

# **INTRODUCTION**

## **Surface Water Resources**

South Carolina has an abundance of surface water resources which are distributed throughout the State. Four major river basins, the Savannah, ACE (Ashley, Combahee, and Edisto), Santee, and Pee Dee include over 11,000 miles of rivers and streams which have an average daily flow of about 33 billion gallons (Appendix A). These river basins contain approximately 1,400 impoundments of 10 acres or more in size with a total surface area of over 492,000 acres. Additionally, there are approximately 50,000 smaller impoundments, primarily farm ponds, located throughout the State.

These water bodies support a variety of uses, and the rate of use is increasing with growth in population and economy. Currently, about 5.8 billion gallons are withdrawn daily from the State's surface waters to supply municipal, industrial, agricultural, and thermoelectric power generation needs. About six percent of this water is used consumptively and not returned to the resource. The surface water resource also supports many instream uses such as hydroelectric power production, wastewater assimilation, navigation, and recreational activities including boating, swimming, and fishing. Nearly all of these withdrawal and instream water uses require the availability of a clean, unobstructed water supply.

## **Importance of Aquatic Plants**

Aquatic plants are an important part of the surface water environment. These plants provide food, shelter, and reproductive habitat for numerous fish, wildlife, and other animal species. When present in limited populations, aquatic plants can act to improve water quality and enhance the aesthetic appeal of surface water. Natural controls such as foraging by animals, disease, and competition with other plants maintain most native aquatic plant populations at levels that are compatible with man's use of the water resource.

Non-native plant species are frequently not vulnerable to the same natural population controls as are native species. As a result, when an exotic plant is introduced to a new area, this plant is often able to compete successfully with native species, and become very abundant. It is these invasive populations of non-native plants that are the source of most major aquatic plant problems in South Carolina. These invasive species may become so numerous that they interfere with virtually every withdrawal and instream use of our surface waters. They can obstruct navigable waterways, restrict water flow, clog water intakes, degrade water quality, provide breeding habitat for mosquitoes and other pests, interfere with recreation, and may upset the balance of desirable fish populations. Left unchecked, these nuisance plants can seriously impair or eliminate beneficial use of infested waters.

## **History of Aquatic Plant Problems and Management**

During the past century, non-native aquatic plants have been introduced to the United States from Asia, Africa, South America, and Europe. These plants have thrived and developed to nuisance levels in some areas of this country. Due to a favorable climate and the presence of numerous shallow, nutrient-rich water bodies, several southeastern states, including South Carolina, have been especially affected by the proliferation of non-native aquatic plants.

While aquatic weeds occur throughout South Carolina, nuisance plant populations and associated water use problems have been most prevalent in the coastal plain region. Large areas of the Santee Cooper Lakes, Cooper River, Back River Reservoir, Edisto River, and other lowcountry streams and lakes are infested with aquatic weeds. Some of the most troublesome species have been alligatorweed (*Alternanthera philoxeroides*), water primrose (*Ludwigia uruguayensis*), Brazilian elodea (*Egeria densa*), and common reed (*Phragmites australis*). Additionally, hydrilla (*Hydrilla verticillata*) was discovered in Lake Marion in July 1982 and Back River Reservoir in July 1984, and this plant has since become the most problematic aquatic weed in the State.

Large-scale aquatic plant management in South Carolina began in the 1940's with the S.C. Public Service Authority's efforts to control alligatorweed in Lake Marion. The U.S. Rivers and Harbors Act of 1958 gave the U.S. Army Corps of Engineers authority to administer a 30% state/70% federal cost sharing program to assist states with the control of nuisance aquatic plants in public waters. Under this program, the Corps of Engineers and S.C. Public Service Authority participated in a cooperative program for Lake Marion from 1960 to 1967. Subsequently, the Public Service Authority has continued in its efforts to control alligatorweed, as well as, Brazilian elodea, water primrose, and hydrilla in the Santee Cooper lakes.

In 1967, the emphasis of the state/federal cooperative program in South Carolina was shifted from the Santee Cooper Lakes to other alligatorweed infested waters of the State. At that time, the S.C. Department of Agriculture entered a cooperative agreement with the Corps of Engineers for the control of alligatorweed in portions of Black River, Black Mingo Creek, Congaree River, Little Pee Dee River, and the North Fork Edisto River. This agreement continued until 1975 when new regulations which prevented the use of some herbicides in flowing waters were developed. More recently, these regulations have been modified to permit certain uses of herbicides in flowing waters.

Management of aquatic plants in private waters has been primarily the responsibility of the owner. Assistance, in the form of advice regarding plant control agents and methods, is available to owners of private waters through the S.C. Department of Natural Resources, Division of Wildlife and Freshwater Fisheries, the Clemson University Agricultural Extension Service, and the Soil Conservation Service of the U.S. Department of Agriculture. Owners may choose to implement control methods themselves or arrange for a commercial lake management firm to do so. Public funds have generally not been available to assist private lake owners in implementing aquatic plant control.

The S.C. Aquatic Plant Management Society, a non-profit organization, was formed in 1978 to promote the management of noxious aquatic plants. The Society's membership includes individuals from the private, public and academic sectors with interests in all aspects of aquatic plant management. The Society was largely responsible for generating interest in the development of a statewide program for aquatic plant management.

### **Aquatic Plant Management Program and Council**

During 1980, Governor Richard W. Riley was informed of the severity and importance of South Carolina's aquatic plant problem by a number of State Agencies and the S.C. Aquatic Plant Management Society. In response to this information, Governor Riley issued Executive Order 80-38 on October 10, 1980 (later amended by Executive Order 82-40) which created the S.C. Aquatic Plant Management Council for the purpose of providing statewide coordina-

tion of aquatic plant management efforts in public waters. On May 29, 1990 Governor Carroll A. Campbell, Jr. approved legislation (Act 498) which established for the first time by law the South Carolina Aquatic Plant Management Program, South Carolina Aquatic Plant Management Council, and the South Carolina Aquatic Plant Management Trust Fund for the statewide management of nuisance aquatic plants in public waters (Appendix B).

The Water Resources Commission was originally designated as the state agency to administer the Aquatic Plant Management Program. Following restructuring of State government in 1994, the Program is now administered by the Water Resources Division of the S.C. Department of Natural Resources. The Department is responsible for developing an annual Aquatic Plant Management Plan which describes the procedures for problem site identification and analysis, selection of control methods, operation program development, and implementation of operational strategies. The Plan also identifies problem areas, prescribes management practices, and sets management priorities.

The Aquatic Plant Management Council is composed of one representative from each of the following agencies: S.C. Department of Natural Resources, Water Resources Division; S.C. Department of Health and Environmental Control, Bureau of Environmental Quality Control; S.C. Department of Natural Resources, Division of Wildlife and Freshwater Fisheries; S.C. Department of Agriculture; S.C. Department of Health and Environmental Control, Office of Coastal Resources Management; S.C. Public Service Authority; S.C. Department of Natural Resources, Land Resources Division; S.C. Department of Parks, Recreation and Tourism; Clemson University Department of Fertilizer and Pesticide Control; and the Governor's Office. The representative from the Water Resources Division of the S.C. Department of Natural Resources serves as Chairman of the Council. The Council provides valuable interagency coordination and serves as the principal advisory body to the Department on all aspects of aquatic plant management and research. Furthermore, the Council establishes management policies, approves all management plans, and advises the Department on research priorities.

The Aquatic Plant Management Trust Fund was created to receive and expend funds for the prevention, management, and research of aquatic plant problems in public waters of the State. The fund is eligible to receive State appropriations, federal and local government funds, and funds from private sources. The S.C. Department of Natural Resources, Water Resources Division administers the Trust Fund which must be kept separate from other funds of the State.

### **The Federal Aquatic Plant Control Cost-Sharing Program**

The U.S. Rivers and Harbors Act of 1958 established the Federal Aquatic Plant Control Program to assist states with the control of nuisance aquatic plants in public waters. The cost-sharing program is administered by the U.S. Army Corps of Engineers and, up until 1988, provided reimbursement to the states for 70 percent of aquatic plant control costs. However, passage of the Water Resources Development Act of 1986 reduced the federal portion of the cost-sharing formula from 70 percent to 50 percent, and further required the states to reimburse the Corps of Engineers for 50 percent of their administrative expenses. These changes were initiated in Federal fiscal year 1988. In response to the reduction in Federal support, the S.C. Aquatic Plant Management Council in 1988 required local sponsors to provide at least 15 percent of total control costs in the form of cash or in-kind services. The local match was later increased to 25 percent of total control costs.

# **PURPOSE AND OBJECTIVES**

## **Purpose and Function of the Management Plan**

The overall purpose of the Aquatic Plant Management Plan is to establish the basis for a management program which will minimize adverse impacts of aquatic plant populations on the use of South Carolina's public waters. The Plan consists of two parts:

- 1) a procedural plan
- 2) an annual operational management plan.

The Procedural Management Plan, describes procedures used by the Department of Natural Resources and Aquatic Plant Management Council to perform the following functions:

- 1) Identify existing and potential aquatic plant problem areas;
- 2) Determine the most appropriate control system for each problem area identified;
- 3) Develop an operational strategy that describes how each control system would be applied;
- 4) Seek funding for implementation of the operational strategy; and
- 5) Monitor results and effects of the program and determine the need for modification.

Using the procedures described in the Procedural Management Plan, the Department will develop an Annual Management Plan that describes problem areas and control systems that are approved by the Council for available State and Federal funding. An Annual Management Plan will be prepared and will describe activities to be conducted during that year as funding permits.

## **Objectives of the Management Program**

The short-term objective of the management program is to reduce the abundance of aquatic plants at specific sites where these plants are currently interfering with the use of public waters.

The long-term objectives of the management program are the following:

- 1) Reduce the Statewide distribution and abundance of invasive aquatic plants in public waters;
- 2) Prevent water use impairment by aquatic plants in currently unimpaired waters;
- 3) Maintain aquatic plant populations at levels that are beneficial to water use, water quality protection, and to fish and wildlife populations;
- 4) Prevent the introduction and distribution of invasive exotic plant species through enforcement of existing laws and regulations;
- 5) Promote the use of environmentally sound aquatic plant management practices;
- 6) Promote the development of improved aquatic plant management methods;
- 7) Promote public education in aquatic plant management matters; and
- 8) Inform owners of private waters of currently available sources of aquatic plant management advice and assistance (State and Federal funding would be provided for management of private waters only if plant populations in these waters were a threat to public waters).

# **PROBLEM IDENTIFICATION AND ANALYSIS**

## **Identification of Aquatic Plant Problem Areas**

The first step in the development of each Annual Management Plan is the identification of areas throughout the State where existing and potential aquatic plant problems occur. The mere presence of aquatic plants may not constitute a problem. The occurrence of limited populations of some species is highly desirable in some situations. Plants must interfere with at least one intended water use before a problem can be considered to exist. Potential problem areas are water bodies or portions of water bodies where use impairment is not currently occurring, but given existing circumstances, could be expected to occur in the near future. Eligible water bodies include all public lakes and navigable waters as determined by the Department of Natural Resources according to the State definition.

Aquatic plant problem areas will be identified by the following methods:

- 1) To the extent that resources are available, Department staff will conduct field surveys to estimate the abundance and distribution of aquatic plant species in public waters.
- 2) Whenever deemed appropriate by the Department, a survey will be conducted of surface water users and other interested parties throughout the State. This survey will be in the form of a questionnaire (Appendix C) mailed to municipal, industrial, and agricultural water users; electric power generating companies; representatives of fishing, wildlife, and boating interests; members of the academic community; and the S.C. Aquatic Plant Management Society. Results of this survey will identify areas where water users feel that aquatic plant problems occur.
- 3) Several agency members of the Aquatic Plant Management Council and other local, State, and Federal agencies obtain aquatic plant information in the course of other program operations. This information will be compiled and evaluated annually to aid in the documentation of water use problems.
- 4) Following completion of a draft Annual Management Plan, the plan will be made available for public review. Based on the information obtained during this review, the Department with approval by the Council may make revisions to the draft Annual Management Plan.

## **Analysis of Aquatic Plant Problem Areas**

For each identified aquatic plant problem area, pertinent information concerning the problem plant species, water use impacts, and the affected water body will be collected and analyzed to aid in the selection of appropriate control methods. Information to be considered in the analysis will include:

- 1) Identification of the problem plant species and an estimate of their general abundance and distribution.
- 2) Life history and ecological information for each problem species.
- 3) Identification of adverse water use impacts due to aquatic plant infestations.
- 4) Identification of water users and their use requirements.
- 5) Important environmental characteristics of the affected water body.

# **SELECTION OF CONTROL METHODS**

## **Determination of Desired Level of Control**

For each problem area identified, the desired level of both short-term and long-term plant control will be established. Depending on the nature of the problem species and its effect on water use, the desired level of control may range from total eradication to removal from only a small area of the affected water body. In cases where dense populations of prolific species occur in large water bodies, total eradication is not possible with available control technology. Under such conditions, control would be limited to certain areas where use is most affected. In other situations, complete removal may be possible and desirable.

The desired level of control will be determined using information obtained in problem identification and system description and with input from affected water users.

## **Identification of Potential Control Techniques**

Information on effectiveness, environmental and other constraints, treatment rates, and cost will be compiled for all aquatic plant control techniques available for use in South Carolina (Appendix D). This information will be reviewed and updated at regular intervals.

From the list of all available control techniques, those capable of controlling the target plant at the desired level in each problem area will be identified.

## **Determination of Environmental and Water Use Constraints**

All environmental and water use constraints that may affect selection of control agents will be identified. Environmental constraints would prevent the use of control agents which would cause

significant or long-term violations of the State water quality standards or adversely affect aquatic ecosystems. Water user constraints would preclude use of agents that would cause significant interference with designated use of the water body being treated.

Also identified will be any constraints associated with specific funding programs. Some Federal cooperative aquatic plant management programs require the use of certain control techniques.

## **Ranking of Control Techniques**

Based on effectiveness in controlling problem plant species and on all identified constraints, control techniques will be prioritized for each problem area. Combinations of control techniques that would result in more effective control than single techniques will be identified.

## **Selection of Best Control Method**

Utilizing information obtained from steps outlined above, the best control method will be selected for each identified problem area. The best control method will be the technique or combination of techniques which will result in the highest degree of control of the problem species while resulting in the least detrimental effects on the aquatic ecosystem.

The selected control method will be included in the Annual Management Plan and approved by the Council for available funding. The Plan will remain flexible so that new and more favorable control techniques that become available during the course of the program may be used to replace those designated in the Plan.

## **OPERATIONAL PROGRAM DEVELOPMENT**

### **Application of the Control Method**

After the best control method has been selected, a strategy will be developed for application of this method to the problem area. This strategy will be based on information obtained on the control agents and techniques to be used, the nature of the problem, and the characteristics of the affected water body. The operational strategy will include the following specifications:

- 1) The area to which each control agent is to be applied;
- 2) The amount and rate of application of each control agent;
- 3) The method of application of each control agent;
- 4) The timing and sequence of application of each control agent; and
- 5) Any other instructions that may be required.

The Council will also determine the most appropriate entity to apply the control agents and techniques. This entity may be an agency member of the Council, some other local, State, or Federal agency, an individual water user or a commercial contractor. Determination of appropriate entities will be based on interest in the specific problem area, willingness of the entity to perform the operational function, and availability of resources to perform the required function.

In cases where an agency or other entity requests State or Federal funding from the Department, the requesting agency or entity will be responsible for developing an operational strategy acceptable to the Department and Council.

### **Determination of Cost of the Operational Program**

When specifications for application of control agents and techniques have been finalized, the estimated cost of these operations will be determined and local sponsors identified. An estimate of costs for each water body and the identification of local sponsors will be included in the Annual Management Plan.

All possible sources of funding for each problem area will be identified. These sources may include local governments, State appropriations, other State funding programs that may be developed, Federal grants and cost-sharing programs, private sources such as individual water users, or any combination of these sources.

### **Priority Ranking of Problem Areas**

When the estimated costs of annual control operations exceed available public funding, each identified problem area will be assigned a priority rank by the Department. In ranking problem areas, the Department will use the following criteria:

- 1) The number and relative importance of water uses affected by the plant problem;
- 2) The extent and intensity of water use for the effected area;
- 3) The severity of the plant problem, including consideration of the area of coverage,

percentage of the total area of the water body affected, the characteristics of the problem plant species, and the potential for infestation of adjacent areas;

- 4) The possible control methods that may be used on the affected area without interfering with designated uses;
- 5) The potential for management success given the plant problem and the capabilities of available control methods;
- 6) The extent of potential benefit to the general public;
- 7) The reasonableness of management costs relative to potential benefits;
- 8) The environmental effects of the proposed management program; and
- 9) The availability of funding for implementation of the management program.

On the basis of this ranking, the Department, with approval from the Council, will determine what portion of available funds are to be allocated for management of each problem area.

### **Review of the Annual Management Plan**

After completion of the Annual Management Plan containing priority problem areas and associated control and operational strategies, the Plan will be made available to the public and relevant governmental agencies for review and comment. Based on results of this review process the Council may make modifications to the Plan.

### **Request for Funding**

Funding for aquatic plant management operation will be sought from all appropriate sources.

## **IMPLEMENTATION OF THE ANNUAL MANAGEMENT PLAN**

### **Implementation of the Operational Strategy**

All entities, either public or private, designated to apply control agents will make applications (or releases) according to specifications in the Annual Management Plan. The application of all approved aquatic herbicides shall be in accordance with label requirements and Material Safety Data Sheets. Public entities will be reimbursed for a designated portion of operational expenses. A daily log of control operations shall be maintained and reported on forms provided by the Department.

All applications of aquatic herbicides must be supervised by applicators certified in Category 5 (Aquatic Pest Control) by the Clemson University, Department of Fertilizer and Pesticide Control and present at the job site.

All aquatic herbicide applications involving public potable water supplies must have prior approval of the water supplier and the S.C. Department of Health and Environmental Control, Bureau of Drinking Water Protection.

### **Limitations on Implementation**

Many water bodies provide multiple water use opportunities, some of which are of greater importance to the general public than others. For waters approved for control operations, but where funds are limited to the extent that all problem areas within the water body cannot be treated, program funds will be used to treat areas of greatest benefit to the general public. To ensure the best use of program funds, areas of highest priority should be effectively treated prior to areas of lower ranking. The priority ranking of potential treatment areas (highest to lowest priority) based on public benefit is as follows:

- 1) Waters adjacent to and impacting public electric and water utility intakes.
- 2) Water in which public health and safety interests are impaired (i.e. flood control, vector control, etc.)
- 3) Waters in and around public access sites, such as public boat ramps, swimming areas, and fishing piers.
- 4) Waters that receive high use by the public for recreational activities.
- 5) Waters in and around commercial boating (marinas), swimming, and camping areas.
- 6) Open water areas adjacent to private residential developments.
- 7) Canals associated with private residential developments.

Any area with problematic plants that pose an immediate threat to the main water body may be assigned a high priority.

### **Monitoring the Effects of the Program**

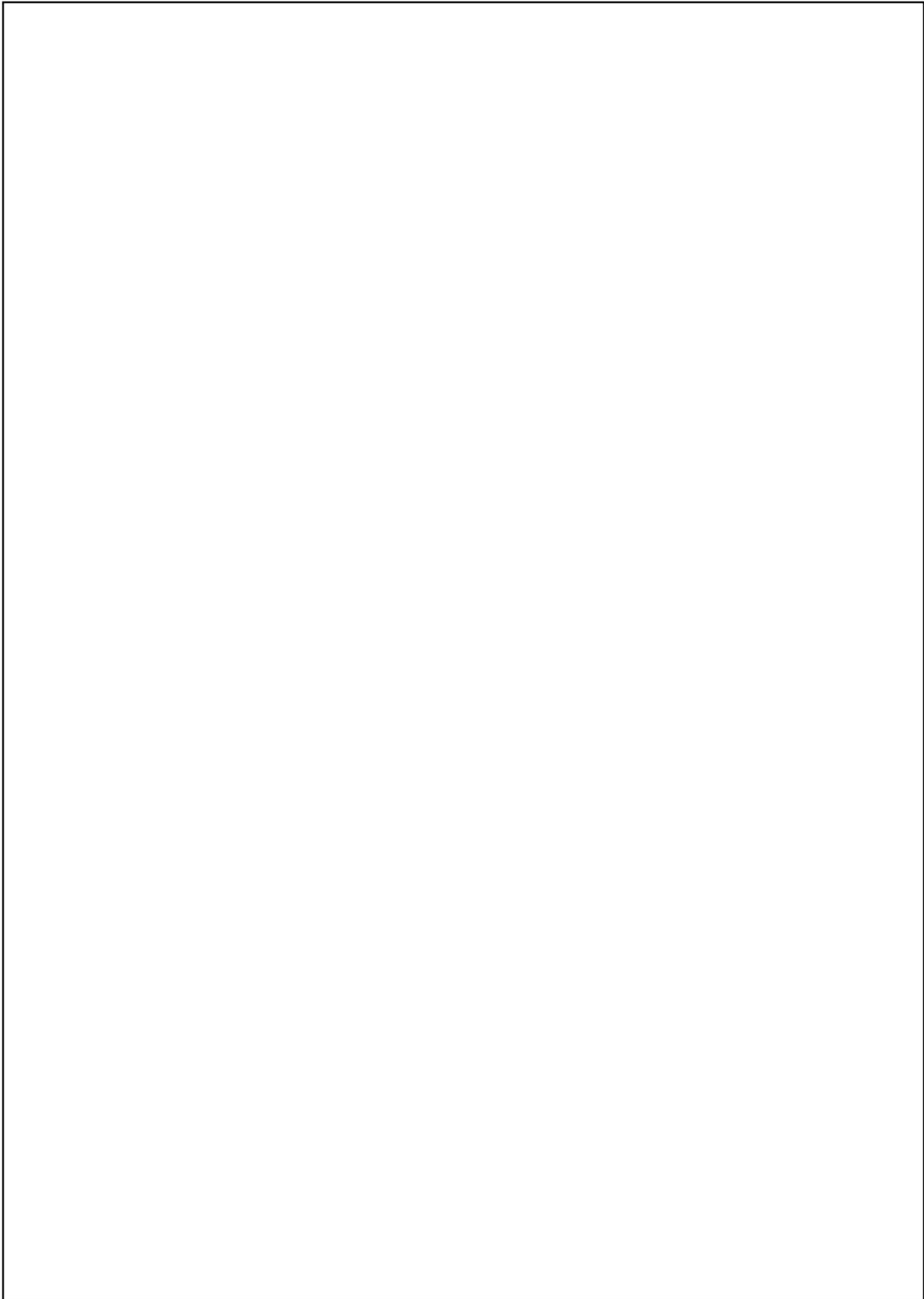
At appropriate intervals following application of control agents and techniques, effects of the program on the distribution and abundance of target plants will be monitored by field inspection. Water users may also be surveyed to determine effects of the program on use impairment.

The need for evaluation of environmental effects of the program will be determined by the S.C. Department of Health and Environmental Control. The Department of Health and Environmental Control may require that the entity applying the control agent conduct routine water quality monitoring during and after the control application. The entity responsible for control application shall notify the Department of Health and Environmental Control immediately of any indication of adverse environmental impact resulting from the control operation. The Department of Health and Environmental Control will notify the Department of Natural Resources of such adverse impacts.

Long-range management strategies for specific problem areas may be updated and modified on the basis of results of these post-implementation monitoring activities.

## **APPROVAL OF THE AQUATIC PLANT MANAGEMENT PLAN**

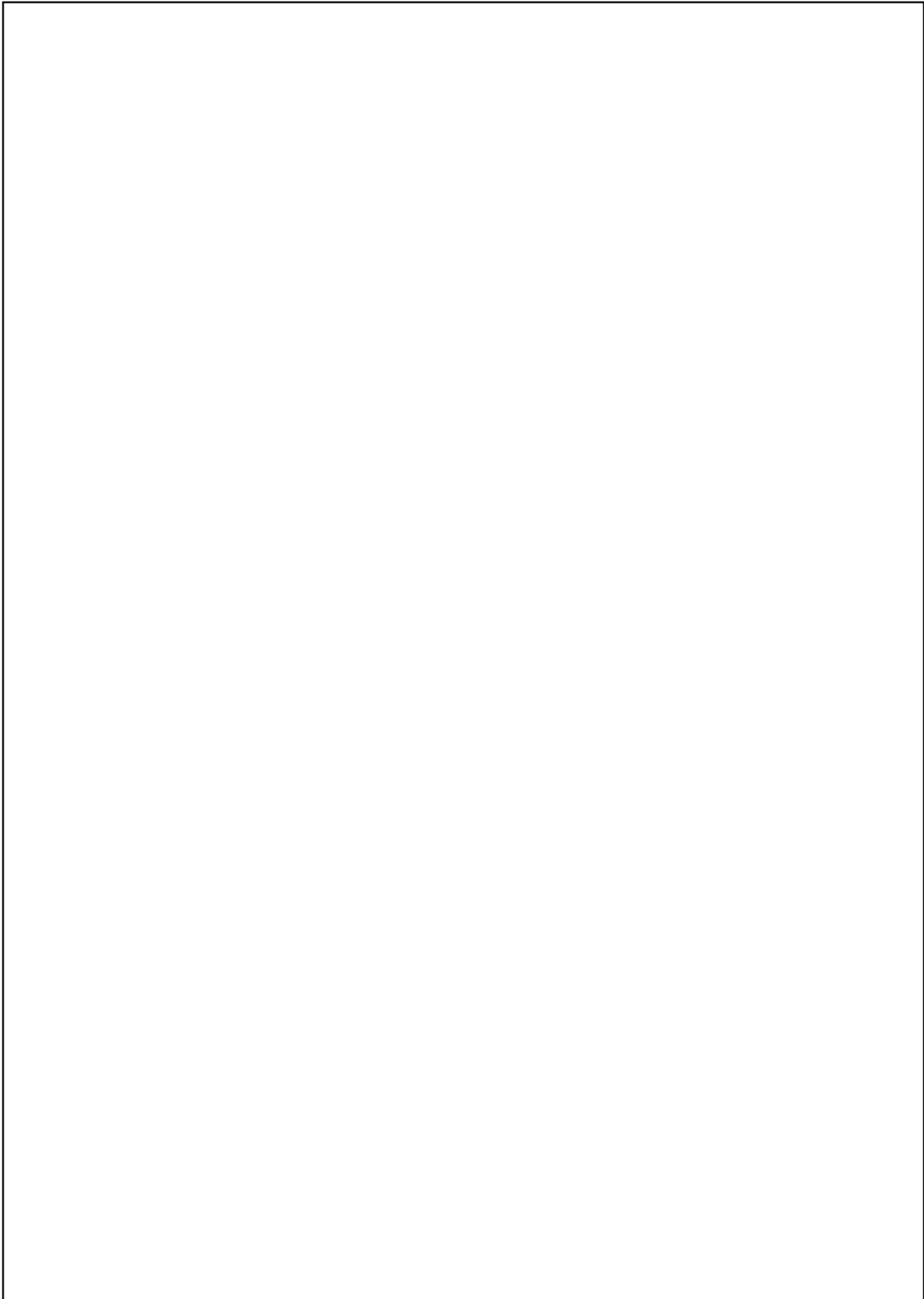
All portions of both this Procedural Management Plan and each Annual Management Plan must be approved and may be amended by a two thirds vote of a quorum of the members of the S.C. Aquatic Plant Management Council. Any portion of the Plan not approved by two thirds of a quorum of the Council shall be submitted to the members of the Department of Natural Resources Board for final approval.



2008

ANNUAL MANAGEMENT PLAN

PART II

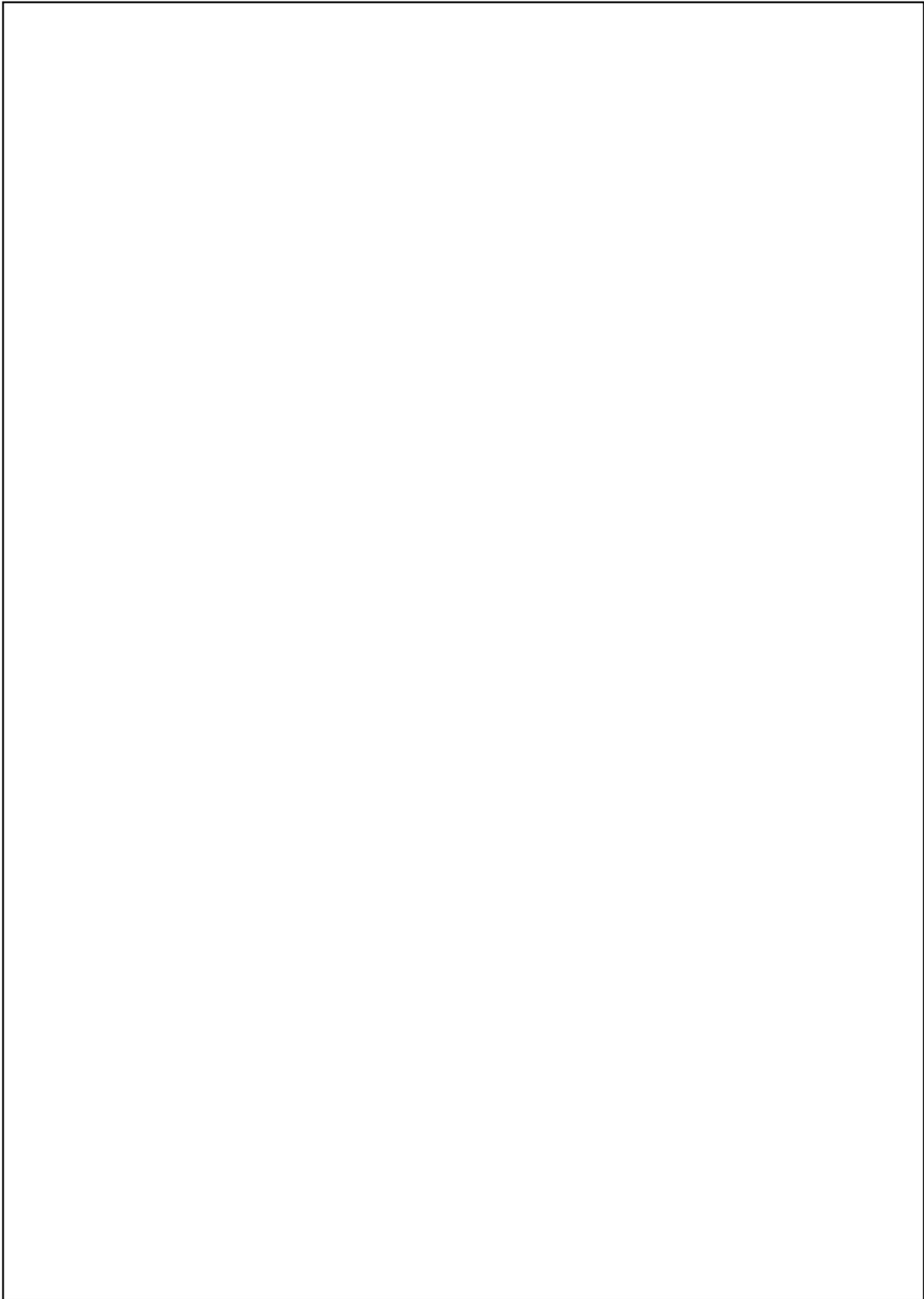


## INTRODUCTION

The Annual Management Plan for 2008 was developed by application of the procedures described in the Aquatic Plant Management Plan, Part I (Procedural Management Plan). The phases of development of the Annual Management Plan include 1) identification of areas where aquatic plants interfere with water use, 2) development of a description of each problem area, 3) development of a management strategy for each problem area, and 4) determination of the distribution of available funding among problem areas.

### Common and Scientific Names of Aquatic Plants Referenced in the Plan

Alligatorweed	<i>Alternanthera philoxeroides</i>
Bladderwort	<i>Utricularia</i> spp.
Brazilian elodea	<i>Egeria densa</i>
Bur Marigold	<i>Bidens</i> spp.
Cowlily	<i>Nuphar luteum macrophyllum</i>
Cattails	<i>Typha</i> spp.
Coontail	<i>Ceratophyllum demersum</i>
Creeping rush	<i>Juncus repens</i>
Curly-leaf pondweed	<i>Potamogeton crispus</i>
Duckweed	<i>Lemna</i> spp.
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Fanwort	<i>Cabomba caroliniana</i>
Filamentous algae	<i>Pithophora</i>
	<i>Lyngbya, Hydrodictyon</i>
Floating bladderwort	<i>Utricularia inflata</i>
Floating heart	<i>Nymphoides</i> spp.
Frog's bit	<i>Limnobium spongia</i>
Giant cutgrass	<i>Zizaniopsis miliacea</i>
Hydrilla	<i>Hydrilla verticillata</i>
Lotus	<i>Nelumbo lutea</i>
Musk-grass	<i>Chara</i>
Pondweed	<i>Potamogeton</i> spp.
Common reed	<i>Phragmites australis</i>
Slender naiad	<i>Najas minor</i>
Smartweed	<i>Polygonum densiflorum</i>
Southern naiad	<i>Najas guadalupensis</i>
Spikerush	<i>Eleocharis</i> spp.
Stonewort	<i>Nitella</i>
Variable-leaf pondweed	<i>Potamogeton diversifolius</i>
Waterlily	<i>Nymphaea odorata</i>
Water hyacinth	<i>Eichhornia crassipes</i>
Water lettuce	<i>Pistia stratiotes</i>
Watermilfoil	<i>Myriophyllum</i> spp.
Water pennywort	<i>Hydrocotyle ranunculoides</i>
Water primrose	<i>Ludwigia hexapetala</i>
Watershield	<i>Brasenia schreberi</i>



## AQUATIC PLANT PROBLEM AREAS

Areas where aquatic plants interfere with water use were identified from information provided by S.C. Aquatic Plant Management Council members, an aquatic plant survey conducted by the S.C. Department of Natural Resources staff and public input. The identified problem areas listed below are open to access and use by the public and are therefore considered by the Council as eligible for some type of public funding. Acres of infestation (coverage) are approximations based on observations made in 2007.

