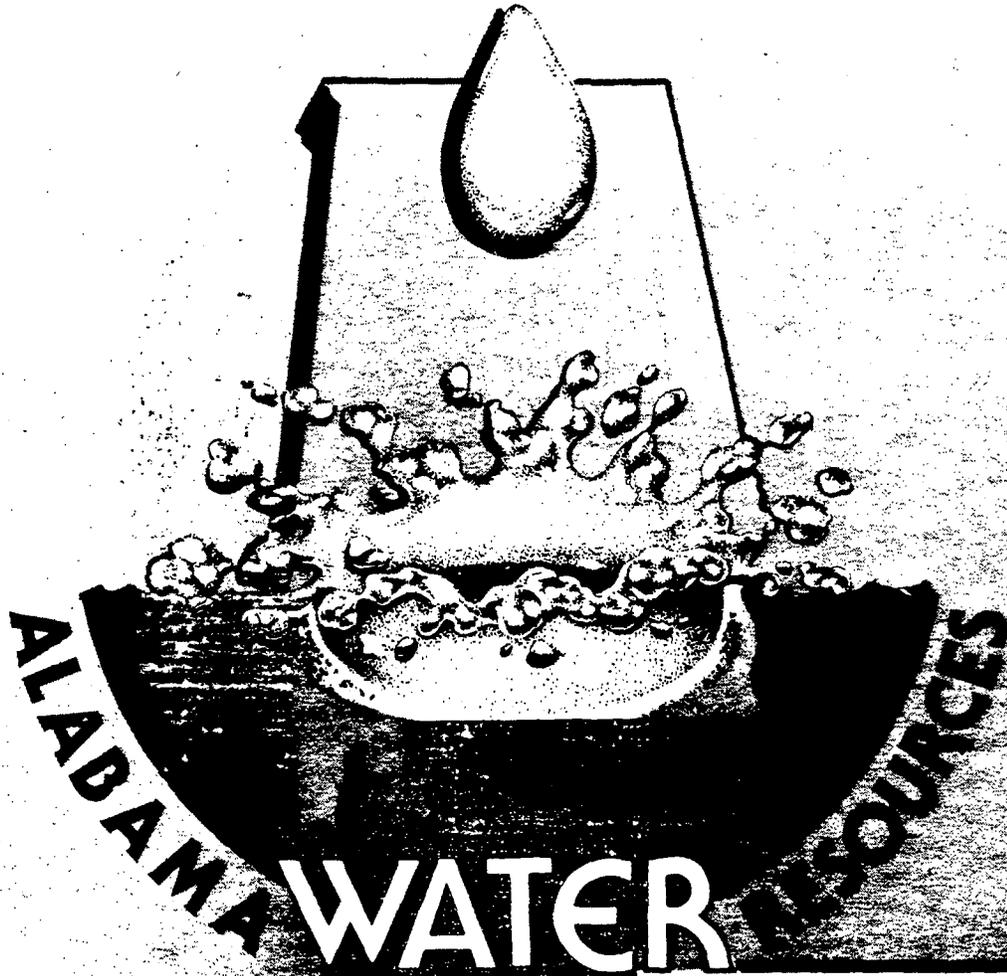


# WATER FOR A QUALITY OF LIFE



**STUDY COMMISSION**

EXECUTIVE SUMMARY



**THE ALABAMA WATER RESOURCES STUDY COMMISSION**

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**HON. W. J. CABANISS, JR.**, Alabama Senate, Mountain Brook  
**DR. WILLIAM B. DAVIS**, University of South Alabama, Mobile  
**HON. BRUCE ETHEREDGE**, St. Clair County Commission, Pell City  
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**HON. RICHARD LAIRD**, Alabama House of Representatives, Roanoke  
**MR. WILLIAM THIGPEN**, Businessman, Fayette

**WATER FOR A QUALITY OF LIFE:  
AN EXECUTIVE SUMMARY**

of

**The Alabama Water Resources Study Commission**

**Presented to the Honorable Guy Hunt  
Governor, State of Alabama**

**October 1990**

#### ACKNOWLEDGMENTS

The Alabama Water Resources Study Commission could not have prepared this report without the assistance of numerous individuals and organizations. In particular, we are indebted to Dr. Don Hines, Walter Stevenson, Bob Grasser, Ralph Ainsworth, and Neal Brogden of the Alabama Department of Economic and Community Affairs for logistical and administrative support of our efforts. A native Alabamian, Dr. Neil Grigg, Colorado State University, was particularly helpful throughout this process, acting as consultant, advisor, and liaison to various water groups and agencies. The Technical Advisory Committee, comprising 25 state and federal agencies, provided technical expertise and advice to the Commission throughout its deliberations. Special thanks are due the 270 individuals who gave so willingly of their time to serve on the Study Committees. Several individuals at Troy State University played a significant role in the activities of the Commission and should be thanked: John McVay, for the many hours he spent in preparing the video presentation used in public hearings; Janice Moore, for her untiring efforts in preparing this manuscript; and Joe Johnson and Ruth Walker, for their advice and assistance in designing and printing the report. Of course, any responsibility for errors, omissions, or inconsistencies rests with the Commission.

Dr. Wayne C. Curtis  
Chairman

Members:

Mr. W. J. Cabaniss, Jr.  
Dr. William B. Davis  
Mr. Bruce Etheredge  
Mr. Eddie Frost  
Mr. Richard J. Laird  
Mr. William Thigpen

## Alabama Water Resources Study Commission

Post Office Box 250347  
Montgomery, Alabama 36125-0347

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October 10, 1990

Honorable Guy Hunt, Governor  
Alabama Statehouse  
11 South Union Street  
Montgomery, Alabama 36130

Dear Gov. Hunt:

Pursuant to Executive Order 27, we are pleased to submit the final report of the Alabama Water Resources Study Commission. Over five man-years of work and effort have gone into its preparation.

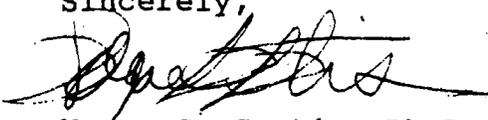
In fulfilling the objectives of Executive Order 27, the Commission studied water use problems in Alabama, determined trends, examined long-term water availability, compared Alabama's planning process with other states, reviewed the role of the State of Alabama to federal and local governments and the private sector, and proposed policies for water resources.

As you know, recent events, such as droughts and falling water tables, have amplified basic water resources problems and indicated that Alabama's water resources, contrary to popular thought, are limited. In our opinion, there is a great obligation to plan and encourage the use of natural resources to best serve the physical, social, economic, and environmental needs of the people of Alabama.

We believe this report represents a major initiative toward comprehensive management of Alabama's water resources, a long-term commitment to planning. To be complete, this initial report must be given executive and legislative direction to encourage water resource developers and users to be good stewards of Alabama's water resources.

On behalf of the Commission, we stand ready to assist you in any way. If you should have questions or need additional information, please let us know.

Sincerely,



Wayne C. Curtis, Ph.D.  
Chairman

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## SYNOPSIS

The Alabama Water Resources Study Commission was established by Executive Order 27 in February 1989. In fulfilling the objectives of Executive Order 27, the Commission studied water use problems in Alabama, determined trends, examined long-term water availability, compared Alabama's planning process with other states, compared the role of the State of Alabama to federal and local governments and the private sector, and proposed policies for water resources.

Alabama's water planning and management has been non-existent to minimal for many years. There is a great deal that is not understood about the state's water resources. This understanding will be critical in the coming decades if those responsible for public policy are to make informed decisions about this pervasive resource that impacts all facets of our lives.

This report represents a major initiative toward the management of Alabama's water resources. It is a distillation of what the Commission feels to be the most significant water resources issues, concerns, and shortcomings. That this report must represent the beginning of a long-term commitment to water resources planning and management in Alabama is absolutely imperative. A water resource planning and management process must be immediately implemented if Alabama is to maintain parity with other states, particularly the four contiguous ones, and properly utilize and protect its water resources.

Several problems and issues were brought to the Commission's attention during its deliberations. Some of these include water shortages, unsafe drinking water, falling water tables, animal waste contamination, the dumping of raw sewage into abandoned wells, salt water intrusion, the growth of aquatic weeds, interstate water issues, and no means of prioritizing water use in emergencies.

To address these problems and issues, the Commission proposes a water management strategy that is based upon four cornerstones: **managing, protecting, using, and understanding** Alabama's water resources.

Management is the first element of the Commission's recommendations. A comparison of Alabama to other states revealed that water resources planning and management is more focused and better coordinated in every other state. Alabama's lack of a state focal point and the virtual absence of emphasis placed on total water resources management has created a wide gap in water resources expertise between Alabama and the other states. These factors led the Commission to recommend the establishment of an Alabama Water Resources Agency and an Alabama Water Resources Commission.

With respect to the Alabama Water Resources Agency, the primary recommendation is to create a new executive branch agency that would be directly responsible to the Governor. An alternative recommendation is to create a water resources division within the Alabama Department of Economic and Community Affairs. In either instance, the agency would have responsibility in four broad categories: planning, coordinating, financing, and monitoring.

Under both options, the proposed Alabama Water Resources Commission would act in an advisory capacity, primarily as an oversight group, to the Governor and the agency. Members would be appointed by the Governor for staggered terms and would serve on a part-time basis, developing and advising on water resources policy, approving strategies, adopting rules and regulations, and hearing appeals.

The planning function of the Alabama Water Resources Agency would involve three elements: data collection, data bases, and studies. Coordination involves interacting with various entities--federal, state, interstate, and intrastate--to include taking actions to protect Alabama's share of interstate waters. Financing is concerned with revenues for water projects, a water development fund, coordinating projects, and matching funds for federal assistance. Monitoring, the fourth component of managing water resources, includes three primary programs: water quantity, interbasin transfers, and a safe dams.

The second cornerstone of the recommendations is protecting water resources. At present, there are a number of water quality programs in Alabama. Citizen comments and reviews indicate these programs need strengthening and, in a few instances, significant new direction. Recommendations for protecting water resources primarily clarify and expand existing programs to address point and nonpoint pollution sources. Major recommendations include wells, septic tanks, sedimentation, irrigation backflow, wetlands, and significant strengthening of certain existing programs.

Water is used for public water supply, industrial manufacturing and cooling, crop irrigation, movement of goods, and power generation. It is subject to many diverse demands and is used over and over as it flows downstream. Not all of the uses are compatible; the potential for future conflicts increases daily. Under using water resources, the Commission identified three topics of high priority: conservation, county water systems, and scenic and recreational streams.

The fourth major recommendation of the Commission concerns understanding water resources. Understanding is vital to any program of this nature. Two key recommendations are proposed to develop a widespread and technically sound understanding of Alabama's water resources. One supports water resources

education as part of a formal and informal process involving expanded courses, revised curricula, and additional training requirements. A second relates to understanding water resources through increased research funding and monitoring federal research programs that are related to Alabama's water resources.

Ground and surface water are among the most basic, necessary, and valuable of resources in Alabama. For water is the lifeblood of society. Protection and wise use of the state's water resources depend on proactive water policies and programs. This report is intended to initiate policies and programs that will provide the necessary protection and promote the wise use of water resources by the citizens of Alabama.

The Commission's findings indicate that Alabama is far behind all other states in water resources planning and management. Actions must be undertaken immediately to develop a framework for managing water resources. The longer Alabama delays initiating a state water resources program, the greater the gap will become with respect to other states and the greater the potential damage to the State's water resources and the lost opportunities for economic development.

It might be beneficial to put things in perspective by examining a series of "worst case scenarios." Visualize the impact, both individually and collectively, if the following were to occur.

- Water tables in southeast Alabama continue to drop and more small wells go dry.
- Salt water intrusion ruins the south Alabama aquifers and temporarily destroys the coastal economy.
- Interbasin transfers or upstream water demands in Georgia shift too much water from a basin of origin and impose growth limits on downstream communities.
- Full allocation of waste assimilation capacity closes additional miles of river for industrial growth and stagnates development potential.
- Droughts of the magnitude of 1986 and 1988 continue through the 1990s, forcing businesses to close and creating drinking water shortages.

All of these situations are possible; none is desirable. The probability of the occurrence of these events grows with each day of inactivity with regard to planning for and managing Alabama's water resources in a comprehensive manner.