1. Water body - ***Back River Reservoir***  
Location - Berkeley County  
Surface acres - 850  
Aquatic plants - Hydrilla, Water hyacinth, Water primrose, Fanwort  
Coverage - 350 acres  
Impaired activities- Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, electric power generation, public access
2. Water body - ***Baruch Institute***  
Location - Georgetown County  
Surface acres - Unknown, adjacent to Winyah Bay  
Aquatic plants - Phragmites  
Coverage - 100+ acres  
Impaired activities - Boating, hunting, fishing, public access
3. Water body - ***Black Mingo Creek***  
Location - Georgetown County  
Surface acres -Unknown  
Aquatic plants - Alligatorweed, Parrot feather  
Coverage - 20 acres  
Impaired activities - Boating, hunting, fishing, public access
4. Water body - ***Black River***  
Location - Georgetown County  
Surface acres -Unknown  
Aquatic plants - Alligatorweed  
Coverage - 30 acres  
Impaired activities - Boating, hunting, fishing, public access
5. Water body - ***Bonneau Ferry***  
Location - Berkeley County  
Surface acres -Unknown - Multiple Reserves and impoundments  
Aquatic plants - Water hyacinth, Water primrose, Frog's bit, Lotus, Cat-tails, Cutgrass, Pennywort, Parrotfeather, Fanwort, Coontail  
Coverage - 50+ acres  
Impaired activities - Boating, hunting, fishing, public access



12. Water body - ***Lake Greenwood***  
Location - Laurens and Greenwood Counties  
Surface acres - 11,400  
Aquatic plants - Hydrilla, Slender naiad  
Coverage - 100 acres  
Impaired activities - Boating, swimming, vector control, public access
13. Water body - ***Lake Keowee***  
Location - Pickens and Oconee Counties  
Surface acres - 18,300  
Aquatic plants - Hydrilla  
Coverage - 10 acres  
Impaired activities - Potential impacts to water recreation, public access, electric power generation, municipal water supply
14. Water body - ***Lake Murray***  
Location - Lexington and Richland Counties  
Surface acres - 50,000  
Aquatic plants - Hydrilla, Illinois pondweed, Water primrose, Alligatorweed  
Coverage - 200 acres  
Impaired activities - Boating, swimming, domestic and municipal water intakes, public access
15. Water body - ***Lake Wateree***  
Location - Kershaw County  
Surface acres - 13,710  
Aquatic plants - Hydrilla, Cutgrass  
Coverage - 50+ acres  
Impaired activities - Potential boating, swimming, public access
16. Water body - ***Little Pee Dee River***  
Location - Marion and Horry Counties  
Surface acres - Unknown  
Aquatic plants - Alligatorweed  
Coverage - 100 acres  
Impaired activities - Boating, hunting, fishing, public access
17. Water body - ***Lumber River***  
Location - Marion and Horry Counties  
Surface acres - Unknown  
Aquatic plants - Alligatorweed  
Coverage - 20 acres  
Impaired activities - Boating, hunting, fishing, public access

18. Water body - ***Pee Dee River***  
 Location - Georgetown County  
 Surface acres - Unknown  
 Aquatic plants - Water hyacinth, Phragmites  
 Coverage - 50 acres  
 Impaired activities - Boating, hunting
  
19. Water body - **Samworth WMA**  
 Location - Georgetown County  
 Surface acres - Unknown  
 Aquatic plants - Phragmites, Water hyacinth  
 Coverage - 300 acres  
 Impaired activities - Hunting, public access
  
20. Water body - ***Santee Coastal Reserve***  
 Location - Georgetown County  
 Surface acres - Unknown  
 Aquatic plants - Phragmites  
 Coverage - 300 acres  
 Impaired activities - Hunting, public access
  
21. Water body - ***Santee Delta WMA***  
 Location - Georgetown County  
 Surface acres - Unknown  
 Aquatic plants - Phragmites  
 Coverage - 25+ acres  
 Impaired activities - Hunting, public access
  
22. Water body - **US Army Corps of Engineers -  
*Charleston Harbor/Intracoastal Waterway***  
 Location - Charleston County  
 Surface acres - Unknown  
 Aquatic plants - Phragmites  
 Coverage - 200+ acres  
 Impaired activities - Boating, hunting, fishing, public access
  
23. Water body - ***US Naval Weapons Station***  
 Location - Charleston and Berkeley Counties  
 Surface acres - Unknown  
 Aquatic plants - Frog's-bit, Water primrose, Water hyacinth, Phragmites  
 Coverage - 150 acres  
 Impaired activities - Boating, hunting, fishing, public access

24. Water body - *Waccamaw River*  
Location - Georgetown and Horry Counties  
Surface acres - Unknown  
Aquatic plants - Water hyacinth, Phragmites  
Coverage - 50 acres  
Impaired activities - Boating, hunting, fishing, public access

25. Water body - *Yawkey Wildlife Center*  
Location - Georgetown County  
Surface acres - Unknown  
Aquatic plants - Phragmites  
Coverage - 100+ acres  
Impaired activities - Hunting, public access

### **Santee Cooper Lakes**

26. Water body - *Lake Marion*  
Location - Sumter, Clarendon, Calhoun, Berkeley, and Orangeburg Counties.  
Surface acres - 110,000  
Aquatic plants - Alligatorweed, Brazilian elodea, Hydrilla, Water primrose, Slender naiad, Coontail, Water hyacinth, Filamentous algae, Fanwort, Cutgrass, Crested floating Heart  
Coverage - 1000 acres  
Impaired activities - Boating, swimming, public access, potential electric power generation, potential irrigation water withdrawals

27. Water body - *Lake Moultrie*  
Location - Berkeley County  
Surface acres - 60,400  
Aquatic plants - Alligatorweed, Water primrose, Brazilian elodea, Hydrilla, Slender naiad, Water hyacinth, Watermilfoil, Fanwort, Cutgrass  
Coverage - 150 acres  
Impaired activities - Potential electric power generation, boating, swimming, public access, potential domestic and irrigation water withdrawals

### **SC Parks, Recreation and Tourism - State Park Lakes**

28. Water body - *Barnwell State Park*  
Location - Barnwell County  
Surface acres - 12  
Aquatic plants - Waterlily  
Coverage - 3 acres  
Impaired activities - Fishing, swimming, aesthetics

29. Water body - ***Charles Towne Landing State Park***  
 Location - Charleston County  
 Surface acres - 5  
 Aquatic plants - Duckweed, Alligatorweed, Pennywort, Cyanobacteria  
 Coverage - 4 acres  
 Impaired activities - Fishing, aesthetics
30. Water body - ***H. Cooper Black Recreation Area***  
 Location - Chesterfield County  
 Surface acres - 2 acres  
 Aquatic plants - Spatterdock  
 Coverage - 2 acres  
 Impaired activities - Recreational activities
31. Water body - ***Huntington Beach SP***  
 Location - Horry County  
 Surface acres - 15 acres  
 Aquatic plants - Cutgrass, Phragmites, Cattails  
 Coverage - 10 acres  
 Impaired activities - Recreational activities
32. Water body - ***Kings Mountain State Park - Crawford Lake***  
 Location - York County  
 Surface acres - 9  
 Aquatic plants - Slender naiad  
 Coverage - 4 acres  
 Impaired activities - Swimming, boating
33. Water body - ***Little Pee Dee State Park***  
 Location - Dillon County  
 Surface acres - 75  
 Aquatic plants - Spikerush, Cowlily  
 Coverage - 15 acres  
 Impaired activities - Fishing, boating
34. Water body - ***N.R. Goodale State Park***  
 Location - Kershaw County  
 Surface acres - 160 acres  
 Aquatic plants - Waterlily, Watershield  
 Coverage - 60 acres  
 Impaired activities - Swimming, recreational activities

35. Water body - ***Santee State Park - Swimming lake***  
Location - Orangeburg County  
Surface acres - Unknown  
Aquatic plants - Coontail  
Coverage - 10 acres  
Impaired activities - Swimming, recreational activities

36. Water body - ***Sesquicentennial State Park***  
Location - Richland County  
Surface acres - 25 acres  
Aquatic plants - Waterlily, Watershield  
Coverage - 10 acres  
Impaired activities - Swimming, fishing

**SC Department of Natural Resources - State Lakes**

37. Water body - ***Lake Cherokee***  
Location - Cherokee County  
Surface acres - 50 acres  
Aquatic plants - Water primrose  
Coverage - 5 acres  
Impaired activities - Boating, fishing

38. Water body - ***Lake Edwin Johnson***  
Location - Spartanburg County  
Surface acres - 40 acres  
Aquatic plants - Water primrose, Hydrilla, Pondweed  
Coverage - 10 acres  
Impaired activities - Boating, fishing

39. Water body - ***Jonesville Reservoir***  
Location - Union County  
Surface acres - 25 acres  
Aquatic plants - Water primrose, Pondweed  
Coverage - 10 acres  
Impaired activities - Boating, fishing

40. Water body - ***Mountain Lakes***  
Location - Chester County  
Surface acres - 70 acres  
Aquatic plants - Water primrose, Alligatorweed, Parrotsfeather  
Coverage - 5 acres  
Impaired activities - Boating, fishing

41. Water body - ***Lancaster Reservoir***  
Location - Lancaster County  
Surface acres - 61 acres  
Aquatic plants - Water primrose, Alligatorweed  
Coverage - 8 acres  
Impaired activities - Boating, fishing, hunting
42. Water body - ***Sunrise Lake***  
Location - Lancaster County  
Surface acres - 25 acres  
Aquatic plants - Pondweed  
Coverage - 15 acres  
Impaired activities - Boating, fishing
43. Water body - ***Lake Ashwood***  
Location - Lee County  
Surface acres - 75 acres  
Aquatic plants - Waterlily  
Coverage - spotty  
Impaired activities - Boating, fishing
44. Water body - ***Lake Edgar Brown***  
Location - Barnwell County  
Surface acres - 100 acres  
Aquatic plants - Water primrose, Coontail  
Coverage - 60 acres  
Impaired activities - Boating, fishing
45. Water body - ***Lake George Warren***  
Location - Hampton County  
Surface acres - 400 acres  
Aquatic plants - Cattails, Water primrose, Coontail  
Coverage - 20 acres  
Impaired activities - Boating, fishing

# AQUATIC PLANT MANAGEMENT STRATEGY

The following management strategies were developed for each identified problem area considered eligible for public funding. Planned expenditures are based on known available federal funds, estimated state funds and anticipated local support as of the date of this plan. For water bodies in which final funding is inadequate to conduct all proposed control operations, the extent of control will be reduced and priority areas and target plants will be determined by the Department of Natural Resources in cooperation with the local sponsor. A summary of proposed expenditures for 2008 and a location map of problem water bodies are located at the end of this section.

## 1. Back River Reservoir

(Berkeley County)

### 1. Problem plant species

Hydrilla

Water hyacinth

Fanwort

Water primrose

Cutgrass

### 2. Management objectives

- a. Reduce water hyacinth and water primrose populations throughout the lake to enhance public access, navigation, water flow and minimize impacts to water intakes from floating islands.
- b. Reduce hydrilla in upper Foster Creek area to improve water quality, waterflow and navigation.
- c. Reduce hydrilla and fanwort in 60 acre area adjacent to SCE&G Williams Station intake to enhance water flow, minimize clogging of water intake, and enhance public boating and fishing use in this area.
- d. Reduce hydrilla and fanwort at Bushy Park Landing to enhance public boating and fishing use in this area.

### 3. Selected control method

#### Problem Species

Water hyacinth

Water primrose, Cutgrass

Hydrilla

Fanwort

#### Control Agent

Renovate 3, Reward, Clearcast, Galleon SC

Renovate 3, Reward, Habitat, Clearcast,  
Glyphosate

Chelated copper\*, Chelated copper\*/Reward,  
Galleon SC

Endotholl

**\* May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.**

4. Area to which control is to be applied
  - Renovate 3, Reward, Clearcast, Galleon SC - 250 acres of water hyacinth throughout the lake.
  - Habitat, Clearcast, Glyphosate - 150 acres of water primrose and cutgrass throughout the lake.
  - Chelated copper\*/Reward, Galleon SC - 150 acres of hydrilla; 2 treatments of 60 acre area near SCE&G intake, 5 acres of hydrilla adjacent to Bushy Park Landing, 30 acres of hydrilla in Foster Creek arm (2 treatments-15 acres each ).
  - Endotholl - 5 acres of fanwort adjacent to Bushy Park Landing.
  
5. Rate of control agents to be applied
  - Renovate 3 - 0.5 to 0.75 gallons per acre
  - Reward - 0.5 gallon per acre.
  - Clearcast - 1 to 4 pints per acre.
  - Glyphosate - up to 6 pints per acre.
  - Chelated copper - up to 1 ppm (about 16 gallons per acre).
  - Chelated copper\*/Reward - 4 gallons/2 gallons per acre
  - Habitat - 4 pints per acre/up to 6 pints per acre.
  - Endotholl - up to 7 gallons per acre.
  - Galleon SC - Submersed 0.174 fl oz/acre foot to achieve minimum effective concentration of 25 to 75 ppb  
Floating species – 2 to 5.6 fl oz/acre as foliar application.
  
6. Method of application of control agents
  - Renovate 3, Reward, Habitat, Clearcast, Glyphosate - spray on surface of foliage with appropriate surfactant.
  - Chelated copper, Chelated copper\*/Reward, Endotholl - subsurface injection from airboat.
  
7. Timing and sequence of control application
  - Three hundred (250) acres of water hyacinths treated with Renovate 3, Clearcast, Galleon SC(May-September), Reward(October). The initial treatments are to be followed in 1-2 days with a cleanup treatment.
  - One Hundred fifty (150) acres of water primrose and cutgrass treated with Habitat, Clearcast, Glyphosate during the growing season (May-October).
  - 15 acres of hydrilla in Foster Creek to be treated 2 times (April-October) with Galleon SC.
  - Hydrilla and fanwort located adjacent to public boat ramp to be treated with chelated copper, endotholl, Galleon SC.
  - Hydrilla located near the SCE&G water intake to be treated periodically during

the year with Chelated copper, Chelated copper\*/Reward (up to three times in the same 60 acre area), treatment area may be expanded as control is realized in target area.

8. Other control application specifications

Herbicide used only upon approval by the S.C. Department of Health and Environmental Control.

All herbicide treatments conducted within 1600 feet of the CPW water intake will use Renovate 3 at a rate of 0.5 gallons per acre or less or Galleon SC at a rate of 2 to 5.6 oz/acre. Reward treatments will be conducted at least 1600 feet from the intake. Following any application of Reward within 1600 feet of the CPW water intake, herbicide residue concentrations may be monitored according to a plan agreed to by the S.C. Department of Natural Resources, Charleston Commissioners of Public Works(CPW), and the Department of Health and Environmental Control.

If filamentous algae is present on submersed macrophytes, an algacide, such as K-TEA, will be used in addition to selected herbicides to assist in control.

Control is to be applied in a manner that will not significantly degrade water quality in the treatment area. This may involve treating only a portion of the area at any one time.

9. Entity to apply control agents

Commercial applicator

10. Estimated cost of control operations

\$87,454

11. Potential sources of funding

Water primrose and water hyacinths -

Charleston Commissioners of Public Works 30%  
S.C. Electric and Gas Co. 20%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

Hydrilla and Cabomba (near SCE&G intake) -

South Carolina Electric and Gas Co. 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

Hydrilla (Foster Creek, boat ramp, and Back River) -

Charleston Commissioners of Public Works 30%

S.C. Electric and Gas Co. 20%

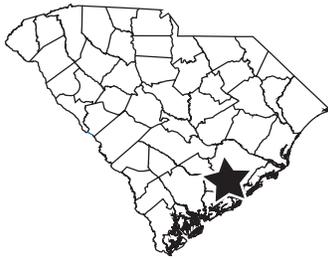
U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

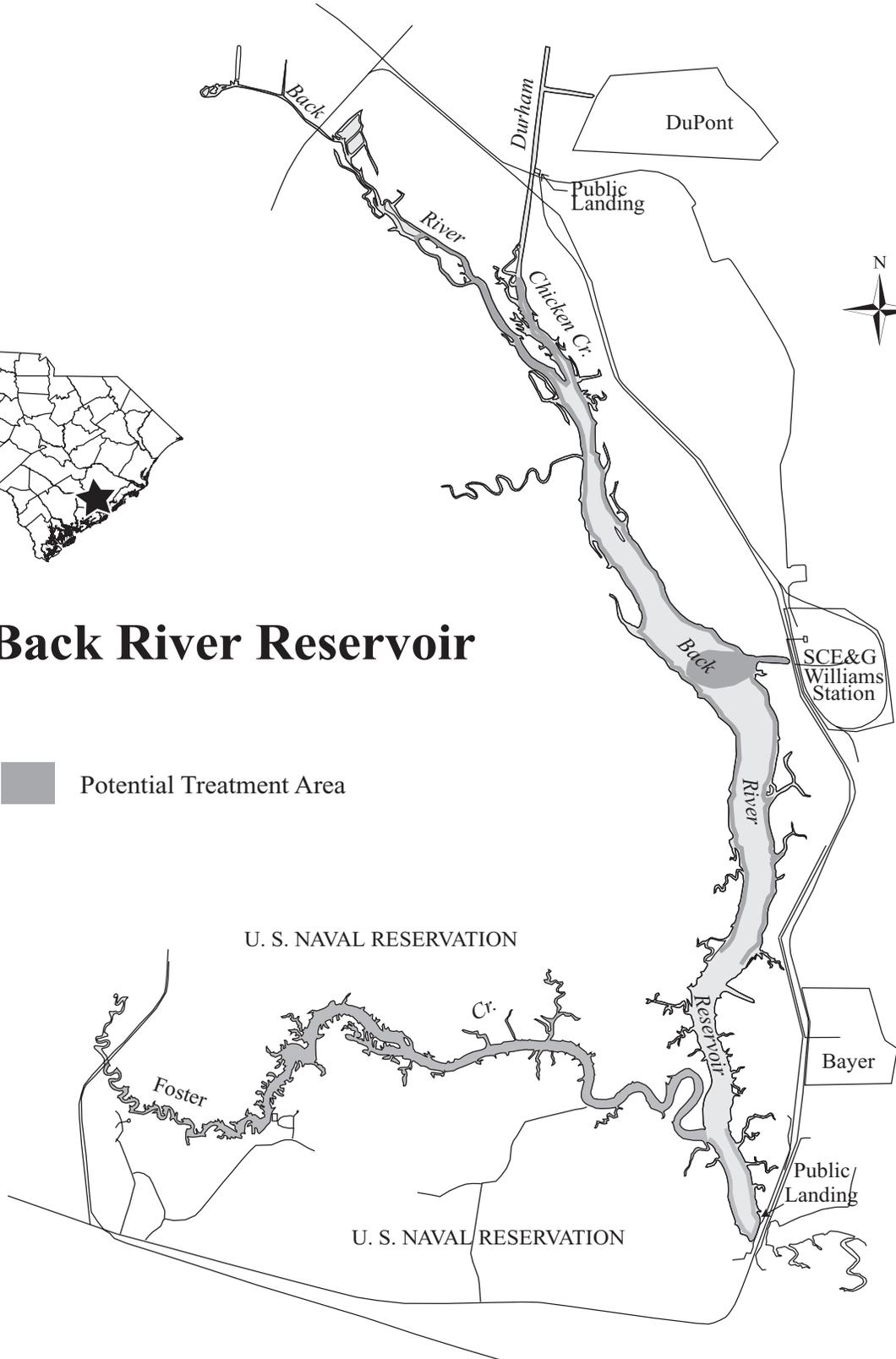
12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Effective long term control of water hyacinth in the reservoir must also include control of this species in the Cooper River to which the reservoir is connected.



# Back River Reservoir

 Potential Treatment Area



## 2. Baruch Institute (Georgetown County)

1. Problem plant species  
Phragmites
2. Management objective  
Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible
3. Selected control method

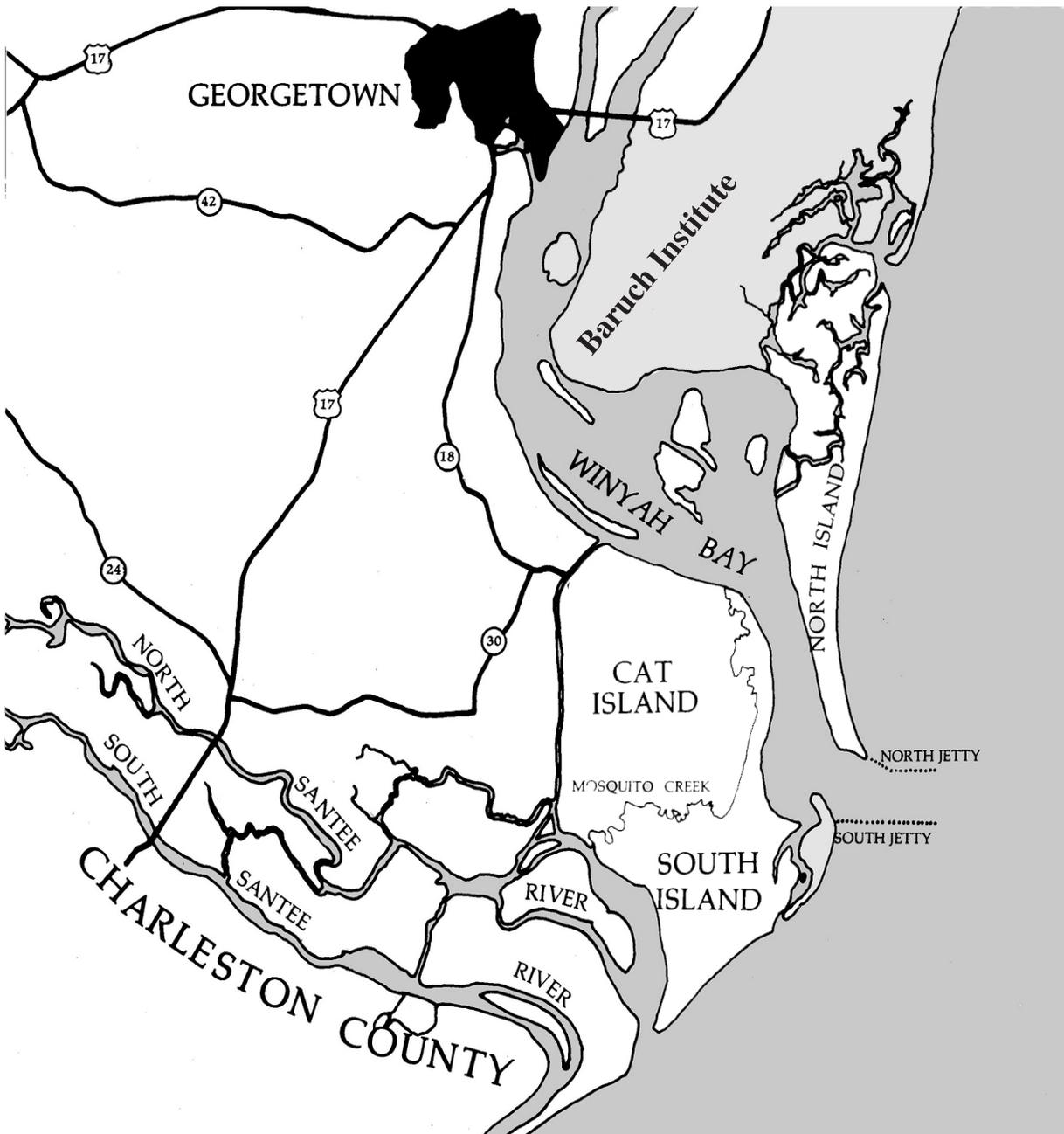
<u>Problem Species</u>	<u>Control Agent</u>
Phragmites	Habitat
4. Area to which control is to be applied  
150 acres of phragmites throughout area
5. Rate of control agent to be applied  
Habitat - 2 to 6 pints per acre.  
Clearcast - 2 to 6 pints per acre.
6. Method of application of control agent  
Helicopter - 125 acres of Habitat, Clearcast applied to phragmites.  
Other applications - Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application  
Apply when plants are actively growing (July - Oct.).
9. Entity to apply control agent  
Commercial applicator
10. Estimated cost of control operations  
\$19,888
11. Potential sources of funding  
Baruch Institute 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Continue to coordinate treatment areas with local conservation groups.

# Baruch Institute



### 3. Black Mingo Creek (Georgetown County)

1. Problem plant species

Alligatorweed	Parrot feather
Frog's bit	Pennywort
  
2. Management objective

Reduce or remove nuisance weed infestation at public access points, the main river channel, and connecting lakes to improve water quality and navigation.
  
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Alligatorweed, Pennywort	Renovate 3, Habitat, Clearcast, Glyphosate
Frog's bit, Parrot feather	Reward, Galleon SC
  
4. Area to which control is to be applied

25 acres of problematic plants throughout river
  
5. Rate of control agent to be applied

Reward - 0.5 gallon per acre.
Renovate 3 - 0.5 to 0.75 gallons per acre.
Habitat - 2 to 3 pints per acre.
Clearcast - 1 to 4 pints per acre.
Glyphosate - up to 6 pints per acre.
  
6. Method of application of control agent

Spray on surface of foliage with appropriate surfactant.
  
7. Timing and sequence of control application

Apply when plants are actively growing (May - Oct.).
  
9. Entity to apply control agent

Commercial applicator
  
10. Estimated cost of control operations

\$2,165

11. Potential sources of funding

Georgetown County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Continue to coordinate treatment areas with local conservation groups.

# Black Mingo Creek



## 4. Black River (Georgetown County)

1. Problem plant species
  - Alligatorweed
  - Frog's bit
  - Parrot feather
  - Pennywort
2. Management objective
  - Reduce or remove nuisance weed infestation at public access points, the main river channel, and connecting lakes to improve water quality and navigation.
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Alligatorweed, Pennywort	Renovate 3, Habitat, Clearcast, Glyphosate
Frog's bit, Parrot feather	Reward, Galleon SC
4. Area to which control is to be applied
  - 30 acres of problematic plants throughout river
5. Rate of control agent to be applied
  - Reward - 0.5 gallon per acre.
  - Renovate 3 - 0.5 to 0.75 gallons per acre.
  - Habitat - 2 to 3 pints per acre.
  - Clearcast - 1 to 4 pints per acre.
  - Glyphosate - up to 6 pints per acre.
  - Galleon SC - Floating species – 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent
  - Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application
  - Apply when plants are actively growing (May - Oct.).
9. Entity to apply control agent
  - Commercial applicator
10. Estimated cost of control operations
  - \$2,543

11. Potential sources of funding

Georgetown County 50%

U.S. Army Corps of Engineers 0%

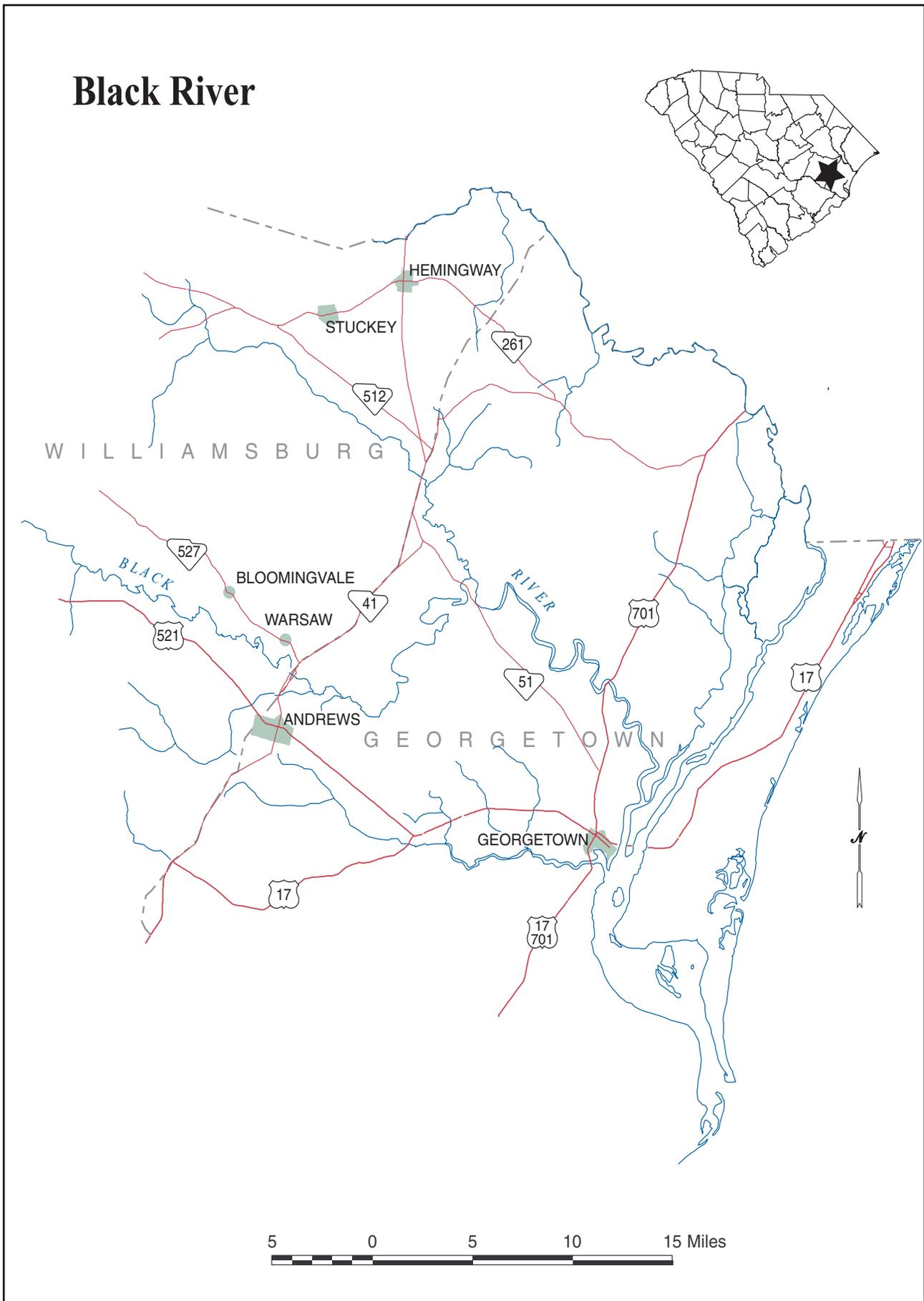
S. C. Department of Natural Resources 50%

(Percentage of match subject to change based on availability of Federal and State funding.)

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Continue to coordinate treatment areas with local conservation groups and State Scenic Rivers Coordinator.

# Black River



## 5. Bonneau Ferry

(Berkeley County)

1. Problem plant species

Water Primrose	Water hyacinth	Cattails
Lotus	Cutgrass	Pennywort
Frog's bit	Parrotfeather	

2. Management objective

Reduce nuisance plant populations to the greatest extent possible throughout Bonneau Ferry impoundments to enhance water quality, water flow, waterfowl habitat, fishing, and hunting opportunities.

3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Water primrose, Pennywort	Renovate 3, Habitat, Clearcast, Glyphosate
Cattails, Cutgrass, Parrotfeather	Habitat, Clearcast, Glyphosate
Water hyacinth, Frog's bit	Renovate 3, Reward, Clearcast, Galleon SC

4. Area to which control is to be applied

50 acres of problematic plants throughout the reserves and impoundments of Bonneau Ferry.

5. Rate of control agent to be applied

Reward - 0.5 gallon per acre.  
Renovate 3 - 0.5 to 0.75 gallons per acre.  
Habitat - 2 to 3 pints per acre.  
Clearcast - 1 to 4 pints per acre.  
Glyphosate - up to 6 pints per acre.  
Galleon SC - Floating species – 2 to 5.6 fl oz/acre as foliar application.

6. Method of application of control agent

Helicopter - 20 acres of Habitat, Clearcast with appropriate surfactant.  
Other applications - Spray on surface of foliage with appropriate surfactant from boat.

7. Timing and sequence of control application

Apply when plants are actively growing.

8. Other control application specifications

None

9. Entity to apply control agent  
Commercial applicator

10. Estimated cost of control operations  
\$7,605

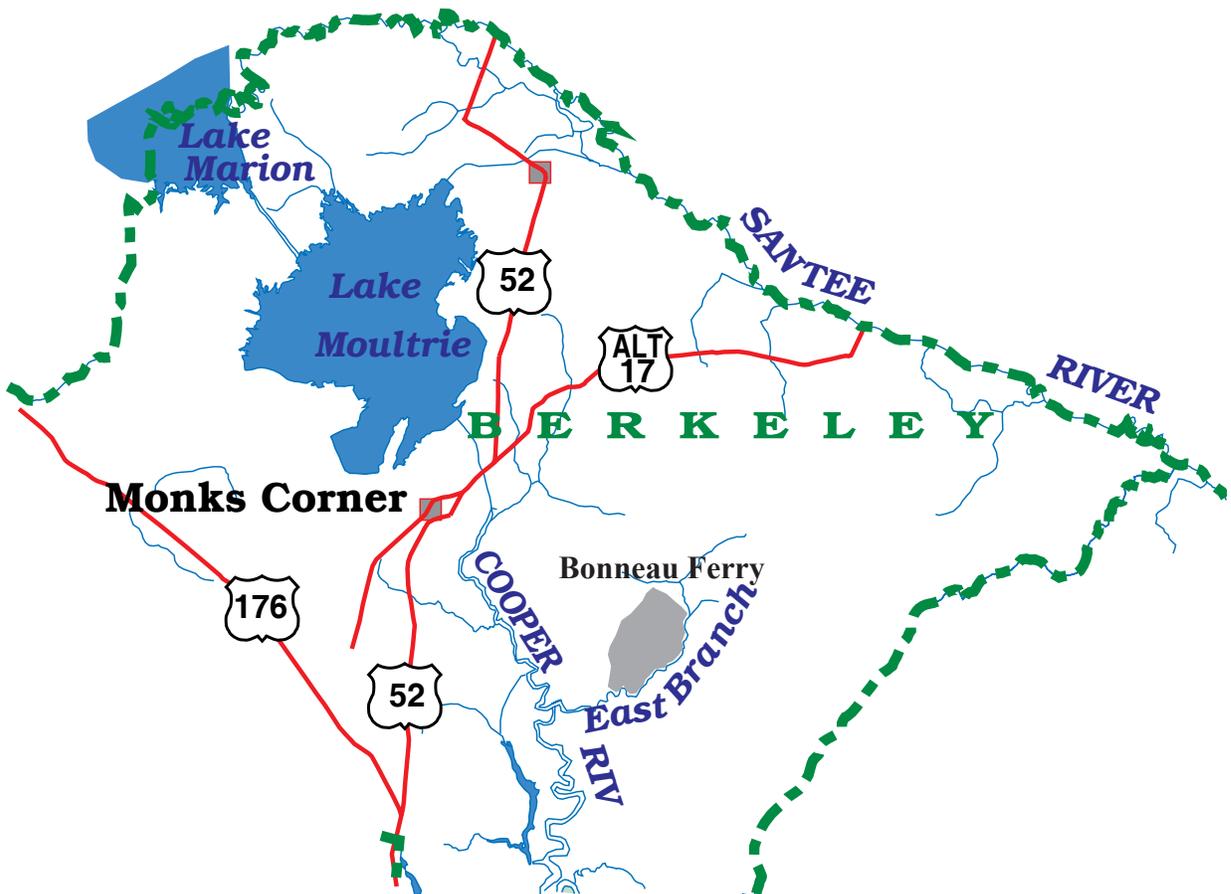
11. Potential sources of funding  
S. C. Department of Natural Resources 100%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

# Bonneau Ferry



## 6. Combahee River (Borrow pit)

(Colleton County)

1. Problem plant species  
Alligatorweed, Parrot feather, Frog's bit
2. Management objective  
Reduce or remove alligatorweed infestation at public access points, the main river channel, and connecting lakes.
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Alligatorweed	Renovate 3, Habitat, Clearcast, Glyphosate
Frog's bit, Parrot feather	Reward, Galleon SC
4. Area to which control is to be applied  
10 acres of problematic plants to be treated 2 times during the growing season.
5. Rate of control agent to be applied  
Reward - 0.5 gallon per acre.  
Renovate 3 - 0.5 to 0.75 gallons per acre.  
Habitat - 2 to 3 pints per acre.  
Clearcast - 1 to 4 pints per acre.  
Glyphosate - up to 6 pints per acre.  
Galleon SC - Floating species – 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application  
Apply when plants are actively growing (May - Oct.).
8. Other control application specifications  
None
9. Entity to apply control agent  
Commercial applicator
10. Estimated cost of control operations  
\$2,020

11. Potential sources of funding

Colleton County 50%

U.S. Army Corps of Engineers 0%

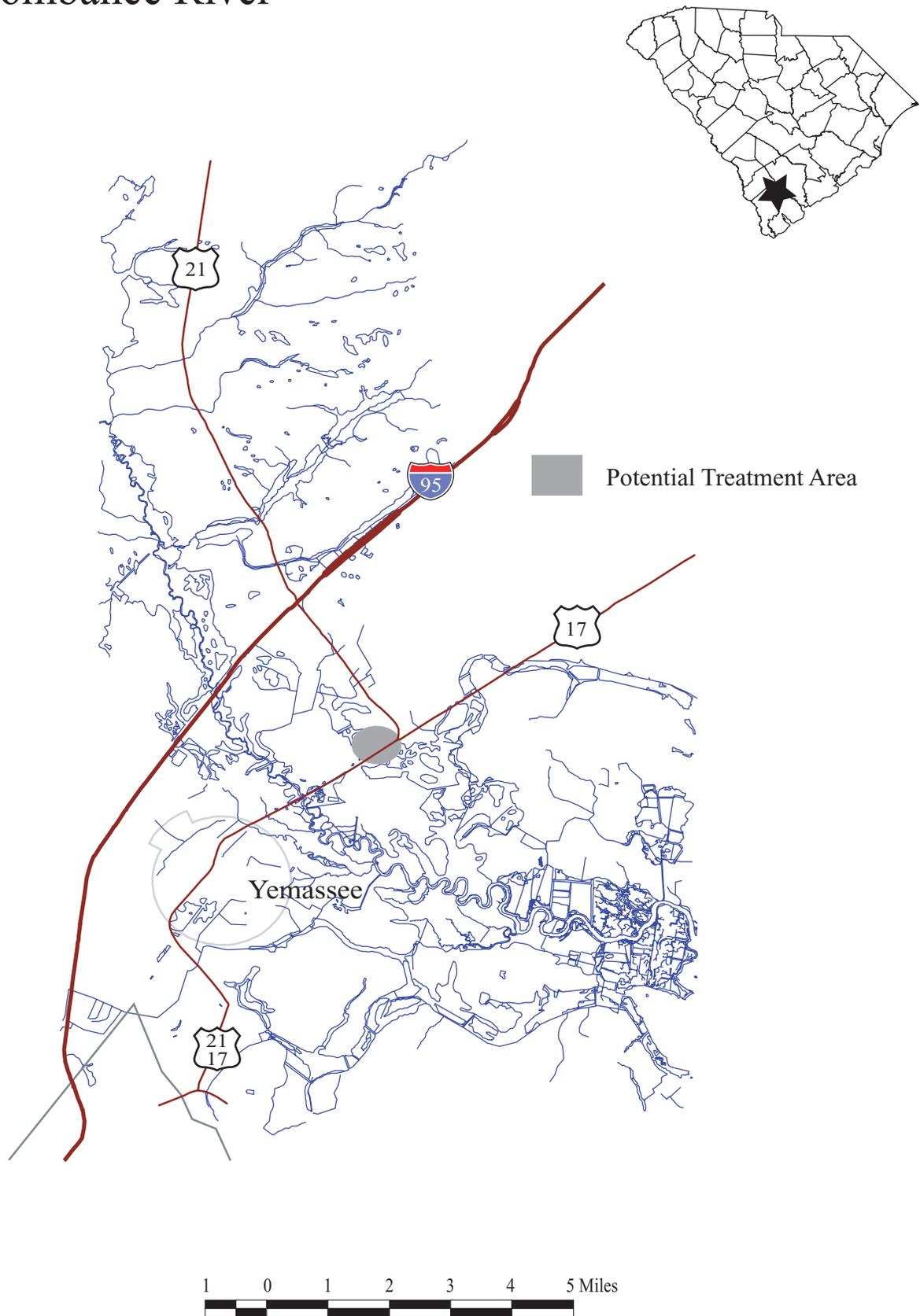
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Continue to coordinate treatment areas with local conservation groups.

# Combahee River



## 7. Cooper River

(Berkeley County)

1. Problem plant species  
Hydrilla, Water hyacinth, Water primrose
2. Management objectives
  - a. Reduce water hyacinth populations to the greatest extent possible in the main river and public ricefields.
  - b. Reduce water primrose growth along boat channels to maintain navigation.
  - c. Open limited boat trails in hydrilla infested ricefields to enhance public access to the river and selected ricefields.
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Water hyacinth	Renovate 3, Reward, Clearcast, Glyphosate, Galleon SC
Water primrose	Renovate 3, Reward, Habitat, Clearcast, Glyphosate
Hydrilla	Chelated copper*

**\* May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.**
4. Area to which control is to be applied

Renovate 3, Reward, Habitat, Clearcast, Glyphosate, Galleon SC - 500 acres of water hyacinth and water primrose throughout river system and in narrow boat channels in French Quarter Creek, Rice Hope Plantation ricefield, and Berkeley Yacht Club ricefield.

Chelated copper - 48 acres (16 acres treated 3 times yearly, spring and fall) to open boat trails in Pimlico, Berkeley Yacht Club and Rice Hope Plantation ricefields and French Quarter Creek canal.
5. Rate of control agents to be applied

Habitat - 2 to 4 pints per acre.  
Reward - 2 quarts per acre.  
Renovate 3 - up to 4 quarts per acre  
Clearcast - 1 to 4 pints per acre.  
Glyphosate - up to 6 pints per acre.  
Chelated copper - up to 1 ppm (about 16 gallons per acre).  
Galleon SC - Floating species – 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent

Renovate 3, Reward, Habitat, Galleon SC - spray on surface of foliage with appropriate surfactant.

Chelated copper - subsurface injection from airboat.

7. Timing and sequence of control application

All agents to be applied when plants are actively growing. Chelated copper treatment of boat trails to be conducted as close to low tide as possible to minimize water movement.

8. Other control application specifications

None

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

\$57,770

11. Potential sources of funding

Berkeley County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

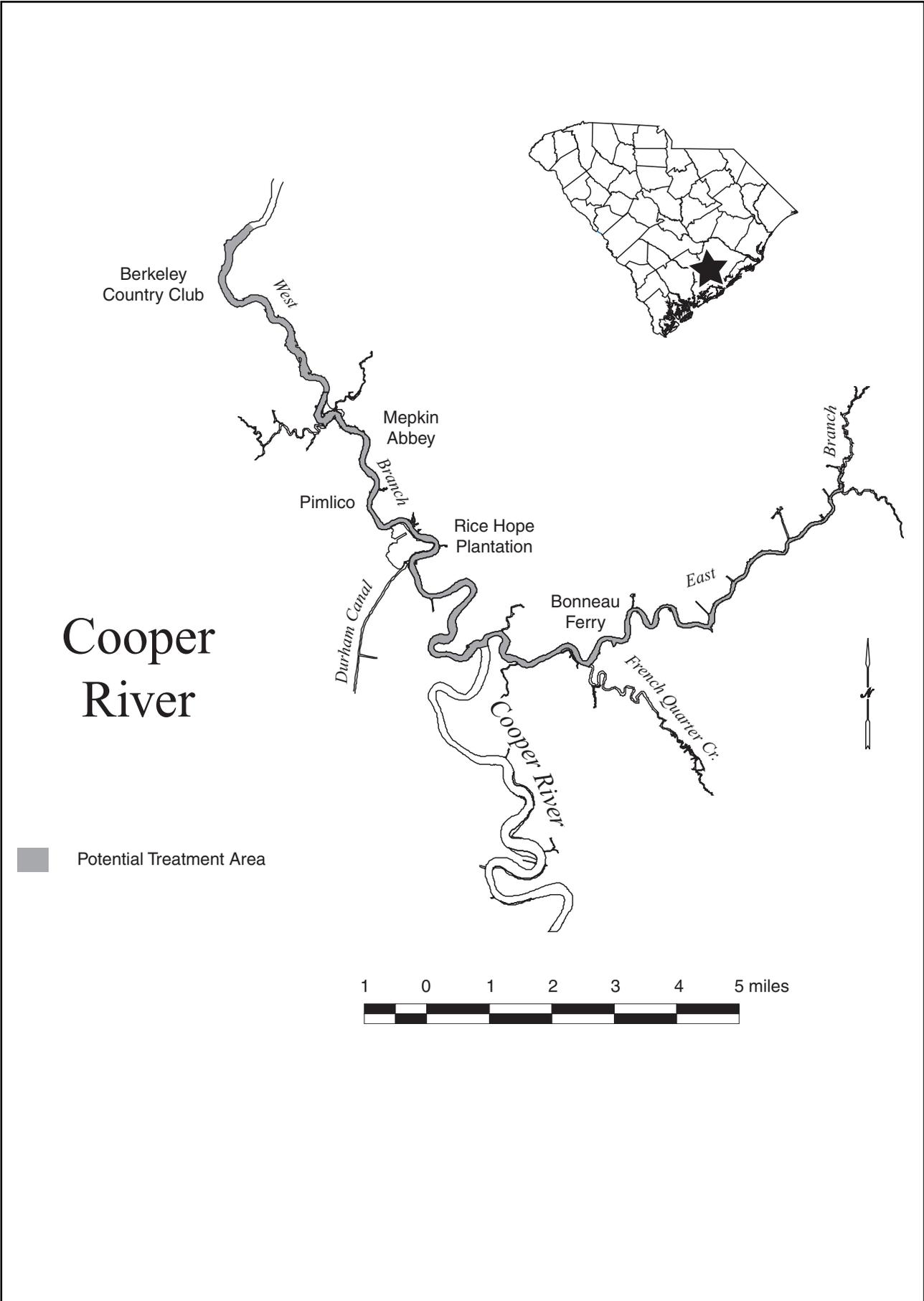
12. Long term management strategy

a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b. Maintain or enhance native aquatic plant populations at levels beneficial to wateruse, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d. Long term management must include consideration of water hyacinth control in many privately owned ricefields to which the public does not have boat access. Water hyacinth from these ricefields can reinfest public areas.



## 8. Donnelley WMA/Bear Island WMA/ACE Basin

(Colleton County)

1. Problem plant species

Frog's bit	Cattails	
Cutgrass	Phragmites	Swamp loosestrife
2. Management objective

Reduce problem plant populations to enhance waterfowl habitat, public access and use.
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Frog's bit	Renovate 3, Galleon SC
Phragmites, Cattails,	Habitat, Clearcast, Glyphosate
Cutgrass, Swamp loosestrife	Habitat, Clearcast, Glyphosate
4. Area to which control is to be applied

45 acres of Frog's bit, Phragmites, Cattails, Cutgrass, and Swamp loosestrife throughout the area.
5. Rate of control agent to be applied

Renovate 3 - 0.5 to 0.75 gallons per acre  
Habitat - 2 to 3 pints per acre.  
Clearcast - 1 to 4 pints per acre.  
Glyphosate - up to 6 pints per acre.  
Galleon SC - Floating species – 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent

Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application

Apply when plants are actively growing (May - Oct.).
8. Other control application specifications

Application to be conducted by airboat and helicopter.
9. Entity to apply control agent

Commercial applicator
10. Estimated cost of control operations

\$5,786

11. Potential sources of funding

Donnelley WMA/USF&W 50%

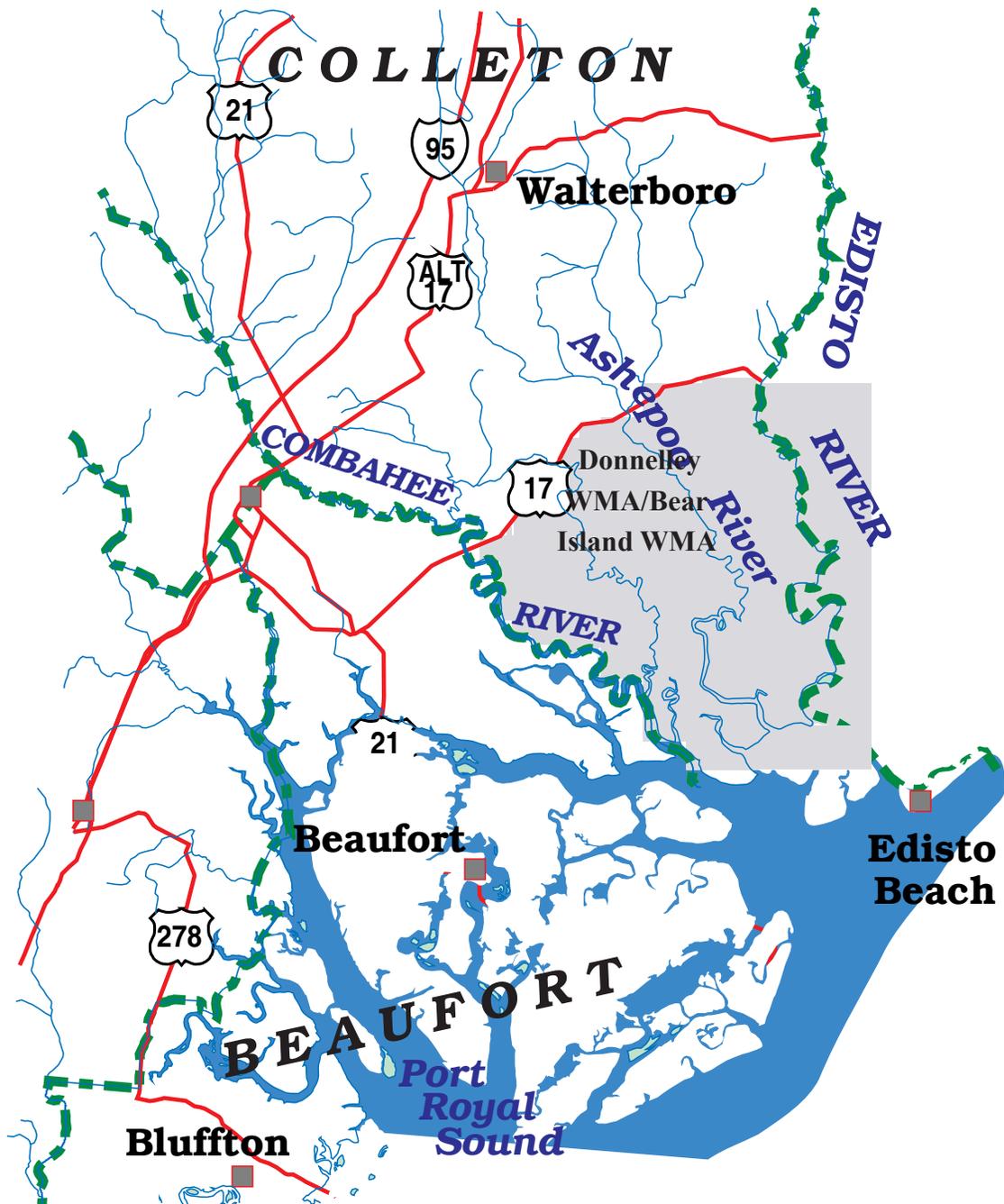
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

# Donnelley/Bear Island



## 9. Dungannon Plantation Heritage Preserve

(Charleston County)

1. Problem plant species

Frog's bit	Cattails	Bur Marigold
Cutgrass	Water Primrose	Swamp loosestrife
2. Management objective

Reduce problem plant populations to enhance Wood stork nesting habitat, public access and use.
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Frog's bit, Water primrose, Bur marigold	Renovate 3, Habitat, Clearcast, Glyphosate
Cattails,	Habitat, Clearcast, Glyphosate
Cutgrass, Swamp loosestrife	Habitat, Clearcast, Glyphosate
4. Area to which control is to be applied

12 acres of Frog's bit, Water primroses, and Bur marigold  
12 acres of Cattails, Cutgrass, and Swamp loosestrife throughout the area.
5. Rate of control agent to be applied

Renovate 3 - 0.5 to 0.75 gallons per acre  
Habitat - 2 to 3 pints per acre.  
Clearcast - 1 to 4 pints per acre.  
Glyphosate - up to 6 pints per acre.
6. Method of application of control agent

Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application

Apply when plants are actively growing (May - Oct.).
8. Other control application specifications

Application to be conducted by airboat and jon-boat.
9. Entity to apply control agent

Commercial applicator
10. Estimated cost of control operations

\$2,482

11. Potential sources of funding

Donnelley WMA/USF&W 50%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Enhance aquatic plant communities to benefit waterfowl and to increase nesting activities of Wood storks and other waterfowl.

# Dungannon Plantation HP



# 10. Goose Creek Reservoir

(Berkeley County)

1. Problem plant species

Water hyacinth	Water primrose	Water lettuce
Hydrilla	Watermilfoil	Fanwort
Salvinia( <i>minima</i> )	Duckweed	

2. Management objective

- a. Reduce water hyacinth and water lettuce populations to the greatest extent possible throughout the lake.
- b. Reduce water primrose, water lettuce and water hyacinth in the upper portion of the lake to enhance water flow and public access.
- c. Reduce hydrilla growth throughout the lake to minimize its spread within the lake, help prevent its spread to adjacent public waters, and minimize adverse impacts to public use and access.
- d. Maintain diverse aquatic plant community through selective application of control methods.

3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Water primrose	Renovate 3, Habitat, Clearcast, Glyphosate
Water hyacinth , Water lettuce	Renovate 3, Reward, Galleon SC
Watermilfoil, fanwort	Reward, Hardball, Stingray
Hydrilla	Aquathol K, chelated copper,
	Triploid grass carp

4. Area to which control is to be applied

Renovate 3, Habitat, Clearcast, Glyphosate- 100 acres water primrose in upper lake and boat ramp.

Reward - 100 acres of water hyacinth and water lettuce throughout lake.

Renovate 3, Reward, Galleon SC - 110 acres of water hyacinth and water lettuce throughout lake.

Reward, Hardball, Stingray - 5 acres of submersed growth throughout the reservoir.

Release triploid grass carp in areas of the lake with greatest hydrilla growth. Grass carp will be released in selected areas, such as boat ramps and park sites, around the lake to achieve as even a distribution as practicable.

5. Rate of control agents to be applied

Reward - 0.5 gallon per acre.

Renovate 3 - 0.50 to 0.75 gallons per acre.

Habitat - up to 4 pints per acre.

Clearcast - 1 to 4 pints per acre.

Glyphosate - up to 6 pints per acre.

Hardball - up to 5 gallons per acre.

Stingray - up to 12 ounces per acre.

Galleon SC - Submersed 0.174 fl oz/acre foot to achieve minimum effective concentration of 25 to 75 ppb

Floating species – 2 to 5.6 fl oz/acre as foliar application.

\*Triploid Grass Carp - 84 fish in the entire reservoir

\*Based on models the number of Triploid grass carp introduced on a maintenance stocking plan was 185 fish in year one(2007) and 84 fish per year in subsequent years to keep the total number of fish at 280.

6. Method of application of control agents

Renovate 3, Habitat, Glyphosate, Reward, Galleon SC - spray on surface of foliage with appropriate surfactant.

Reward, Hardball, StingrayGalleon SC - subsurface injection from airboat.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

7. Timing and sequence of control application

All agents to be applied when plants are actively growing.

Triploid grass carp to be released as soon as possible in the spring of 2008 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

8. Other control application specifications

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time. Coordinate all control operations with Charleston Commissioners of Public Works and Goose Creek Reservoir Watershed Task Force.

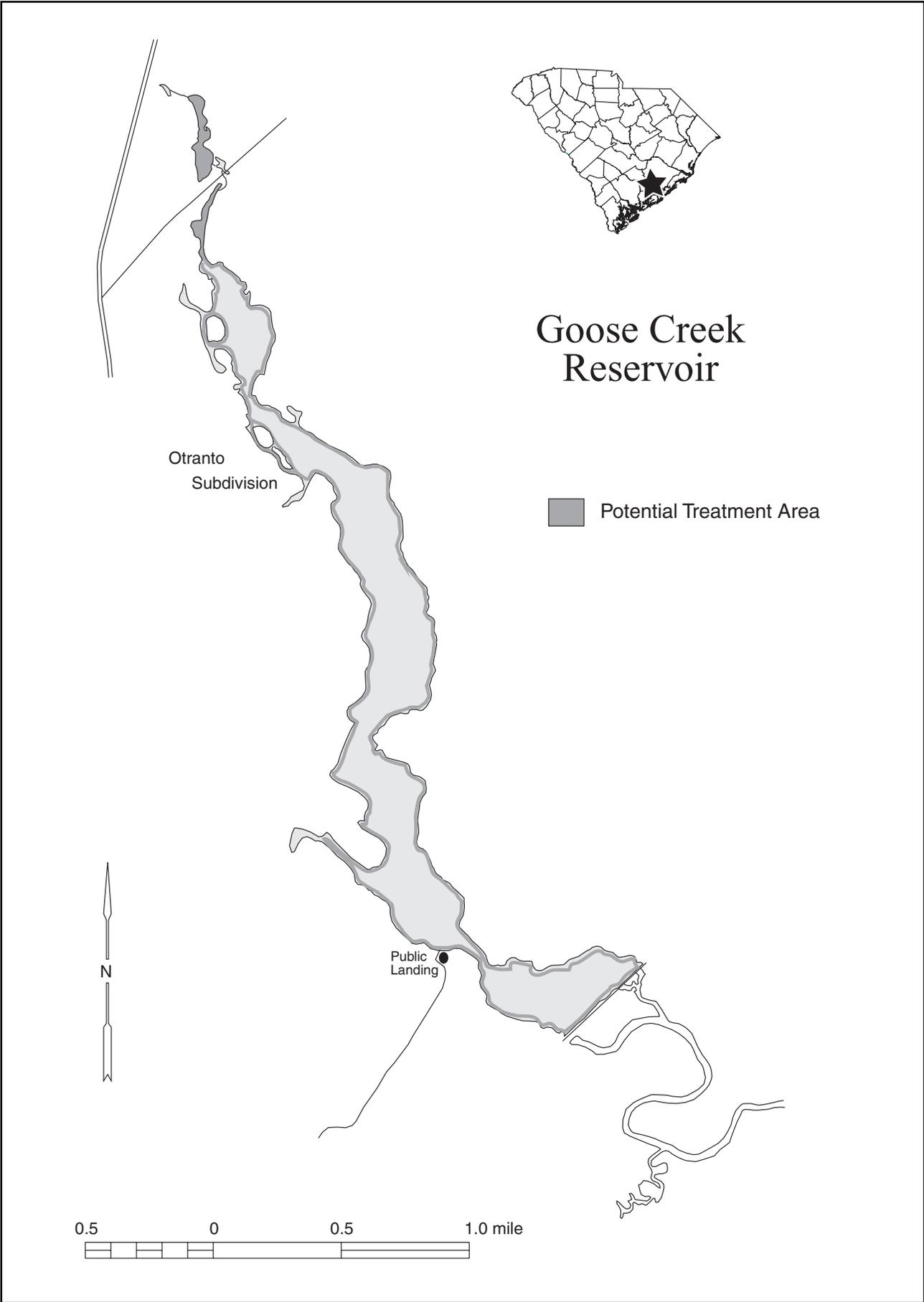
If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Goose Creek Reservoir will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

Hydrilla is slowly increasing in acreage along with other submerged species. Hydrilla populations will be carefully monitored and in the event that significant

regrowth occurs during the year the Aquatic Plant Management Council may consider the need for additional grass carp or treat with herbicides to give short-term control as needed.

9. Entity to apply control agents
  - Herbicides - Commercial Applicator
  - Triploid Grass Carp - S.C. Public Service Authority and/or a commercial supplier with supervision by the SCDNR.
10. Estimated cost of control operations
  - \$33,945
11. Potential sources of funding
  - Charleston Commissioner of Public Works 50%
  - U.S. Army Corps of Engineers 0%
  - S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*
12. Long term management strategy
  - a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
  - b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
  - c. Seek to prevent further introduction and distribution of problem species



## 11. Lake Darpo

(Darlington County)

1. Problem plant species
  - Water lily
  - Milfoil
2. Management objectives
  - Reduce problem plant populations to enhance waterfowl habitat, public access and use.
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Water lily, milfoil	Hardball, Stingray
4. Area to which control is to be applied
  - Hardball, Stingray - 15 acres of Milfoil infestation.
5. Rate of control agents to be applied
  - Hardball - up to 5 gallons per acre
  - Stingray - up to 2 ounces per acre
6. Method of application of control agents
  - Hardball, Stingray - subsurface injection from airboat. Application by airboat with adjuvant two(2) times per year.
7. Timing and sequence of control application
  - Agent to be applied when plants are actively growing.
8. Other control application specifications
  - Treatment of control area is to be conducted in a manner that will not significantly degrade water quality.
  - Milfoil may require multiple treatments.
9. Entity to apply control system
  - Commercial applicator
10. Estimated cost of control operations
  - \$3,827

11. Potential sources of funding

Darlington County 50%

U.S. Army Corps of Engineers 0%

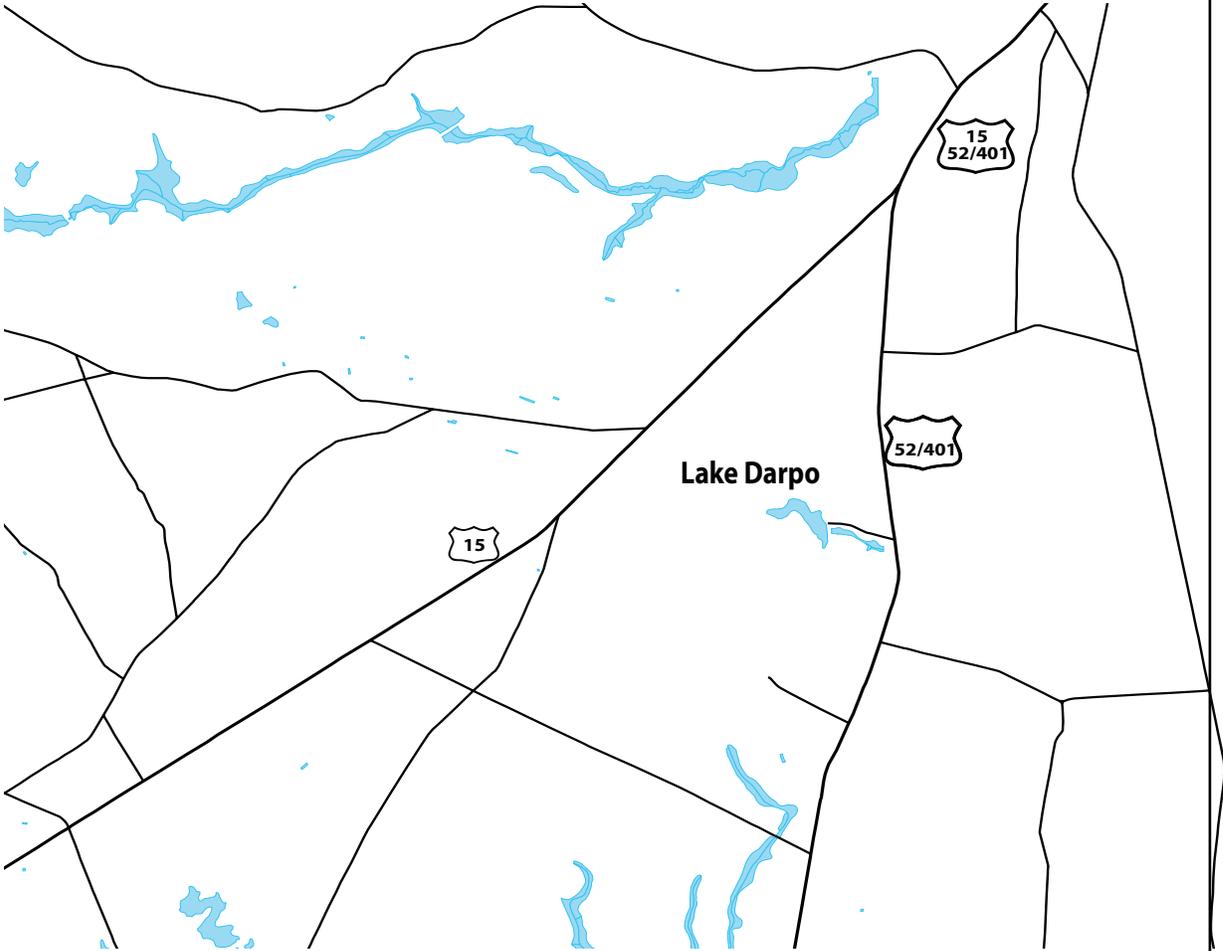
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Lake Darpo



## 12. Lake Greenwood

(Greenwood and Laurens County)

1. Problem plant species
  - Slender naiad
  - Hydrilla
2. Management objectives
  - a. Reduce slender naiad in developed shoreline areas and areas of high public access and use.
  - b. Eliminate hydrilla from Rabon Creek arm and around Greenwood State Park.
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Slender naiad, Hydrilla	Aquathol K, Sonar, chelated copper*
4. Area to which control is to be applied
  - Aquathol K - 40 acres of slender naiad infestation.
  - Aquathol K, Sonar, chelated copper\* - 60 acres of hydrilla infestation in upper Rabon Creek arm and 20 acres around Greenwood State Park.
5. Rate of control agents to be applied
  - Aquathol K - 0.5 to 4 ppm (about 3 to 8 gallons per acre depending on depth)
  - Sonar - 0.075 to 0.25 ppm
  - Chelated Copper- up to 1 ppm
  - Sonar Q, Sonar PR - up to .40 ppm(approx 10 pounds/acre)
6. Method of application of control agents
  - Aquathol K, Sonar, chelated copper\* - Subsurface application by airboat with adjuvant.
7. Timing and sequence of control application
  - Agent to be applied to slender naiad when plants are actively growing.
  - Agent to be applied to hydrilla when plants are actively growing but prior to tuber production.
8. Other control application specifications
  - Herbicide used only upon approval by the S.C. Department of Health and Environmental Control.
  - Treatment of control area is to be conducted in a manner that will not significantly degrade water quality. Survey and final determination of treatment areas

to be conducted in conjunction with the South Carolina Department of Natural Resources district fisheries biologist. In general, treatment will be limited to developed shoreline areas, public access sites, and areas of high public use.

Hydrilla may require multiple treatments.

9. Entity to apply control system  
Commercial applicator

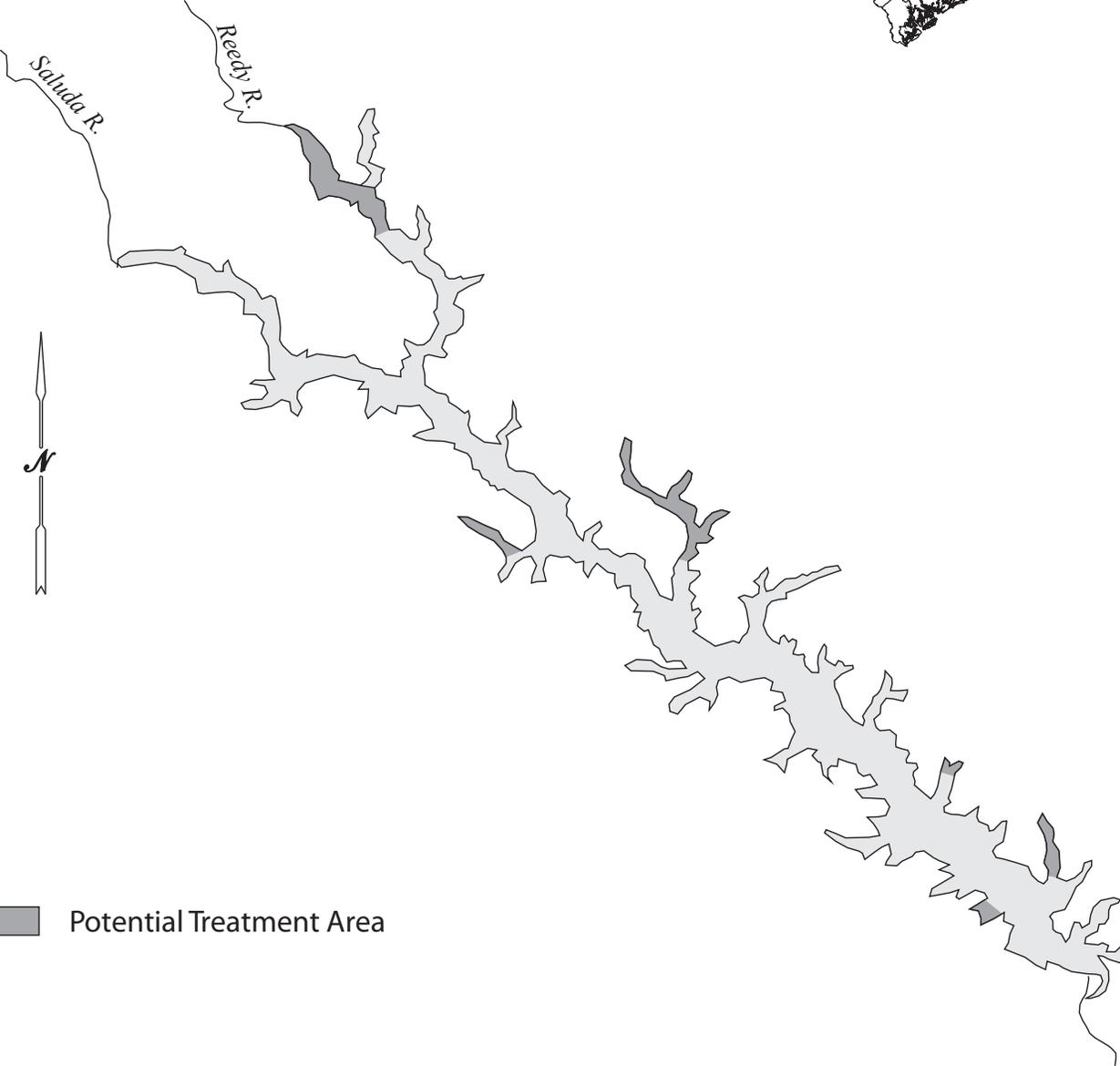
10. Estimated cost of control operations  
\$70,700

11. Potential sources of funding  
Greenwood County 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy
- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
  - b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
  - c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Lake Greenwood



■ Potential Treatment Area



## 13. Lake Keowee

(Pickens and Oconee County)

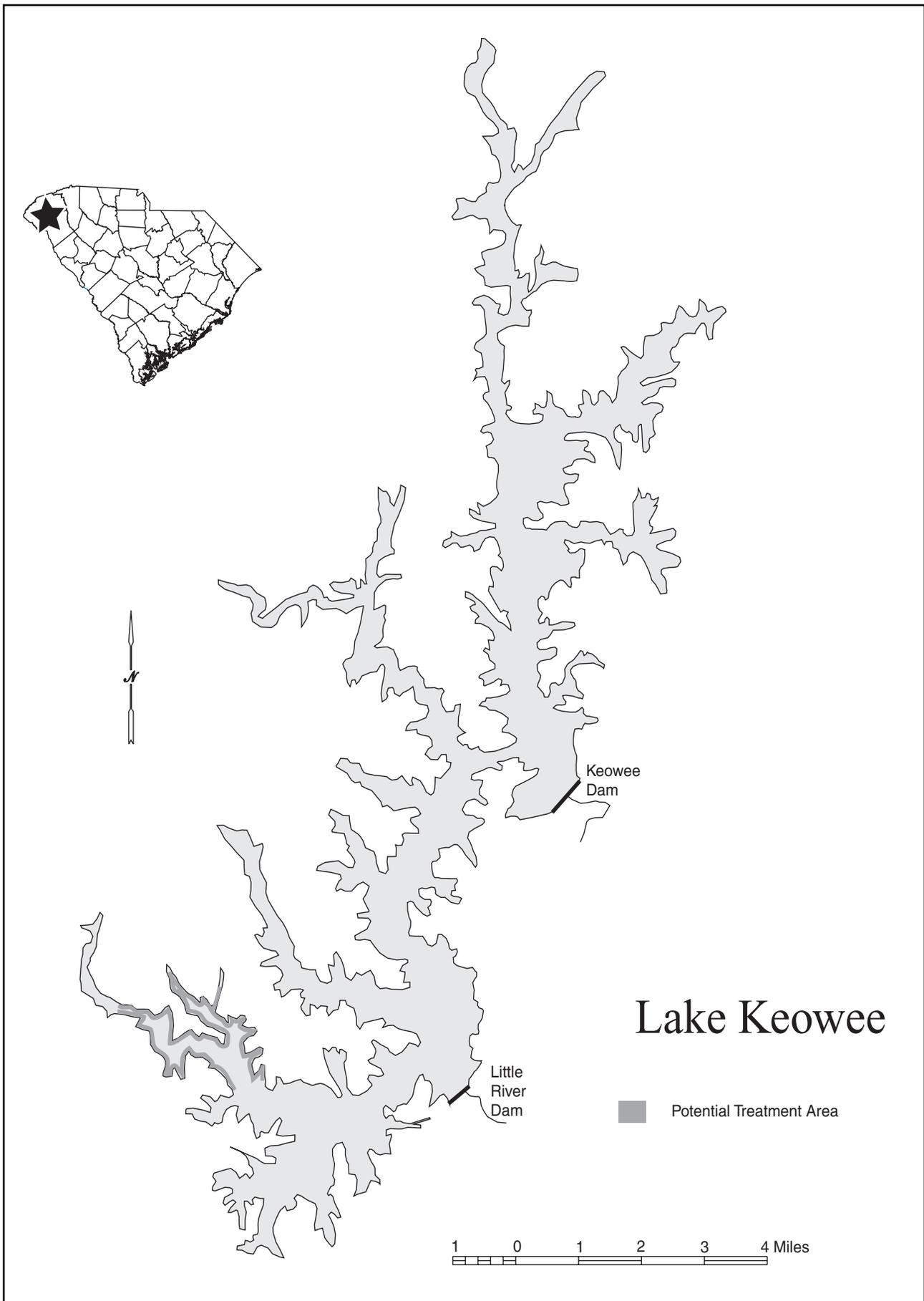
1. Problem plant species  
Hydrilla
2. Management objectives  
Keep hydrilla growth suppressed to minimize its spread within the lake, help prevent its spread to adjacent public waters and minimize adverse impacts to water use activities.
3. Selected control method  
Chelated copper \*  
Fall/winter water level drawdown  
**\* May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.**
4. Area to which control is to be applied  
Chelated copper - 10 acres  
Drawdown - entire lake
5. Rate of control agent to be applied  
Chelated copper - up to 1 ppm (about 16 gallons per acre)  
Drawdown - to the greatest extent possible within project limits.
6. Method of application of control agent  
Chelated copper - subsurface injection by airboat with adjuvant.  
Drawdown - draw lake down.
7. Timing and sequence of control application  
Herbicide application - when plants are actively growing.  
Drawdown - drawdown lake from October through February.
8. Other control application specifications  
Herbicide application - Herbicide used only upon notification of all local potable water supply authorities and approval by S.C. Department of Health and Environmental Control. Treatment of control area will be conducted in a manner that will not significantly degrade water quality.

Drawdown - Extent and duration of drawdown is dependent on operational limits of hydroelectric project, Federal regulations, electric demand, precipitation, and inflow.

9. Entity to apply control system  
Herbicide application - Commercial applicator or Duke Power Company  
Drawdown - Duke Power Company
10. Estimated cost of control operations  
Herbicide application - \$3,114  
Drawdown - Undetermined
11. Potential sources of funding  
Duke Power Company 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy
  - a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
  - b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
  - c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.



## 14. Lake Murray

(Lexington, Newberry, Richland and Saluda Counties)

1. Problem plant species

Hydrilla

Illinois pondweed

Water Primrose

2. Management objectives

- a. Maintain reduced hydrilla and Illinois pondweed growth throughout the lake to minimize its spread within the lake, help prevent its spread to adjacent public waters, and minimize adverse impacts to drinking water withdrawals and public use and access.
- b. Monitor water primrose growth and consider control options if impacts are greater than anticipated.
- c. Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

3. Selected control method

- a. Triploid grass carp stocked in 2003 substantially reduced hydrilla coverage in Lake Murray during 2003-2007. Consequently, no additional grass carp stockings are planned for these areas in 2008. However, hydrilla populations and potential regrowth will be carefully monitored and in the event that survey results and regrowth warrant, the Aquatic Plant Management Council may reconsider the need for additional grass carp.
- b. Mechanical harvester – short-term control in selected areas to provide public access and clear areas around municipal water intakes.
- c. Aquatic herbicides - short-term control in selected areas to provide public access and clear areas around municipal water intakes.

Problem Species

Hydrilla

Water primrose

Control Agents

Chelated copper(Nautique)

Renovate 3, Habitat, Clearcast

4. Area to which control is to be applied

- a. If needed, release triploid grass carp in areas of the lake with greatest hydrilla growth.
- b. Use mechanical harvesters or aquatic herbicides to provide immediate short-term control at high priority public access points, such as boat ramps and park sites, and municipal water intakes.(75 acres of water primrose).

5. Rate of control agent to be applied
  - a. If hydrilla acreage in 2008 warrants, additional grass carp may be stocked at the rate of 15 fish per vegetated acre following Council approval.
  - b. Harvest acreage as needed to provide public use, access and clear areas around municipal water intakes.
  - c. Apply aquatic herbicides to provide immediate short-term control at high priority public access points and municipal water intakes.  
 Chelated copper - up to 1 ppm  
 Renovate 3 - 0.50 to 0.75 gallons per acre.  
 Habitat - 2 to 4 pints per acre.  
 Clearcast - 1 to 4 pints per acre.
  
6. Method of application of control agent
  - a. Triploid grass carp - See section 3 above.
  - b. Use mechanical harvester as designed.
  - c. All agents to be applied when plants are actively growing.
  
7. Timing and sequence of control application
  - a. If hydrilla acreage in 2008 warrants, additional grass carp may be stocked following Council approval.
  - b. Harvest aquatic growth as it becomes problematic; multiple applications are likely.
  - c. Apply herbicides to aquatic vegetation as it becomes problematic.
  