Alabama now has a window of opportunity to address water resources management. Proper planning and management are required to avoid a water crisis, to meet the challenges of economic growth and development, to protect the water environment of Alabama, to promote health, safety, and welfare, and to provide citizens with an improved quality of life.

## INTRODUCTION

Access to water determines economic prosperity and the quality of life in all cultures. Alabama is no exception. The State must plan and act to ensure that water will be available in every area where it is needed. It is the vision of the Alabama Water Resources Study Commission (Commission) that every individual and every commercial activity will have all the water that is needed, now and in the future, for beneficial purposes without impairing the environment or future quality of life in Alabama.

Because of the abundant water the State has historically enjoyed, stewardship of Alabama's water resources has not been a major concern of Alabama citizens or elected leaders. Recent events, such as droughts and falling water tables, have amplified several underlying water resource problems and indicated that Alabama's water resources are limited. As the State's leadership responds to its broad responsibility to enhance the quality of life and general welfare of all Alabamians, there is an obligation to plan and encourage the use of natural resources to best serve the physical, social, economic and environmental needs of the people.

This report represents a major initiative toward the planning and management of Alabama's water resources. Agriculture, municipal and industrial water, pollution control, navigation, recreation, wildlife, flood control and drought response are representative components of the issues that must be addressed by Alabama water policies. To be complete, this initial report must be given executive and legislative direction to encourage water resource developers and users to be good stewards of Alabama's water resources.

Water planning, like the resource itself, must be a continuous flow. Routine monitoring and assessments are necessary to recognize changing conditions in water supply and demand. This will require State strategies, basin plans, development projects, and periodic updating to enable Alabama to maintain the quality of life that has been traditionally associated with water resources.

## **COMMISSION AUTHORITY, COMPOSITION, AND DUTIES**

The Commission was formed by Governor Hunt's Executive Order 27 on February 10, 1989. Under the terms of the Executive Order, the tenure of the Commission was established as two years, the Commission expiring on February 9, 1991.

There are seven members on the Commission, one from each Congressional district. Members have diverse backgrounds, none an expert in the field of water resources. This structure was adopted deliberately to ensure objectivity.

Members are:

Dr. Wayne C. Curtis, Chairman  
Honorable W. J. Cabaniss, Jr.  
Dr. William B. Davis  
Honorable Bruce Etheredge  
Honorable Eddie Frost  
Honorable Richard Laird  
Mr. William Thigpen

The duties of the Commission, as extracted from Executive Order 27, are:

- Study water use problems in Alabama
- Determine water use trends in relation to supply and utilization
- Plan for long-term water availability with equitable access
- Compare Alabama's water planning process, coordination mechanisms, and legislation with that of other states
- Determine the role of the State of Alabama relative to the federal and local governments and the private sector
- Develop policies for the future use and development of Alabama water resources

The Executive Order also requires that the Commission make an Interim Report to the Governor by October 15, 1990. This report fulfills that requirement. It should be noted, however, that the Commission considers this to be the final report. Further activity by the Commission should be at the Governor's direction based on the contents of this report.

#### ORGANIZATION AND PROCESS

The Commission conducted its investigations using traditional planning, or problem solving methods, and a significant organizational structure to insure balanced viewpoints without sacrificing technical competency. The organizational structure can be highlighted as follows.

A Technical Advisory Committee was appointed which consisted of one representative from each of the federal and Alabama agencies that have daily responsibilities related to the State's water resources. There were 10 federal and 15 state agencies represented; they are listed in Appendix Table 5.

Thirteen Study Committees were approved by the Commission. The Commission itself acted as the Institutional Structure Committee and addressed organizational issues. The remaining 12 Study Committees consisted of over 270 representatives from federal, state and local governments, special interest groups, and private businesses. These committees addressed a comprehensive range of

water uses and related supporting concerns: agriculture, environment, finance, ground water, industry, legal, natural hazards, navigation, power generation, recreation and tourism, surface water, and water supply. The composition of each Committee is found in Appendix Table 6.

Citizen participation was also stressed throughout the process. Six public hearings were conducted in May 1989 to allow citizens the opportunity to voice their concerns about Alabama's water resources. During the planning process, citizens were encouraged to comment on issues or alternatives and to participate on Study Committees. Six additional public hearings were conducted in August 1990 to allow citizens to review and comment on the Commission's preliminary proposals.

In summary, the Commission actively sought technical information, broad-based representation, and citizen participation to refine the proposals included in this report. The diversity and magnitude of the recommendations attest to the nearly three man-years of voluntary effort contributed by Alabamians because of their deep concern about the State's water resources. An additional two man-years of professional staff time was involved. The Commission is deeply indebted to everyone who participated in this study.

#### ORGANIZATION OF REPORT

The Commission proposes a water management strategy for Alabama that is based on four cornerstones--managing, protecting, using, and understanding water resources. The water resource policy statements have been categorized to conform to this format. Each policy statement is followed by an issue description and implementing recommendations.

This report of the Commission should be viewed in two ways. First, it is a summary of a mass of data and Study Committee findings which support the recommendations. The Study Committee reports were referred to the Technical Advisory Committee for conflict resolution, consolidation, and technical review; the 108 recommendations of the Study Committees were consolidated into 35 broad categories by the Technical Advisory Committee. This paper is a further extract of the Technical Advisory Committee report--in essence, a significant distillation of material containing what the Commission feels to be the most crucial issues, concerns, and shortcomings. Additional valid recommendations can be found in interim reports available through the Alabama Department of Economic and Community Affairs.

Second, it is imperative that this report must represent the beginning of a long-term commitment to water resources planning and management in Alabama. Significant deficiencies in water resource management and policy have been identified as a result

of the Commission's study. A water resource planning and management process must be immediately implemented if Alabama is to maintain parity with the 49 other states, particularly the four contiguous states, and properly utilize and protect its water resources. A long-term state program is required to implement these, and subsequent, recommendations to achieve the long-term, equitable access to water resources as sought in Executive Order 27.

## ISSUES AND CONSIDERATIONS

Many water resource problems were brought to the Commission's attention during the May 1989 public hearings. Some of those problems and issues include unsafe drinking water, falling water tables, a lack of water, animal waste contamination, the dumping of raw sewage into abandoned wells, salt water intrusion, the growth of aquatic weeds, and no means to prioritize water use in emergencies.

### **MAJOR ISSUES**

#### **Abandoned Wells**

Abandoned wells of all types are a tremendous threat to contamination of the water supply. Due to Alabama not having a comprehensive well permitting program, there is no record of where abandoned wells are located. To compound the problem, according to testimony received by the Commission, abandoned wells are used for garbage disposal and overflows for malfunctioning septic tanks. Finally, the abandoned wells with larger diameters are physical hazards for small children.

#### **Citizen Awareness**

A major detriment to action is the widely held perception that Alabama has abundant water. As long as the average citizen can turn on the faucet and get a drink, there is no perception of a problem. However, the State's perspective of "public trust" must be more comprehensive and longer range.

#### **Declining Ground Water**

Ground water levels are declining in the vicinity of major cities that are dependent on ground water throughout the State. These cones of depression vary in depth and expanse; they indicate a dewatering of the aquifers and permanent damage may be caused in certain areas. The most notable ground water declines are in the wiregrass area of Southeast Alabama.

## **Droughts**

The droughts of 1986 and 1988 focused attention on the lack of water. However, the problems experienced were basic problems that were merely accentuated by the droughts. During those periods, the need for a method to deal with water shortages and emergencies was also realized.

## **Environmental Concerns**

Alabama, like other southeastern states, must address a demanding agenda of environmental issues related to water resources. The State is a leader in terms of wildlife species, fauna, and wetland acreage. These assets will provide a foundation for future recreation and quality of life attractions.

## **Financing**

Changes in federal requirements, decreasing sources and amounts of assistance, and the current fiscal status of Alabama combine to create a major concern for financing water resource projects. Alabama has been blessed with many federal water projects of various types in the past. Local matching shares, the legal capacity to sponsor non-federal projects, and a means to determine which projects are truly important to Alabama are all issues to be faced.

## **Floods**

Flooding is another form of hydrologic emergency. As experienced in early 1990, the devastation can be widespread, can occur in short time periods at unpredictable intervals, and can result in extreme hardship.

## **Salt Water Intrusion**

In south Alabama, where the aquifer is relatively thin and fragile, excessive withdrawals could dewater the aquifer or allow salt water intrusion. Saltwater intrusion can permanently damage the aquifer because desalination would then be required before the water is generally fit for use.

## **Septic Tanks**

The majority of Alabama's residents use on-site sewage disposal methods; septic tanks are the most prominent. Surveys have also indicated that about one-third of the septic tanks installed lack the proper inspections and approval. Existing septic tank statutes have been identified as antiquated.

## **Surface Water Depletion and Transfers**

There are also instances of surface water depletion in Alabama. Technical briefings by State agencies indicated that some surface waters have been impounded, eliminating downstream flows and pre-empting downstream water users. They include interstate depletions, interbasin transfers, and excessive withdrawals. Although not a total pre-emption, the situation in the Birmingham area, where flows in the Cahaba River are nearly depleted, is similar. To alleviate this situation, the Birmingham Water Works is reaching out beyond the metropolitan area and importing water from other watersheds.

## **Water Quality**

Water quality problems were frequently discussed at the public hearings and during the deliberations of the Study Committees. Much of this can be attributed to Alabamians only being familiar with water quality, not quantity, issues. There are many issues that are related to water quality; however, the Alabama Department of Environmental Management (ADEM) is currently charged with addressing many of the water quality issues.

## **Water Quantity Protection for Future Growth**

Quantities of available water will be a problem in the future due to growth trends in high water use sectors such as agricultural irrigation. The acreage under irrigation is projected to grow significantly in the next decade. Unfortunately, these demands are projected to grow the most in the wiregrass and south Alabama areas and will compete with public supply and industrial water demands.

## **Water Resource Management**

Fifteen state agencies were identified as having a daily role in programs which impact Alabama's water resources. Despite this proliferation of activity, there are still major areas of water resource planning and management which are either not addressed or provided at minimal levels.

The Commission, Study Committees, technical agencies, and private industries all had strong feelings that lack of water resources management was a crucial element facing Alabama. A section of State government needs to have a specific charge to address water resource planning, management, and coordination issues which face Alabama now and in the immediate future.

These are representative issues related to water resources that face Alabama decision makers. The Commission was aware of many other issues and endeavored to address them with the following

recommendations. Due to the range of diverse issues and the work which needs to be done, the recommendations are still broad.

### **OTHER IMPORTANT CONSIDERATIONS**

The Commission attempted to assess the status, present uses, and mechanisms used for the current planning and management of Alabama's water resources in as comprehensive a manner as possible. Findings were compared with other states; the other states were compared with each other. This type of analysis created an awareness of many water resource similarities and some significant differences between Alabama and other States. It also pointed out the need for setting forth one policy as a guiding principle. It is presented as part of this section under the heading of Ground-Surface Water Relationships.

#### **Ground Water-Surface Water Relationships**

##### **Policy Statement**

Designate by legislative definition that ground waters and surface waters of the state of Alabama are integrally connected and are not to be considered as separate in any action by the State or by any city, county, or local agency.

##### **Issue Description**

Governments often unknowingly identify ground and surface water as separate sources of water. It should be recognized that ground water is the source of baseflow in surface water streams during low-flow periods. Surface water is also a source of recharge to ground water aquifers. In some cases, such as when streams and rivers pass through unconsolidated material, the surface and ground water can be indistinguishable. Because of this intimate relationship, any action that affects the quantity or quality of one source affects the other. The planning or management system for Alabama's water resources should recognize this relationship and ensure that the use of one source does not negatively impact the other.

##### **Implementing Recommendations**

- Appoint a committee of technical specialists to develop a definition for Alabama water resources, acknowledging the interactive ground and surface water relationship prior to, or in conjunction with, legislative action.
- Legislatively define water resources and direct that all water resource laws and subsequent management and development actions consider the overall effects on the ground and surface water system.

## Water Uses

Water is used over and over as it flows downstream or is withdrawn and returned to ground water supplies. Prominent water uses in Alabama are:

- Agriculture
- Environment and Wildlife
- Industry
- Navigation
- Power Generation
- Recreation and Tourism
- Waste Assimilation
- Water Systems and Domestic Supply

Some of the present and future reasons these water uses are important to Alabama are highlighted in the following paragraphs.