8. Other control application specifications
  - a. If needed, all sterile grass carp will be a minimum of 12 inches in length. All sterile grass carp shipments for Lake Murray will be examined by the SCDNR for sterility, size, and condition at the Campbell Fish Hatchery in Columbia prior to stocking in the lake.
  - b. Harvested vegetation must be removed from the lake and deposited on high ground. The harvesting process must minimize adverse impacts to fish.
  - c. Control by Residential/Commercial Interests:  
  
 This plan is designed to provide relief from noxious aquatic vegetation for the public at large. Private entities such as lake-front residents and commercial interests may have site specific concerns not addressed immediately by the use of grass carp or mechanical harvesters at public access areas. **Residential and commercial interests may remove nuisance**

**aquatic vegetation manually or by use of mechanical harvesting devices.** Of the three major control methods the following conditions apply.

1) Mechanical harvesters – Commercial aquatic plant harvesting services may be hired to remove hydrilla and Illinois pondweed from areas adjacent to residential and commercial property after notification of SCE&G. Harvesting precautions as stated in item b. above must be adhered to.

2) Aquatic herbicides – SCE&G opposes regular or general application of herbicides in Lake Murray, therefore, aquatic herbicides may not be applied in the lake by lake front property owners.

3) Sterile grass carp - A sufficient number of grass carp are being stocked by SCDNR to control nuisance aquatic vegetation. Stocking additional grass carp in Lake Murray without written consent by the SCDNR is prohibited.

9. Entity to apply control agent

- a. Triploid grass carp - Commercial supplier with supervision by the SCDNR.
- b. Mechanical harvester – Commercial harvester under supervision of SCE&G at park sites and public boat ramps; private marina operators to contract for application at commercial boat ramps.
- c. Aquatic herbicides - Commercial applicator under supervision by the SCDNR.

10. Estimated cost of control operations

- a. Triploid grass carp - None anticipated
- b. Mechanical harvester - \$500-1000/acre
- c. Aquatic herbicides - \$5,413

11. Potential sources of funding

- a. Triploid grass carp if needed.  
S.C. Electric and Gas Company, Lexington and Richland Counties 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%
- b. Mechanical harvester  
S.C. Electric and Gas Company, Commercial marina operators, and residential property owners.

c Aquatic herbicides

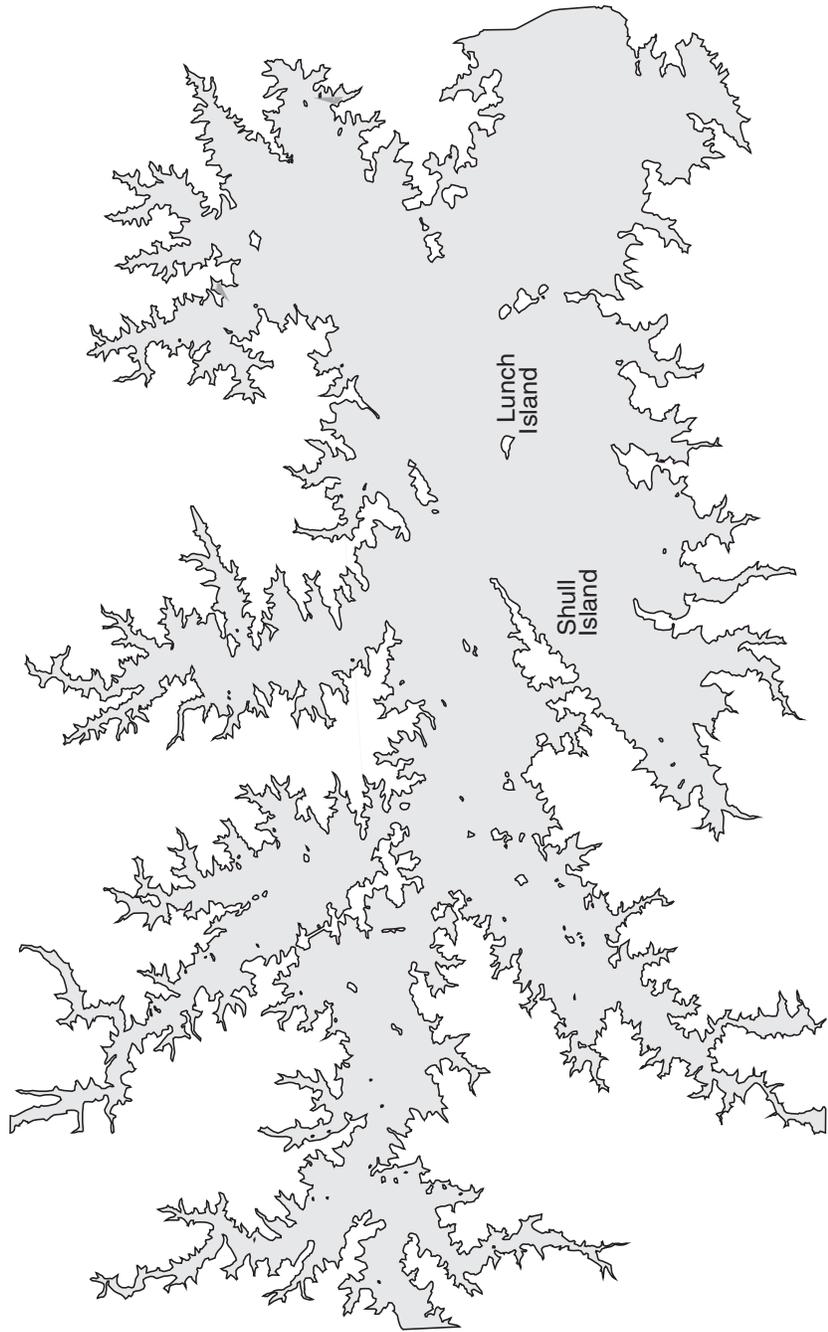
S.C. Electric and Gas Company, Lexington and Richland Counties 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Improve public awareness and understanding of aquatic plant management activities through the maintenance of the Lake Murray Aquatic Plant Management web site. The web site includes up-to-date information on annual management plans, dates and locations of current and historical control operations, locations of habitat enhancement activities, and other pertinent information.
- e. Periodically revise the management strategy and specific control sites as new environmental data and control agents and techniques become available, and public use patterns change.
- f. Water primrose - Water primrose, a shoreline plant, became problematic in the upper portion of the lake last year. The two-year drawdown exposed a lot of unvegetated shoreline where water primrose quickly spread and re-established at the 345-348 foot contour level. While this plant can be invasive and cause localized problems, it has been in the lake for decades and is typically not a threat to general public access and use of the waterway. Based on past experience, it is expected that most of the plants that are rooted in deep water will not survive after the lake level returns to full pool. Therefore, there are no plans to control its growth this year. However, the SCDNR and SCE&G will monitor water primrose growth and consider control options if impacts are greater than anticipated.

# Lake Murray



## 15. Lake Wateree

(Fairfield, Kershaw and Lancaster Counties)

1. Problem plant species  
Hydrilla
2. Management objective  
Keep hydrilla growth suppressed to prevent its spread within the lake, help prevent its spread to adjacent public water, and minimize adverse impacts to water use activities.
3. Selected control method  
Aquathol K  
Fall/winter water level drawdown
4. Area to which control is to be applied  
Aquathol K - At least 2 acres in cove near Lakeside Marina.  
Drawdown - Entire lake
5. Rate of control agent to be applied  
Aquathol K - 4 ppm (about 8 gallons per acre depending on depth)  
Drawdown - To the greatest extent possible within project limits.
6. Method of application of control agent  
Aquathol K - Subsurface injection from airboat with adjuvant.  
Drawdown - Draw lake down
7. Timing and sequence of control application  
Aquathol K - 2 acres treated twice in June and again in fall of year.  
Drawdown - Drawdown lake from October through February.
8. Other control application specifications  
Aquathol K - Herbicide used only upon notification of all local potable water supply authorities and approval by S.C. Department of Health and Environmental Control. Treatment of control area will be conducted in a manner that will not significantly degrade water quality.  
  
Drawdown - Extent and duration of drawdown is dependent on operational limits of hydroelectric project, Federal regulations, electric demand, precipitation, and inflow.

9. Entity to apply control agent  
Herbicide application - Commercial applicator or Duke Power Company  
Drawdown - Duke Power Company

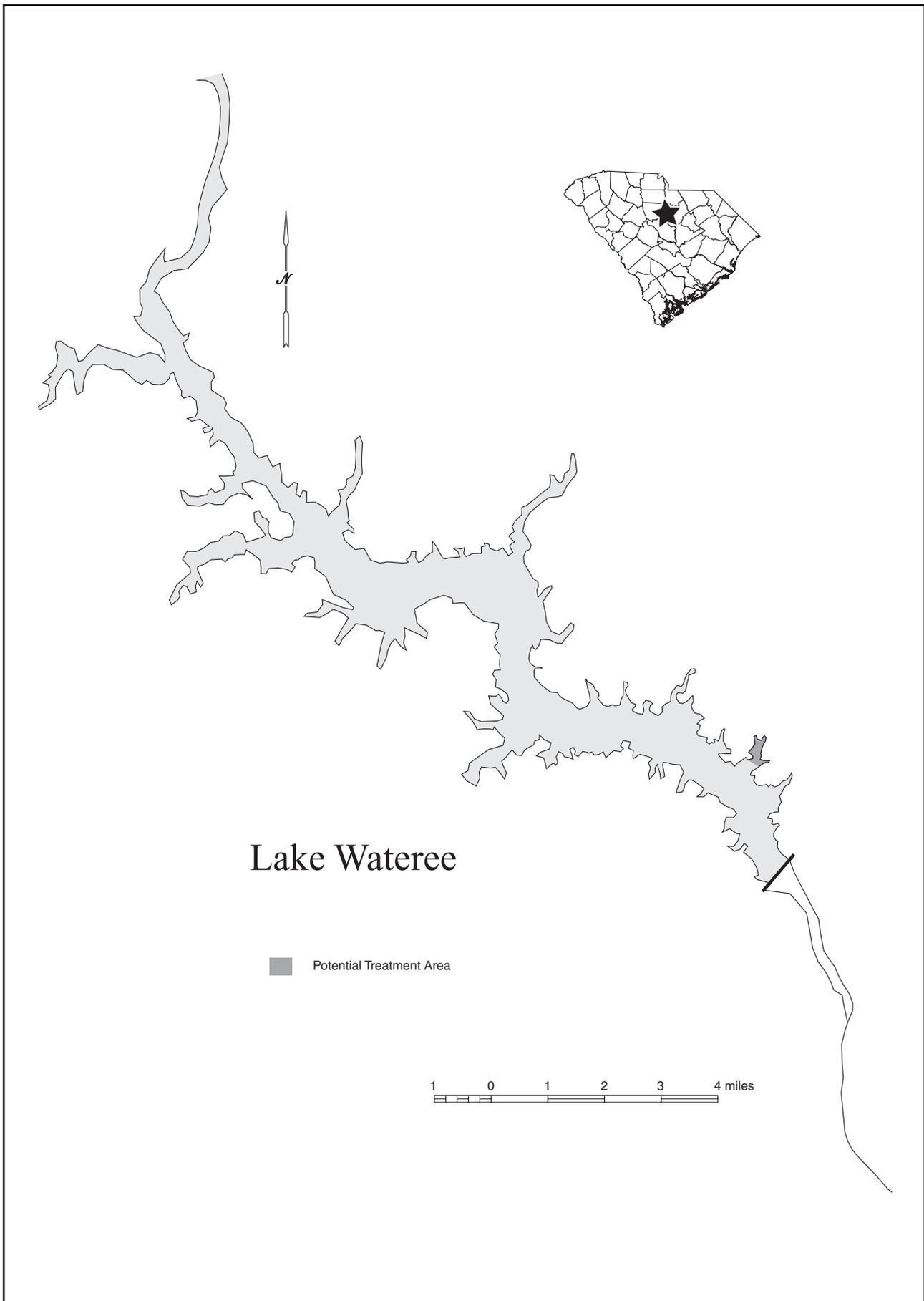
10. Estimated cost of control operations  
Herbicide application - \$3,108  
Drawdown - Undetermined

11. Potential sources of funding  
Duke Power Company 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.



# Lake Wateree

■ Potential Treatment Area

1 0 1 2 3 4 miles

## 16. Little Pee Dee River

(Marion and Horry Counties)

1. Problem plant species  
Alligatorweed                      Water hyacinth
2. Management objective  
Through a comprehensive, multi-year approach; reduce water hyacinth and alligatorweed populations to the greatest extent possible
3. Selected control method  

<u>Problem Species</u>	<u>Control Agent</u>
Water hyacinth	Renovate 3, Reward, Clearcast, Galleon SC
Alligatorweed	Renovate 3, Reward, Habitat, Clearcast, Glyphosate

Biological Control - Alligatorweed flea beetles, *Agasicles hygrophila*
4. Area to which control is to be applied  
50 acres of alligatorweed throughout river  
30 acres of water hyacinth around Cox's Lake
5. Rate of control agent to be applied  
Habitat - 2 to 4 pints per acre.  
Reward - 2 quarts per acre.  
Renovate 3 - up to 4 quarts per acre  
Clearcast - 1 to 4 pints per acre.  
Glyphosate - up to 6 pints per acre.  
Galleon SC - 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent  
Herbicide - Spray on surface of foliage with appropriate surfactant.  
Biological Control - Release in the vicinity of alligatorweed populations to supplement existing populations of alligatorweed flea beetles
7. Timing and sequence of control application  
Apply after plants are actively growing (May - Oct.).
8. Other control application specifications  
None
9. Entity to apply control agent  
Commercial applicator

10. Estimated cost of control operations

\$7,344

11. Potential sources of funding

Horry and Marion Counties 50%

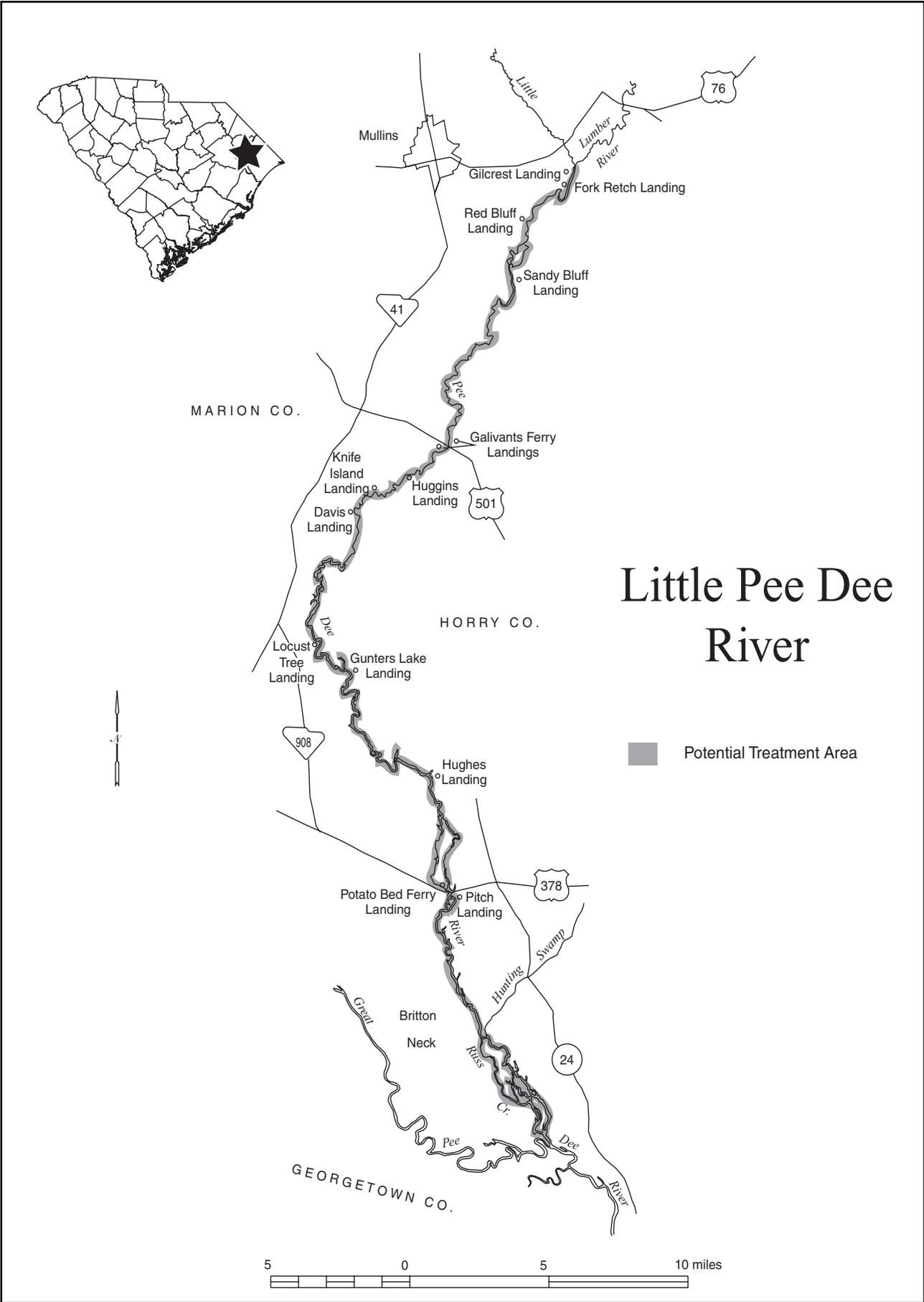
U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Continue to coordinate treatment areas with local conservation groups and State Scenic Rivers Coordinator.



# Little Pee Dee River

■ Potential Treatment Area

## 17. Lumber River

(Marion and Horry Counties)

1. Problem plant species  
Alligatorweed
2. Management objective  
Reduce or remove alligatorweed infestation at public access points, the main river channel, and connecting lakes.
3. Selected control method  
Herbicides - Renovate 3, Habitat, Clearcast, Glyphosate, Galleon SC  
Biological Control - Alligatorweed flea beetles, *Agasicles hygrophila*
4. Area to which control is to be applied  
20 acres of problematic plants throughout river
5. Rate of control agent to be applied  
Renovate 3 - 0.50 to 0.75 gallons per acre.  
Habitat - up to 4 pints per acre.  
Clearcast - 1 to 4 pints per acre.  
Glyphosate - up to 6 pints per acre.  
Galleon SC - 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent  
Herbicide - Spray on surface of foliage with appropriate surfactant.  
Biological Control - Release in the vicinity of alligatorweed populations to supplement existing populations of alligatorweed flea beetles
7. Timing and sequence of control application  
Apply after plants are actively growing (May - Oct.).
8. Other control application specifications  
None
9. Entity to apply control agent  
Commercial applicator
10. Estimated cost of control operations  
\$1,515

11. Potential sources of funding

Horry and Marion Counties 50%

U.S. Army Corps of Engineers 0%

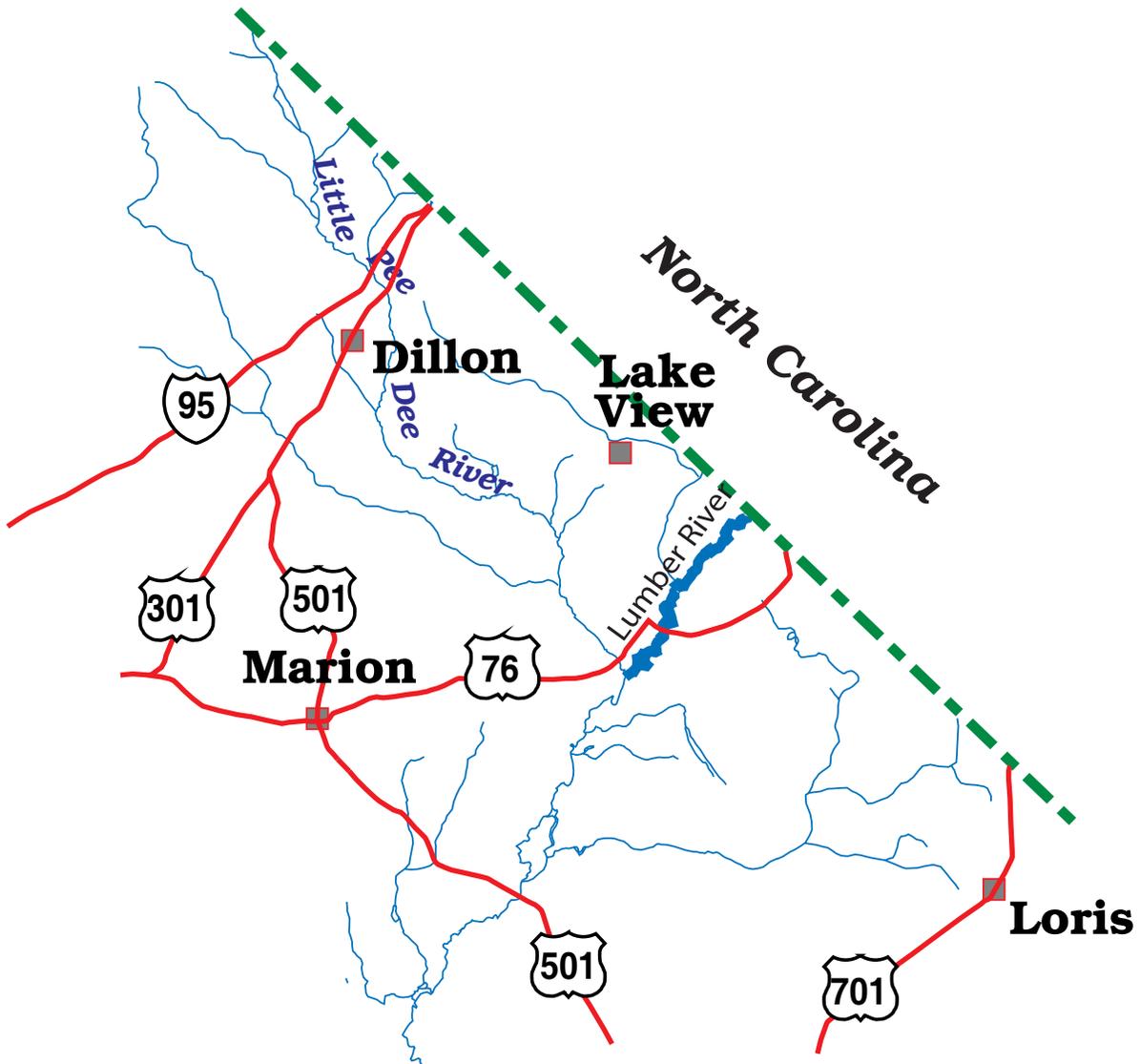
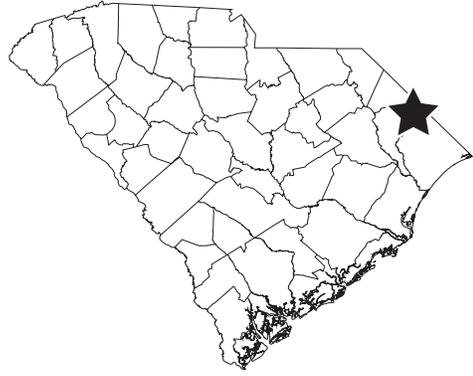
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Continue to coordinate treatment areas with local conservation groups and State Scenic Rivers Coordinator.

# Lumber River



## 18. Pee Dee River

(Georgetown County)

1. Problem plant species
  - Water hyacinth
  - Phragmites
2. Management objective
  - Through a comprehensive, multi-year approach; reduce water hyacinth and Phragmites populations to the greatest extent possible
3. Selected control method

<u>Problem Species</u>	<u>Control Agents</u>
Water hyacinth	Reward, Renovate 3, Clearcast, Habitat, Galleon SC
Phragmites	Habitat, Clearcast
4. Area to which control is to be applied
  - 100 acres of water hyacinth throughout river and adjacent public ricefields.
  - 15 acres of phragmites in the Sandy Island area and Samworth WMA.
5. Rate of control agent to be applied
  - Reward - 0.5 gallons per acre.
  - Renovate 3 - 0.50 to 0.75 gallons per acre.
  - Habitat - up to 4 pints per acre.
  - Clearcast - 1 to 4 pints per acre.
  - Galleon SC - 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent
  - Helicopter, aiboat - 100 acres of herbicide applied to water hyacinth (Sandy Island Area 10 acres). 12 acres of Habitat applied to phragmites (Sandy Island Area 2 acres).
  - Other applications - 50 acres of water hyacinth applied by airboat. Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application
  - Reward, Renovate 3, Clearcast, Habitat, Galleon SC - to be applied periodically to water hyacinth from May through October.
  - Habitat, Clearcast - Apply when plants are actively growing.

8. Other control application specifications

None

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

\$13,029

11. Potential sources of funding

Georgetown County 50%

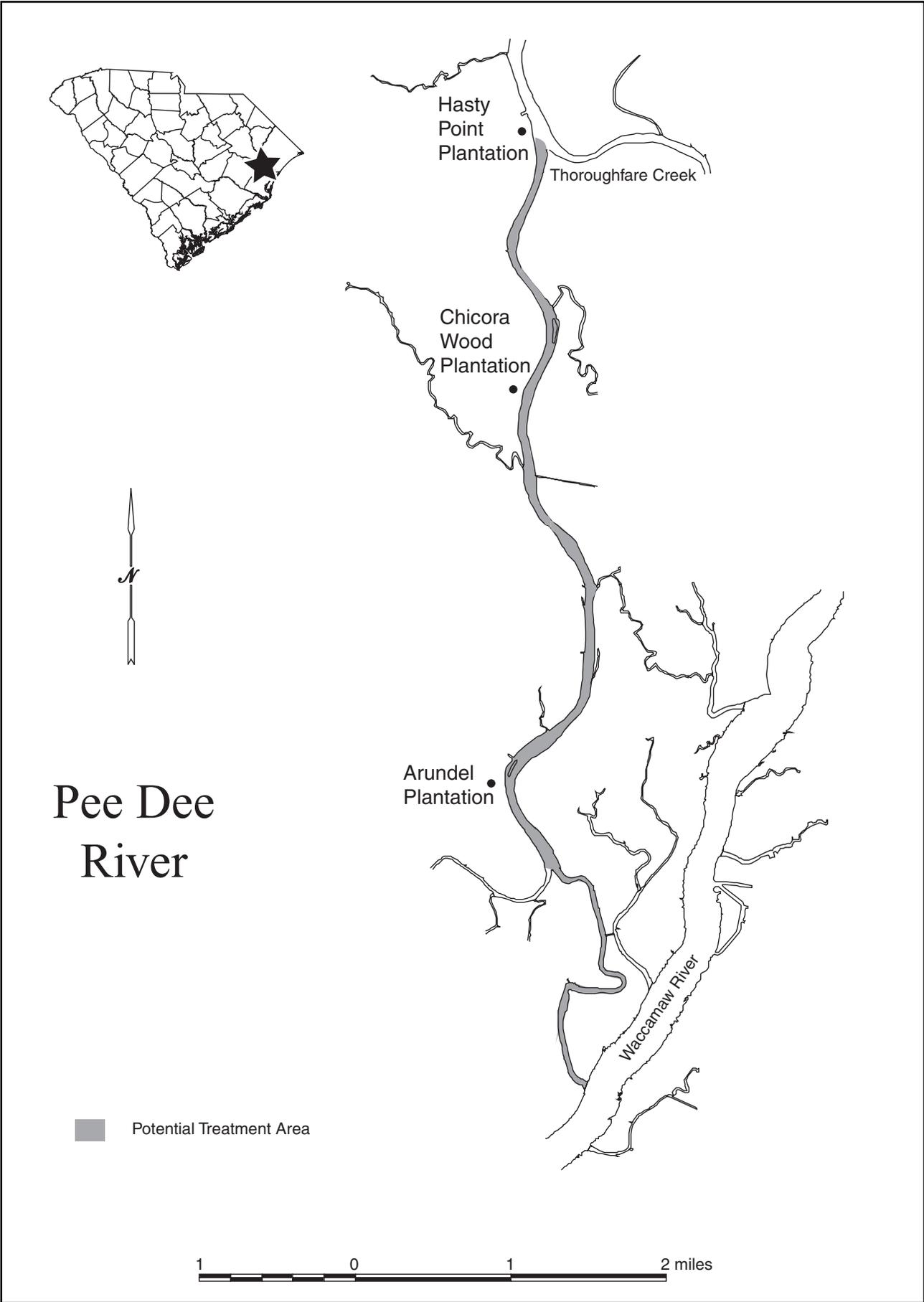
U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.



## **19. Samworth WMA** (Georgetown County)

1. Problem plant species
  - Water hyacinth
  - Phragmites
2. Management objective
  - Through a comprehensive, multi-year approach; reduce water hyacinth and Phragmites populations to the greatest extent possible
3. Selected control method

<u>Problem Species</u>	<u>Control Agents</u>
Water hyacinth	Reward, Renovate 3, Clearcast, Habitat, Galleon SC
Phragmites	Habitat, Clearcast
4. Area to which control is to be applied
  - 75 acres of water hyacinth throughout river and adjacent public ricefields.
  - 10 acres of phragmites in the Sandy Island area and Samworth WMA.
5. Rate of control agent to be applied
  - Reward - 0.5 gallons per acre.
  - Renovate 3 - 0.50 to 0.75 gallons per acre.
  - Habitat - up to 4 pints per acre.
  - Clearcast - 1 to 4 pints per acre.
  - Galleon SC - 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent
  - Helicopter, aiboat - 75 acres of herbicide applied to water hyacinth. 10 acres of Habitat applied to phragmites.
7. Timing and sequence of control application
  - Reward, Renovate 3, Clearcast, Habitat, Galleon SC - to be applied periodically to water hyacinth from May through October.
  - Habitat, Clearcast - Apply when plants are actively growing.

8. Other control application specifications

None

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

\$11,548

11. Potential sources of funding

Georgetown County 50%

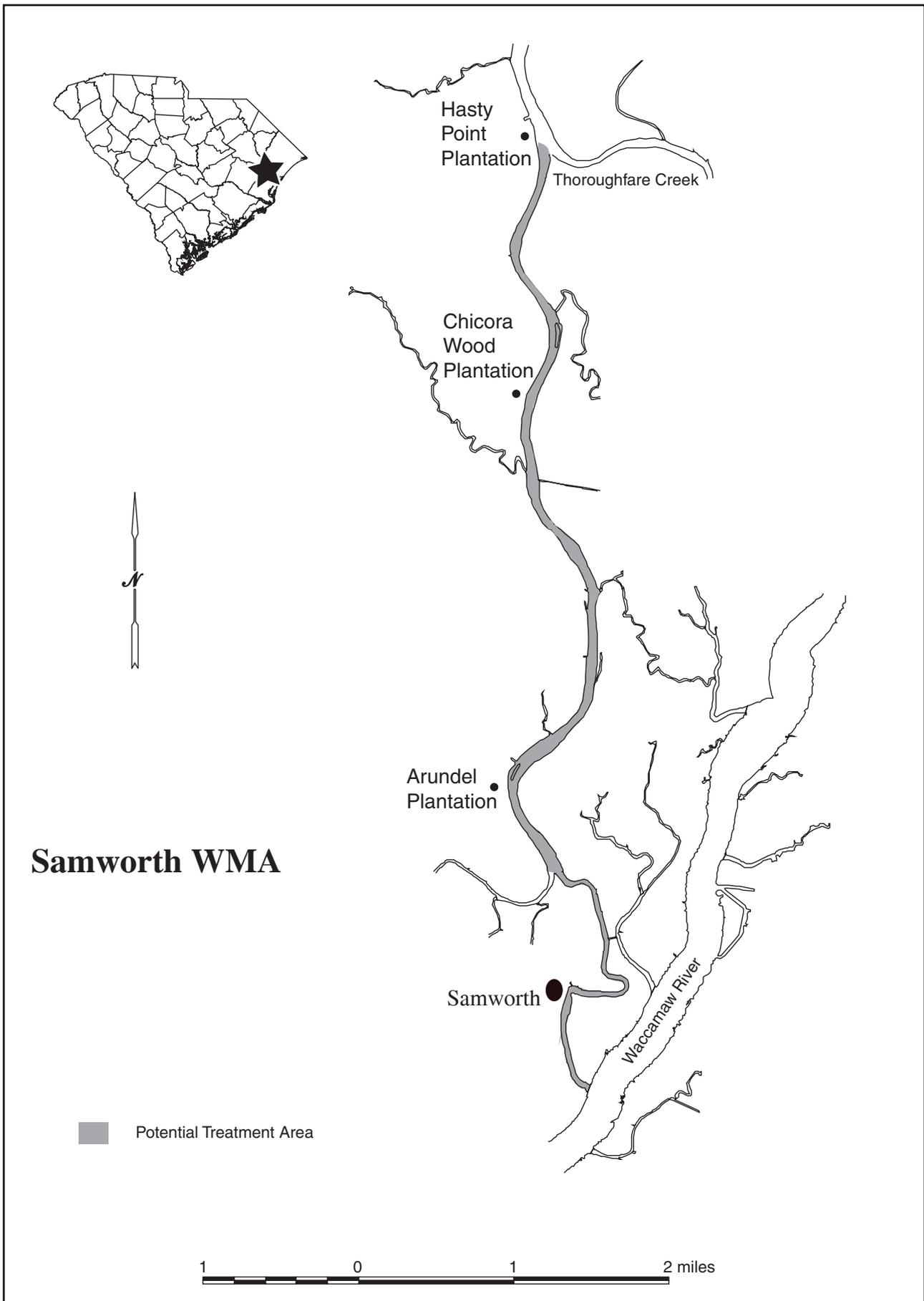
U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.



## 20. Santee Coastal Reserve

(Charleston and Georgetown Counties)

1. Problem plant species  
Phragmites
2. Management objective  
Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible throughout the Santee Coastal Reserve.
3. Selected control method  
Habitat, Clearcast
4. Area to which control is to be applied  
200 acres of phragmites throughout the ricefields.
5. Rate of control agent to be applied  
Habitat - 3 to 6 pints per acre.  
Clearcast - 3 to 6 pints per acre.
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application  
Apply after plants are actively growing (May - Oct.).
8. Other control application specifications  
Application to be conducted by ground application or airboat. Helicopter applications should be utilized at a minimum of every 3 years or when substantial regrowth occurs.
9. Entity to apply control agent  
Commercial applicator
10. Estimated cost of control operations  
\$26,825

11. Potential sources of funding

Santee Coastal Reserve 50%

U.S. Army Corps of Engineers 0%

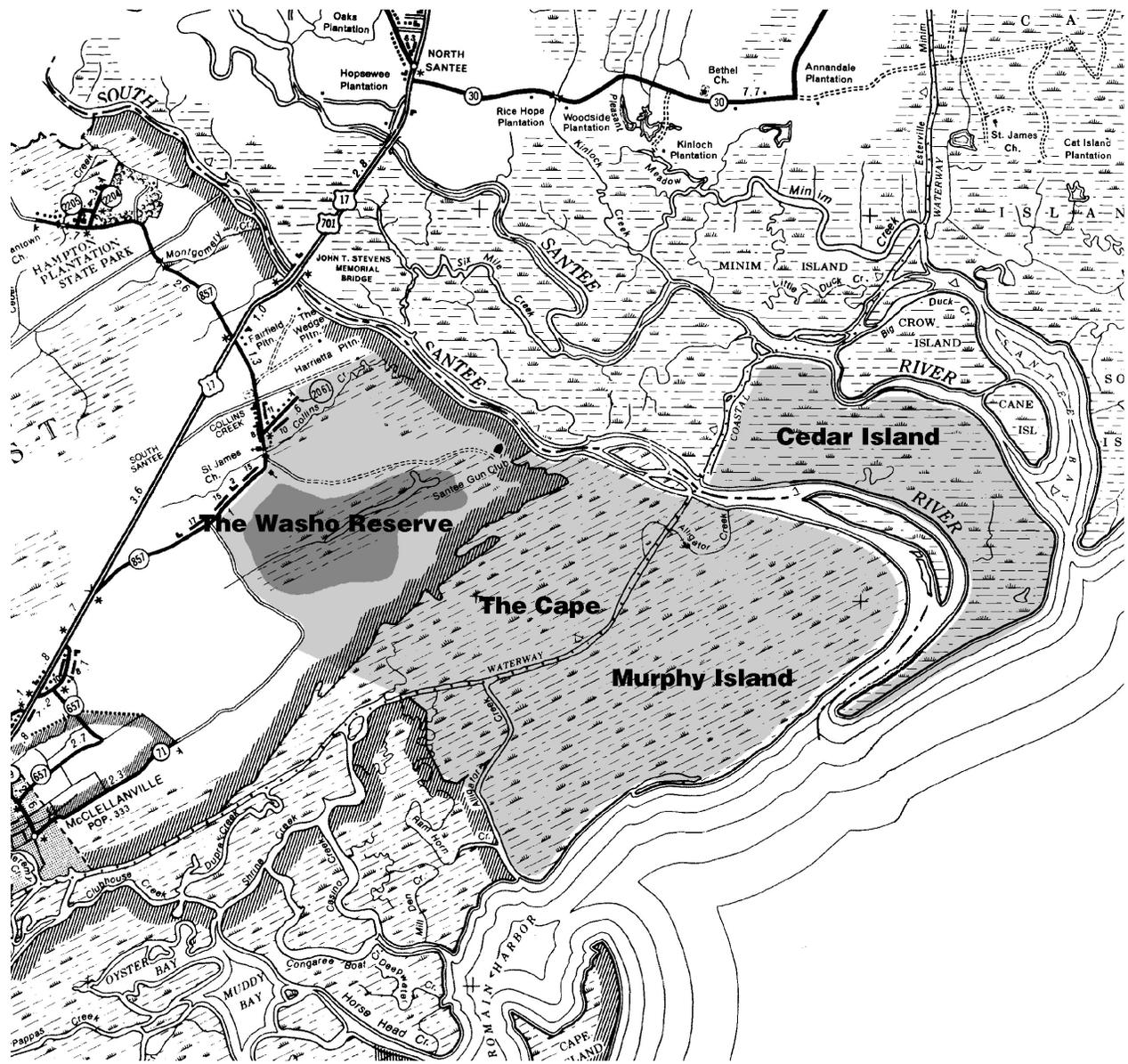
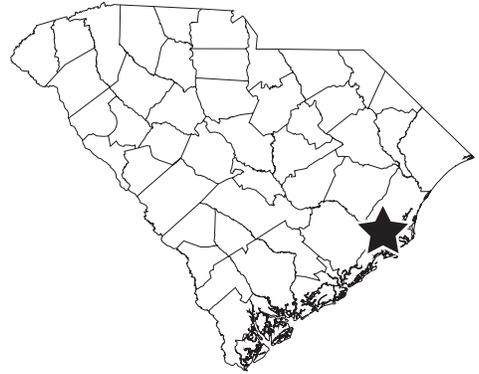
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

# Santee Coastal Reserve



## 21. Santee Delta WMA

(Georgetown County)

1. Problem plant species  
Phragmites
2. Management objective  
Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible.
3. Selected control method  
Habitat, Clearcast
4. Area to which control is to be applied  
30 acres of Phragmites throughout the ricefields.
5. Rate of control agent to be applied  
Habitat - 3 to 6 pints per acre.  
Clearcast - 3 to 6 pints per acre.
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application  
Apply after plants are actively growing (May - Oct.).
8. Other control application specifications  
Application to be conducted by ground application or airboat. Helicopter applications should be utilized at a minimum of every 3 years or when substantial regrowth occurs.
9. Entity to apply control agent  
Commercial applicator
10. Estimated cost of control operations  
\$4024

11. Potential sources of funding

Santee Coastal Reserve 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

# Santee Delta WMA



## **22. U.S. Army Corps of Engineers Charleston Harbor/Intracoastal Waterway**

(Charleston County)

1. Problem plant species  
Phragmites
2. Management objective  
Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible
3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Phragmites	Habitat
4. Area to which control is to be applied  
255 acres of phragmites throughout area
5. Rate of control agent to be applied  
Habitat - 2 to 6 pints per acre.
6. Method of application of control agent  
Helicopter - 255 acres of Habitat applied to phragmites.  
Other applications - Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application  
Apply when plants are actively growing (July - Oct.).
9. Entity to apply control agent  
Commercial applicator
10. Estimated cost of control operations  
\$34,20211. Potential sources of funding  
U.S. Army Corps of Engineers (Charleston Harbor Funds) 100%  
S. C. Department of Natural Resources 0%  
  
*(Percentage of match subject to change based on availability of Federal and State funding.)*
12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d. Continue to coordinate treatment areas with local conservation groups.

# Charleston Harbor Dredge Spoil Areas



## 23. US Navy Naval Weapons Station

(Charleston, Berkeley County)

1. Problem plant species

Frog's bit	Cattails	Bur Marigold
Cutgrass	Water Primrose	Swamp loosestrife
Phragmites		

2. Management objective

Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible in spoil areas and control invasives, Frog's bit, Cattails, Bur Marigold, Cutgrass, Water Primrose, and Swamp loosestrife) in Marrington Forest Recreation Area waters.

3. Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Frog's bit, Water primrose, Bur marigold	Renovate 3, Habitat, Galleon SC
Cattails, Phragmites	Habitat, Clearcast, Glyphosate
Cutgrass, Swamp loosestrife	Habitat , Clearcast, Glyphosate

4. Area to which control is to be applied

60 acres of Frog's bit, Water primroses, Bur marigold , Cattails, Cutgrass, and Swamp loosestrife throughout the Marrington Forest Recreation Area waterbodies on three separate treatments.

25 acres of Phragmites populations in dredge spoil areas.

5. Rate of control agent to be applied

Renovate 3 - 0.5 to 0.75 gallons per acre  
Habitat - 2 to 6 pints per acre.  
Clearcast - 2 to 6 pints per acre  
Glyphosate - up to 7.5 pints per acre  
Galleon SC - 2 to 5.6 fl oz/acre as foliar application.

6. Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

Apply after plants are actively growing (May - Oct.).

8. Other control application specifications

Application to be conducted by helicopter, airboat and jon-boat.

9. Entity to apply control agent  
Commercial applicator

10. Estimated cost of control operations  
\$17,525

Potential sources of funding

US Naval Weapons Station 0%\*

S. C. Department of Natural Resources 100%\*

*(Percentage of match subject to change based on availability of Federal and State funding.)*

*\* costs in 2007 were charged completely to USN, Backside cost share to finish project*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

**US Navy Naval Weapons Station**



**NO MAP AVAILABLE**

## 24. Waccamaw River

(Horry County)

1. Problem plant species
  - Water hyacinth
  - Phragmites
2. Management objective
  - Through a comprehensive, multi-year approach; reduce water hyacinth and Phragmites populations to the greatest extent possible
3. Selected control method

<u>Problem Species</u>	<u>Control Agents</u>
Water hyacinth	Reward, Renovate 3, Clearcast, Galleon SC
Phragmites	Habitat, Clearcast
4. Area to which control is to be applied
  - 110 acres throughout river system where needed.
5. Rate of control agent to be applied
  - Reward - 0.5 gallons per acre.
  - Renovate 3 - 0.50 to 0.75 gallons per acre.
  - Habitat - up to 4 pints per acre.
  - Clearcast - 1 to 4 pints per acre.
  - Galleon SC - 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent
  - Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application
  - Herbicide to be applied to water hyacinth periodically from late May through November.
8. Other control application specifications
  - Herbicide used only upon approval by S.C. Department of Health and Environmental Control. Treatment of control area will be conducted in a manner that will not significantly degrade water quality.
9. Entity to apply control agent
  - Commercial applicator

10. Estimated cost of control operations

\$ 9,150

11. Potential sources of funding

Horry County 25%

Brookgreen Gardens 25%

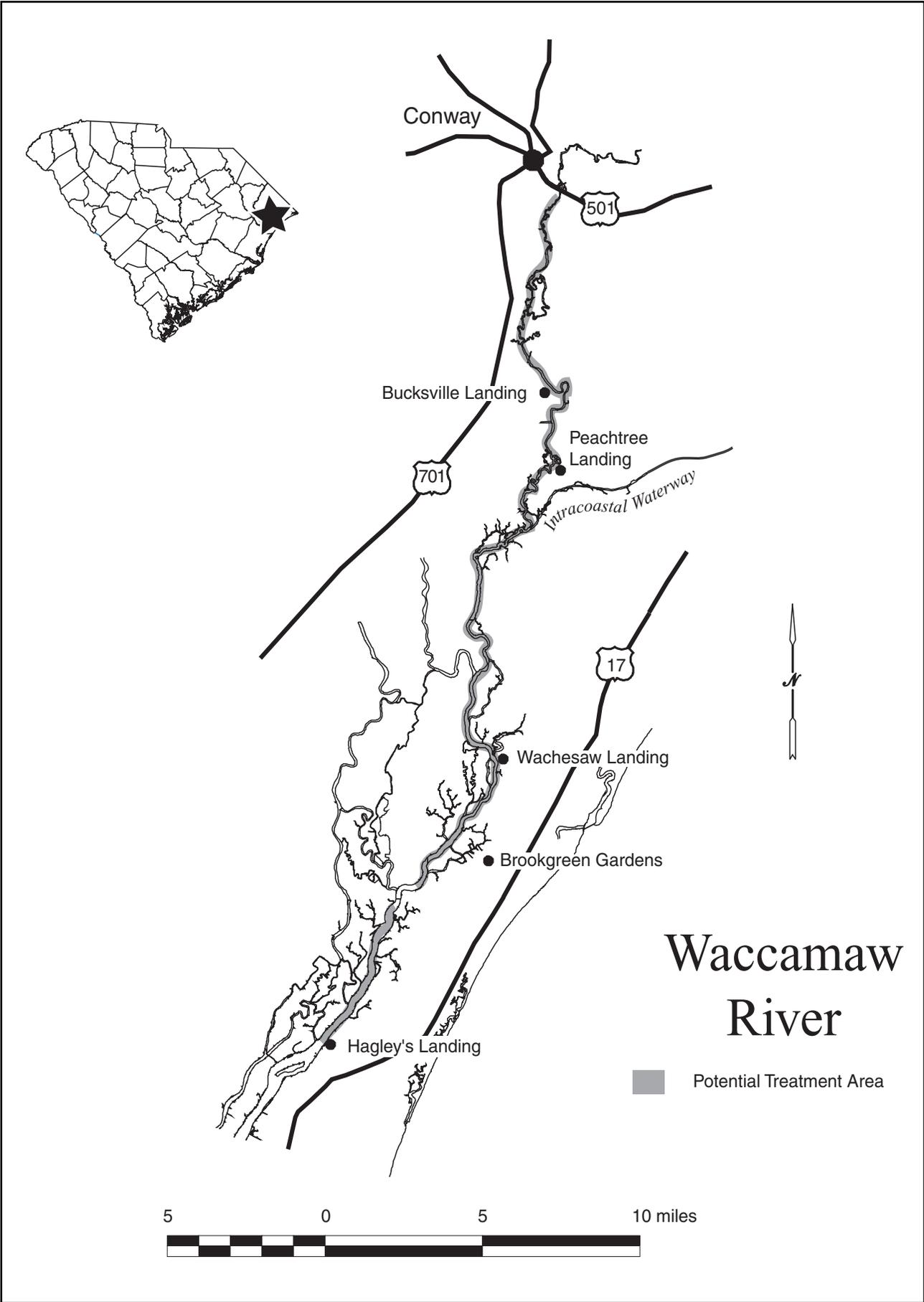
U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.



## 25. Yawkey Wildlife Center

(Georgetown County)

1. Problem plant species  
Phragmites                      Cattails                      Cutgrass
2. Management objective  
Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible.
3. Selected control method  
Habitat, Clearcast, Glyphosate
4. Area to which control is to be applied  
100 acres of Phragmites, cattails, and cutgrass throughout the ricefields.
5. Rate of control agent to be applied  
Habitat - 2 to 6 pints per acre.  
Clearcast - 2 to 6 pints per acre  
Glyphosate - up to 7.5 pints per acre
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application  
Apply after plants are actively growing (May - Oct.).
8. Other control application specifications  
Application to be conducted by airboat, ground, or helicopter. Phragmites control in impounded areas should only occur where drainage has left areas moderately dry
9. Entity to apply control agent  
Commercial applicator
10. Estimated cost of control operations  
\$18,475

11. Potential sources of funding

Yawkey Foundation 50%

U.S. Army Corps of Engineers 0%

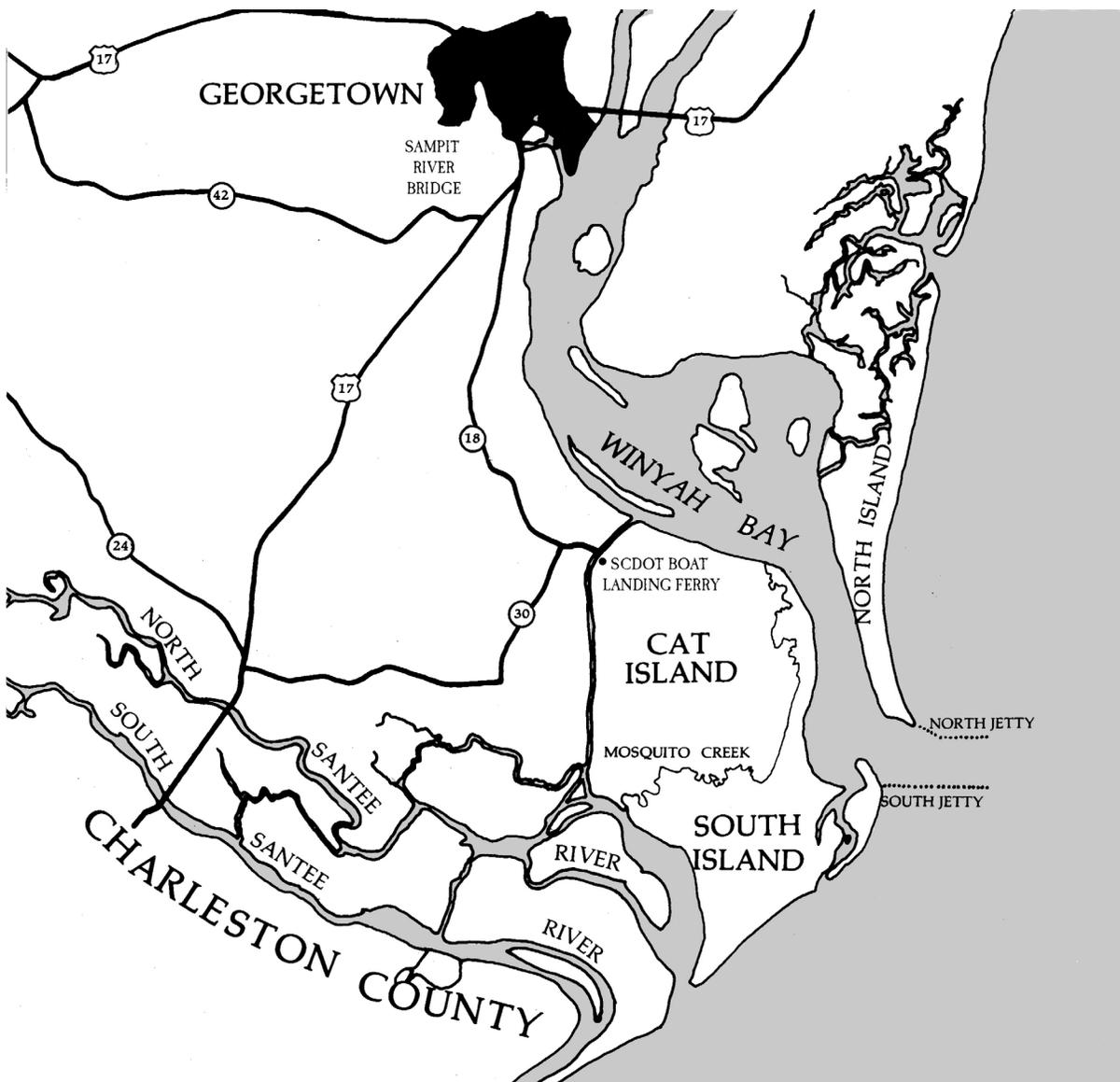
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

# Yawkey Wildlife Center



## **Santee Cooper Lakes**

## 26. Lake Marion

(Calhoun, Clarendon, and Sumter Counties)

### 1. Problem plant species

Hydrilla	Alligatorweed	Fanwort
Water willow	Water hyacinth	Slender naiad
Water primrose	Giant Cutgrass	Coontail
Filamentous algae (Lyngbya)		Slender Pondweed
Crested floating Heart		Fragrant waterlily

### 2. Management objectives

- a. Foster a diverse aquatic plant community through selective treatment of nuisance aquatic vegetation (to avoid adverse impacts to existing non-invasive plant species) and the introduction of desirable native plant species.
- b. Manage hydrilla growth throughout the main lake and subimpoundments to minimize its spread within the lake, help prevent its spread to adjacent public waters, and minimize adverse impacts to electric power generation, agricultural irrigation withdrawals, and public use and access.
- c. Reduce water hyacinth populations throughout the lake to enhance boating, fishing, hunting, and public access.
- d. Reduce giant cutgrass populations throughout the lake, especially in the Hickory Top Wildlife Management Area and upper lake near Lowfalls landing, to enhance wildlife habitat and hunting opportunities.
- e. Reduce fragrant waterlily and alligatorweed populations throughout the Santee Cooper Wildlife Management Area to enhance wildlife habitat and hunting opportunities.
- f. Reduce other nuisance aquatic vegetation in priority use areas, such as electric power generation facilities, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas in the main lake and subimpoundments.

### 3. Selected control method

Problem Species	Control Agents
Hydrilla	Aquathol K, Sonar, chelated copper*, Triploid grass carp
Lyngbya	chelated copper*
Water hyacinth	Reward, Renovate 3, Clearcast

Fanwort, coontail, slender naiad, Aquathol K, Sonar, Reward  
slender pondweed

Water primrose, alligatorweed, Glyphosate, Habitat, Renovate 3, Clearcast-  
giant cutgrass

\* May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.

4. Area to which control is to be applied

Water hyacinth - Approximately 750 acres throughout lake but mostly in the upper lake area above I-95 bridge.

Hydrilla - Approximately 400 acres in priority areas such as electric power generation facilities, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas in the main lake and sub-impoundments. If conditions warrant, release triploid grass carp in close proximity to areas of the lake with the greatest hydrilla growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

Giant Cutgrass - Approximately 50 acres along shoreline areas throughout lake system.

Crested Floating Heart - Approximately 200 acres in priority areas such as public and commercial access sites(boat ramps, piers, swimming areas, marinas, and residential shoreline areas in the main lake).

Other target species - Approximately 100 acres in priority areas such as electric power generation facilities, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas in the main lake and sub-impoundments.

Sub-Impoundments -

a. Dean's Swamp Impoundment, Potato Creek Impoundment, Church Branch Impoundment, Taw Caw Impoundment

The general management strategy is to transition from hydrilla dominant plant communities to ones dominated by native plant species, which are beneficial to wildlife, by use of aquatic herbicides. Specific control methods for the sub-impoundments will be determined cooperatively between Santee Cooper and SCD-NR staffs which are consistent with both groups' interests for control of invasive plant species such as hydrilla while promoting vegetation beneficial to wildlife and waterfowl through other habitat enhancement projects.

5. Rate of control agents to be applied

Aquathol K - 6 to 10 gallons per acre (dependent on water depth)

Reward - 0.5 gallon per acre for floating plants; two gallons per acre for submersed plants

Renovate 3 - 0.5 to 0.75 gallons per acre for emergent species, per label for submersed plants.

Habitat - 1 to 6 pints per acre

Sonar AS - 0.075 to 0.15 ppm

Chelated Copper- up to 1 ppm

Glyphosate - up to 1 gallon per acre.

Sonar Q, Sonar PR - up to 40 ppb(approx 10 pounds/acre)

Clearcast - 1 to 4 pints per acre

Triploid grass carp –The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in the Santee Cooper Lakes to provide long-term control of hydrilla. Drought conditions during the past year resulted in a decrease in lake levels to near historic lows. The long-term impacts of the low water levels on the increasing hydrilla growths observed early in the year are as yet undetermined. These impacts may range from a degree of control to exposed beds of vegetation to rapidly expanded growth due to shallower and clearer water. As a result of these unknowns, no grass carp will be stocked until a determination of impacts can be made. Hydrilla populations will be carefully monitored and in the event that survey results and regrowth warrant, the Aquatic Plant Management Council will resume maintenance stocking of grass carp at that time. A maintenance stocking plan developed in 1999 provided for the stocking of grass carp at a rate that maintains a low level population to control hydrilla yet maintain native plant species. The plan was initiated in 2007 when it was apparent that aquatic vegetation was increasing in the lakes. Surveys in 2007(pre-drought) continue to indicate a substantial increase in aquatic plants and the regrowth of hydrilla in some areas. The plan is intended to maintain the population of triploid grass carp at the same level that was present in 2006.

#### 6. Method of application of control agents

Aquathol K, chelated copper, Sonar - subsurface application by airboat or surface application by helicopter.

Reward - (water hyacinths) spray on surface of foliage using handgun from airboat or by helicopter with appropriate surfactant;( submersed plants) subsurface application.

Renovate 3, Glyphosate, Habitat, Clearcast - spray on surface of foliage with appropriate surfactant.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

7. Timing and sequence of control application

Herbicide applications - All herbicide applications to be applied when plants are actively growing. Water hyacinth treatments should be initiated in early spring when plant growth begins and continued regularly during the year as needed.

Triploid grass carp - If conditions warrant, triploid grass carp to be released as soon as possible.

8. Other control application specifications

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

Water hyacinth treatments should be considered a high priority to minimize spread to other areas of the lake system. Treatments should be conducted wherever the plants occur and access by boat is feasible. Frequent treatments in this area will be necessary to meet management objectives.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Lake Marion will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

9. Entity to apply control agents

Herbicide application - S.C. Public Service Authority and/or commercial applicator.

Triploid Grass Carp - S.C. Public Service Authority and/or a commercial supplier with supervision by the SCDNR.

10. Estimated cost of control operations

\$250,000

Note: The budgeted amount is based on aquatic plant coverage and treatment needs from previous years. Actual expenditures will depend on the extent of noxious aquatic plant growth in 2008.

11. Potential sources of funding

S.C. Public Service Authority 50%

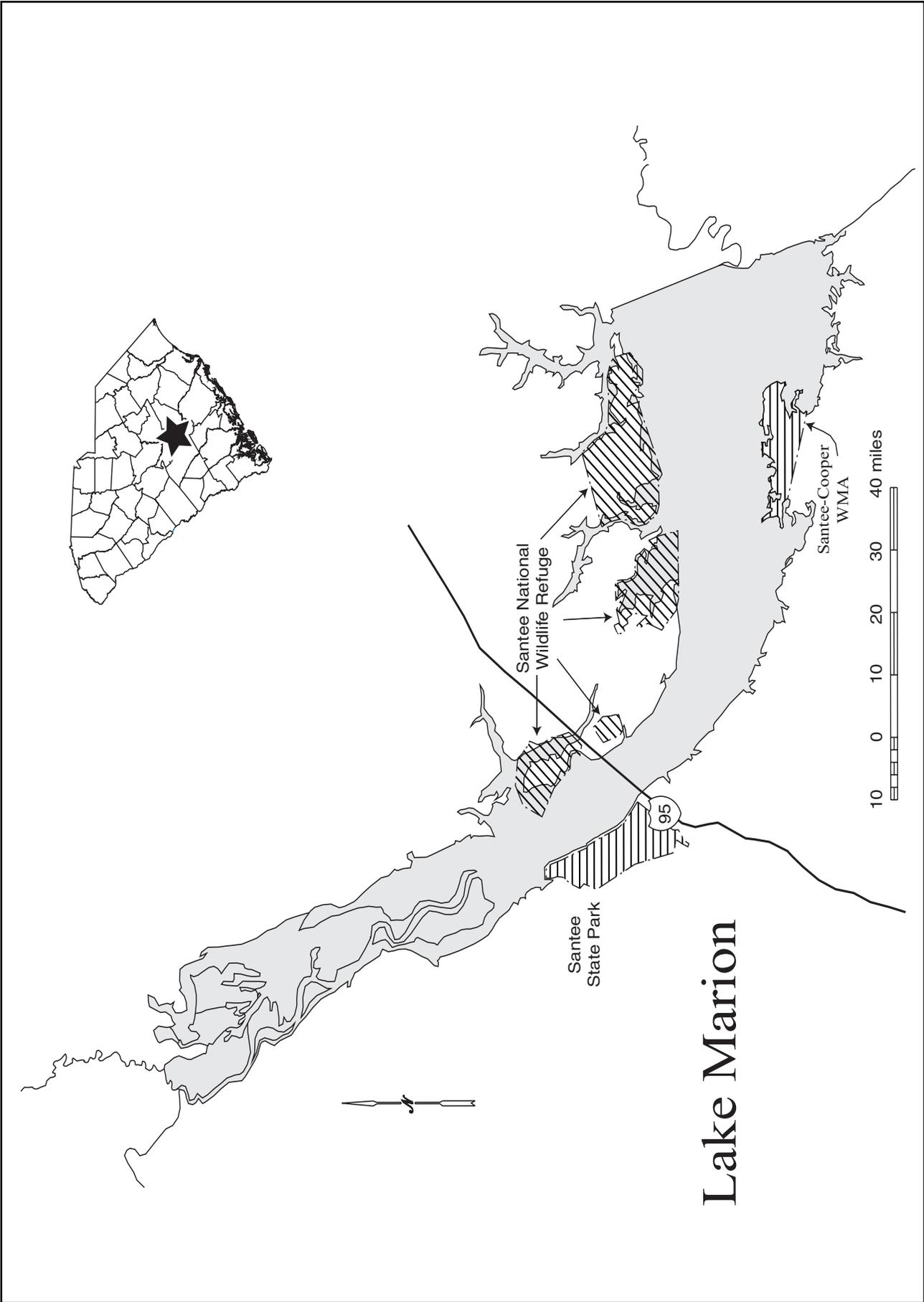
U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

(Percentage of match subject to change based on availability of Federal and State funding.)

12. Long term management strategy

- a. Support the management goals established by the DNR and Santee Cooper (Appendix E) which attempts to achieve a diverse assemblage of native aquatic vegetation in 10% of the total surface area of the lake and to effectively control non-native invasive species.
- b. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- c. A long-term integrated management strategy has been implemented to control hydrilla. Triploid grass carp have been stocked to control hydrilla growth lake-wide and approved aquatic herbicides are used to control localized growth in priority use areas. Future plans include annual maintenance stocking of grass carp to maintain the population at a level that is sufficient to maintain control of hydrilla but to minimize impacts on desirable native plant populations.
- d. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- e. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- f. Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.



# Lake Marion

## 27. Lake Moultrie

(Berkeley County)

1. Problem plant species

Hydrilla	Slender naiad	Watermilfoil
Water willow	Water primrose	Alligatorweed
Fanwort	Water hyacinth	Giant Cutgrass

2. Management objectives

- a. Foster a diverse aquatic plant community through selective treatment of nuisance aquatic vegetation (to avoid adverse impacts to existing non-invasive plant species) and the introduction of desirable native plant species.
- b. Manage hydrilla growth throughout the main lake and subimpoundments to minimize its spread within the lake, help prevent its spread to adjacent public waters, and minimize adverse impacts to electric power generation, agricultural irrigation withdrawals, and public use and access.
- c. Reduce water hyacinth populations throughout the lake to enhance boating, fishing, hunting, and public access.
- d. Reduce giant cutgrass populations throughout the lake to enhance wildlife habitat and hunting opportunities.
- e. Reduce other nuisance aquatic vegetation in priority use areas, such as electric power generation facilities, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas.

3. Selected control method

<u>Problem Species</u>	<u>Control Agents</u>
Hydrilla	Aquathol K, Sonar, Triploid grass carp** Chelated Copper
Water hyacinth	Reward, Renovate 3
Fanwort, slender naiad, watermilfoil	Aquathol K, Sonar, Reward, Renovate 3
Water primrose, alligatorweed, giant cutgrass	Glyphosate, Habitat, Renovate 3

**\* May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.**

4. Area to which control is to be applied

Hydrilla, fanwort, watermilfoil - Approximately 80 acres in priority areas such as electric power generation facilities, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas and sub-impoundments. If conditions warrant, release triploid grass carp in close proximity to areas of the lake with the greatest hydrilla growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

Giant cutgrass, water primrose, alligatorweed - Approximately 90 acres along shoreline areas throughout the lake.

Sub -Impoundments -

a. Stoney Bay Impoundment

The general management strategy is to transition from hydrilla dominant plant communities to ones dominated by native plant species, which are beneficial to wildlife, by use of aquatic herbicides. Specific control methods for the sub-impoundments will be determined cooperatively between Santee Cooper and SCD-NR staffs which are consistent with both groups' interests for control of invasive plant species such as hydrilla while promoting vegetation beneficial to wildlife and waterfowl through other habitat enhancement projects.

5. Rate of control agents to be applied

Aquathol K - 6 to 10 gallons per acre (dependent on water depth)

Reward - 0.5 gallon per acre for floating plants; two gallons per acre for submersed plants

Renovate 3 - 0.5 to 0.75 gallons per acre for emergent species, per label for submersed plants.

Habitat - 1 to 6 pints per acre

Sonar AS - 0.075 to 0.15 ppm in treatment area

Chelated copper - up to 1 ppm

Glyphosate- up to 1 gallon per acre.

Sonar Q, Sonar PR - up to 40 ppb (approx 10 pounds/acre)

Clearcast - 1 to 4 pints per acre

Other approved aquatic herbicides - as per label instructions.

Triploid grass carp –The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in the Santee Cooper Lakes to provide long-term control of hydrilla. Drought conditions during the past year resulted in a decrease in lake levels to near historic lows. The long-term impacts of the low water levels on the increasing hydrilla growths observed early in the year are as yet undetermined. These impacts may range from a degree of control to exposed beds of vegetation to rapidly expanded growth due to shallower and clearer water. As a result of these unknowns, no grass carp will be stocked until a determination of impacts can be made. Hydrilla populations will be carefully monitored and in the event that survey results and regrowth warrant, the Aquatic Plant Manage-

ment Council will resume maintenance stocking of grass carp at that time. A maintenance stocking plan developed in 1999 provided for the stocking of grass carp at a rate that maintains a low level population to control hydrilla yet maintain native plant species. The plan was initiated in 2007 when it was apparent that aquatic vegetation was increasing in the lakes. Surveys in 2007(pre-drought) continue to indicate a substantial increase in aquatic plants and the regrowth of hydrilla in some areas. The plan is intended to maintain the population of triploid grass carp at the same level that was present in 2006.

6. Method of application of control agents

Aquathol K, chelated copper, Sonar, - subsurface application by airboat or surface application by helicopter.

Reward - (water hyacinths) spray on surface of foliage using handgun from airboat or by helicopter with appropriate surfactant;( submersed plants) subsurface application .

Renovate 3, Glyphosate, Habitat, clearcast - spray on surface of foliage with appropriate surfactant.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

7. Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

If needed, aerial treatment of hydrilla adjacent to the Rediversion Canal entrance should be performed as early as possible to prevent excessive plant growth and avoid impacts to the St. Stephen Hydropower Plant.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

8. Other control application specifications

Herbicide used only upon approval by the S.C. Department of Health and Environmental Control.

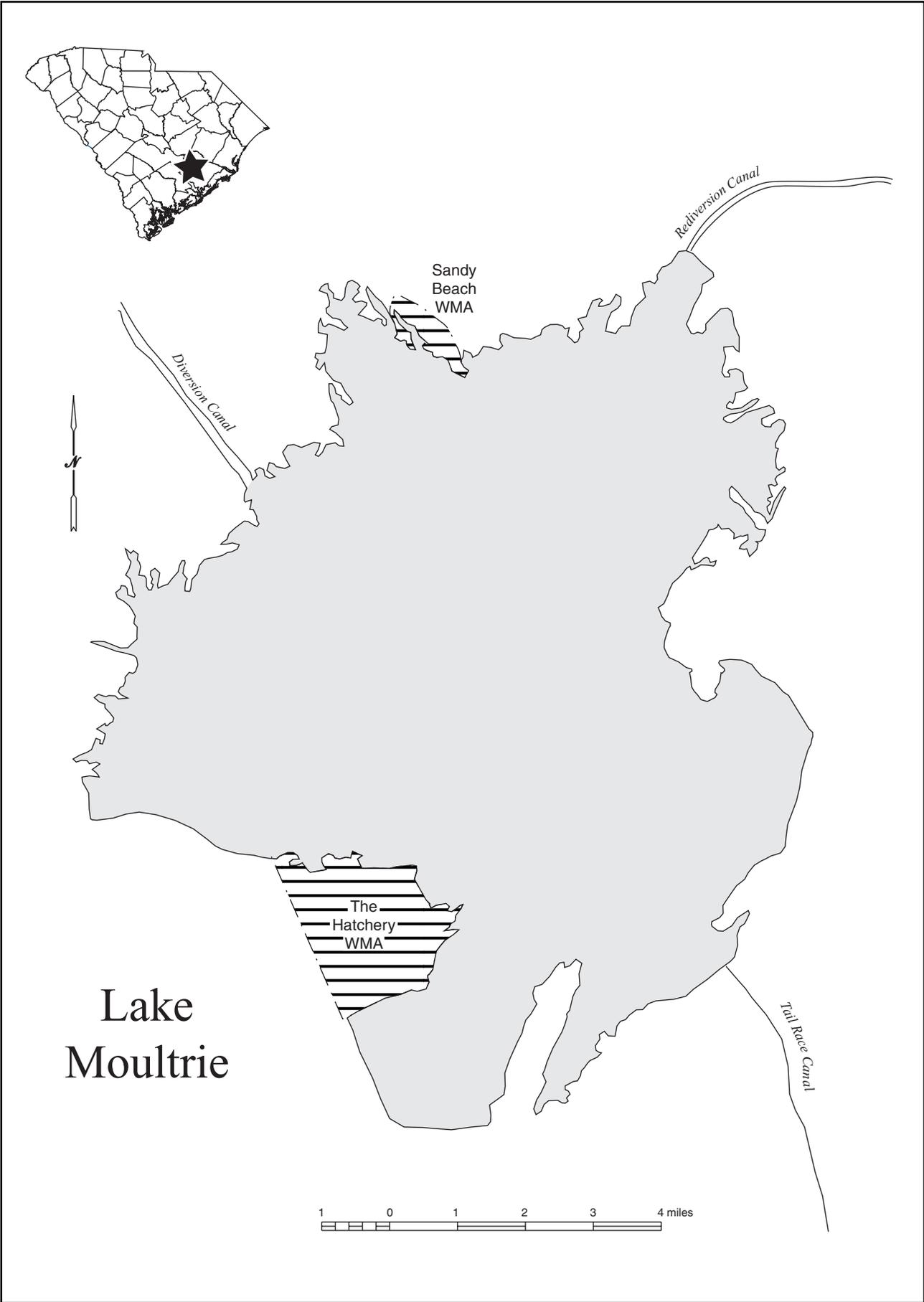
Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

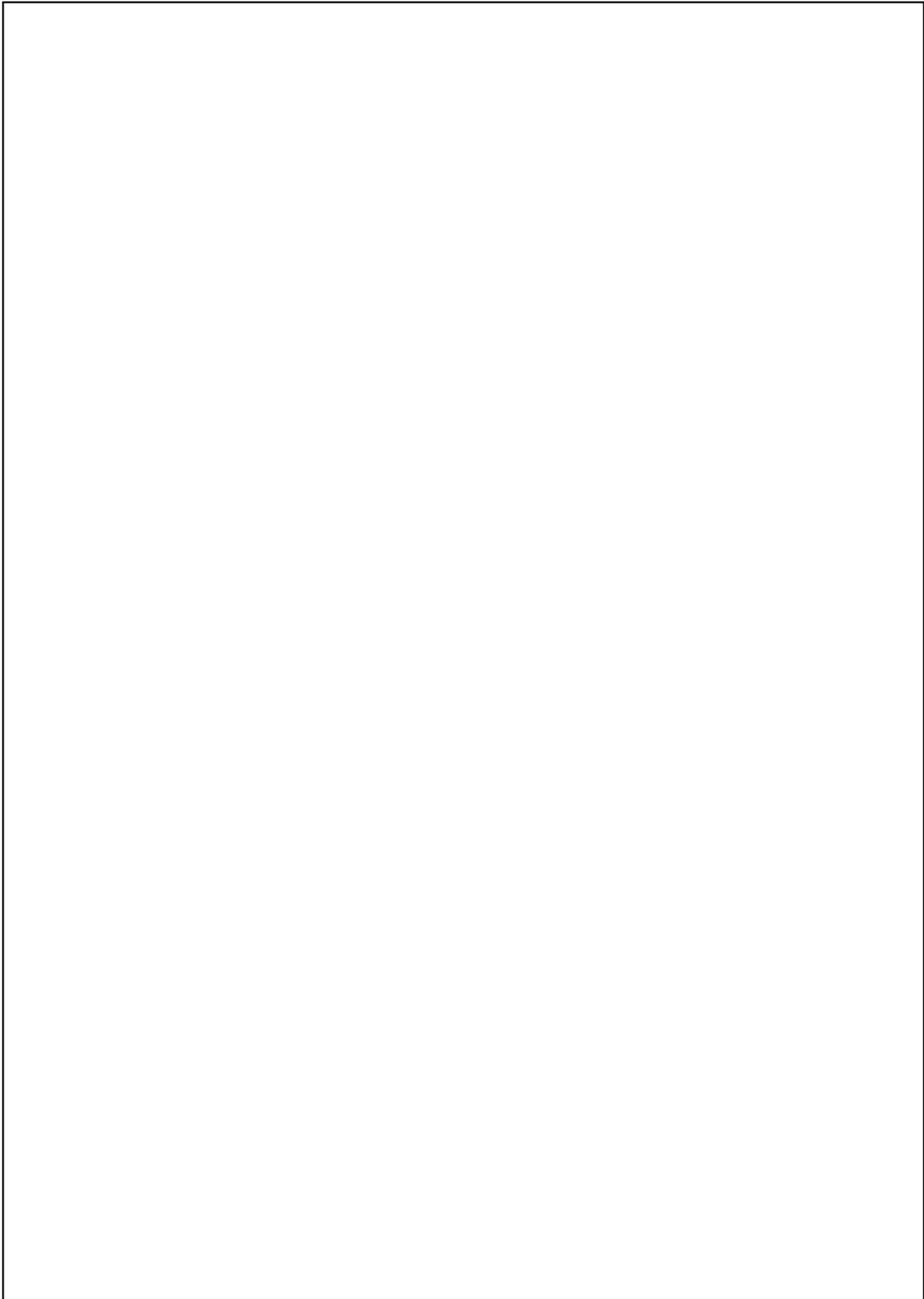
Treatment of lake, especially near the Rediversion Canal, should be coordinated with hydropower production to avoid excessive flows and maximize herbicide contact time.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Lake Moultrie will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

9. Entity to apply control agent
- Herbicide application - S.C. Public Service Authority and/or commercial applicator.
- Triploid Grass Carp - S.C. Public Service Authority and/or a commercial supplier with supervision by the SCDNR.
10. Estimated cost of control operations
- \$35,000
- Note:** The budgeted amount is based on aquatic plant coverage and treatment needs from previous years. Actual expenditures will depend on the extent of noxious aquatic plant growth in 2008.
11. Potential sources of funding
- S.C. Public Service Authority 50%
- U.S. Army Corps of Engineers 0%
- S. C. Department of Natural Resources 50%
- (Percentage of match subject to change based on availability of Federal and State funding.)*
12. Long term management strategy
- a. Support the management goals established by the DNR and Santee Cooper (Appendix E) which attempts to achieve a diverse assemblage of native aquatic vegetation in 10% of the total surface area of the lake and to effectively control non-native invasive species.
  - b. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
  - c. A long-term integrated management strategy has been implemented to control hydrilla. Triploid grass carp have been stocked to control hydrilla growth lake-wide and approved aquatic herbicides are used to control localized growth in priority use areas. Future plans include annual maintenance stocking of grass carp to maintain the population at a level that is sufficient to maintain control of hydrilla but to minimize impacts on desirable native plant populations.
  - d. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

- e. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- f. Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.