Agricultural water use is important for two reasons: irrigation of more crops and expansion of aquaculture. Domestic water supply, whether by public system or private well, is a daily need for every Alabama resident. Water supply is probably the most universal water resource concern in Alabama.

Industrial water is provided by a combination of public systems and "self supplied" industries. Existing industries use a large volume of water, but in the last decade economics has promoted a high level of water use efficiency in this sector.

Power generation can be categorized as thermoelectric or hydropower generated. Thermoelectric generation uses huge quantities of water for cooling; hydropower is even more significant in Alabama, comprising 10 to 12 percent of total power generated.

Navigation, a key component of Alabama's economic structure, is a uniquely important instream use in Alabama. Over 1,200 miles of commercial inland navigable waterways place Alabama among the top states in the nation in this category.

Water for recreation and tourism was eloquently stressed in a May 1989 public hearing when Alabama's lakes and rivers were referred to as "a water wonderland". The wildlife and flora associated with Alabama's water resources are prolific. They are about as diverse as can be found in any state and must be considered integral to water resource planning and management.

There are valid reasons for each use of water. It is readily apparent that simple conflicts arise because some uses require water to remain instream while others demand withdrawal. More issues arise when competition for use of the same water occurs.

## **Local Responsibilities Related To Water Supply**

### **Policy Statement**

Statutes governing local water departments, boards, and authorities should be reviewed and revised as necessary, and a system of State incentives for local water development and management should be related to grant and loan awards and administrative penalties.

### **Issue Description**

Implementation of state guidelines and incentives for proper financial management of local water systems would strengthen local financial capacity and decrease reliance on the state.

### **Implementing Recommendations**

- Require all local water systems to use enterprise accounting and require that revenues be used only for expenses related directly to the management, maintenance, and operation of the local system.
- Require any water system applying for a state administered grant or loan to include a financial analysis of the rate structure estimating its ability to generate adequate revenues for operations, debt retirement, and system expansions.
- Advise and provide incentives to all local water systems to implement impact or replacement fee systems.
- Encourage all water systems to establish flat, or increasing block, rate structures.

## **Navigable Waterways Are Primary Transportation Infrastructure**

### **Policy Statement**

Recognize inland navigable waterways as a primary transportation infrastructure in state policy making.

### **Issue Description**

Statewide economic development and trade enhancement vitally depend on competitive transportation alternatives. Efficient inland navigable waterways, an integral component of surface transportation, require adequate channel widths and depths, stream flows, maintenance provisions, and professional management to sustain a primary transportation infrastructure.

### **Implementing Recommendation**

- Include navigation in basic decision and policy making with respect to all water resource allocation issues.

## Facilitating Industrial Locations

### Policy Statement

Initiate water resource planning and management programs that consider industrial growth by identifying and providing adequate water quantity, water quality, and discharge assimilative capacity for existing, expanding, and future industries without negatively impacting adjacent geographic areas.

### Issue Description

The existing and projected use of municipal water supply and wastewater treatment plant capacities is increasing, as are stream withdrawals and stream assimilative capacities. Industrial water demands have quantity and quality dimensions which may vary from minimal to stringent.

### Implementing Recommendations

- Develop and implement a state water resource program which establishes a basis for protecting existing, expanding, and future industrial locations.
- Assess the maximum levels of water withdrawal and waste discharge appropriate for a given location or region. This consideration should include effects of potential or existing land application spray of treated effluent.
- Estimate future production support requirements (10-year minimum) for existing industries giving consideration to projected expansions.
- Identify municipal water supply and waste treatment systems by current capacity, average use, and peak use levels as well as source and facility descriptions.
- Encourage a multi-step (e.g., 5-, 10-, 20-, and 50 year) water supply growth plan for public water systems.
- Educate individuals in state and regional development agencies who have impact on site location decisions and establish a coordinated, pre-planning process to insure consideration of current and projected water uses.

## MANAGING WATER RESOURCES

Alabama's water planning and management has been minimal for many years; there is a great deal that is not understood about the State's water resources. This understanding will be critical in the coming decades if those charged with public policy are to make informed decisions about this pervasive resource that impacts all facets of our lives.

Compared to other states, Alabama has a relative abundance of water. This fact has largely been responsible for the years of lackadaisical attitudes regarding water resources planning and management. It is not surprising, therefore, that this section includes the majority and most significant Commission recommendations.

## **ALABAMA WATER RESOURCES AGENCY AND COMMISSION**

### **Background**

As part of its study process, the Commission compared Alabama to other states. This analysis revealed that water resource planning and management is more focused and better coordinated in virtually every other state. The manner in which other states organized their planning and management was diverse, but this general statement is true regardless of the organizational structure. Alabama's lack of a state focal point and the virtual absence of emphasis placed on total water resource management has led to a wide gap in expertise between Alabama and other states. It is urgent that Alabama close this gap in order to protect the State's share of interstate waters, effectively invest in water projects of State significance, and assure adequacy and quality of the water supply in the future.

These factors led the Commission to recommend establishment of an Alabama Water Resources Agency. As stated previously, other states have diverse organizational concepts regarding the location and structure of their water resources unit. The Commission recognizes this diversity by offering a primary and alternative recommendation for the Alabama Water Resources Agency, page 16. Either arrangement will require substantial commitments, both human and financial. The term "Alabama Water Resources Agency" is, therefore, used in the generic form to refer to the unit regardless of its organizational arrangement.

### **Policy Statement**

Authorize and establish an Alabama Water Resources Agency and Alabama Water Resources Commission to manage, protect, coordinate, and further the understanding of Alabama's water resource policy, development, planning, financing, and related actions and initiatives.

### **Primary Organizational Structure**

The primary recommendation is to create a new executive branch agency that would be directly responsible to the Governor. The agency would have a director appointed by the Governor to manage a merit system staff.

Although the alternative recommendation follows, all of the implementing recommendations are written in support of this primary recommendation.

### **Alternative Organizational Structure**

The alternative recommendation is to create a new division within the Alabama Department of Economic and Community Affairs (ADECA). ADECA was chosen because it is an executive branch agency, its current broad scope of responsibility for state planning, and its historic but understaffed involvement in water resource issues. Under this option, a division level organization is viewed as the minimum requirement to enable the agency to be a strong, effective advocate for Alabama water resources.

If this approach is followed, the Commission believes that, ultimately, a separate state agency needs to evolve from this organization.

### **The Commission**

Under both options, the proposed Alabama Water Resources Commission would act in an advisory capacity, primarily as an oversight group. The Alabama Water Resources Commission would be appointed by the Governor for staggered terms; commission members would serve on a part-time basis. In fulfilling its responsibilities, the Commission would consider Alabama's diverse needs such as municipal and industrial water, hydropower, navigation, irrigation, and recreation to ensure that water management plans promote a proper balance between economic development, environment, and public health and welfare.

### **Implementing Recommendations**

- Create an Alabama Water Resources Agency with responsibilities in four broad categories: planning, coordinating, financing, and monitoring. A detailed description of these responsibilities is found in Appendix Table 1.
- Create an Alabama Water Resources Commission. The duties of the Commission are outlined in Appendix Table 2.

### **PLANNING**

Planning is the first of four major functions of the Alabama Water Resources Agency. The planning function involves three elements: data collection, databases, and plans and studies.

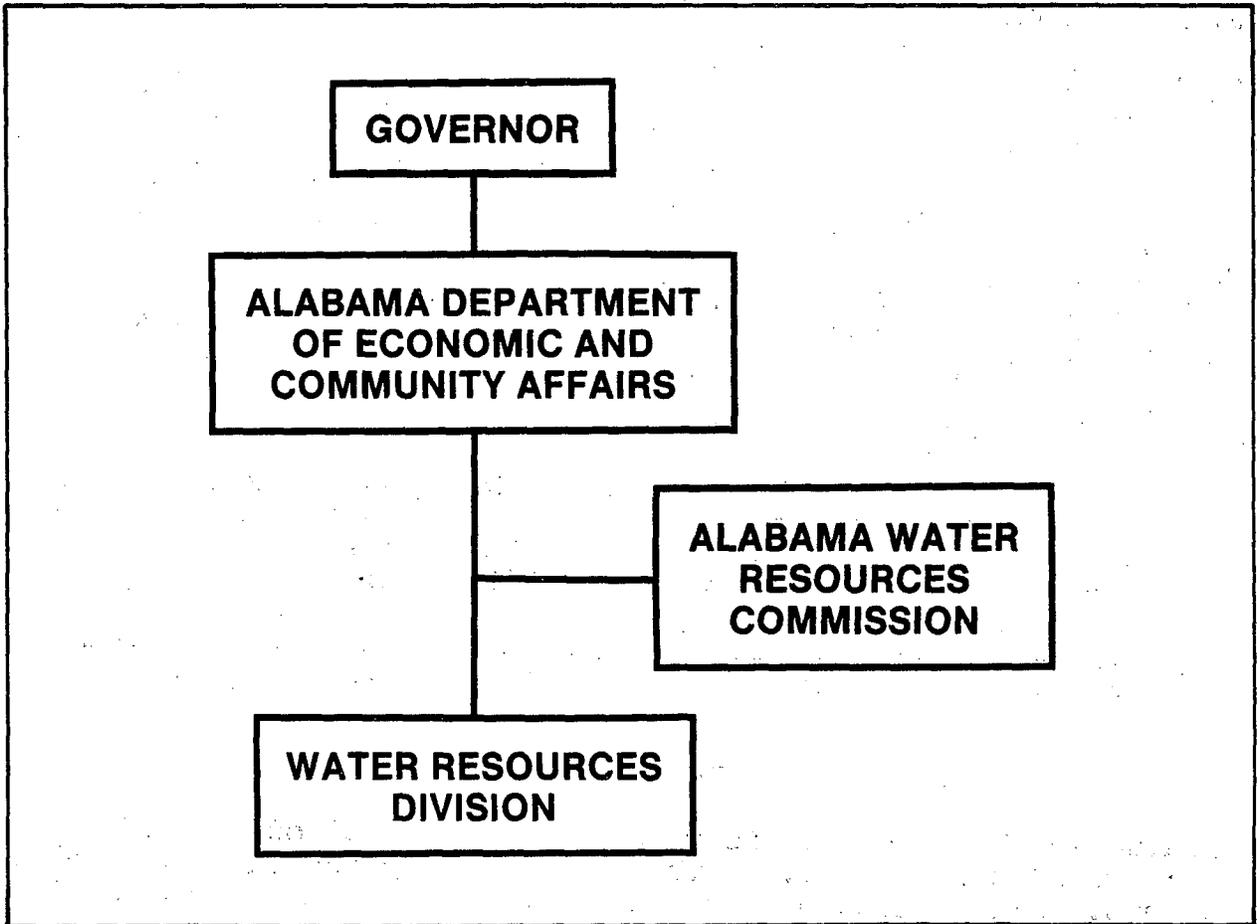
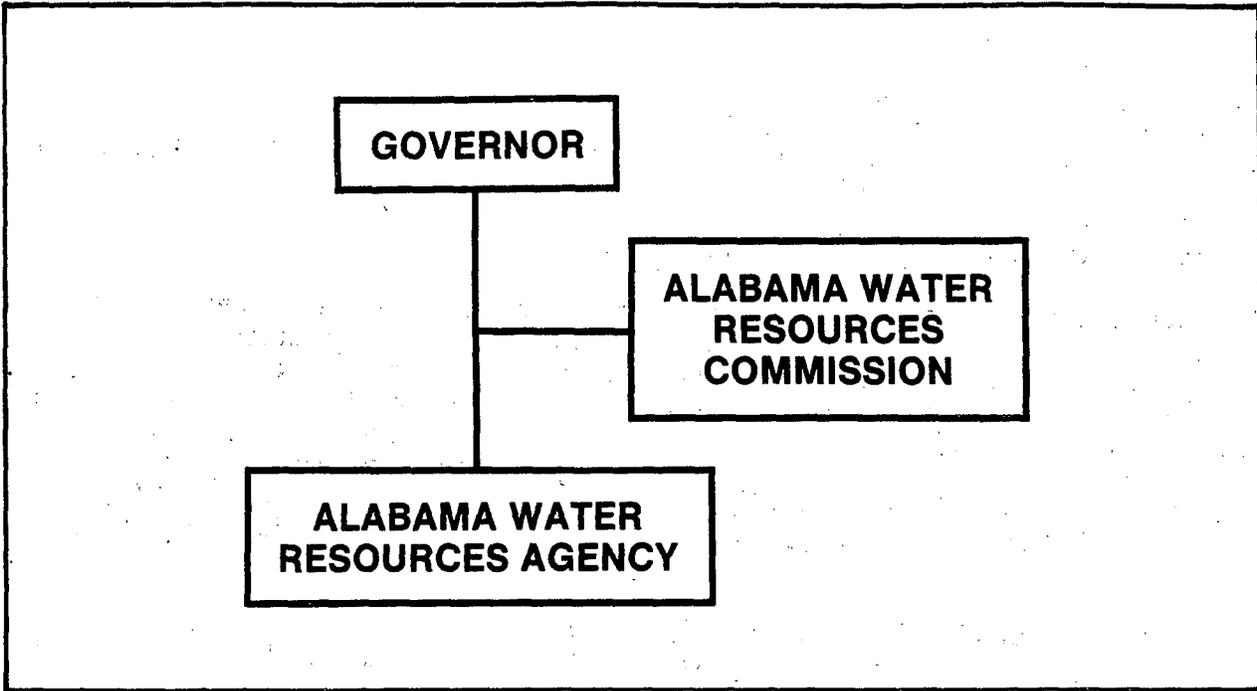


Figure 1. Proposed Organizational Charts For Alabama Water Resources Agency And Commission.