**South Carolina Department of  
Parks, Recreation and Tourism  
State Park Lakes**

## 28. Barnwell State Park (Swimming Lake)

(Barnwell County)

1. Problem plant species  
Waterlily
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Hardball
4. Area to which control is to be applied  
3 acres in swimming lake.
5. Rate of control agent to be applied  
Up to 5 gallons per acre
6. Method of application of control agent  
Subsurface injection from airboat.
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Commercial applicator contracted and monitored by SCPRT.
10. Estimated cost of control operations  
\$603
11. Potential sources of funding  
S.C. Department of Parks, Recreation and Tourism 50%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Barnwell State Park Swimming Lake





10. Estimated cost of control operations

\$1,236

11. Potential sources of funding

S.C. Department of Parks, Recreation and Tourism 50%

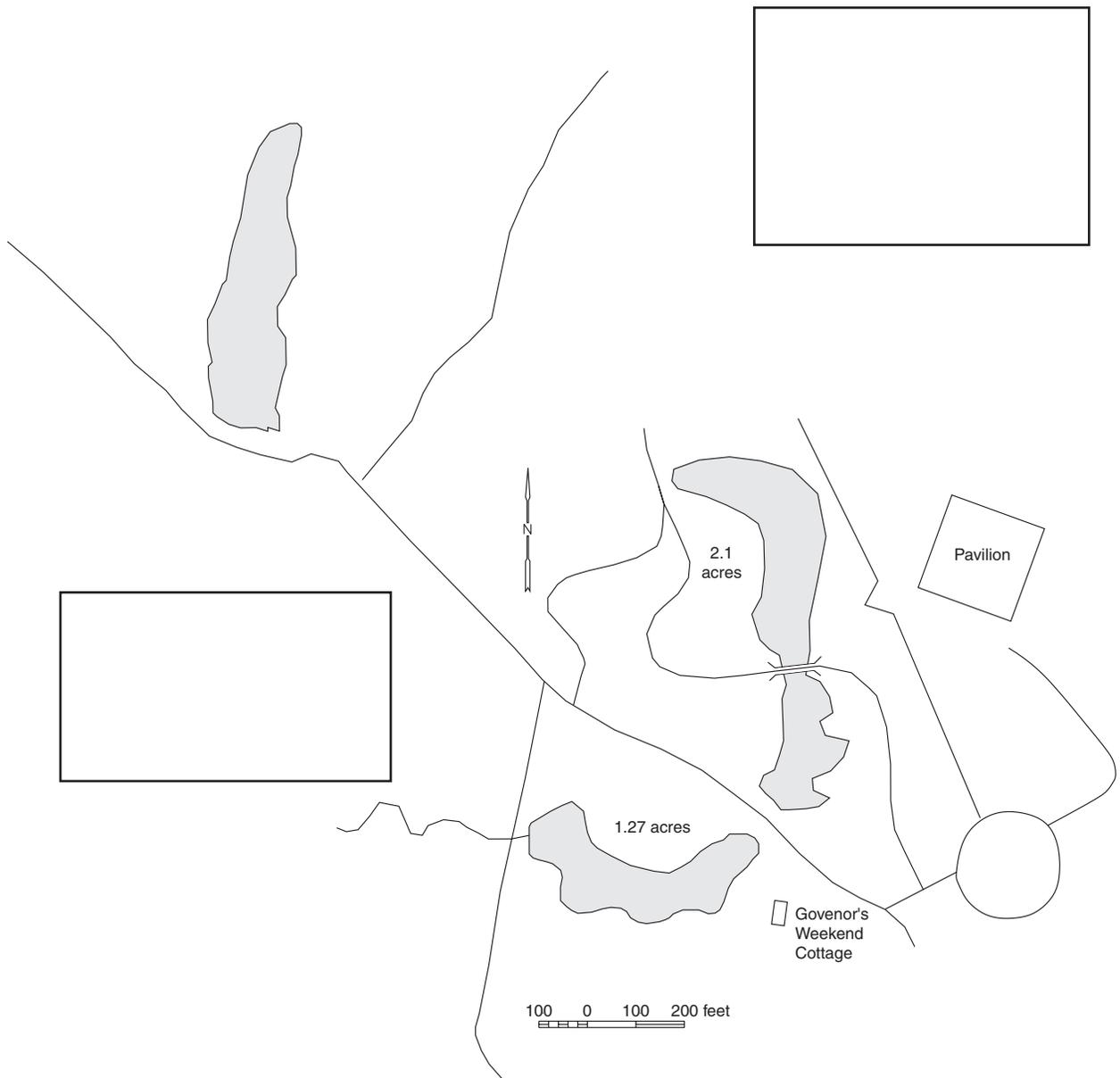
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Charles Towne Landing State Park



## 30. H. Cooper Black State Recreation Area

(Chesterfield County)

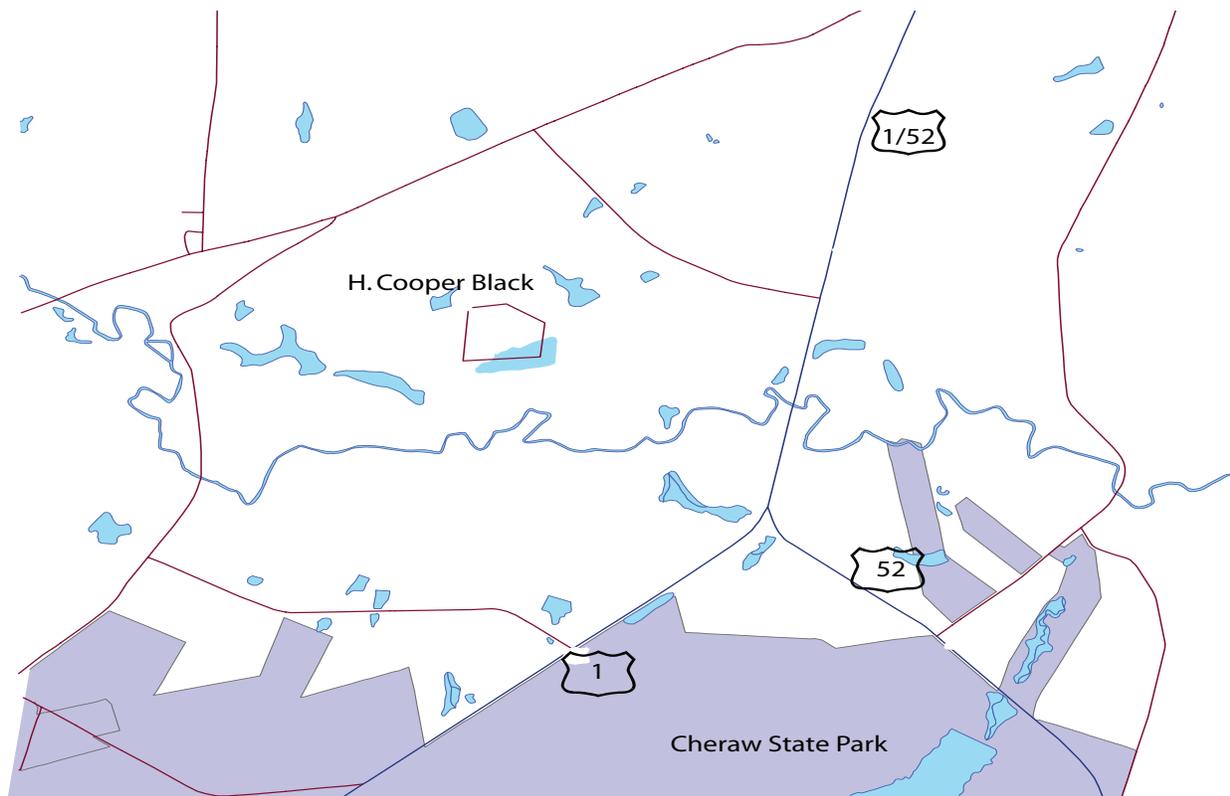
1. Problem plant species
  - Waterlily
  - Watershield
2. Management objective
  - Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method
  - Hardball
4. Area to which control is to be applied
  - 2 acres in lake.
5. Rate of control agent to be applied
  - Up to 5 gallons per acre
6. Method of application of control agent
  - Subsurface injection from airboat.
7. Timing and sequence of control application
  - Apply when plants are actively growing.
8. Other control application specifications
  - Monitor plant growth prior to treatment.
9. Entity to apply control agent
  - Commercial applicator contracted and monitored by SCPRT.
10. Estimated cost of control operations
  - \$402
11. Potential sources of funding
  - S.C. Department of Parks, Recreation and Tourism 50%
  - S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# H. Cooper Black Recreation Area



## 31. Huntington Beach State Park

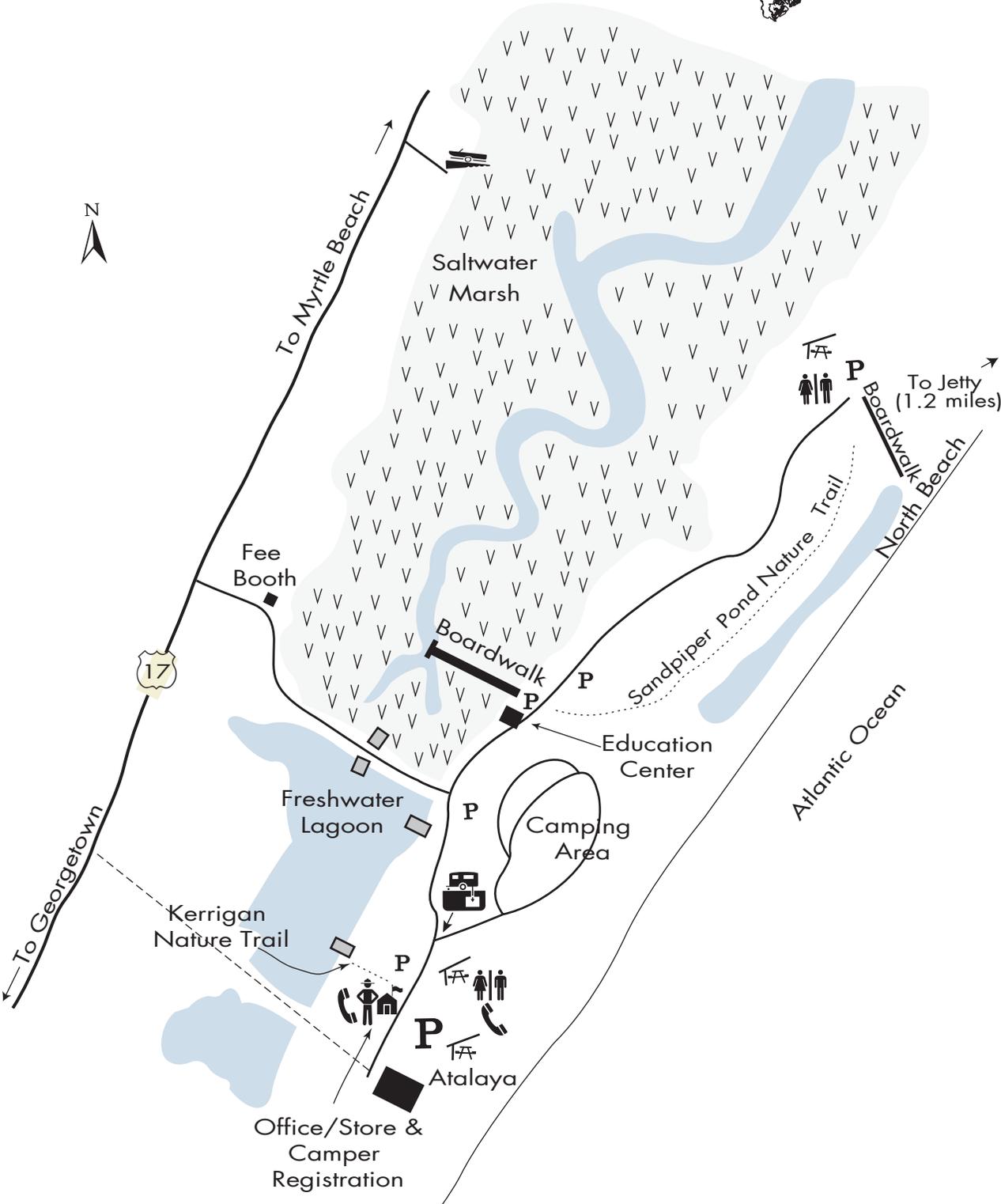
(Georgetown County)

1. Problem plant species  
Phragmites                      Cutgrass                      Cattails
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Habitat, Clearcast
4. Area to which control is to be applied  
15 acres in 3 different lakes.
5. Rate of control agent to be applied  
Habitat - up to 4 pints per acre.  
Clearcast - 1 to 4 pints per acre.  
Galleon SC - 2 to 5.6 fl oz/acre as foliar application.
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant.
7. Timing and sequence of control application  
Apply after plants are actively growing (May - Oct.).
8. Other control application specifications  
Application to be conducted by airboat, ground, or helicopter. Phragmites control in impounded areas should only occur where drainage has left areas moderately dry
9. Entity to apply control agent  
Commercial applicator
10. Estimated cost of control operations  
\$1,643
11. Potential sources of funding  
S.C. Department of Parks, Recreation and Tourism 50%  
S. C. Department of Natural Resources 50%

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Huntington Beach SP



## 32. Kings Mountain State Park - Crawford Lake

(York County)

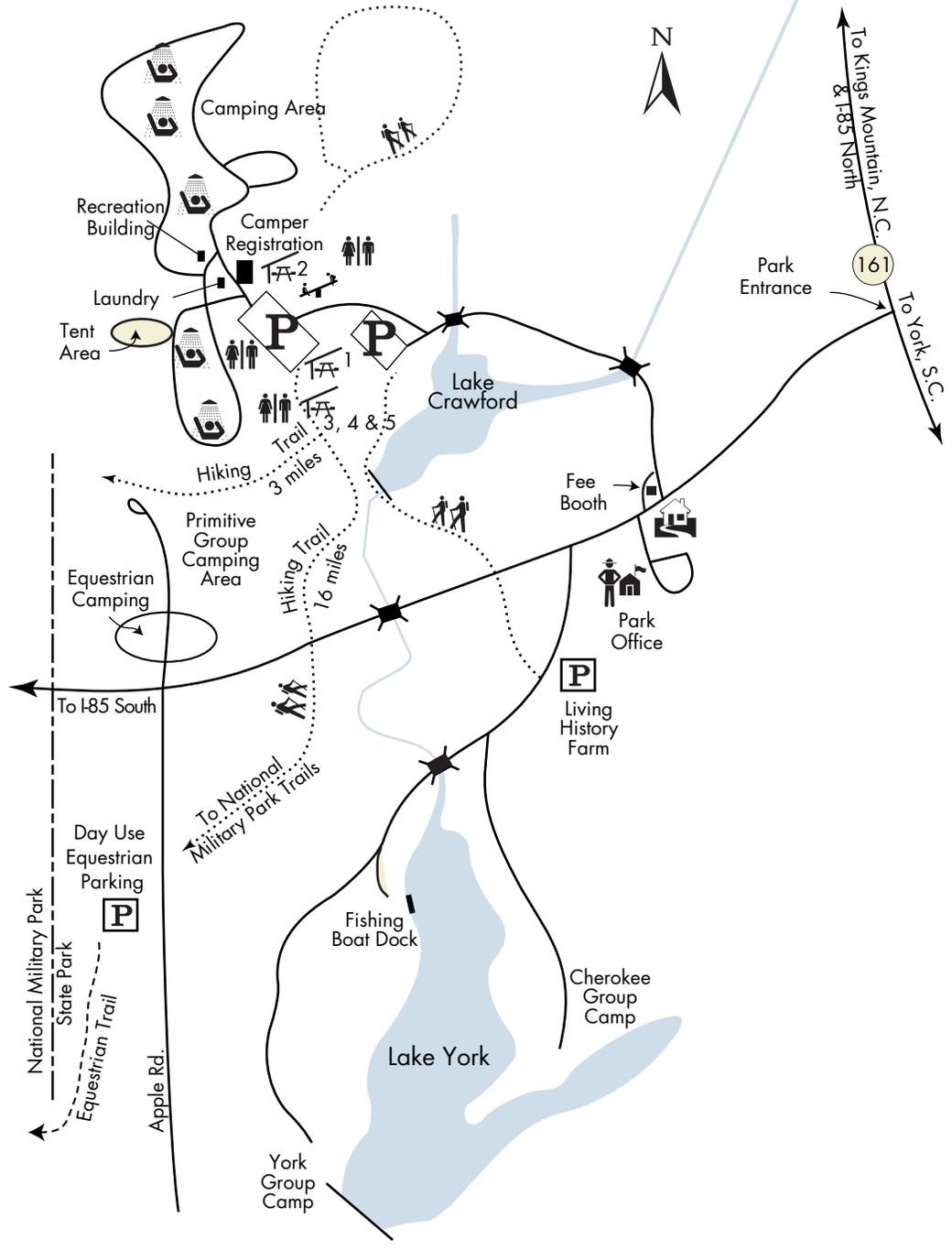
1. Problem plant species  
Slender naiad
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Aquathol K
4. Area to which control is to be applied  
4 acres in swimming and paddle boat area
5. Rate of control agent to be applied  
Four gallons per acre.
6. Method of application of control agent  
Apply subsurface throughout lake
7. Timing and sequence of control application  
Apply in May or June when naiad growth is initiated.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Commercial applicator contracted and monitored by SCPRT.
10. Estimated cost of control operations  
\$1,120
11. Potential sources of funding  
S.C. Department of Parks, Recreation and Tourism 50%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Kings Mountain SP Lake Crawford



### 33. Little Pee Dee State Park

(Dillon County)

1. Problem plant species
  - Spikerush
  - Cowlily
2. Management objective
  - Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method
  - Hardball
4. Area to which control is to be applied
  - 10 acres adjacent to the parks day use area, along the park dam and adjacent to the campground
5. Rate of control agent to be applied
  - Up to 5 gallons per acre.
6. Method of application of control agent
  - Subsurface injection from airboat.
7. Timing and sequence of control application
  - Apply when plants are actively growing.
8. Other control application specifications
  - Monitor plant growth prior to treatment.
9. Entity to apply control agent
  - Commercial applicator contracted and monitored by SCPRT.
10. Estimated cost of control operations
  - \$2,010
11. Potential sources of funding
  - S.C. Department of Parks, Recreation and Tourism 50%
  - S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy
  - a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
  - b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
  - c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.



## 34. N.R. Goodale State Park

(Kershaw County)

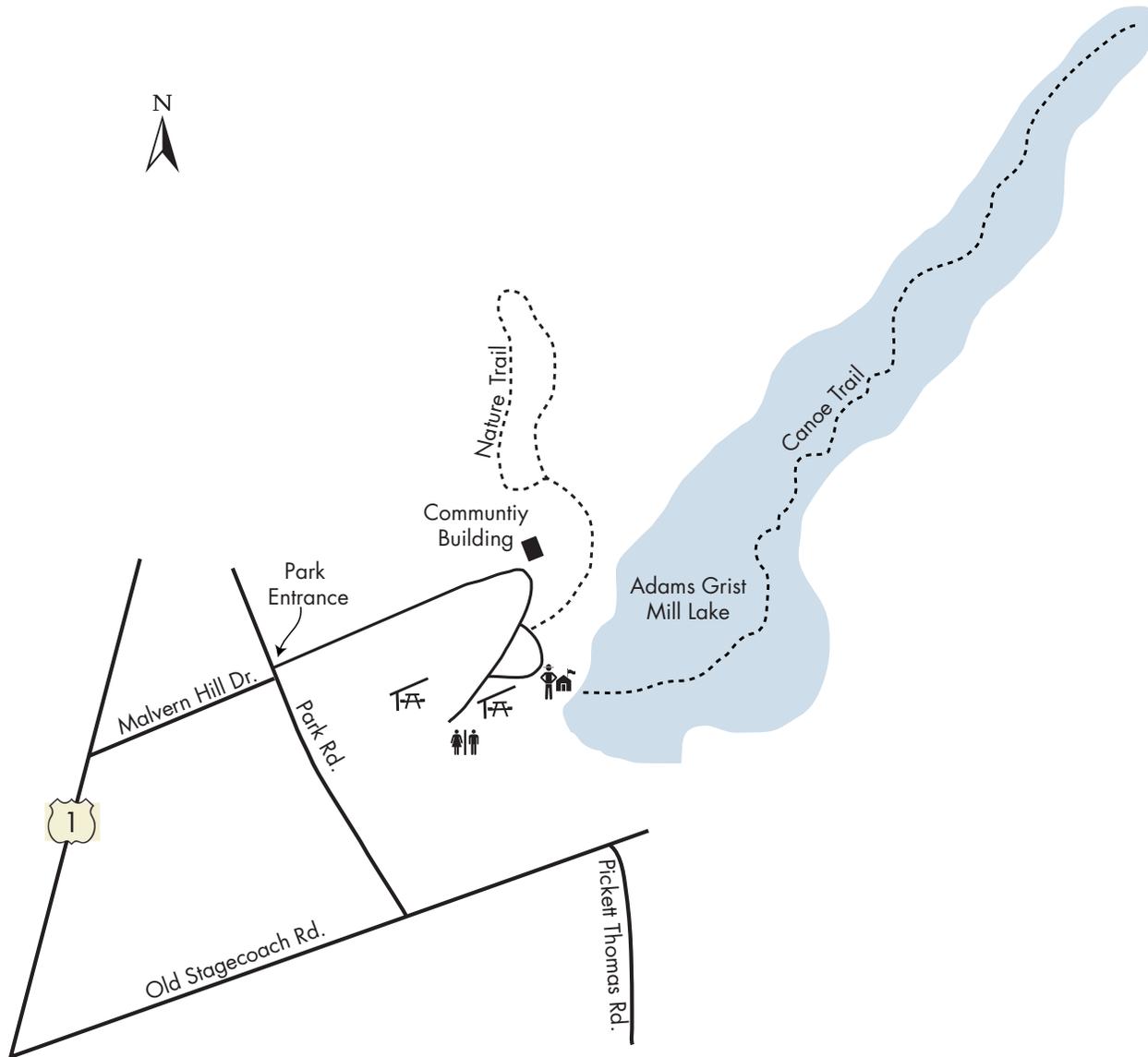
1. Problem plant species
  - Waterlily
  - Watershield
2. Management objective
  - Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method
  - Hardball
4. Area to which control is to be applied
  - 2 acres in lake.
5. Rate of control agent to be applied
  - Up to 5 gallons per acre
6. Method of application of control agent
  - Subsurface injection from airboat.
7. Timing and sequence of control application
  - Apply when plants are actively growing.
8. Other control application specifications
  - Monitor plant growth prior to treatment.
9. Entity to apply control agent
  - Commercial applicator contracted and monitored by SCPRT.
10. Estimated cost of control operations
  - \$402
11. Potential sources of funding
  - S.C. Department of Parks, Recreation and Tourism 50%
  - S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# N.R. Goodale State Park



## 35. Santee State Park - Swimming Lake

(Orangeburg County)

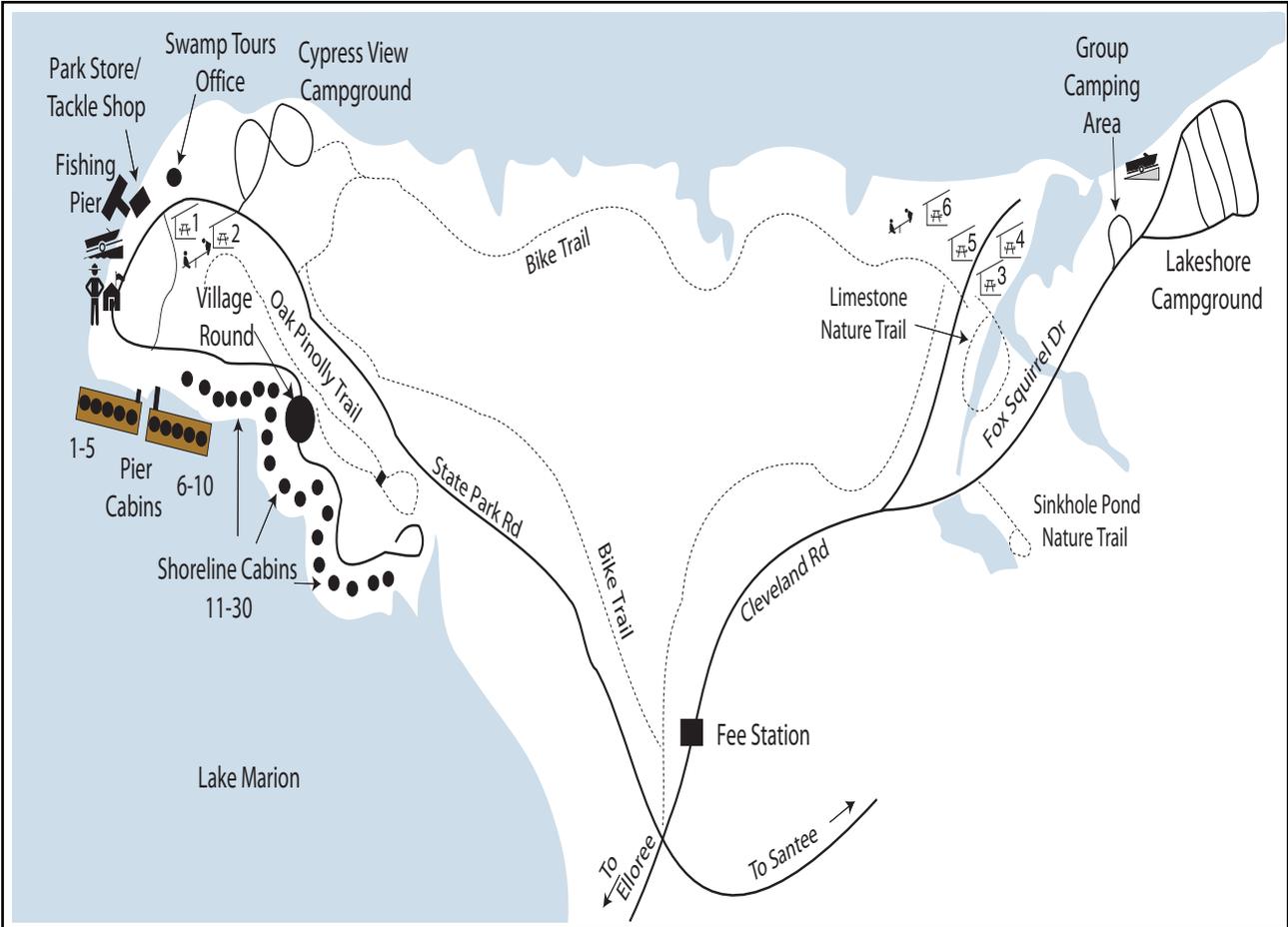
1. Problem plant species  
Coontail
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Reward (Diquat)
4. Area to which control is to be applied  
10 acres
5. Rate of control agent to be applied  
2 gallons per acre
6. Method of application of control agent  
Subsurface injection from airboat.
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Commercial applicator contracted and monitored by SCPRT.
10. Estimated cost of control operations  
\$2,400
11. Potential sources of funding  
S.C. Department of Parks, Recreation and Tourism 50%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Santee State Park Swimming Lake



## 36. Sesquicentennial State Park

(Richland County)

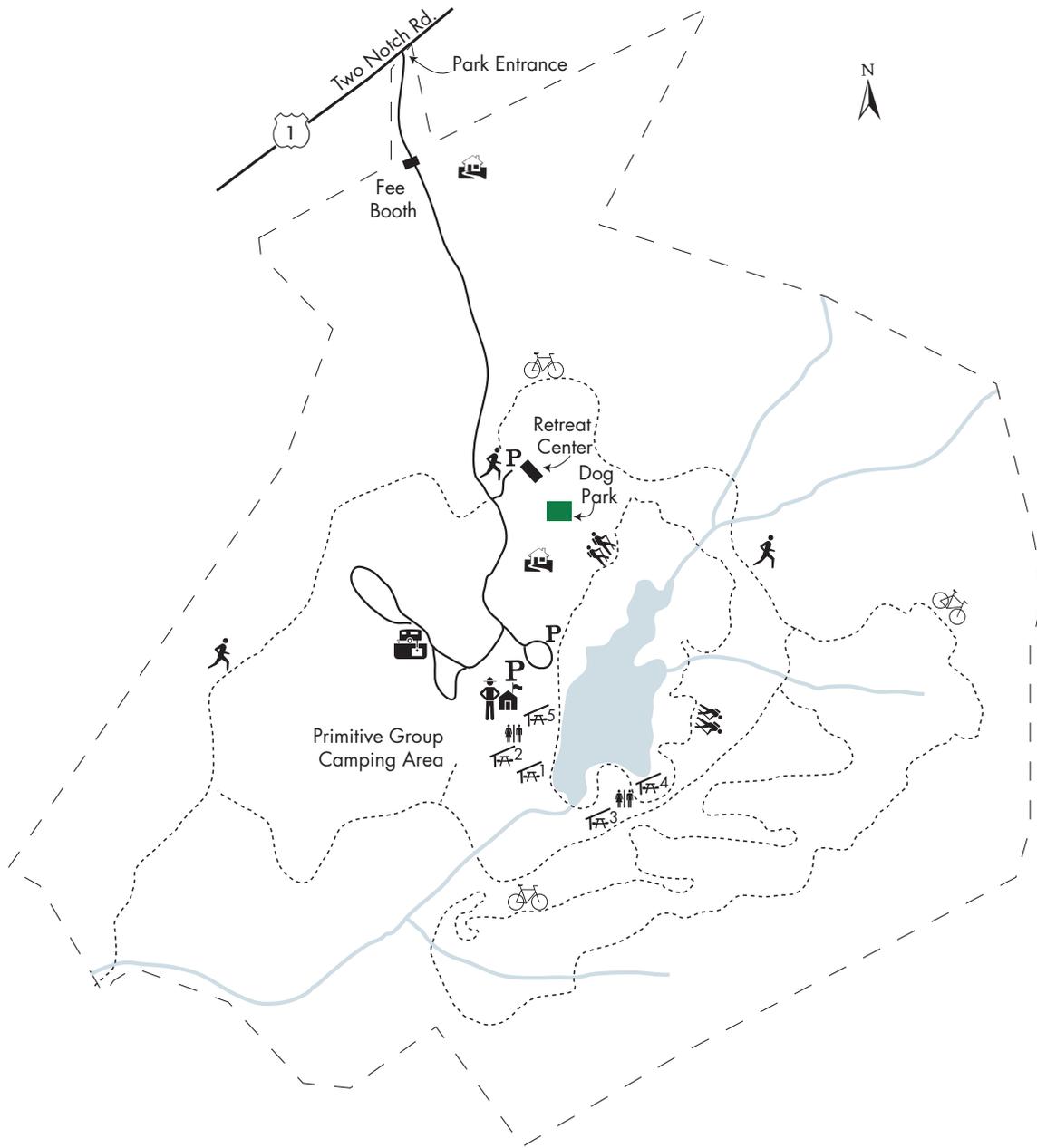
1. Problem plant species
  - Waterlily
  - Watershield
2. Management objective
  - Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method
  - Hardball
4. Area to which control is to be applied
  - 5 acres in swimming and bank fishing portions of the lake.
5. Rate of control agent to be applied
  - Up to 5 gallons per acre
6. Method of application of control agent
  - Subsurface injection from airboat.
7. Timing and sequence of control application
  - Apply when plants are actively growing.
8. Other control application specifications
  - Monitor plant growth prior to treatment.
9. Entity to apply control agent
  - Commercial applicator contracted and monitored by SCPRT.
10. Estimated cost of control operations
  - \$1,005
11. Potential sources of funding
  - S.C. Department of Parks, Recreation and Tourism 50%
  - S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

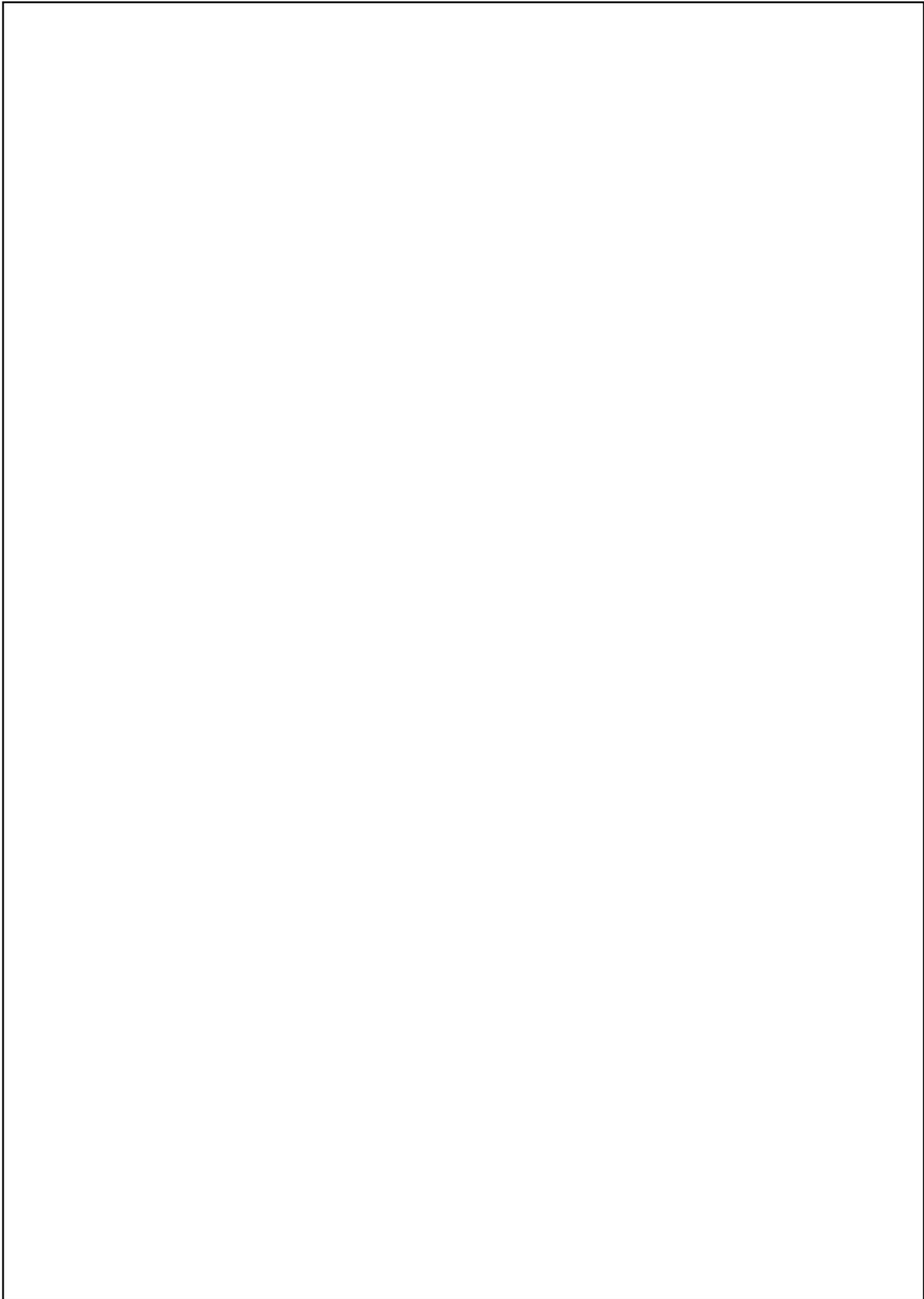
- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Sesquicentennial State Park



**South Carolina Department of  
Natural Resources  
State Lakes**

**\*Total price and cost share is for herbicide costs only based on state contract costs.  
Freshwater Fisheries staff will apply based on label rates.**



## 37. Lake Cherokee

(Cherokee County)

1. Problem plant species  
Water primrose
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Renovate 3
4. Area to which control is to be applied  
5 acres in lake two (2) time per year.
5. Rate of control agent to be applied  
Renovate 3 - 0.5- 1.0 gals/acre
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$962\*
11. Potential sources of funding  
S. C. Department of Natural Resources(WFF division) 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 38. Lake Edwin Johnson

(Spartanburg County)

1. Problem plant species  
Water primrose                      Hydrilla                      Pondweed
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  