## **Monitoring Networks**

### **Policy Statement**

Enhance statewide networks of water resource monitoring stations to allow monitoring of precipitation, water quantity, including streamflows and groundwater levels, and ground and surface water quality.

### **Issue Description**

Proper development and management of Alabama's water resources must be based on a sound knowledge of hydrologic conditions. Water resources monitoring networks are needed to provide the necessary information on the condition of the hydrologic environment.

Real-time hydrologic and meteorological data at key stations throughout the State are crucial for making wise decisions during floods and droughts. Groundwater levels are declining in many areas of Alabama, and proper management of ground water resources will require close monitoring of water levels. Surface water monitoring data is needed to determine the quantities of water that are available for water supplies, recreation, assimilative capacities, navigation, hydropower, fish and wildlife needs, and other uses. Finally, water quality monitoring should be expanded to assure that the State's surface and ground water resources are not being adversely affected by contamination.

### **Implementing Recommendations**

- Expand monitoring networks including hydrologic water quality stations, streamflow stations, precipitation stations, and observation wells.
- Install real-time sensors at key streamflow stations, observation wells, precipitation stations, and water quality stations in order to provide immediate data for decision makers.
- Expand aquatic biological monitoring and develop biological criteria for surface waters.

## **Databases and Information**

### **Policy Statement**

Establish a state water resources information center using an integrated, computerized data network that is coordinated with existing federal and state databases.

## Issue Description

Water resources and biological data are collected as part of numerous local, state, and federal programs. Existing data on the State's water resources includes multiple variables such as streamflow, water use, physical parameters, radiological quality, and other aspects of the water resources. However, no single source or entity exists for acquisition of all data for a specific location, stream reach, aquifer, or hydrologic region.

## Implementing Recommendations

"An Environmental Protection Plan for the State of Alabama," a report by the Alabama Environmental Planning Council, recommended establishment of a centralized water resources database. The Commission reiterates this need.

- Establish a state "Water Resources Information Center," including a comprehensive water resources reference collection and computerized databases at scientific water resource agencies, networked to water regulatory and management entities.
- Establish a data quality assurance program which sets quality control guidelines for data included in the network.
- Establish and maintain a long-term, baseline data network to monitor trends in the quantity, quality, and distribution of state surface and ground water. This network must be sufficient to meet planning and monitoring needs into the foreseeable future.

## Plans and Studies

### Policy Statement

Initiate a long-range, comprehensive water resources planning process to prepare state plans, basin plans, and functional plans.

### Issue Description

There is a lack of comprehensive water resource data and planning in the State. For the most part, Alabama has been reactive rather than proactive in its thinking. Alabama must have plans for the effective utilization, management, and development of its water resources.

In short, the State has reached the time when water resources can no longer be taken for granted. Demands are felt to exceed available water supplies in some areas; some of the uses are directly competitive. Yet the total amount of potable water in the state is not known. Data on water consumption is unreliable

because of unmetered use and the absence of withdrawal permits. In addition, there is little comprehensive state-wide information on future demands for water. There is no systematic plan for drought management; there are no future plans for water resource management. Without such plans, there is no effective means to enhance economic growth, improve the environment, nor assure the quality of life of citizens.

### **Implementing Recommendation**

- Charge the Alabama Water Resources Agency with the responsibility to coordinate comprehensive water resources studies aimed at developing a water resources strategy for the future of Alabama. This effort should be adequately funded and coordinated with federal and state agencies involved with water resources issues and development.

As a minimum, the water resource strategy should be composed of studies that encompass state water resources plans, basin plans, and functional plans. State water resource plans should assess the availability and utilization of water resources in Alabama, project the needs for communities across the state, evaluate the practicability for water conservation measures, establish a long term water resources development strategy, and quantify and emphasize the contribution that water resources have made to the Alabama economy. Basin plans should address the above issues and unique problems within major river basin areas of Alabama. Functional plans, on the other hand, should relate to the needs of such water users as agriculture, industry, power generation, navigation, recreation, and waste assimilation.

### **Reservoirs**

#### **Policy Statement**

Promulgate state legislative policy and supporting administrative rules and regulations which provide a mechanism for a comprehensive review (baseline study) of the purposes and operation of existing reservoirs, determine through the instream need analysis program whether additional surface water storage is needed to ensure required flows, catalog potential reservoir sites which could be used to meet current and future public needs and interests, and catalog streams and rivers on which no additional reservoirs should be constructed.

#### **Issue Description**

Managing the water resources of Alabama for the best interest of the public necessitates making difficult choices while retaining as many options as possible. Reservoirs, existing or proposed, elicit strong favorable and opposing views. Existing reservoirs were built for one or more specific purposes; however, with the

passage of time the expectations and desires of the public change. Proposed new reservoirs, while generally multi-purpose by design, create opposition from people concerned with the rapidly vanishing, undisturbed, free-flowing streams and rivers and the unique ecosystems they represent.

### **Implementing Recommendations**

- Initiate a comprehensive public review of the operations of existing reservoirs in Alabama to determine if original project purposes are still valid.
- Determine, using information from the instream flow analysis, if additional surface water storage or changes in reservoir operations are needed.
- Establish a list of potential reservoir sites which could help meet current and future public needs and interests.
- Establish a list of streams and rivers on which no additional dams or impoundments should be constructed.

### **Instream Flow**

#### **Policy Statement**

Promulgate state legislative policy and supporting administrative rules and regulations, consistent with water withdrawal permitting, to ensure that streams and rivers of Alabama have adequate flows necessary to accommodate competing interests and protect instream water uses.

#### **Issue Description**

The quantity of water flowing in a stream or river and the timing of the flows are important determinants of the types of uses a specific stream or river can support. For natural streams, the volume of water flowing at any particular time is dependent on a base flow, minus any water withdrawals which are occurring. For regulated streams, the volume of water flowing downstream from a dam is mainly determined by releases from the dam which, in turn, are determined by the purpose(s) of the upstream dam and reservoir. Consequently, it is possible that at different times, several miles of river downstream from a dam may have no flow and, in some cases, no water in the channel. Waters of Alabama are classified for uses including public water supply, swimming and other whole body contact sports, shellfish harvesting, fish and wildlife, agricultural and industrial water supply, and industrial operations and navigation. Boating, sport and commercial fishing, hydro-electric power generation, wading and recreational floating, aesthetic enjoyment and assimilation of treated wastewater are just a few of the other important uses of State waters even though no specific use classification category exists.

## **Implementing Recommendations**

- Develop and enact legislation which sets forth the basis for establishing and protecting instream flows and uses of Alabama streams.
- Develop supporting administrative rules and regulations needed to determine the instream flows required to accommodate competing interests, establish maximum withdrawal quantities, and protect instream uses.

## **Enhanced Coordination of Hydrologic Emergencies**

### **Policy Statement**

Improve responses to hydrologic emergencies by coordinating assistance from state agencies and encouraging all Alabama counties to have trained, full-time emergency management coordinators.

### **Issue Description**

Many agencies of state and county government are asked to assist in responding to hydrologic emergencies. However, in many cases, they are not prepared or trained to provide assistance because of lack of advance identification of roles and training or lack of funding and manpower.

In most Alabama counties, there are local emergency management coordinators on a full-time basis. But in a few counties, there is no designated emergency management coordinator. Recent events have underscored the benefits of having trained full-time emergency management coordinators.

### **Implementing Recommendations**

- Develop memorandums of understandings among state agencies, identifying roles and responsibilities for hydrologic emergencies.
- Provide adequate funding, manpower, and training to state agencies anticipated to be required to respond to hydrologic emergencies.
- Encourage, through the Alabama Emergency Management Agency and the Association of County Commissions of Alabama, all Alabama counties to have full-time, trained emergency management coordinators with financial support provided by the Federal Emergency Management Agency.

## **Floodplain Management**

### **Policy Statement**

Enhance floodplain management in Alabama by encouraging local jurisdictions, both municipalities and counties, to participate in the national flood insurance program. Also, they should be urged to develop guidelines to prevent increased flooding by encroachment in rural floodplains.

### **Issue Description**

Two possible deficiencies have been identified in the existing floodplain management program. First is denial of the opportunity for individuals, businesses, and industries to obtain flood insurance for protection of assets against flood damage because communities do not participate in the flood insurance program. Second is the encroachment of rural floodplains related to significant increases in aquaculture.

Flood insurance is not available in over 100 Alabama communities. In order for flood insurance to be available in a given community, the community must make a commitment to control development in designated floodprone areas.

Recent surveys indicate there are about 18,000 acres of commercial catfish impoundments in the state. It has been estimated the fresh water aquaculture (catfish) could grow to 200,000 surface acres in the future. Rural areas could be adversely affected by increased flooding as a result of floodplain encroachment. Current development provisions may not adequately address impoundments and other areas so as to avoid or prohibit increased flood damage.

### **Implementing Recommendations**

- Provide additional support for the state floodplain management program to assist Alabama communities in understanding the requirements of the National Flood Insurance Program.
- Require the Alabama Water Resources Agency, with the assistance of appropriate federal agencies, to research the encroachment of rural floodplains to determine the magnitude of the problem, develop guidelines for location and construction of catfish ponds, and develop appropriate model regulations to minimize floodplain encroachment.

## **Drought Management**

### **Policy Statement**

Develop local and state drought management plans and establish a state drought management mechanism to utilize water resources more effectively during extreme periods.

### **Issue Description**

Inadequate management of water resources can have severe impacts on such diverse areas as industry, jobs, navigation, agriculture, and recreation. To minimize adverse impacts during droughts, better management of current resources is desperately needed.

Currently, there is no state and few local drought management plans. In addition, there is a lack of education or understanding on the importance of water conservation, and this could lead to waste of our resources. Due to the enormous demands placed on water resources in Alabama, there is a need for central planning and coordination of all activities in the state.

### **Implementing Recommendations**

- Require the Alabama Water Resources Agency to be the umbrella organization for drought planning and coordination.
- Enact legislation to require drought contingency planning for local water systems to be incorporated into existing emergency management plans.
- Enact legislation to require drought contingency planning for local systems requesting water withdrawal authority.
- Enact legislation to require a permit to withdraw a specified amount of water from either surface or groundwater supplies.

## **COORDINATING**

Coordinating is a second major function of the Water Resources Agency. An integral part of the Water Resources Agency's mission is its role in interacting with various entities. The key is coordination--Federal, state, interstate, and intrastate.

### **Federal-State Water Management Partnership**

#### **Policy Statement**

Develop a state water policy that provides a means for state interaction with federal agencies in planning current and future operations of federal projects that impact state waters.

## **Issue Description**

There are limited mechanisms for state participation in planning current and future operations of existing federal projects that impact state waters.

The demand for water resources projects is increasing. Federal agencies are responding to these demands by evaluating and changing operations, adding new features, and making modifications as appropriate for Federal water resources projects.

Changes or modifications of federal water resources projects in Alabama--or at water projects in other states whose discharges flow into Alabama--can have a significant impact on water resources in Alabama. The State needs to develop an ongoing relationship with the federal water resources agencies for information purposes and for early involvement in federal project and operations plans. This would include changes in reservoir operating levels, changes in reservoir release schedules, and additions and modification of features at existing projects.

## **Implementing Recommendation**

- The Alabama Water Resources Agency should monitor federal activities which affect Alabama water resources and implement a policy to involve Alabama with federal agencies operating existing, or proposing new, water resources projects that are located in the State or which will impact water coming into the State. Representative actions should include arranging periodic meetings with federal agencies to secure status reports of current and proposed activities at projects which affect Alabama water resources, serving as the State's representative on task forces or committees of federal agencies, and serving as the State water resources contact for federal agencies.

## **Interstate Compacts**

### **Policy Statement**

Develop and enter into interstate agreements with adjoining states to ensure that Alabama protects and receives--for both current and future water needs--its equitable share of both surface and ground water.

### **Issue Description**

The lack of enforceable interstate agreements to protect the state's water resources is a major issue in Alabama. Recent natural events, including droughts and floods, and proposals by

other states and federal agencies with respect to interstate water resources have underscored this fact.

#### **Implementing Recommendation**

- Research, develop, and implement procedures, through legislation or other methods, that allow agreements on interstate water resource quantity and quality issues to ensure Alabama's current and future water needs are adequately assured and protected.

### **Aquatic Plant Management**

#### **Policy Statement**

Initiate policy, directives, or legislation as necessary to ensure control of aquatic plants in general with particular attention to artificial introduction of exotic species which may have adverse effects on water bodies in Alabama.

#### **Issue Description**

Most aquatic plants are beneficial, serving as a food source for invertebrates and other animals that live in and near the water as well as providing spawning sites. Aquatic plants are usually considered a problem only when their growth becomes excessive; most plants which cause problems are not native to the State or North America.

Aquatic plant problems on public waters have increased during recent years, and this trend is expected to continue. Problems faced are varied, expanding in acres of water affected and increasing in plant species involved.

#### **Implementing Recommendations**

- Direct, on a short-term basis and within existing statutory authority, State agencies to endorse, initiate, and cooperate with federal agencies and private firms that have interests in the management of aquatic weeds.
- Enact, on an intermediate-term basis, legislation to implement an aquatic plant management plan to minimize adverse effects on Alabama freshwater bodies.

### **FINANCING**

Financing is the third major function of the Alabama Water Resources Agency. The finance recommendations can be grouped into four categories: revenues for water resources programs and projects, water development fund, mechanisms to coordinate water resource projects, and matching funds for federal assistance.

The Commission and the Study Committees faced the dilemma of needing substantial financial resources for a multitude of water resource needs, coupled with diminished to nonexistent sources of revenue. Comparative analysis of funding sources in other states resulted in numerous options being considered. Financial requirements for sponsoring federal projects and means of coordinating and prioritizing water projects--both significant functions of the Alabama Water Resources Agency--played a major role in the Commission's recommendations in the financial realm.

### **Policy Statement**

Initiate broad-based water user fees and increase registration and inspection fees for pollutants, such as pesticides and fertilizers, to provide revenue to support water resource programs and projects.

### **Issue Description**

Testimony presented to the Commission indicated that federal assistance for water resource projects is decreasing. Simultaneously, the requirements for local matching shares are being increased.

The Finance Study Committee found that Alabama has its own unique set of financial problems. Currently, 89 percent of Alabama's revenues are earmarked; only monies from the General Fund could be allocated for a Water Resources Agency. Competing demands for General Fund appropriations are intense. At the same time, the general fund has traditionally grown slowly--about one percent per year--and few revenue enhancement measures have been adopted. Therefore, the Commission concluded that substantial funding from the General Fund is not a viable option.

### **Implementing Recommendations**

- Enact legislation to establish broad-based water user fees. An illustration of how this would work is shown in Table 1. There are, however, other sources that could be used to generate funds.
- Amend existing legislation to increase registration and inspection fees on pesticides and fertilizers.
- Establish a Water Development Fund to finance water resources programs and projects of state significance.

Table 1. Potential Revenue From User Fees

Type of Fee	Projected Annual Revenue		
	----Fee/1000 Gallons, Cents----		
	1	2	3
	----Dollars----		
Municipal Water	2,336,000	4,672,000	7,008,000
Industrial Water	3,073,000	6,146,000	9,219,000
Pesticide Registration	800,000	800,000	800,000
Fertilizer Inspection	900,000	900,000	900,000
Sub-total	7,109,000	12,518,000	17,927,000
	--Fee/10,000 Gallons, Cents--		
	1	2	3
Power Generation (Nuclear and fossil)	2,209,000	4,418,000	6,627,000
<b>Total</b>	<b>9,318,000</b>	<b>16,936,000</b>	<b>24,554,000</b>

1/ With an additional \$100 per chemical registered.

2/ With an additional \$1.40 per ton of fertilizer registered.

## **Coordinating, Selecting, And Sponsoring Water Resource Development Projects**

### **Policy Statement**

Establish within the Alabama Water Resource Agency the capability to coordinate all water resource projects and determine projects of State significance, employ project selection and priority setting procedures for projects to receive State assistance, and act as "local sponsor" under new federal requirements for State projects.

### **Issue Description**

Currently, water resource projects of State significance are presented to the legislature on a case-by-case basis. Based on the findings of the Commission, the volume of water resources projects is expected to increase in the future.

Assuming projects are coordinated through a central clearinghouse, there will still be important project decisions to make. For example, which projects are of State significance, what should be the State's level of participation, and what is the relative priority for implementation?

Due to changes in local sponsor requirements enacted as a part of the Federal Water Resources Development Act of 1986, there are distinct limitations on entities in Alabama which can act as the non-federal sponsor. Of those entities with the capacity to act as local sponsor, most have limited interests in water resources or serve a limited geographic area.

### **Implementing Recommendations**

- Charge the Alabama Water Resource Agency with determining and recommending water resource projects in which the State should participate, developing a method for prioritizing water resource projects, and determining the distribution of State and local cost sharing for regional projects.
- Provide active participation in the initiation, planning, development, and support of state and federal water resource projects.
- Create a statewide "Alabama Water Resource Authority" with funding powers and the legal capacity to participate as the local sponsor for water resource projects.

## State Water Development Fund

### Policy Statement

Establish a State Water Development Fund which can be used to provide financing for, but not necessarily limited to, water resource development projects, matching funds, and other administrative activities.

### Issue Description

Decreasing federal assistance and limitations on types of projects underscore the need for the ability to finance and implement projects which are of State significance. This may include projects with or without payback ability as well as State initiatives to stimulate certain local action. Also, the Alabama Rural Water Finance Authority's effectiveness is restricted under current legislation.

Underutilization of certain existing federal matching funds allows federal tax revenues from Alabama to flow to other states. These matching funds need to be fully funded by the state.

Additional funds will be required to support the administrative functions being recommended. This includes support of the Alabama Water Resource Agency.

### Implementing Recommendations

- Establish a State Water Development Fund to provide the required local matching share for projects of State significance, leverage dollars to create a revolving loan fund to provide below-market interest rate loans for water resource development projects, and create State incentives to locate, evaluate, and develop alternative water sources or improve the efficiency of use.
- Provide matching funds to ensure that the Alabama Water Pollution Control Authority and ADEM capture all federal grant seed monies to provide a perpetual source of low-interest loan funds for municipal waste water improvements.
- Provide adequate funds for water resources data collection and information dissemination, scientific analyses, baseline and trend information for long-term planning and specific short-term data, and other water resource agency activities as required.

## **MONITORING**

Monitoring is the fourth component of managing water resources. As presented here, monitoring includes three primary components--water quantity, interbasin transfers, and dam safety.

### **Water Quantity Program**

The Commission recommends several measures to create a process to deal with water quantity issues in Alabama. In increasing order of urgency, these include certificates of use, water supply and demand analysis, critical use areas, capacity use areas, and permitting. The first four steps of this process are discussed more briefly than the fifth--permitting. Because of the significance of the latter, the Commission felt a policy statement was needed.

The water quantity protection program could be implemented either in the Alabama Water Resources Agency or in ADEM.

#### **Certificates of Use**

The need for precise data to coordinate water use is vital. At present, water use data in Alabama is based on voluntary reporting. Only 42 percent of the users respond to water use questionnaires. In order to develop more accurate information, water use reporting must be made mandatory. The purpose of this recommendation is to ensure at least 95 percent complete and accurate data on current water use in Alabama.

The instrument for annual reporting of water use would be a "certificate of use." Such a document would not include restrictive requirements nor ensure water rights. In addition, this reporting requirement would exempt small water quantity users, e.g., individual home owners and small farms.

#### **Water Supply and Demand Analysis**

Certificates of use would provide for quantification of water demand in a given area. Available "safe yield" water supplies in the same geographic area could be scientifically quantified by technical agencies such as the Geological Survey of Alabama and the U. S. Geological Survey. Calculations could then be performed to compare water supply data with the reported water demand.

Areas in Alabama characterized by declining water tables and significant reductions of streamflow due to water withdrawals underscore the need for certificates of use. Unless these practices are controlled, the water supply may be seriously and permanently endangered, economic potential shifted, and environmental damage created.

## **Critical Use Areas**

In areas where demand is approaching the available supply, a "critical use area" would be administratively declared by the management agency. Declaration of a critical use area would lead to delineation of a hydrologic or geographic study area and preparation of detailed demand and supply projections for the area. Since there is a need for even more precise data in these areas, water use reporting thresholds may have to be lowered to provide more comprehensive data.

## **Capacity Use Areas**

In areas where the water demand/supply balance is proven to be acute, a "capacity use area" declaration would be imposed to forestall water shortages. A capacity use area, a declared zone for intensive water management, could include actions such as mandatory conservation, control of water transfers and, as a last resort, quantity permitting.

## **Permitting of Water Quantity**

Within the declared capacity use areas, all water withdrawals above an established threshold would be permitted to prevent overdrafting of the water supply.

## **Water Withdrawal Permits**

### **Policy Statement**

Enact legislation requiring reporting of water use and permitting of water withdrawals.

### **Issue Description**

Current information on the availability and use of ground and surface water resources is essential in planning for continued growth and development in Alabama. For most areas of Alabama, there is little information concerning the magnitude of water withdrawal from surface and ground water sources. As noted earlier, voluntary reporting programs conducted by the Geological Survey of Alabama provide limited water-use information.

State water resources in aquifers and surface waters have been tapped with the implicit assumption that water is an inexhaustible resource. In reality, it is finite. When ground water withdrawals exceed the rate at which water is recharged, the total quantity of the resource can decrease significantly. In some areas, drawdowns have already resulted in shallow wells going dry; if this continues, the aquifer may never be able to be restored to its original capacity. Likewise, surface water

withdrawals can reduce available downstream flows and intensify water quality problems. Sufficient withdrawals may change or damage environmental characteristics.

### **Implementing Recommendations**

- Enact legislation requiring larger volume water users to obtain a certificate of use and report annual water use. Water use reports required under the certificate of use should include representative types of information found in Appendix Table 3.
- Enact legislation to enable the declaration of critical use and capacity use areas.
- Require water withdrawal permits within capacity use areas for water users that withdraw, divert, or consume more than a specified quantity of water. Criteria such as, but not necessarily limited to, that found in Appendix Table 4 can be used to evaluate the applications for permits.

Withdrawal permits should be issued for a designated period of time and should specify the limits on quantity, time, place, and rate of withdrawal or diversion of water. Water use under the permit should continue to be reported at specified intervals to monitor actual consumption.

### **Interbasin Transfers of Water**

#### **Policy Statement**

Promulgate rules and regulations to require permits for interbasin transfers of water and to require reporting of water transfer values.