<u>Problems species</u>	<u>Control Agent</u>
Water Primrose	Renovate 3
Pondweed	Komeen/Reward
Hydrilla	Komeen/Reward
4. Area to which control is to be applied  
Primrose - 7 acres in lake two (2) times per year.  
Hydrilla/Pondweed - 3 acres in lake two (2) times per year.
5. Rate of control agent to be applied  
Renovate 3 - 0.50 - 1.0 gals/acre  
Komeen/Reward - 4 gals/acre / 2 gals/acre
6. Method of application of control agent  
Hydrilla, Pondweed -Apply subsurface throughout lake  
Water primrose - Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$2,939\*

11. Potential sources of funding

S. C. Department of Natural Resources(WFF division) 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 39. Jonesville Reservoir

(Union County)

1. Problem plant species  
Water primrose                      Pondweed
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Renovate 3, Glyphosate
4. Area to which control is to be applied  
10 acres in lake.
5. Rate of control agent to be applied  
Renovate 3 - 0.50 - 1.0 gals/acre  
Glyphosate - 6 - 7.5 pints/acre
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$1,155\*
11. Potential sources of funding  
S. C. Department of Natural Resources(WFF division) 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 40. Mountain Lakes

(Chester County)

1. Problem plant species  
Water primrose                      Alligatorweed                      Parrotfeather
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Renovate 3, Glyphosate
4. Area to which control is to be applied  
5 acres in lake.
5. Rate of control agent to be applied  
Renovate 3 - 0.50 - 1.0 gals/acre  
Glyphosate - 6 - 7.5 pints/acre
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$578\*
11. Potential sources of funding  
S. C. Department of Natural Resources(WFF division) 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 41. Lancaster Reservoir

(Lancaster County)

1. Problem plant species  
Water primrose                      Alligatorweed
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Renovate 3, Glyphosate
4. Area to which control is to be applied  
8 acres in lake.
5. Rate of control agent to be applied  
Renovate 3 - 0.50 - 1.0 gals/acre  
Glyphosate - 6 - 7.5 pints/acre
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$539\*
11. Potential sources of funding  
S. C. Department of Natural Resources(WFF division) 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 42. Sunrise Lake

(Lancaster County)

1. Problem plant species  
Pondweed
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Glyphosate
4. Area to which control is to be applied  
15 acres in lake.
5. Rate of control agent to be applied  
Glyphosate - 6 - 7.5 pints/acre
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$290\*
11. Potential sources of funding  
S. C. Department of Natural Resources(WFF division) 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 43. Lake Ashwood

(Lee County)

1. Problem plant species  
Waterlily
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
2,4-d BEE granular
4. Area to which control is to be applied  
<5 acres of spotty coverage
5. Rate of control agent to be applied  
200 pounds per acre
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$2,360\*
11. Potential sources of funding  
S. C. Department of Natural Resources(WFF division) 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 44. Lake Edgar Brown

(Barnwell County)

1. Problem plant species  
Water primrose                      Coontail
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Glyphosate
4. Area to which control is to be applied  
60 acres in lake.
5. Rate of control agent to be applied  
Glyphosate - 6 - 7.5 pints/acre
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$1,158\*
11. Potential sources of funding  
S. C. Department of Natural Resources(WFF division) 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 45. Lake George Warren

(Hampton County)

1. Problem plant species  
Water primrose                      Cattails                      Coontail
2. Management objective  
Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.
3. Selected control method  
Glyphosate, Habitat
4. Area to which control is to be applied  
20 acres in lake.
5. Rate of control agent to be applied  
Glyphosate - 6 - 7.5 pints/acre  
Habitat - 0.25 - 0.50 gals/ac
6. Method of application of control agent  
Spray on surface of foliage with appropriate surfactant
7. Timing and sequence of control application  
Apply when plants are actively growing.
8. Other control application specifications  
Monitor plant growth prior to treatment.
9. Entity to apply control agent  
Wildlife and Freshwater Fisheries Division, Lake Management staff.
10. Estimated cost of control operations  
\$1,112\*
11. Potential sources of funding  
S. C. Department of Natural Resources(WFF division) 50%  
U.S. Army Corps of Engineers 0%  
S. C. Department of Natural Resources 50%

*(Percentage of match subject to change based on availability of Federal and State funding.)*

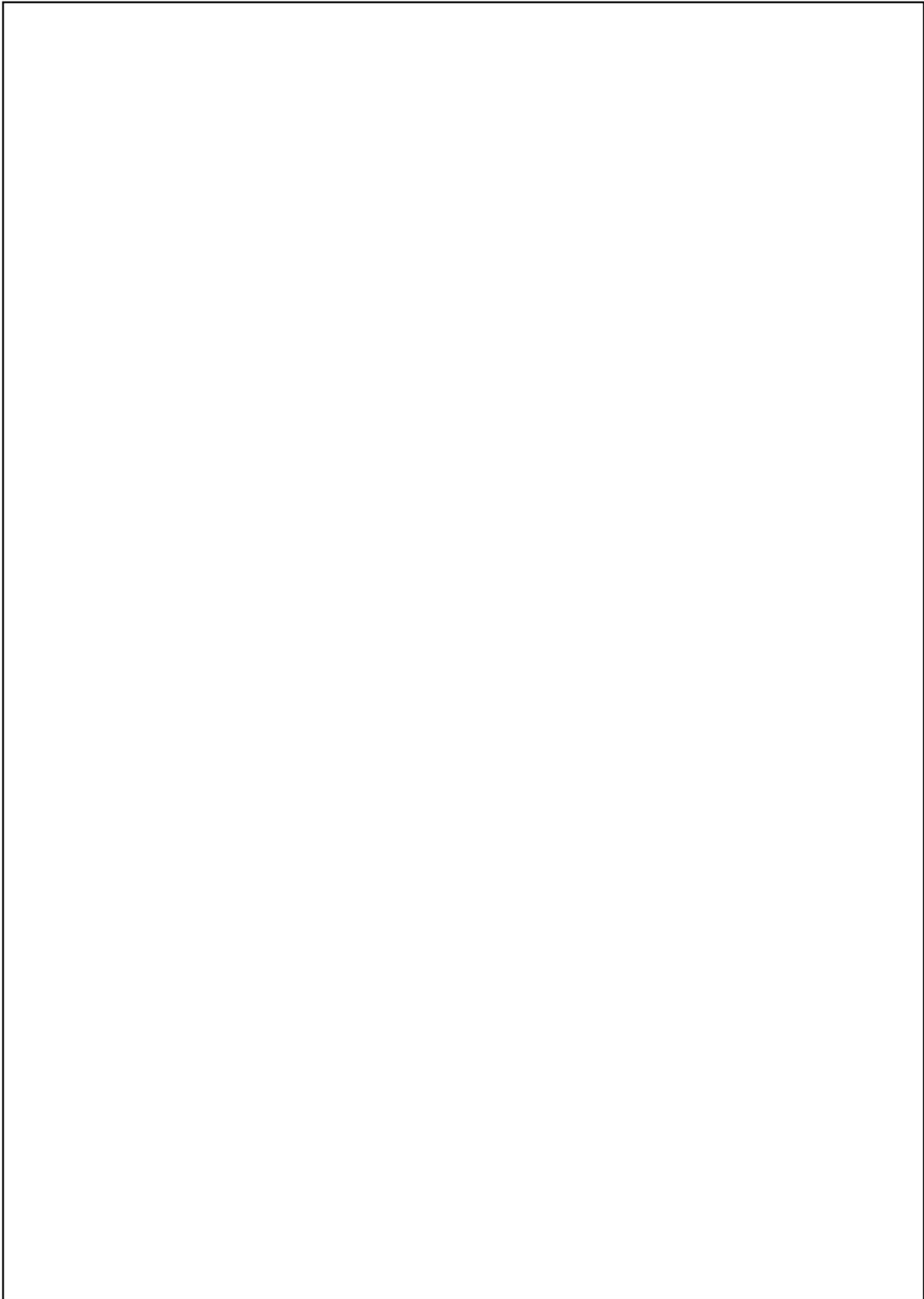
12. Long term management strategy

- a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.
- b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

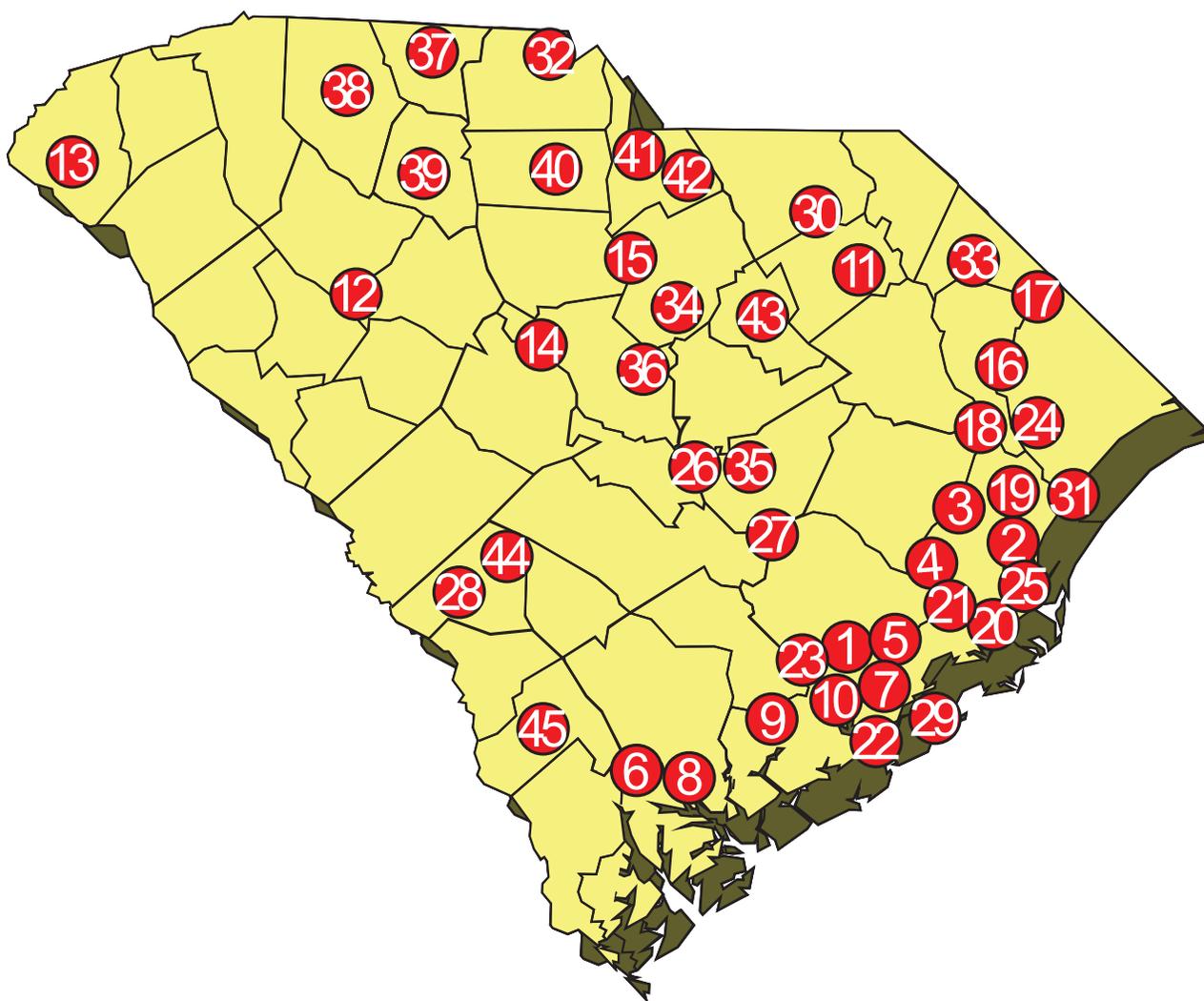
### Summary of Planned Management Operation Expenditures For 2008

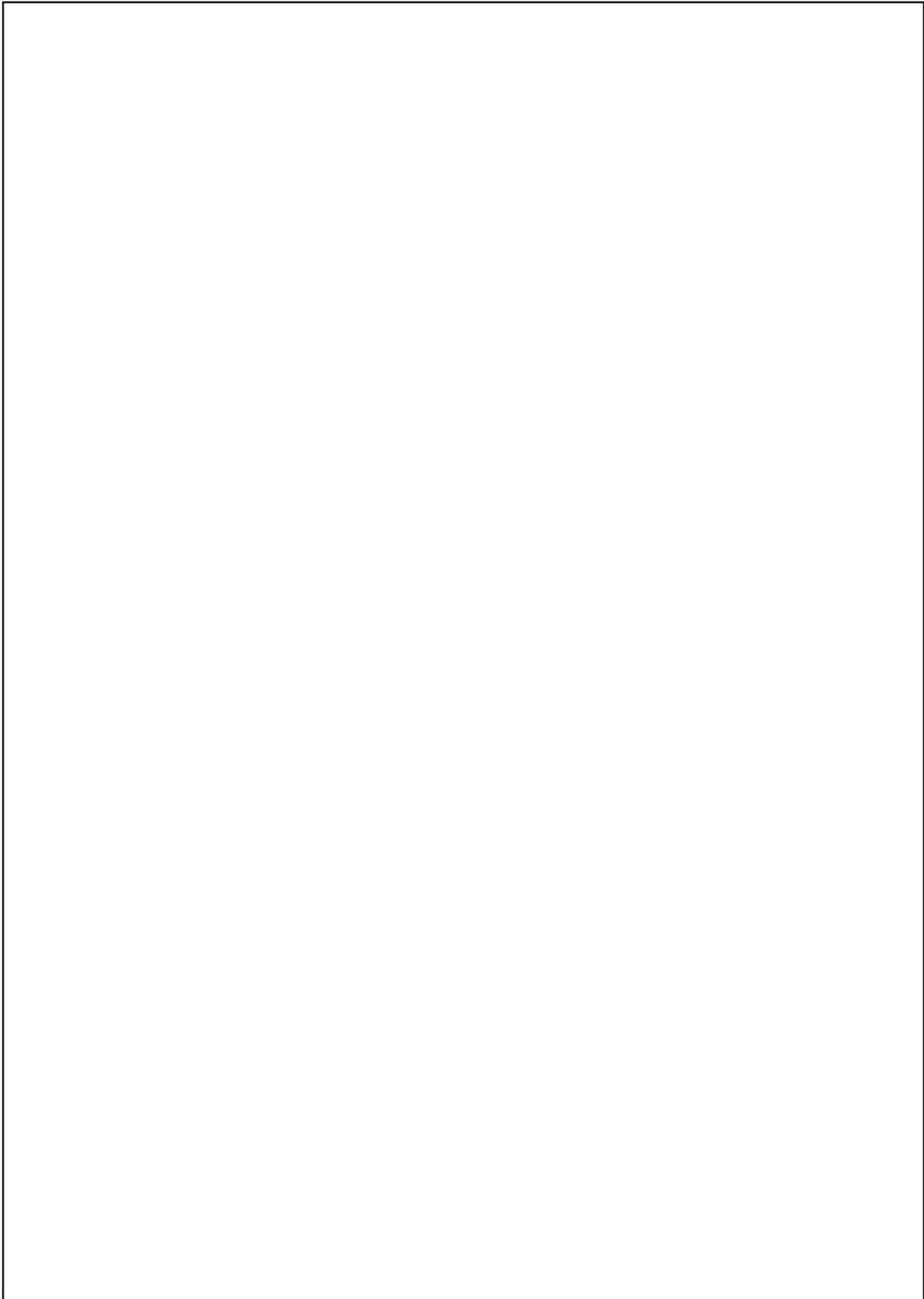
Water Body	Total Cost	Local	State	Federal	Local Sponsor
1 Back River Reservoir	\$87,454	\$43,727	\$43,727	\$0	SCE&G, CPW
2 Baruch Institute	\$19,888	\$9,944	\$9,944	\$0	Baruch Institute
3 Black Mingo Creek	\$2,165	\$1,082	\$1,082	\$0	Georgetown Co.
4 Black River	\$2,543	\$1,272	\$1,272	\$0	Georgetown Co.
5 Bonneau Ferry	\$7,605	\$0	\$7,605	\$0	SCDNR
6 Combahee River (Borrow Pit)	\$2,020	\$1,010	\$1,010	\$0	Colleton Co.
7 Cooper River	\$57,770	\$28,885	\$28,885	\$0	Berkeley Co.
8 Donnelly/Bear Island WMA	\$5,786	\$2,893	\$2,893	\$0	SCDNR
9 Dungannon WMA	\$2,482	\$1,241	\$1,241	\$0	SCDNR
10 Goose Creek Reservoir	\$33,945	\$16,972	\$16,972	\$0	Charleston CPW
11 Lake Darpo	\$3,827	\$1,914	\$1,914	\$0	Darlington Co.
12 Lake Greenwood	\$70,700	\$35,350	\$35,350	\$0	Greenwood Co.
13 Lake Keowee	\$3,114	\$1,557	\$1,557	\$0	Duke Power
14 Lake Murray	\$5,413	\$2,706	\$2,706	\$0	SCE&G, Lexington Co., Richland Co.
15 Lake Wateree	\$3,108	\$1,554	\$1,554	\$0	Duke Power
16 Little Pee Dee River	\$7,344	\$3,672	\$3,672	\$0	Horry Co.
17 Lumber River	\$1,515	\$758	\$758	\$0	Horry Co.
18 Pee Dee River	\$13,029	\$6,515	\$6,515	\$0	Georgetown Co.
19 Samworth WMA	\$11,548	\$5,774	\$5,774	\$0	Samworth WMA
20 Santee Coastal Reserve	\$26,825	\$13,413	\$13,413	\$0	Santee Coastal Reserve
21 Santee Delta WMA	\$4,024	\$2,012	\$2,012	\$0	SCDNR
22 USCOE Charleston Harbor	\$34,202	\$0	\$0	\$34,202	Charleston COE
23 US Naval Wpns. Station	\$17,525	\$0	\$17,525	\$0	US Navy
24 Waccamaw River	\$10,491	\$4,575	\$4,575	\$0	Horry Co., Georgetown Co.
25 Yawkey	\$18,475	\$9,238	\$9,238	\$0	Yawkey Foundation
<b>Santee Cooper Lakes</b>					
26 Lake Marion	\$250,000	\$125,000	\$125,000	\$0	Santee Cooper
27 Lake Moultrie	\$35,000	\$17,500	\$17,500	\$0	Santee Cooper
<b>State Park Lakes</b>					
28 Barnwell SP	\$603	\$302	\$302	\$0	SCPRT
29 Charlestown Landing SP	\$1,236	\$618	\$618	\$0	SCPRT
30 H Cooper Black (Rec. Area)	\$402	\$201	\$201	\$0	SCPRT
31 Huntington Beach SP	\$1,643	\$821	\$821	\$0	SCPRT
32 Kings Mt. Lk. Crawford SP	\$1,120	\$560	\$560	\$0	SCPRT
33 Little Pee Dee SP	\$2,010	\$1,005	\$1,005	\$0	SCPRT
34 NR Goodale SP	\$402	\$201	\$201	\$0	SCPRT
35 Santee (swimming lake) SP	\$2,400	\$1,200	\$1,200	\$0	SCPRT
36 Sesquicentennial SP	\$1,005	\$503	\$503	\$0	SCPRT
<b>SCDNR Lakes</b>					
37 Lake Cherokee	\$962	\$481	\$481	\$0	SCDNR
38 Lake Edwin Johnson	\$2,939	\$1,470	\$1,470	\$0	SCDNR
39 Jonesville Reservoir	\$1,155	\$578	\$578	\$0	SCDNR
40 Mountain Lakes	\$578	\$289	\$289	\$0	SCDNR
41 Lancaster Reservoir	\$539	\$270	\$270	\$0	SCDNR
42 Sunrise Lake	\$290	\$145	\$145	\$0	SCDNR
43 Lake Ashwood	\$2,360	\$1,180	\$1,180	\$0	SCDNR
44 Lake Edgar Brown	\$1,158	\$579	\$579	\$0	SCDNR
45 Lake George Warren	\$1,112	\$556	\$556	\$0	SCDNR
<b>Totals:</b>	<b>\$759,712</b>	<b>\$349,519</b>	<b>\$374,650</b>	<b>\$34,202</b>	

NOTE: Planned expenditures are based on anticipated aquatic plant problems. The extent of proposed management operations will be modified depending on actual aquatic plant growth and funding availability in 2008. (Percentage of match subject to change based on availability of Federal and State funding.) \* Control operations on Lakes Marion and Moultrie may receive federal funds from the Corps of Engineers St. Stephen Plant if control activities are directly related to maintaining operation of the St. Stephen Hydropower Facility. Those funds should be used whenever possible instead of APC cost-share funds from the Charleston District.

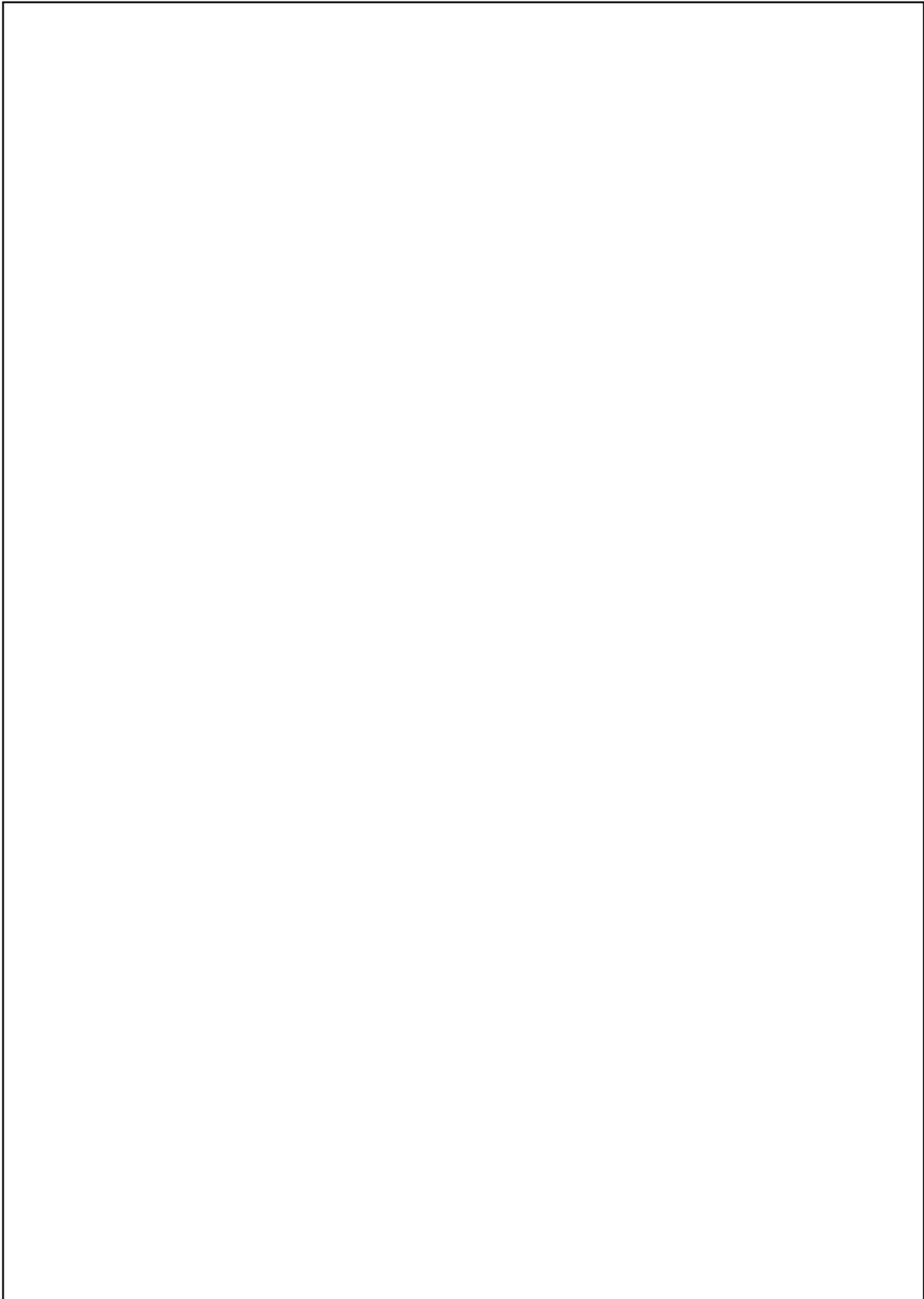


# Location of 2008 Management Sites





# Appendices



**APPENDIX A**  
**Major River Basins**  
**in South Carolina**



**APPENDIX B**

**Enabling Legislation**

**South Carolina Code of Laws**

**Section 49-6-10/40**

**Other Legislation**

# **Title 49 – Waters, Water Resources and Drainage**

## **CHAPTER 6. AQUATIC PLANT MANAGEMENT**

### **SECTION 49-6-10.** Purpose; administering agency.

There is hereby created the South Carolina Aquatic Plant Management Program for the purpose of preventing, identifying, investigating, managing, and monitoring aquatic plant problems in public waters of South Carolina. The program will coordinate the receipt and distribution of available federal, state, and local funds for aquatic plant management activities and research in public waters.

The Department of Natural Resources (department) is designated as the state agency to administer the Aquatic Plant Management Program and to apply for and receive grants and loans from the federal government or such other public and private sources as may be available for the Aquatic Plant Management Program and to coordinate the expenditure of such funds.

### **SECTION 49-6-20.** Aquatic Plant Management Trust Fund.

There is created the South Carolina Aquatic Plant Management Trust Fund which must be kept separate from other funds of the State. The fund must be administered by the department for the purpose of receiving and expending funds for the prevention, management, and research of aquatic plant problems in public waters of South Carolina. Unexpended balances, including interest derived from the fund, must be carried forward each year and used for the purposes specified above. The fund shall be subject to annual audit by the Office of the State Auditor.

The fund is eligible to receive appropriations of state general funds, federal funds, local government funds, and funds from private entities including donations, grants, loans, gifts, bond issues, receipts, securities, and other monetary instruments of value. All reimbursements for monies expended from this fund must be deposited in this fund.

### **SECTION 49-6-30.** Aquatic Plant Management Council; membership; duties.

There is hereby established the South Carolina Aquatic Plant Management Council, hereinafter referred to as the council, which shall be composed of ten members as follows:

1. The council shall include one representative from each of the following agencies, to be appointed by the chief executive officer of each agency:

- (a) Water Resources Division of the Department of Natural Resources;
- (b) South Carolina Department of Health and Environmental Control;
- (c) Wildlife and Freshwater Fish Division of the Department of Natural Resources;
- (d) South Carolina Department of Agriculture;
- (e) Coastal Division of the Department of Health and Environmental Control;
- (f) South Carolina Public Service Authority;
- (g) Land Resources and Conservation Districts Division of the Department of Natural Resources;
- (h) South Carolina Department of Parks, Recreation and Tourism;
- (i) Clemson University, Department of Fertilizer and Pesticide Control.

2. The council shall include one representative from the Governor's Office, to be appointed by the Governor.

3. The representative of the Water Resources Division of the Department of Natural Resources shall serve as chairman of the council and shall be a voting member of the council.

The council shall provide interagency coordination and serve as the principal advisory body to the department on all aspects of aquatic plant management and research. The council shall establish management policies, approve all management plans, and advise the department on research priorities.

**SECTION 49-6-40. Aquatic Plant Management Plan.**

The department, with advice and assistance from the council, shall develop an Aquatic Plant Management Plan for the State of South Carolina. The plan shall describe the procedures for problem site identification and analysis, selection of control methods, operational program development, and implementation of operational strategies. The plan shall also identify problem areas, prescribe management practices, and set management priorities. The plan shall be updated and amended at appropriate intervals as necessary; provided, however, problem site identification and allocation of funding shall be conducted annually. In addition, the department shall establish procedures for public input into the plan and its amendments and priorities. The public review procedures shall be an integral part of the plan development process. When deemed appropriate, the department may seek the advice and counsel of persons and organizations from the private, public, or academic sectors.

The council shall review and approve all plans and amendments. Approval shall consist of a two-thirds vote of the members present. The department shall have final approval authority over those sections which do not receive two-thirds approval of the council.

## **Some of the Specific State Laws which pertain to Illegal, Noxious, or Nuisance Species:**

### **Title 46, Chapter 9 - State Crop Pest Act**

The State Crop Pest Commission is authorized by law (Section 46-9-40) to promulgate and enforce reasonable regulations to eradicate or prevent the introduction, spread or dissemination of plant pests. Plant pests are by definition (Section 46-9-15(5)) any living state of insects, mites, nematodes, slugs, animals, protozoa, snails or other invertebrate animals, bacteria, weeds, fungi, other parasitic plants...which directly or indirectly may injure or cause disease or damage in plants...and which may be a serious agricultural threat to the State, as determined by the Director.

The State Crop Pest Commission is responsible for control of plant pests which constitute a threat to production agriculture. In so doing, the Commission is the primary contact point for cooperation with the Animal and Plant Health Inspection Service (APHIS), U. S. Department of Agriculture.

The Commission has designated certain organisms as plant pests. These organisms are already designated as noxious weeds by state and/or federal authorities or are under domestic federal quarantine. Once a plant pest has been designated, the Commission has the authority to impose control measures, up to and including, quarantine of the premises. However, the Director, as the Commission's designee, retains the discretion to determine that a plant pest has become so widespread that further control measures are not warranted.

### **Title 46, Chapter 23 - South Carolina Noxious Weed Act**

Provides far reaching powers to seize, quarantine, treat, destroy, apply other remedial measures, to export, return to shipping point, or otherwise dispose of in such a manner as (it) deems appropriate, any noxious weed or any product or article of any character whatsoever or any means of conveyance which (it) has reason to believe contains or is contaminated with any noxious weed, offered for movement, moving, or has moved into or through the state or intrastate. To further deter persons from spreading nuisance aquatic weeds the law includes fines not exceeding \$500 and/or imprisonment not exceeding one year.

**SECTION 50-13-1415** - Importation, possession, or placing water hyacinth and hydrilla in waters of the state.

No person shall possess, sell, offer for sale, import, bring, or cause to be brought or imported into this State, or release or place into any waters of this State any of the following plants:

- (1) Water Hyacinth
- (2) Hydrilla

Provided, however, that the department may issue special import permits to qualified persons for research purposes only.

The department shall prescribe the methods, control, and restrictions which are to be adhered to by any person or his agent to whom a special permit under the provisions of this section is issued. The department is authorized to promulgate such regulations as may be necessary to effectuate the provisions of this section and the department, by regulation, is specifically authorized to prohibit additional species of plants from being imported, possessed, or sold in this

State when, in the discretion of the department, such species of plants are potentially dangerous.

**SECTION 50-13-1630.** Importing, possessing or selling certain fish unlawful; special permits for research; Department shall issue rules and regulations.

(A) No person may possess, sell, offer for sale, import, bring or cause to be brought or imported into this State or release into the waters of this State the following fish:

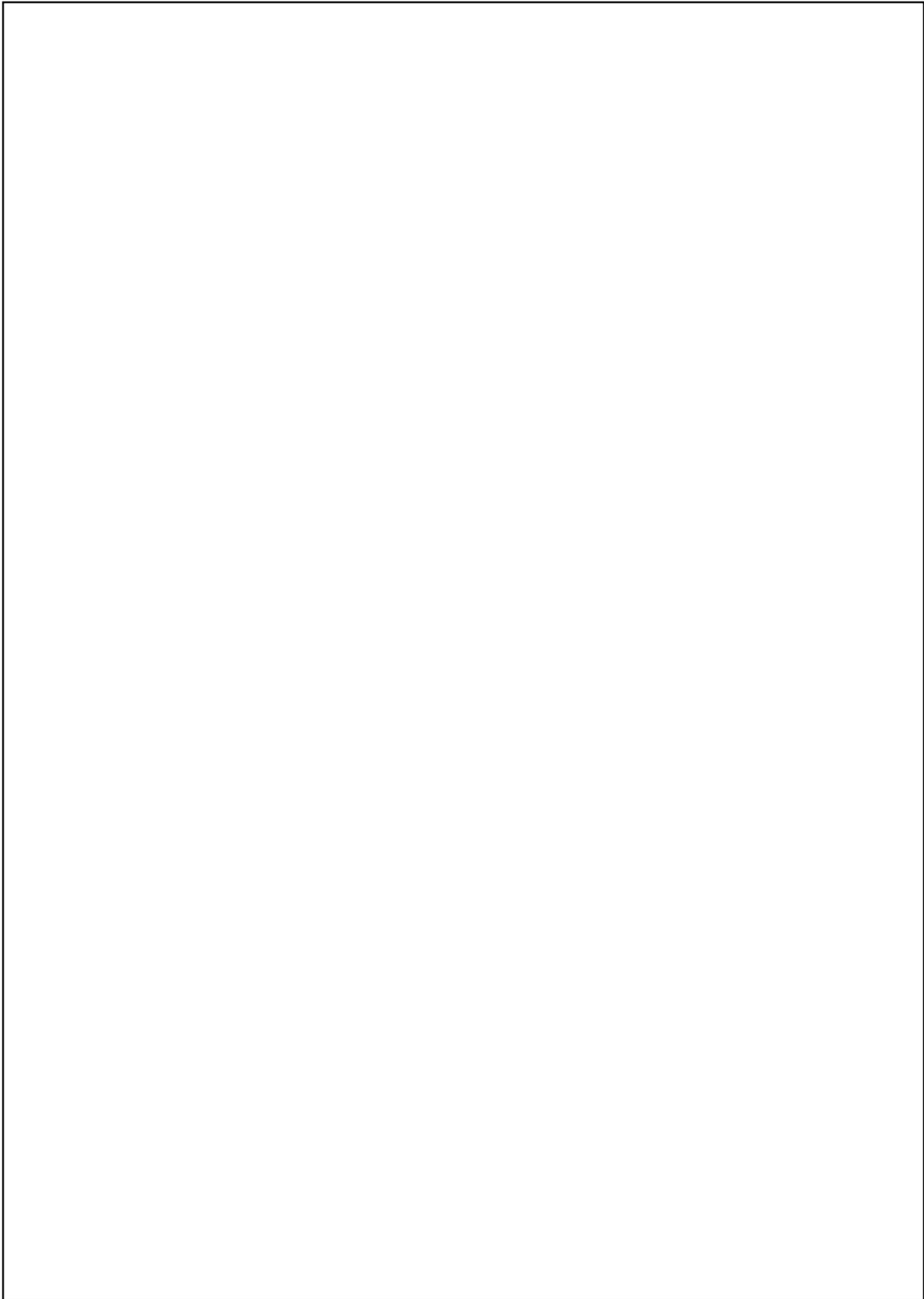
- (1) carnero or candiru catfish (*Vandellia cirrhosa*);
- (2) freshwater electric eel (*Electrophorus electricus*);
- (3) white amur or grass carp (*Ctenopharyngodon idella*);
- (4) walking catfish or a member of the clariidae family (*Clarias*, *Heteropneustea*, *Gymnallabes*, *Channallabes*, or *Heterobranchus* genera);
- (5) piranha (all members of *Serrasalmus*, *Rooseveltiella*, and *Pygocentrus* genera);
- (6) stickleback;
- (7) Mexican banded tetra;
- (8) sea lamprey;
- (9) rudd (*Scardinius erythrophthalmus*-Linneaus).

(B) The department may issue special import permits to qualified persons for research and education only.

(C) The department may issue special permits for the stocking of nonreproducing white amur or grass carp hybrids in the waters of this State.

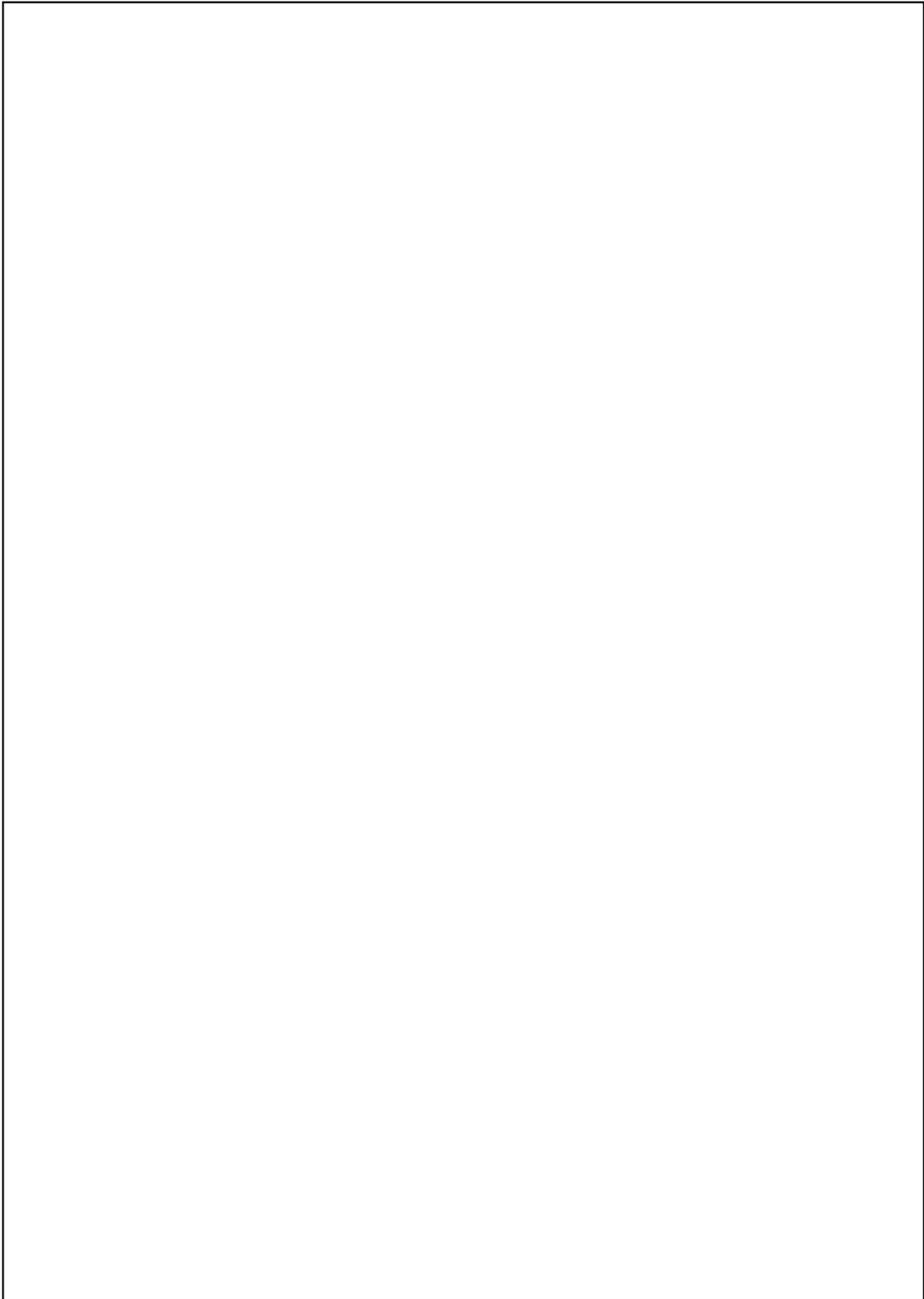
(D) It is unlawful to take grass carp from waters stocked as permitted by this section. Grass carp caught must be returned to the water from which it was taken immediately.