#### **Issue Description**

The amount of water available for development in an area generally is fixed; however, the demand for this water may increase. If demand exceeds supply, a common practice is to transfer water from other areas or basins. Interbasin transfers are occurring in several locations in Alabama and are expected to increase as economic growth continues in areas with limited water resources. A need exists to better identify the location(s) and manage the distribution of these water transfers in order to maintain and better plan for future development and environmental preservation. A permit system should be established for the interbasin transfer of ground and surface water in Alabama. Without a permit program, detrimental impacts could occur in the losing basin.

## **Implementing Recommendations**

- Discourage, on a short-term basis, interbasin transfers of water until a procedure has been established to evaluate the matter on a statewide basis.
- Enact legislation, on an intermediate-term basis, to require water users to obtain interbasin transfer permits from the appropriate state water management agency. The agency should determine whether the benefits of approving a transfer outweigh the costs of not approving it.
- Require permits to control interbasin transfers of ground and surface water that exceed a specified quantity. The permit should specify the maximum quantity of water that can be transferred during a given time period.

### **Alabama Safe Dams Program**

#### **Policy Statement**

Develop an Alabama safe dams program which provides construction standards and periodic inspection for both existing and new dams. Dams inspected, regulated, or owned by the federal government and dams for farm ponds or other small impoundments would be exempt from the program.

#### **Issue Description**

New dams need to be inspected and monitored for construction methods and materials. Existing dams which are not inspected, regulated, or owned by the federal government need periodic inspection to ensure their safety.

There are approximately 1,800 dams in Alabama large enough to present some hazard to life or property if the structure fails. Alabama is one of only two states without statutes or regulations that establish standards for construction and maintenance of dams. There has not been inspection of non-federally regulated or owned dams in Alabama since a 1981 review and limited inspection of 163 dams in Alabama by the U.S. Army Corps of Engineers. The review and inspection revealed that all had potential for downstream loss, ranging from loss of life (142) to economic loss (18).

#### **Implementing Recommendation**

- Resolve any remaining conflicts and complete and enact, in the next session, legislation to establish a "Safe Dams Program."

## PROTECTING WATER RESOURCES

The use of streams and rivers by cities and industries to dispose of waste is permitted and monitored by various agencies. Major water quality problems exist due to unintentional factors such as sedimentation, animal wastes, chemicals, nutrients, and organic matter. These pollutants are often collectively referred to as non-point sources. They can have a devastating effect on water quality.

At present, there are water quality programs in Alabama. Citizen comments and Commission reviews indicate that these programs need strengthening and, in a few instances, significant new direction. As a result, this section is devoted primarily to recommendations that clarify and expand existing programs to address point and non-point pollution sources.

Major topics in this section are wells, septic tanks, sedimentation, irrigation backflow, wetlands, and strengthening certain existing programs.

### **WELLS**

The issues and recommendations related to wells are extensive enough to be categorized as follows: source protection, testing, construction and siting standards, well driller requirements, and abandoned wells.

The Commission's proposal with respect to wells is intended to exempt wells which are already regulated by agencies such as the Oil and Gas Board and ADEM.

Small bores for exploration purposes, which are almost immediately capped or properly abandoned, can be handled by issuing exploration permits, establishing standards for post exploration closure, and reporting the location of the closed borings to the Alabama Water Resources Agency. This would enable field verification of proper abandonment and assignment of responsibility if ground water problems are identified in the future.

### **General Policy Statement**

Implement a series of regulations, programs, and services related to various types of wells in order to ensure quality water supplies and protect ground water resources.

## Source Protection

### Issue Description

Every hole in the ground, whether dug or drilled, represents a potential access route for pollution to enter the ground water supply. Currently, Alabama permits only those wells that are used for public water supply systems. In 1989, the Alabama Department of Environmental Management permitted only 31 of the 50,000 wells drilled by licensed contractors. Water sample data compiled in February 1990 and provided by the Alabama Department of Public Health revealed that 50 percent of the 6,673 water samples voluntarily submitted were contaminated.

There are numerous other types of wells; their use extends far beyond providing drinking water. In the past, farm wells were frequently used to drain crop and pasture land. There is no record of how many still exist, but they provide direct entry routes for the pollution of ground water by herbicides, fertilizer, and chemicals. Other representative types of wells that need to be considered include industrial wells for process water, dewatering wells for construction and mining, irrigation wells for agriculture or landscaping, water supply wells for livestock and poultry, and environmental and remediation wells.

### Implementing Recommendations

- Enact legislation implementing a comprehensive well permitting program, including locating and inspecting all new wells.
- Assess permitting fees to pay for the administrative and inspection costs related to the permitting program, a portion of the fee to be escrowed in a "plugging fund."
- Require public water systems and large capacity self providers to secure bonding to ensure the proper abandonment of wells.
- Support other types of ground water protection programs.

### Testing

#### Issue Description

Well water testing conducted by the Alabama Department of Public Health is currently limited to bacteriological testing. In today's society, chemical pollution must be considered. The Health Department survey previously mentioned also indicates the public is generally unaware of the need for ongoing sampling of private wells to ensure good water quality.

## **Implementing Recommendations**

- Provide, through the State Health Department, individual county health departments with equipment to test water for outside contaminants.
- Require the State Health Department to continue to offer bacteriological testing, initiate non-duplicative, two-parameter chemical testing at each laboratory, and charge a nominal fee to offset the expenses of the testing program.
- Implement, through state and county health departments, an informational program to inform users of private water sources of the need to periodically sample their water.

## **Construction and Siting**

### **Issue Description**

Well construction standards are not specified for many types of wells in use in Alabama. Well siting is typically handled as a recommendation rather than a requirement.

### **Implementing Recommendations**

- Develop standards for all types of wells and use well permitting to monitor and inspect all wells not already regulated.
- Establish and enforce, through the Department of Health, minimum private well (drinking water) construction standards. Other departments, such as ADEM, should regulate wells within their normal areas of jurisdiction.

## **Well Drillers**

### **Issue Description**

According to the Alabama Water Well Contractors Association, well driller licensing and certification requirements in Alabama are lower than in all adjacent states.

### **Implementing Recommendation**

- Increase well driller licensing standards to be in general conformity with adjacent states and certify each driller for the type of well(s) that each is permitted to install.

## Abandoned Wells

### Issue Description

Alabama has no accurate record of the location of abandoned wells. Furthermore, the abandoned well problem extends to all types of wells because existing permitting programs only address installation procedures.

Abandoned wells are often used for garbage and trash disposal. It has also been reported that wells are occasionally used as an overflow drain for malfunctioning septic tanks. Various types of dead animals are frequently found in abandoned wells. All of these abuses of abandoned wells represent a direct source of pollution for ground water resources.

Abandoned wells of 8 inches or more in diameter are a physical hazard as illustrated by the "Baby Jessica" incident in Midland, Texas.

### Implementing Recommendations

- Aggressively enforce, through multiple state agencies, the existing standards on well abandonment procedures. Provisions should allow prosecution to ensure the proper abandonment of all types of well.
- Inventory, through a multi-agency effort and over an extended period of time, the different types of wells that have been abandoned.
- Require all new well permits to include information on whether the new well will result in the abandonment of an existing well. The permit should require an accurate reporting of the location of the abandoned well, and an inspection should be made to determine that the well is properly capped.
- Use the well "plugging fund," generated by well permit fees, to pay for proper well abandonment when the legal responsibility cannot be determined.

## SEPTIC TANKS

### Policy Statement

Amend the Code of Alabama to authorize the Alabama Department of Public Health to revise and modernize Alabama's rules regarding on-site sewage collection, treatment, and disposal and support appropriate implementation and enforcement actions.

### Issue Description

Septic tank malfunctions and improper sewage disposal techniques are polluting ground and surface water. Examples include the

location of septic tanks in ground water aquifer recharge areas that are covered by highly permeable soils, in close proximity to impounded waters, and in flood prone areas. This can be largely attributed to the lack of adequate enforcement and the antiquated statutes governing septic tanks.

#### **Implementing Recommendations**

- Amend the Alabama Code regarding the Alabama Department of Health and on-site sewage systems.
- Instruct the Health Department to develop and adopt rules and implement enforcement actions necessary to eliminate the public threats caused by improper on-site sewage systems.

### **SEDIMENTATION**

#### **Policy Statement**

Develop and implement a sediment control program. This should include urban sedimentation ordinances addressing all land-disturbing activities in urban areas and state funding for enforcing and implementing best management practices for agricultural non-point source.

#### **Issue Description**

Sedimentation is the most abundant pollutant in terms of quantity. All land disturbing activities--including construction, agriculture, mining, and unpaved roads--are major sources of sedimentation. All sources of sedimentation should be regulated by State legislation and local ordinances.

#### **Implementing Recommendations**

- Enact a "Sediment Pollution and Erosion Control Act."
- Require phased-in implementation of local sediment control ordinances, giving priority to communities with high rates of growth and areas with highly erodible soils.
- Provide State funding to establish and enforce best management practices for all rural land disturbing activities.
- Charge ADEM with implementing and enforcing these regulations.

## **IRRIGATION BACKFLOW PREVENTION**

### **Policy Statement**

Identify proper application techniques and devices to ensure that animal waste water and chemigation are applied to agricultural lands in an environmentally safe manner.

### **Issue Description**

Ground and surface water resources are susceptible to being damaged by the improper application of chemicals and waste water during irrigation and the lack of backflow prevention devices.

### **Implementing Recommendation**

- Enact legislation that would require backflow prevention devices to be installed on irrigation systems.

## **WETLANDS STRATEGY**

### **Policy Recommendation**

Develop a comprehensive policy for wetlands retention and preservation, with related protection mechanisms, that will provide State agencies with a uniform program.

### **Issue Description**

Alabama is one of the leading states in the nation in terms of wetland acreage. Alabama's various wetlands function as breeding grounds for seafood, a source of aquifer recharge, and as wildlife habitat. Wetlands are continually being lost due to the acts of man and as a result of natural forces. In some cases, it may be in the public interest for development, such as waterborne shipping facilities, to occur in certain wetlands provided there is adequate mitigation to offset the wetland loss. Programs are also necessary to reduce wetland losses caused by natural forces.

### **Implementing Recommendations**

- Implement wetland protection strategies identified in the State Comprehensive Outdoor Recreation Plan, Volume 2.
- Establish a formal state wetlands acquisition program.
- Issue an Executive Order requiring state agencies to protect wetlands through alternatives and mitigation.
- Evaluate and implement wetlands mitigation banking.
- Use implementing tools, such as Executive Order 12372, Section 401 CWA certification, and legislated regulatory actions to foster wetland retention and preservation.

## POLLUTION PROTECTION PROGRAMS

### Existing Programs

During the work of the Study Committees, a number of proposals were developed regarding the changes required and the need for support of existing programs to abate pollution. The Commission concurs with many of these proposals and recommends that existing agencies be supported in their efforts to improve programs related to adoption of regulations for non-point pollution management, implementation of an Underground Storage Tank (UST) installer certification program and for authority for additional funding for the UST Trust Fund, and strengthening and enforcing boat sanitation laws. The Commission also supports the efforts of existing agencies to study water well contamination by naturally occurring radon, to develop a water-oriented anti-litter program, and to resolve dam tailwater problems.

The Commission believes that a significant strengthening of the following existing programs is necessary because of their potential present and short-term future impacts on water resources.

- Strengthen animal waste nutrient guidelines and provide more funding to the Alabama Cost Share Program to expand technical assistance for best management practices to reduce non-point agricultural pollution.
- Enact legislative amendments to the Surface Mining Act to incorporate stronger standards, bonding requirements, and funding for reclaiming abandoned non-coal mining sites.
- Develop better guidelines for monitoring, applying, and disposing of agricultural chemicals.
- Evaluate the cumulative effects of coalbed methane development. Rule changes by the Oil and Gas Board requiring water well inventories in the vicinity of coalbed methane wells and requiring baseline water well analyses before coalbed methane well development should be supported.

The Commission feels that two recommendations are of the magnitude to be considered new initiatives.

### Clean Lakes

The first relates to the current "Clean Lakes Program" which ADEM initiated under the Safe Drinking Water Act. The Commission feels this program needs significant change to be in line with initiatives being conducted by other states. For that reason, the recommendation is considered a new initiative.

It is recommended that the Clean Lakes Program be revised to reflect new State initiatives including:

- Developing a definition of lakes applicable to Alabama.
- Studying sequentially Alabama's lakes to determine the key water resource parameters and establish standards to improve the water quality of the lake.
- Adopting and enforcing the established lake standards within a specified period following completion of each study.

### **Impacted Stream Segments**

The second recommendation addresses marginal water quality in existing stream segments. The Commission's investigations determined there are at least five major stream segments which are severely stressed. In order to promote future growth and development, it will be necessary to improve water quality in these segments. It is proposed that existing water quality standards be increased in these segments to provide assimilative capacity for future industrial development.

Related to this proposal is the need to authorize the state to withhold stream and river capacity for future growth and to accumulate the incremental increases which may be gained so new industry siting and significant plant expansions can occur.

### **USING WATER RESOURCES**

Water is used for public water supply, industrial manufacturing and cooling, crop irrigation, movement of goods, and power generation. Think for a moment about all the other different uses made of water in Alabama. The demand for water will continue to expand as growth occurs, exerting pressures that could preempt other uses.

Another important water use is for waste disposal. A 1972 report, "Use of Water in Alabama, 1970," estimated that the

...remaining undeveloped surplus...would support water withdrawals at 10 times the present rate. However, it is only clean, usable water that constitutes a resource. If the depreciation in water quality is sufficient to render the source unfit for further use, the source is depleted almost as effectively as if it had been entirely consumed. Thus, water quality rather than the quantity of Alabama's water supply would appear to be the principle concern of the future...

The Commission discovered river segments where the remaining assimilative capacity was so minimal that it is doubtful that further industrial locations can occur in these areas. In essence, the conditions postulated 18 years ago are now present in Alabama.

Water is subject to many demands and is used over and over as it flows downstream. Not all of these uses are compatible; the potential for future conflicts will increase daily. Under the major heading of managing water resources, the Commission has recommended formation of the Alabama Water Resources Agency. Although the latter will ultimately be responsible for determining how water resources are used, the Commission has identified conservation, county water systems, and scenic and recreational streams as topics related to water use which should receive high priority.

## **CONSERVATION**

### **Policy Recommendation**

Adopt a statewide policy supporting water conservation and initiate local water conservation by encouraging water systems to prepare conservation programs. The program would be implemented during droughts and in areas where it is desirable or necessary to reduce water demand.

### **Issue Description**

The droughts of 1986 and 1988 dramatically underscored the need to conserve water in various areas of Alabama. The droughts also demonstrated that the impacts were not statewide and not all water users were affected in the same manner. The impacts of the droughts, however, were significant enough to merit state interest in mitigation actions to assure the public health and economic well being of large areas of the state.

### **Implementing Recommendations**

- Enact legislation to require local water conservation when water supply disruption or loss would jeopardize either the health of citizens or economic well being of an area.
- Empower the Alabama Water Resources Agency to develop model water conservation programs, provide technical assistance to local public entities, and review local water conservation plans to ensure they are capable of attaining state conservation objectives.
- Use locally prepared programs to accomplish water conservation. Examples of measures to be included in local conservation programs are amending the plumbing code to require the use of "low flow" fixtures,

developing landscape water conservation practices, and curtailing certain other outdoor water uses.

- Support water conservation education programs.

## **COUNTY WATER SYSTEMS**

### **Policy Statement**

Give priority to expansions of existing water systems and encourage, through coordination and consolidation, systems to achieve efficient operation, economies of scale, and improved maintenance.

### **Issue Description**

There are numerous public water supply systems in every Alabama county. Many of these systems have limited sources of supply, inadequate storage, and small line sizes which impede efficient expansion and sustained dependable service. Systems are also frequently limited in their administrative support and maintenance capabilities.

### **Implementing Recommendations**

- Require counties to develop countywide plans to coordinate the engineering of all water systems within the county. Plans should address sources of supply, strategic locations for major storage facilities, locations of trunk distribution lines, critical points of interconnection, and the potential to share equipment and personnel for maintenance.
- Encourage public water systems to develop emergency operations plans.
- Provide State incentives, such as project rating and financial assistance, for water systems and projects that comply with the above.

## **SCENIC AND RECREATIONAL STREAMS**

### **Policy Statement**

Create a "Scenic and Recreational Stream Program" based on a statewide comprehensive river corridor assessment.

### **Issue Description**

Various Alabama waterways possess potential scenic, recreational, and wildlife values. Many of these waterways do not qualify for national protection programs but are unique to Alabama. These waterways also contribute significantly to Alabama's economy and the quality of life for Alabamians as well as tourists. Unfortunately, through lack of protection and promotion, certain

water resources are being adversely affected. In addition, the State lacks conservation easements, tax incentives, and other tools which are often utilized to implement a "Scenic Stream Program."

### **Implementing Recommendations**

- Prepare a comprehensive river corridor assessment based on land uses and the multiple interests that exist in the river corridors.
- Develop a scenic and recreational stream program based on the corridor assessments and establish the authority to enact local ordinances to control development in the corridors.

### **UNDERSTANDING WATER RESOURCES**

These recommendations were developed to maintain the quantity and quality of water resources in Alabama. The recommendations provide a framework to avoid many future water resource problems. Unfortunately, it will take time to fully implement all the recommendations. It also takes a good understanding of the recommendations, as well as future problems that will undoubtedly arise, in order for implementation to be successful. To increase both the short-and long-term potential for success, the Commission suggests two vital recommendations leading to a widespread and technically sound understanding of our water resources.

### **EDUCATION**

#### **Policy Statement**

Support water resources education as a part of formal education through existing institutions by expanding courses, curricula, and training requirements and through continuing education by inclusion of water resources topics in seminars and conferences and creative use of mass media outlets.

#### **Issue Description**

Attempting to use only regulatory solutions to water resource issues will not successfully address many existing and emerging problems. Collective and individual actions for the prevention and solution of water resources problems confronting modern society will require an environmentally literate citizenry. Previous studies have recognized that existing environmental education in Alabama is not what it should be.

### **Implementing Recommendations**

- Encourage the Department of Education to develop water resource courses and integrate them in environmental education curricula for grades K through 12.
- Require water resource training credits for teacher certification.
- Coordinate and disseminate, through the Alabama Water Resources Agency, information about existing state and federal water resource education programs.
- Develop water resource information and education programs for all citizens of Alabama.

### **RESEARCH**

#### **Policy Statement**

Support state water resources research through state funding and through monitoring federal research programs that are related to Alabama's water resources.

#### **Issue Description**

Growth in Alabama and adjoining states is placing increasing demands on water resources and creating complex issues that must be addressed. Much of the information decision makers will require to develop solutions to existing and future water resource problems is not available. In many cases, the needed data could be generated through appropriate research. State funding currently is not available to support the types of research activities necessary to produce this information.

#### **Implementing Recommendations**

- Utilize public agencies, universities, and other organizations within the State of Alabama that have responsibilities for water resources/environmental research.
- Provide an annual appropriation, through the Alabama Water Resources Agency, of at least \$1,000,000 to support applied water resources research.
- Monitor federal water resources research through the Alabama Water Resources Agency.

## CONCLUSION

Ground and surface waters are the most basic, necessary and valuable natural resources in Alabama. For water is the lifeblood of society. The State has a public trust to protect this valuable resource and direct its use to the betterment of all citizens of Alabama. Protection and wise use of the State's water resources depend on proactive water policies and programs. This report is intended to initiate policies and programs that will provide the necessary protection and promote the wise use of water resources by the citizens of Alabama.

One must keep in mind that it has taken years for Alabama's water resources to reach their current status. The Commission's findings indicate that Alabama is far behind all other states in water resources planning and management. Actions must be undertaken immediately to develop a framework for managing water resources. The longer Alabama delays initiating a state water resources program, the greater the gap will become with respect to other states and the greater the potential damage to the State's water resources. To compound the situation, the Commission projects that additional years of dedicated professional work are required before many actions can be justified and implemented. Even this type of delay subjects the water supply to escalating, diverse, and competing demands with the potential for further degradation.

It might be beneficial to put things in perspective by examining a series of "worst case scenarios." Visualize the impact, both individually and collectively, if the following were to occur.

- Water tables in southeast Alabama continue to drop and more small wells go dry.
- Salt water intrusion ruins the south Alabama aquifers and temporarily destroys the coastal economy.
- Interbasin transfers or upstream water demands in Georgia shift too much water from a basin of origin and impose growth limits on downstream communities.
- Full allocation of waste assimilation capacity closes additional miles of river for industrial growth and stagnates development potential.
- Droughts of the magnitude of 1986 and 1988 continue through the 1990s, forcing businesses to close and creating drinking water shortages.

All of these situations are possible; none is desirable. The probability of the occurrence of these events grows with each day of inactivity with regard to planning for and managing Alabama's water resources in a comprehensive manner. The job at hand is one in which Alabama--all levels of government, business and industry, and the public at large--must succeed.

**APPENDICES**

EXECUTIVE ORDER NUMBER 27

WHEREAS, the water resources of the State of Alabama, including both surface and ground water, are among the most abundant in the nation; and,

WHEREAS, the water resources have been highly beneficial to the state in the pursuit of a high quality of life and economic gain; and,

WHEREAS, the water resources are of vital importance in providing an improved quality of life and greater economic well being for the citizens of the State in the future; and,

WHEREAS, recent natural events have shown that the state's water resources, though abundant, are finite; and,

WHEREAS, competition for utilization continues to grow placing increased demands on a limited resource; and,

WHEREAS, the federal government's water resource policies were significantly modified with the enactment of the "Water Resources Development Act of 1986", Public Law 99-662, which requires major changes in non-federal participation in water resource projects, and provides new opportunities for federal-state partnerships; and,

WHEREAS, the Governor's Drought Task Force has recognized the need for an evaluation of the state's ability to address the current and future wise utilization of its water resources;

NOW, THEREFORE, I, Guy Hunt, Governor of the State of Alabama do hereby order as follows:

I. By virtue of the authority vested in me by law, I, do hereby establish the Alabama Water Resources Study Commission.

II. The Alabama Water Resources Study Commission shall consist of seven members. Such members shall be appointed by and serve at the pleasure of the Governor.

III. The members of the Alabama Water Resources Study Commission shall serve for a two year period.

IV. The Alabama Department of Economic and Community Affairs (ADECA) shall coordinate and assist the Commission as needed. ADECA shall also provide staff and other support to the Commission to assist the Commission in its responsibilities.

V. The Alabama Water Resources Study Commission may establish such committee(s) as it deems appropriate to assist it in its objectives. The committee(s) may include members of the Commission, representatives of agencies, both public and private, with water resource responsibility or knowledge, and/or the public at large.

VI. All agencies, departments, universities, etc. of the State of Alabama shall cooperate and assist the Commission in its activities.

VII. The Alabama Water Resources Study Commission shall address the following:

1. In relation to water resource issues, determine the role and future direction of the state relative to local governments and the federal government and the private sector;
2. To study and determine the extent to which the level of water usage is creating problems relative to long-term water availability and equitable access to water supplies;
3. To determine the status of long-range trends in water resources, including both utilization and water supplies;
4. To compare Alabama's water planning process, coordination, and laws with those of other states, and to make recommendations about changes that may be required to address current and future water resource needs; and
5. To develop appropriate policies concerning future developments of certain aspects of water sources and uses, to include public and industrial supplies, irrigation, storage ponds, storage reservoirs, power generation, navigation, and recreation.

VIII. The commission shall report to me on its preliminary findings no later than October 15, 1990.

This order shall become effective immediately upon the Governor's signature.

DONE and ORDERED this, the 10<sup>th</sup> day of February, 1989.

  
\_\_\_\_\_  
Guy Hunt  
Governor

ATTEST:

  
\_\_\_\_\_  
Secretary of State

Appendix Table 1. Responsibilities of the Alabama Water Resources Agency

**Planning**

- Implementing strategies to obtain favorable outcomes from Federal water-related programs.
- Insuring protection of State water resources on non-environmental issues.
- Preparing comprehensive river basin and aquifer studies and plans.
- Undertaking studies and actions to establish water needs for Alabama's economic growth and long range planning for water management.
- Preparing drought contingency plans and coordinating water resources development and management projects.
- Implementing comprehensive water projects and programs.

**Coordinating**

- Interceding for protection of interstate water.
- Providing liaison with water industry agencies and interest groups.
- Providing assistance to communities and industries in water supply use and development.
- Coordinating recommendations and diverse task forces, agencies and interest groups.

**Financing**

- Assisting in development of financial policy and providing financial assistance for water resources development.
- Identifying projects, financial resources and implement actions needed to enhance water resources management.

**Monitoring**

- Developing and implementing a water withdrawal control program.
- Requiring reporting and permitting of interbasin transfer of water.
- Administering an Alabama Safe Dam program.

Appendix Table 2. Duties of the Alabama Water Resources Commission

- Develop and advise the Governor and Agency on water resource policy.
- Review geographic area and functional water plans.
- Approve strategies.
- Adopt rules and regulations to implement the plans and strategies.
- Hear appeals related to administrative actions related to rules and regulations.
- Oversee the work of the Agency.

Appendix Table 3. Examples of Data Contained in Certificates of Use

- Identification, description, and location of sites or facilities where water is used, withdrawn, diverted, conveyed, obtained, and discharged.
- Capacity and location of any intake, withdrawal, conveyance, or diversion pumps or structures.
- Depth and construction data of any wells from which water is withdrawn or to which it is returned.
- Any water treatments applied to the waters.
- The total amount of water used, diverted, withdrawn, conveyed, or obtained.
- Water storage and treatment capacity and location of facilities.
- The total amount of discharge or return of water and the location of the discharge or return structure and the name and location of the receiving stream, river, well, land area, utility, or other source to which the water is returned or discharged.
- The method used to determine the amount of water used, withdrawn, or obtained.
- The general nature of the use made of the water.

Appendix Table 4. Representative Criteria for Withdrawal Permits

- Existing and potential beneficial uses.
- Water demands that need to be balanced.
- Feasible alternatives.
- Evaluation of costs and benefits.
- Alternatives that are in the "Best Public Interest."
- Resolving conflicts between competing water uses.

Appendix Table 5. Technical Advisory Committee

Federal Agencies

Army Corps of Engineers  
Mobile District  
N. D. McClure  
Nashville District  
James P. King

Environmental Protection Agency  
Charles Sweatt

Farmers Home Administration  
Dale Richey

Federal Energy Regulatory Commission  
Robert Crisp, Jr.

Fish and Wildlife Service  
Larry Goldman

Geological Survey  
D. Briane Adams

Soil Conservation Service  
Ernest V. Todd

Southeastern Power Administration  
Jim B. Lloyd

Tennessee Valley Authority  
Richard Urban

State of Alabama

Agriculture and Industries  
Bill Adams

Attorney General  
R. Craig Kneisel

Conservation and Natural  
Resources  
Fred Harders

Development Office  
Rickey McLaney

Economic and Community Affairs  
Walter B. Stevenson, Jr.

Environmental Management  
Charles Horn

Forestry Commission  
James R. Hyland

Geological Survey  
Ernest Mancini

Health  
Jim Cooper

Industrial Relations  
Walter Cartwright

Public Service Commission  
Stephen D. Bartelt

Soil and Water Conservation  
Committee  
James J. Plaster

State Docks  
Gerry Robinson

Surface Mining Commission  
Sharron Henson

Water Resources Research  
Institute  
Joseph F. Judkins, Jr.

Appendix Table 6. User and Support Committees

**Ground Water Study Committee**

Geological Survey of Alabama  
Dr. Ernest A. Mancini, Committee Chairman

Alabama Association of Conservation Districts  
Mr. Ben Bowden

Alabama Department of Economic and Community Affairs  
Mr. Ralph Ainsworth

Alabama Department of Environmental Management  
Mr. Fred Mason  
Ms. Sonja Massey

Alabama Department of Public Health  
Mr. Sam Robertson

Alabama Power Company  
Mr. William A. Sim

Alabama Surface Mining Commission  
Ms. Sharron Henson

Alabama Water Well Contractors Association  
Mr. Scott Phillips  
Mr. Duke Brady

Auburn University  
Dr. Fred J. Molz

Geological Survey of Alabama  
Mr. J. Danny Moore

National Weather Service  
Mr. Rodger R. Goetz  
Mr. David Ihle

State Soil and Water Conservation Committee  
Mr. Steve Cauthen

U. S. Environmental Protection Agency  
Mr. Jon Isbell

U. S. Geological Survey  
Mr. Robert E. Kidd

U. S. Soil Conservation Service  
Mr. Ken Aycock

**Surface Water Study Committee**

U. S. Geological Survey  
Mr. D. Briane Adams, Committee Chairman

Alabama Association of Conservation Districts  
Mr. Ben Bowden

Alabama Department of Conservation and Natural Resources  
Mr. Fred Harders

Alabama Department of Economic and Community Affairs  
Mr. Walter B. Stevenson, Jr.

Alabama Department of Environmental Management  
Mr. James McIndoe

Alabama Department of Industrial Relations, State Programs

Mr. Larry Barwick  
Mr. Walter Cartwright

Alabama Department of Public Health

Mr. Wade Pitchford

Alabama Power Company

Mr. David E. Miller

Alabama Surface Mining Commission

Ms. Sharron Henson

Auburn University

Dr. Joe M. Morgan

Geological Survey of Alabama

Mr. Robert V. Chandler

National Weather Service

Mr. Walker Gilreath

State Soil and Water Conservation Committee

Mr. Steve Cauthen

Tennessee Valley Authority

Dr. Richard D. Urban

Mr. Larry Clark

U. S. Army Corps of Engineers

Mr. N. D. McClure

Mr. Gene Russell

U. S. Coast Guard

Mr. Steve Willman

U. S. Environmental Protection Agency

Mr. John Marlar

Mr. Jim Harrison

U. S. Geological Survey

Mr. Hillary H. Jeffcoat

U. S. Soil Conservation Service

Mr. Mason Dollar

Mr. Jesse Bush

University of Alabama, Huntsville

Dr. Richard McNider

Mr. John Christy

**Institutional Structure Committee**

Troy State University

Dr. Wayne C. Curtis, Committee Chairman

City of Florence

Honorable Eddie Frost

St. Clair County Commission

Honorable Bruce Etheredge

State Representative

Honorable Richard J. Laird

State Senator

Honorable W. J. Cabaniss, Jr.

Private Entrepreneur

Mr. William Thigpen .

University of South Alabama  
Dr. William B. Davis

#### Legal Study Committee

Assistant Attorney General  
Mr. R. Craig Kneisel, Committee Chairman  
Alabama Department of Conservation and Natural Resources  
Mr. Jim Goodwyn  
Alabama Department of Economic and Community Affairs  
Mr. Eddie Davis  
Alabama Department of Environmental Management  
Mr. James Wright  
University of Alabama  
Mr. William L. Andreen

#### Finance Study Committee

Alabama Department of Economic and Community Affairs  
Dr. Don C. Hines, Committee Chairman  
Alabama Department of Economic and Community Affairs  
Mr. Robert Culver  
Alabama Department of Environmental Management  
Mr. Truman Green  
Alabama Department of Finance  
Mr. Lamar Harris  
Alabama League of Municipalities  
Honorable Ted Jennings  
Alabama Rural Water Association  
Mr. James L. Hall  
Association of County Commissions of Alabama  
Honorable Robert Crowder  
Legislative Fiscal Office  
Ms. Joyce Bigbee  
Tennessee Valley Authority  
Mr. Jack L. Davis  
U. S. Army Corps of Engineers  
Mr. Roger Burke  
U. S. Farmers Home Administration  
Mr. William Somerall  
U. S. Geological Survey  
Mr. D. Briane Adams  
U. S. Soil Conservation Service  
Mr. Gary Jones

#### Environment Study Committee

Alabama Water Resources Research Institute  
Dr. Joseph Judkins, Jr., Committee Chairman  
The Alabama Conservancy  
Mr. Pat Byington

Alabama Department of Conservation and Natural Resources  
Mr. David Hayden  
Alabama Department of Economic and Community Affairs  
Mr. Bob Grasser  
Alabama Department of Environmental Management  
Ms. Catherine Lamar  
Alabama Department of Public Health  
Mr. David Nelson  
Mr. Carl Gates  
Mr. Lemuel Burrell  
Mr. George Holcombe  
Alabama Forestry Commission  
Mr. James Hyland  
Alabama Historical Commission  
Mr. Greg Rhinehart  
Alabama (PALS) People Against a Littered State  
Mr. Spenser Ryan  
Alabama Power Company  
Mr. Willard L. Bowers  
Mr. Mike Godfrey  
Alabama Wildlife Federation  
Mr. Douglas Z. Schofield  
Alabamians for a Clean Environment  
Ms. Peggy Loftis  
Audubon Society  
Mrs. Betty Susina  
B.A.S.S. Inc.  
Mr. Al Mills  
Ducks Unlimited  
Mr. Dan Gardner Mr. George Horton  
Environmental Research and Service Center  
Mr. Michael William Mullen  
Geological Survey of Alabama  
Mr. Maurice F. (Scott) Mettee  
National Toxics Campaign  
Ms. Linda Campbell  
The Nature Conservancy  
Ms. Kathy Stiles Cooley  
Sierra Club  
Mr. James L. Taylor  
Tennessee Valley Authority  
Mr. Paul Schmeirbach Mr. Richard Shane  
U. S. Army Corps of Engineers  
Mr. Hugh McClellan  
Mr. Ronald Krizman  
U. S. Coast Guard  
Mr. Scott Coard  
U. S. Environmental Protection Agency  
Mr. Charles Sweatt  
U. S. Fish and Wildlife Service  
Mr. Larry Goldman

U. S. Geological Survey  
Mr. Will S. Mooty  
University of Alabama  
Dr. Douglas J. Phillips

**Agriculture Study Committee**

U. S. Soil Conservation Service  
Mr. Ernest V. Todd, Committee Chairman  
Alabama Association of Conservation Districts  
Mr. Ben Bowden  
Alabama Cattlemen's Association  
Dr. William E. Powell  
Alabama Cooperative Extension Service  
Mr. Larry M. Curtis  
Dr. James Hairston  
Alabama Council of Farmers Coops  
Mr. F. O. Ward  
Alabama Department of Agriculture and Industries  
Mr. Bill Adams  
Alabama Department of Economic and Community Affairs  
Mr. Ralph Ainsworth  
Mr. Donald Hopper  
Alabama Farmers Federation  
Mr. Jimmy Carlisle  
Alabama Forestry Association, Inc.  
Mr. Bill Jones  
Alabama Forestry Commission  
Mr. James Hyland  
Alabama Poultry and Egg Association  
Mr. Dean Strickland  
American Dairy Association of Alabama, Inc.  
Mr. Louis E. Hogue  
Auburn University Mr. Wayne Shell  
Mr. David Bayne  
East Alabama Fish Farmers Association  
Mr. William B. Easterling  
Governor's Rural Initiative  
Ms. Jane Knight  
National Weather Service  
Mr. Rodger R. Getz  
Mr. David Ihle  
State Soil and Water Conservation Committee  
Mr. Steve Cauthen  
Tuskegee University, Agriculture  
Dr. Walter Hill  
Dr. Ramble O. Ankumah  
U. S. Agriculture Stabilization & Conservation  
Mr. John "Bubba" Trotman  
U. S. Soil Conservation Service  
Mr. Bob Thompson

West Alabama Catfish Producers Association  
Mr. Bill Kyser

**Water Supply Study Committee**

Alabama Rural Water Association  
Mr. John A. Garrett, Committee Chairman

Alabama Department of Economic and Community Affairs  
Mr. Don Reid  
Mr. Mike Forster

Alabama Department of Environmental Management  
Mr. Joe Alan Power  
Mr. Keith Lowery

Alabama Department of Public Health  
Mr. Wade Pitchford

Alabama League of Municipalities  
Honorable Deborah Hood

Alabama Public Service Commission  
Mr. Stephen Bartelt

Alabama Water and Pollution Control Association  
Mr. Charles Lay

Alabama Water Well Contractors Association  
Mr. Scott Phillips  
Mr. Duke Brady

American Water Works Association  
Mr. David Parks

Andalusia Utilities Department  
Mr. Jimmy Wilson

Association of County Commissions of Alabama  
Mr. Charles Clardy

Association of Regional Councils of Alabama  
Mrs. Faye P. Quick

Auburn Water Works  
Mr. Tony Segrest

Birmingham Water Works  
Mr. Joe Rhaley

Demopolis Water and Sewer Board  
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