(E) The department must prescribe the qualifications, methods, controls, and restrictions required of a person or his agent to whom a special permit is issued. The department must condition all permits issued under this section to safeguard public safety and welfare and prevent the introduction into the wild or release of nonnative species of fish or other organisms into the waters of this State. The department may promulgate regulations necessary to effectuate this section and specifically to prohibit additional species of fish from being imported, possessed, or sold in this State when the department determines the species of fish are potentially dangerous.



**APPENDIX C**

**Aquatic Plant Problem Identification Form**



## Aquatic Plant Problem Site Identification Form

1. Name and location of affected water body \_\_\_\_\_

2. GPS Location (LAT/LONG or UTM. specify projection) \_\_\_\_\_

3. Public or private water \_\_\_\_\_

4. Name of problem plant (if known) \_\_\_\_\_

5. Does the plant grow above or below the surface of the water? \_\_\_\_\_

6. Approximate area of water covered by the problem plant \_\_\_\_\_

7. Type of water use(s) affected by the plant \_\_\_\_\_

8. Length of time problem has existed \_\_\_\_\_

9. Plant control methods that have been used \_\_\_\_\_

10. Contact for additional information: \_\_\_\_\_

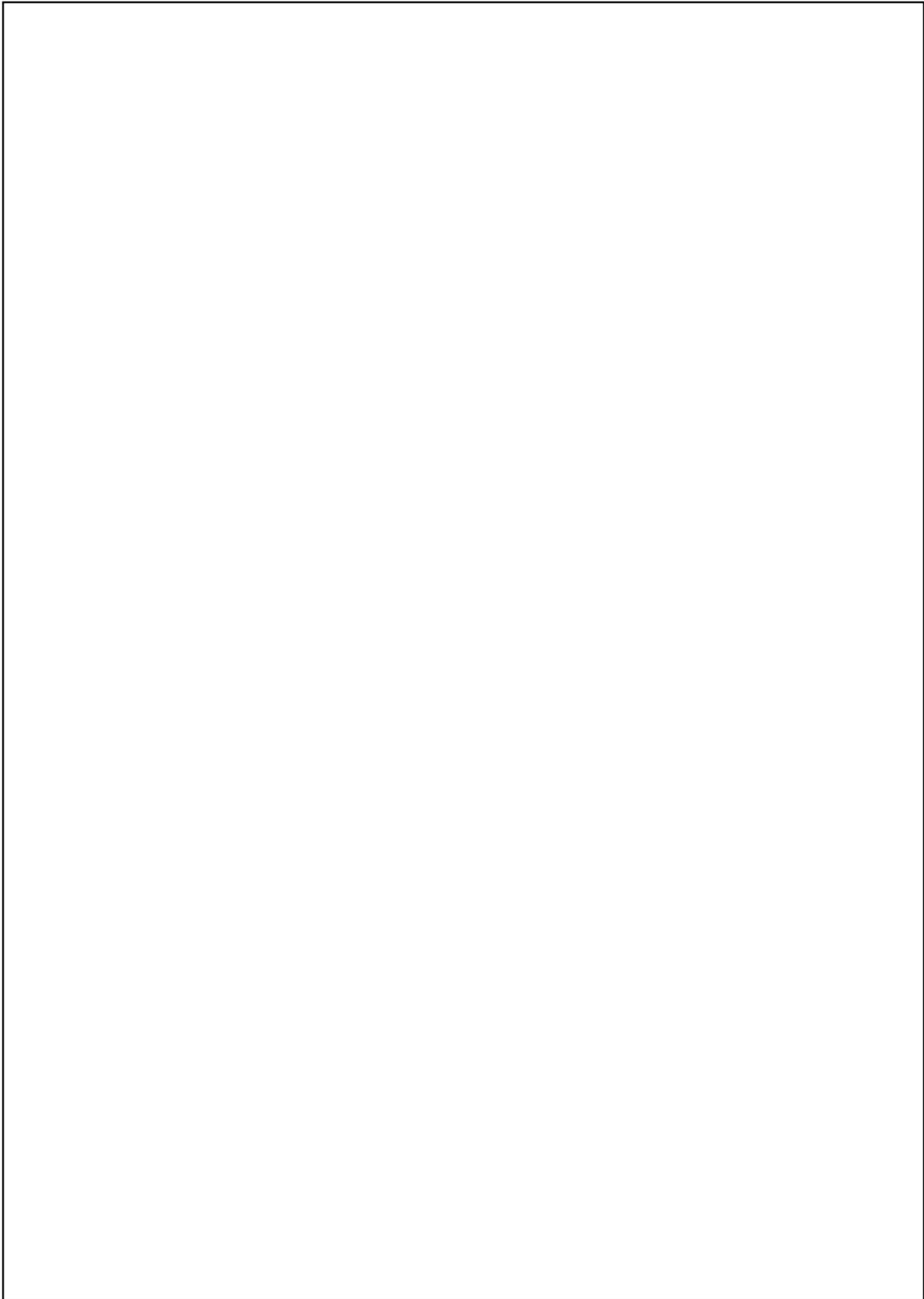
Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

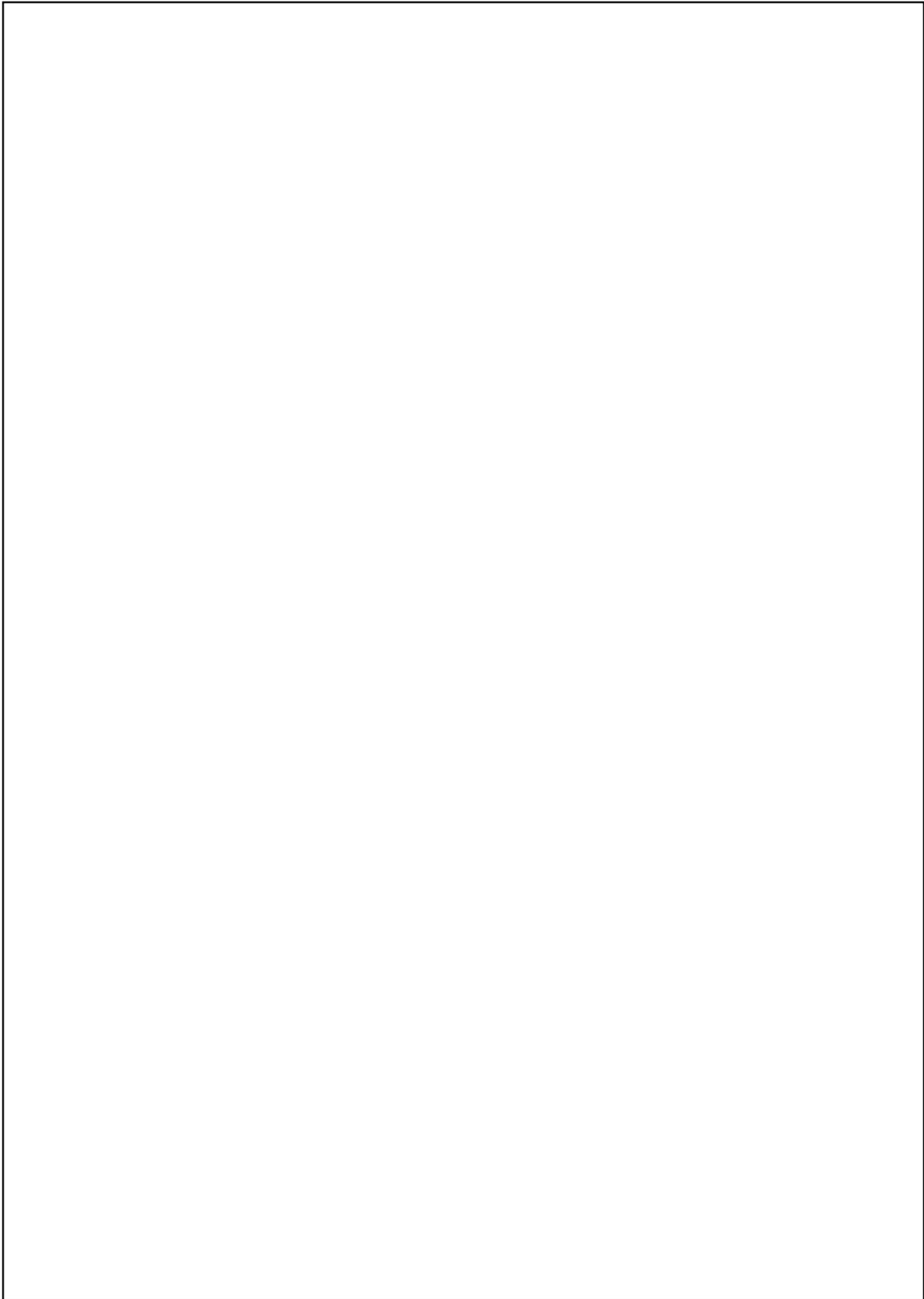
**Please Return To:** Chris Page  
S.C. Department of Natural Resources  
2730 Fish Hatchery Road  
West Columbia, South Carolina 29172  
(803) 755-2836

\*\* Please include a sample of the plant if possible. Wrap the plant in a moist towel and place in a "baggie". The sample should include flowers, if visible, along with leaf structure and stem.



**APPENDIX D**

**Aquatic Plant Control Agents**



## Aquatic Plant Control Agents

Listed below are the major aquatic plant control agents which are currently available for use in South Carolina. While the list is not all inclusive, it does contain those agents considered most useful for aquatic plant management. Costs for the agents are approximations and will vary somewhat depending on the source and amount purchased. Application costs are approximations of commercial applicator rates.

### I. Chemical Control

#### A. Diquat (Reward)

1. Target Plants
  - a. Submersed species - Bladderwort, coontail, elodea, naiad, pondweeds, watermilfoil, and hydrilla.
  - b. Floating species - Pennywort, Salvinia, water hyacinth, water lettuce, and duckweed.
2. Application Rate
  - a. Submersed species - One to two gallons per surface acre.
  - b. Floating species - One half to one gallon per surface acre, depending on target species.
3. Cost -Diquat costs approximately \$99 per gallon. Assuming an application rate of two gallons per acre and an application cost of \$41 per acre, the total cost would be \$239 per acre per application for submersed species. The treatment cost for floating species at one-half gallon per acre rate would be \$90 per acre.
4. Use Considerations -Diquat is not toxic to fish or wildlife at normal use concentrations. It is non-volatile and nonflammable, but can cause irritation to eyes and skin upon contact. Its effectiveness is greatly reduced at temperatures below 50-60°F, by overcast conditions, and by turbid waters.
5. Water Use Restrictions - Water treated with Diquat cannot be used for drinking for up to 3 days, livestock consumption for one day, irrigation of food crops for 5 days, and irrigation of turf and ornamentals for up to 3 days depending on application rate or until approved analysis indicates that diquat ion concentrations are less than 0.02 ppm. There are no fishing or swimming restrictions. Do not apply this product within 1600 feet upstream of an operating water intake in flowing water bodies (rivers, streams, canals) or within 400 feet of an operating water intake in standing water bodies (lakes, reservoirs). To make applications within these restricted areas, the intake must be turned off for the time periods specified on the Federal label for the appropriate use category (Drinking, Livestock consumption, Irrigation) or until the treated area contains less than 0.02 ppm of diquat dibromide.

- B. 2,4-D (Aqua-Kleen, Navigate, Hardball, Sinkerball)
1. Target Plants
    - a. Emergent species - Broadleaf species such as water primrose, waterlily, cowlily, watershield, smartweed, pondweeds, and floating heart.
    - b. Submersed species - Watermilfoil, bladderwort, and coontail.
    - c. Floating species - Water hyacinth.
  2. Application Rate
    - a. Granular form (2,4-D BEE) - 150 to 200 pounds per acre depending on target species.
    - b. Liquid form - (2,4-D DMA) - 5 gallons per acre.
  3. Cost
    - a. The granular form of 2,4-D costs about \$2.36 per pound. Assuming an application rate of 200 pounds per acre and an application cost of \$47 per acre, the total cost would be \$519 per application.
    - b. The liquid form of 2,4-D costs approximately \$31 per gallon. Assuming an application rate of 5 gallons per acre and an application cost of \$41 per acre, the total cost would be \$196 per application.
  4. Use Considerations - The recommended formulations of 2,4-D are not toxic to fish or wildlife at normal use concentrations. This chemical is nonflammable and noncorrosive.
  5. Water use Restrictions - Do not apply to waters used for irrigation, agricultural sprays, watering dairy animals, or domestic water supplies.
- C. Chelated Copper (Cutrine Plus, Clearigate, Komeen, K-TEA, Nautique, Captain)
1. Target Plants
    - a. Algae - Cutrine Plus, K-TEA, Captain
    - b. Submersed species (Hydrilla, Brazilian elodea, pondweed and southern naiad) - Komeen, Nautique, Cutrine Plus, Clearigate, and Captain
  2. Application Rate
    - a. Algae - Treatment concentration of 0.2-0.5 parts per million of copper.
    - b. Submersed species - 1.0 part per million of copper (12-16 gallons per acre) or mix two gallons of copper complex and two gallons of diquat per acre.

3. Cost - Copper products cost about \$17 per gallon. Assuming an application rate of 16 gallons per acre and an application cost of \$41 per acre, the total cost would be \$313 per acre.
  4. Use Considerations - Copper may be toxic to fish and aquatic invertebrates at recommended application rates, especially in soft water. Copper-based product should be carefully applied and monitored to minimize the risk of fish kills.
  5. Water Use Restrictions - Copper complexes may be used in domestic and irrigation water supplies without water use restrictions.
- D. Endothall - (Aquathol, Aquathol K, Aquathol Super K granular, Hydrothol 191 granular and liquid)
1. Target Plants
 

Aquathol products are effective for submersed species such as naiads, bladderwort, coontail, watermilfoil, pondweed, hydrilla, and cabomba.

Hydrothol 191 is effective on the species listed above as well as filamentous and macrophytic algae.
  2. Application Rate
 

Aquathol

    - a. Liquid form (Aquathol K) - three gallons or more per acre depending on the target species.
    - b. Granular form - Aquathol: 54-323 pounds per acre depending on water depth and the target species.

Aquathol Super K: 22-66 pounds per acre depending on the water depth and the target species.

Hydrothol 191

    - a. Heavy Infestations - Evenly spread 160 - 270 pounds per acre foot of water (3.0 - 5.0 ppm) applied evenly.
    - b. Moderate or light infestations - Use 55 - 110 pounds per acre foot (1.0 - 2.0 ppm) applied evenly.
  3. Cost
 

Aquathol

    - a. Aquathol K costs approximately \$57 per gallon. Assuming an application rate of 5 gallons per acre and an application cost of \$41 per acre, the total cost would be \$326 per acre.

- b. Aquathol Super K costs about \$15 per pound at an application rate of 30 pounds per acre and an application cost of \$47 per acre, the total cost would be \$510 per acre.

#### Hydrothol 191

- a. Hydrothol 191 costs approximately \$64 per gallon. Assuming an application rate of 7 gallons per acre and an application cost of \$41, the total cost would be \$492 per acre.
  - b. Hydrothol 191 granular costs approximately \$2.78 per pound. Assuming an application rate of 240 pounds per acre and an application cost of \$47, the total cost would be \$714 per acre.
4. Use Considerations - Concentrated endothall formulations are toxic to man if ingested or absorbed through the skin. They are also irritating to the skin and eyes. Avoid contact with or drift to other crops or plants as injury may result. Generally not toxic to fish at normal use concentrations, however, fish may be killed by dosages of Hydrothol 191 in excess of 0.3 ppm.
  5. Water Use Restrictions - Water treated with endothall cannot be used for watering livestock, preparing agricultural sprays for food crops, for irrigation or domestic purposes for 7 to 25 days after treatment (depending on treatment concentration) or until such time that the water does not contain more than 0.2 ppm of endothall. Do not use fish from treated areas for feed or food for three days after treatment.

#### E. Glyphosate (Rodeo, Aquastar, Touchdown Pro)

1. Target Plants - Emergent broadleaf plants and grasses such as alligatorweed, water primrose, smartweed, and *Phragmites*.
2. Application Rate - Up to 7 1/2 pints per acre, the specific rate depending on the target species.
3. Cost - Glyphosate products range in price from \$21-\$39 per gallon. At an application rate of 7.5 pints per acre and an application cost of \$41 per acre, the total would range from \$63-\$78 per acre per application.
4. Use Considerations - Glyphosate is not toxic to mammals, birds or fish at recommended use concentrations. Glyphosate products with aquatic labels can be used in and around aquatic sites, including all bodies of fresh and brackish water which may be flowing or nonflowing.
5. Water Use Restrictions - Do not apply within 0.5 miles upstream of potable water intakes unless water intake is shut off for 48 hours. There are no restrictions on water use for irrigation or recreation after treatment.

#### F. Fluridone (Sonar, Avast)

1. Target Plants - Primarily submersed plants, such as hydrilla, Brazilian elodea, watermilfoil, pondweeds, duckweeds and naiads; also effective on lilies and some grasses.
2. Application Rate
  - a. Liquid form (Sonar AS, Avast) - 1-4 pints per acre depending on water depth.
  - b. Pellet forms (Sonar PR, Sonar SRP, Avast SRG) - 15 to 80 pounds per acre depending on water depth.
3. Cost
  - a. The liquid formulation ranges from \$1468-\$1650 per gallon. Assuming an application rate of 1.5 pints per acre (2 pounds active ingredient per acre) and an application cost of \$40 per acre, the total cost would be \$349 per acre per application.
  - b. The pellet formulations range in price from \$22.00-\$26.00 per pound. Assuming an application rate of 20 pounds per acre (2 pounds active ingredient per acre) and an application cost of \$47 per acre, the total cost would be \$567 per acre per application.
4. Use Considerations - In large lakes and reservoirs fluridone should be applied to areas greater than five acres. This herbicide requires a long contact time and is not effective in sites with significant water movement or rapid dilution. Fluridone is slow acting and may require 30 to 90 days to achieve desired control under optimal conditions. Unlike other aquatic herbicides, fluridone has proven effective in inhibiting viable hydrilla tuber production.
5. Water Use Restrictions - Do not apply within 1/4 mile of a functioning potable water intake unless concentrations are less than 20 ppb. Water treated with fluridone cannot be used for irrigation for 7-30 days depending on target crop.

#### G. Imazapyr (Habitat)

1. Target Plants - Phragmites, Alligatorweed, Water primrose, and Cutgrass.
2. Application Rate - 1 to 6 pints per acre depending on target species.
3. Cost - Habitat (Imazapyr) costs \$245 per gallon. Assuming the application rate of 16 oz. per acre and an application cost of \$41 per acre, the total cost would be \$78 per acre.

4. Use Considerations - Applications to public waters can only be made by federal, state, or local agencies or those applicators which are licensed or certified as aquatic pest control applicators and are authorized by state or local agencies. Do not use in close proximity to hardwoods.
5. Water Use Restrictions - Do not apply within ½ mile of potable water intakes. For applications within ½ mile of a potable water intake, the intake must be turned off for a minimum of 48 hours. Do not apply within 1 mile of active irrigation intakes on still or slow moving waters. Irrigation water usage may be continued 120 days after application or when Habitat (Imazapyr) residue levels are determined by laboratory analysis to be 1.0 ppb or less.
6. Aerial Applications may only be made by helicopter.

H. Imazamox (Clearcast)

1. Target Plants - Phragmites, Alligatorweed, Water primrose, and Cutgrass.
2. Application Rate - 1 to 6 pints per acre depending on target species.
3. Cost -Clearcast (Imazamox) costs \$175 per gallon. Assuming the application rate of 16 oz. per acre and an application cost of \$41 per acre, the total cost would be \$63 per acre.
4. Use Considerations - Applications to public waters can only be made by federal, state, or local agencies or those applicators which are licensed or certified as aquatic pest control applicators and are authorized by state or local agencies. Can be used in close proximity to hardwoods
5. Water Use Restrictions - Do not apply within ½ mile of potable water intakes. For applications within ½ mile of a potable water intake, the intake must be turned off for a minimum of 48 hours. Do not apply within 1 mile of active irrigation intakes on still or slow moving waters. Irrigation water usage may be continued 120 days after application or when Habitat (Imazapyr) residue levels are determined by laboratory analysis to be 1.0 ppb or less.
6. Aerial Applications may only be made by helicopter.

I. Triclopyr (Renovate 3, Tahoe)

1. Target Plants - Alligatorweed, Eurasian watermilfoil, water hyacinth, parrotfeather, and water primrose.
2. Application Rate - 2-8 qts. per acre depending on target species.
3. Cost - Triclopyr products cost \$96 per gallon. Assuming the application rate of 2 qts per acre and an application cost of \$41 per acre, the total cost would be \$89 per acre.

4. Use Considerations - Triclopyr is not toxic to fish or wildlife at normal use concentrations. It can cause severe irritation to eyes and skin upon contact. It is suggested that it is used in a manner to reduce the possibility of drift. The proper personal protective equipment should be used as prescribed by the Federal label.
5. Water Use Restrictions - For floating and emergent applications do not apply within 200 feet of operating potable water intakes when using 4 - 8 qts per acre. There are no setback restrictions for potable water intakes when 2 qts. per acre or less is applied to emergent vegetation. To make applications within these restricted areas, follow the label directions. There are no restrictions on the use of treated water for recreational purposes or for livestock consumption.

J. Carfentrazone (Stingray)

1. Target Plants
  - a. Submersed species – Eurasian water milfoil
  - b. Floating species – Water lettuce, water hyacinth, Salvinia minima, S. molesta, Azolla, duckweed, alligatorweed, water primrose
2. Application Rates
  - a. Submersed species – Eurasian water milfoil 2 ounces per acre. (Best when applied with liquid 2,4-D)
  - b. Floating species – 6.7 – 13.5 ounces per acre
3. Cost – Carfentrazone costs approximately \$6 per ounce (\$760 per gallon). Assuming an application rate of 2 ounces per acre and an application cost of \$41 per acre total cost would be \$53 per acre for submersed species. Assuming an application rate of 13.5 ounces per acre, the total cost would be \$122 per acre for floating species.
4. Use considerations – Carfentrazone is moderately toxic to fish. It is non-volatile and non-flammable. It can cause moderate eye irritation and has low acute toxicity.
5. Water Use Restrictions - Water treated with carfentrazone cannot be used for drinking or for consumption by livestock for up to 1 day. It should not be used in tank mixes or used for irrigation of food crops, turf, or ornamentals for up to 14 days. There are no recreation, fishing, or swimming restrictions. Applications within ¼ mile (1320 feet) of a potable water intake in flowing or standing water can only be made if the intake will be turned off prior to application and left off for a minimum of 24 hours. The 24 hour minimum can only be reduced if the concentration of carfentrazone-glycol is shown to be below 0.2ppm through testing carried out by a FMC approved lab.

K. Penoxsulam (Galleon SC)

1. Target Plants
  - a. Submersed species – Hydrilla, Cabomba, Egeria, Eurasian water milfoil
  - b. Floating species – Floating species – Waterhyacinth, Water lettuce, Water fern, Duckweed, Frog's bit, Mosquito fern
2. Application Rates
  - a. 0.174 fl oz per acre foot to achieve minimum effective concentration of 25 – 75 ppb.
  - b. Floating species – 2- 5.6 fl oz per acre as foliar application.
3. Cost – Penoxsulam costs approximately \$1650 per gallon. Assuming an application rate of 11 fl oz per acre and an application cost of \$41 per acre, total cost would be \$183 per acre for submersed plants. Assuming an application rate of 5.6 fl oz per acre, and an application cost of \$41 per acre, total cost would be \$113 per acre for emergent plants.
4. Use considerations – Penoxsulam has no potable water restrictions or irrigation restrictions except for irrigation of food crops. It must have prolonged contact times similar to fluridone (>21 days).
5. Water Use Restrictions - Food crop irrigation waters cannot be used if penoxsulam concentrations are above 1ppb

II. Biological Control

A. Alligatorweed Flea Beetle (*Agasicles hygrophila*)

1. Target Plant - Alligatorweed
2. Stocking Rate - 600-1,000 per acre.
3. Cost - The U.S. Army Corps of Engineers office in Palatka, Florida will provide lots of 6,000 flea beetles for the cost of shipping which is about \$50 per shipment. Flea beetles may also be obtained from the U.S. Department of Agriculture.
4. Use Considerations - Flea beetles feed only on alligatorweed and pose no threat to desirable plant species. They produce no adverse impact on the aquatic environment. As with all biological control agents, flea beetles may not remain in the area where stocked but may migrate to other areas of alligatorweed infestation. These insects are not able to survive severe winters and may require occasional restocking. The effectiveness of these insects may be enhanced by use with an aquatic herbicide such as 2,4-D, or Rodeo.

- B. Alligatorweed Stem Borer Moth (*Vogtia malloi*)
  - 1. Target Plant - Alligatorweed
  - 2. Cost - Approximately the same as for flea beetle.
  - 3. Use Considerations - Same as for flea beetle.
  
- C. Alligatorweed Thrip (*Amynothrips andersonii*) - This insect feeds on alligatorweed and has been stocked in South Carolina. It has failed to become established in the State and is considered less desirable than flea beetles or stem borers for control of alligatorweed.
  
- D. Triploid White Amur or grass carp (*Ctenopharyngodon idella*)
  - 1. Target Plant - Primarily submersed plants including Brazilian elodea, hydrilla, bladderwort, coontail, naiads, pondweeds.
  - 2. Cost - Triploid white amur cost \$4 to \$7 each. At a stocking rate of 15 to 25 fish per vegetated acre, the total cost could range from \$60 to \$175 per acre.
  - 3. Use Considerations - Only the triploid (sterile) white amur may be stocked in South Carolina for aquatic weed control. Introduction and stocking of this fish is regulated by the S.C. Department of Natural Resources and requires a permit. Escapement over some dams may occur during high flow periods. Use of barriers in some lakes should prevent fish loss. While grass carp are effective on a wide variety of submersed plants, they generally do not provide effective control of watermilfoil species. Plants should be carefully identified prior to stocking to ensure proper stocking rates and potential efficacy.
  
- E. Tilapia (*Tilapia sp.*) - Several species of this herbivorous fish have been used to control filamentous algae and submersed macrophytes. Tilapia cannot overwinter in South Carolina. Introduction of fish is regulated by the S.C. Department of Natural Resources.

### III. Mechanical Control

- A. Harvesters, Cutters, Dredges and Draglines
  - 1. Target Plants - All species
  - 2. Cost - Harvesters range in cost from \$5,000 to over \$150,000 for the initial investment. Operating cost range from \$300 to \$700 per acre.
  - 3. Use Consideration - Harvesters can be used in irrigation and drinking water supplies without water use restrictions. They may actually spread some plants such as Brazilian elodea and hydrilla by dispersing plant fragments which form new colonies. Harvesting requires the availability of a land disposal site for harvested plants. These devices cannot be

used on water bodies which have debris and obstructions which interfere with operation. Harvesters are slow, with a maximum coverage of about five acres per day.

B. Fiberglass Bottom Screens

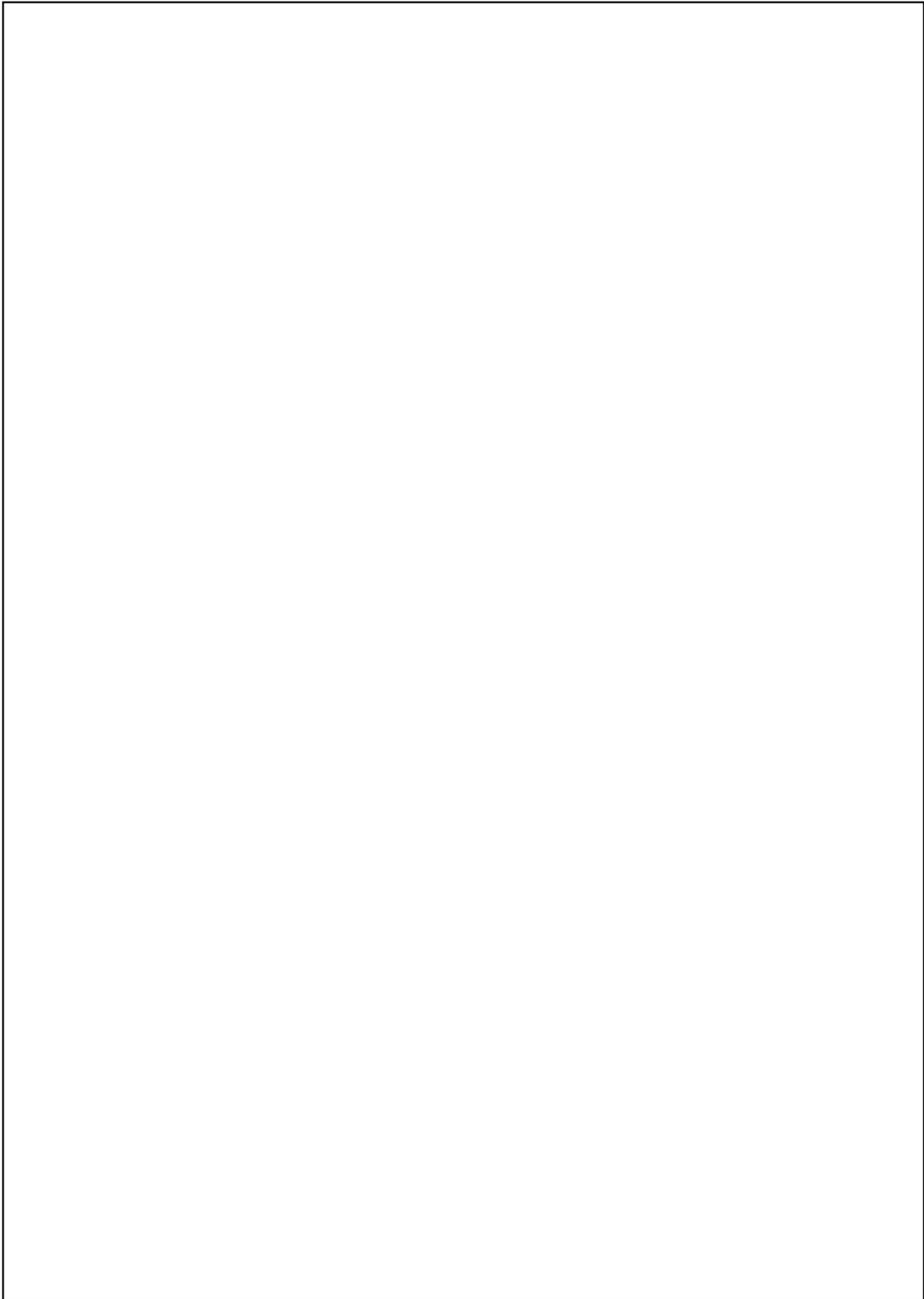
1. Target Plants - All species which root in the bottom.
2. Cost \$10,000 per acre.
3. Use Considerations - Bottom screens may be detrimental to bottom-dwelling aquatic organisms. Due to high cost, use is usually restricted to beaches and other swimming areas where a relatively small area of control is required.

IV. Environmental Alterations

- A. Water Level Manipulation - Some species of aquatic plants can be controlled by a periodic raising or lowering of water level. Shoreline grasses, cattails, and *Phragmites* can be controlled, to some extent, by maintaining higher than normal water levels during the plant growing season. Periodic lowering of water and drying of the bottom can reduce abundance of a number of submersed and emersed species. Disadvantages are that water level fluctuation can adversely affect water uses such as recreation, hydroelectric power production, wildlife protection, and others. Also, some plant species may actually be favored by water level variations. Many factors must be considered before using this method for aquatic plant control.
- B. Reduction in Sedimentation and Nutrient Loading - Sedimentation decreases depth of the water body and increased the area where aquatic plants can grow. Nutrient enrichment resulting from man's activities usually does not create aquatic plant problems, but does contribute to existing problems. Reduction in these two environmental factors can assist in aquatic plant management, but is not a sufficient control method by itself. The mechanism for control of these factors is through implementation of Best Management Practices for Control of Non-Point Source Pollution developed by the S.C. Department of Health and Environmental Control, and through the wastewater discharge permitting program (NPDES) also administered by the S.C. Department of Health and Environmental Control.

**APPENDIX E**

**SCDNR and Santee Cooper  
Aquatic Plant and Habitat Management Goals  
for the Santee Cooper Lakes**



**S.C. Department of Natural Resources and Santee Cooper  
Aquatic Plant and Habitat Management Goals  
For the Santee Cooper Lakes**

Santee Cooper (S-C) and the S.C. Department of Natural Resources (DNR) recognize the Santee Cooper Lakes as a significant natural resource of the State. In order to provide balanced benefits to natural resources and the multiple uses of the lakes, the DNR and S-C (the parties) agree to cooperate in the management of aquatic vegetation and the habitat that it provides. The parties' goal is to maintain 10 % of the lakes' surface area as beneficial vegetated habitat for waterfowl, wildlife, fish and other aquatic organisms. In order to achieve this goal, the parties agree to the following:

1. The aquatic plant management goal for the Santee Cooper Lakes is to achieve a diverse assemblage of native aquatic vegetation in 10% of the total surface area of the lake and to effectively control non-native invasive species. The aquatic plant coverage should include a combination of submersed, floating leaf, and emergent plant species that provide habitat and food to game and non-game fish and wildlife species. At least 75% of the vegetation should be composed of species that are beneficial to waterfowl. This vegetation should be distributed throughout the lake system. However, localized control using chemical or mechanical methods may be necessary in areas where vegetation interferes with hydroelectric power production or other legitimate lake uses regardless of plant coverage and distribution.

2. Monitoring

**Aquatic Plants:** S-C will annually monitor the vegetative community and extent of coverage. This monitoring may include aerial photography, visual surveys, hydro-acoustic transects and other appropriate measures - as deemed necessary by the parties in the annual work plan - to map the plant species and coverage. An annual report of the monitoring results will be completed at the end of each growing season and provided to the parties prior to preparation of the following year's work plan.

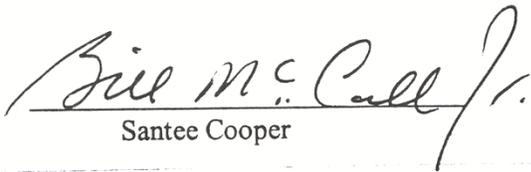
**Fish and Wildlife:** The DNR and Santee Cooper will cooperate in monitoring the health of the fishery and in conducting enhanced monitoring of waterfowl populations. The waterfowl population monitoring will consist of aerial waterfowl censuses. The census will be conducted 10 times each winter. The DNR will provide personnel and prepare an annual report to be distributed to both agencies. S-C will provide the flight time, approximately 30 hours each year.

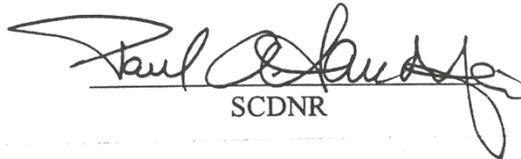
3. Sterile grass carp will continue to be a major component of the long-term management strategy in controlling hydrilla. The DNR and S-C will meet at least annually to review the monitoring data and to develop recommendations for maintenance stocking levels and other control strategies. These recommendations will be jointly presented to the Aquatic Plant Management Council for consideration. The implementation of these recommendations will be subject to approval by the Council.

4. Aquatic vegetation will not be controlled in Santee Cooper Project water bodies that are totally isolated from the lakes unless it conflicts with specific water uses or is identified as a state or federal noxious weed and poses a threat to Lakes Marion and Moultrie.

5. In order to enhance native plant growth and habitat throughout the lake system, S-C and the DNR will cooperate in implementing innovative management techniques. These techniques could include such measures as constructing grass carp barriers, introducing desirable native plant species, enhancing wildlife/waterfowl management areas, and implementing strategic lake level management measures.

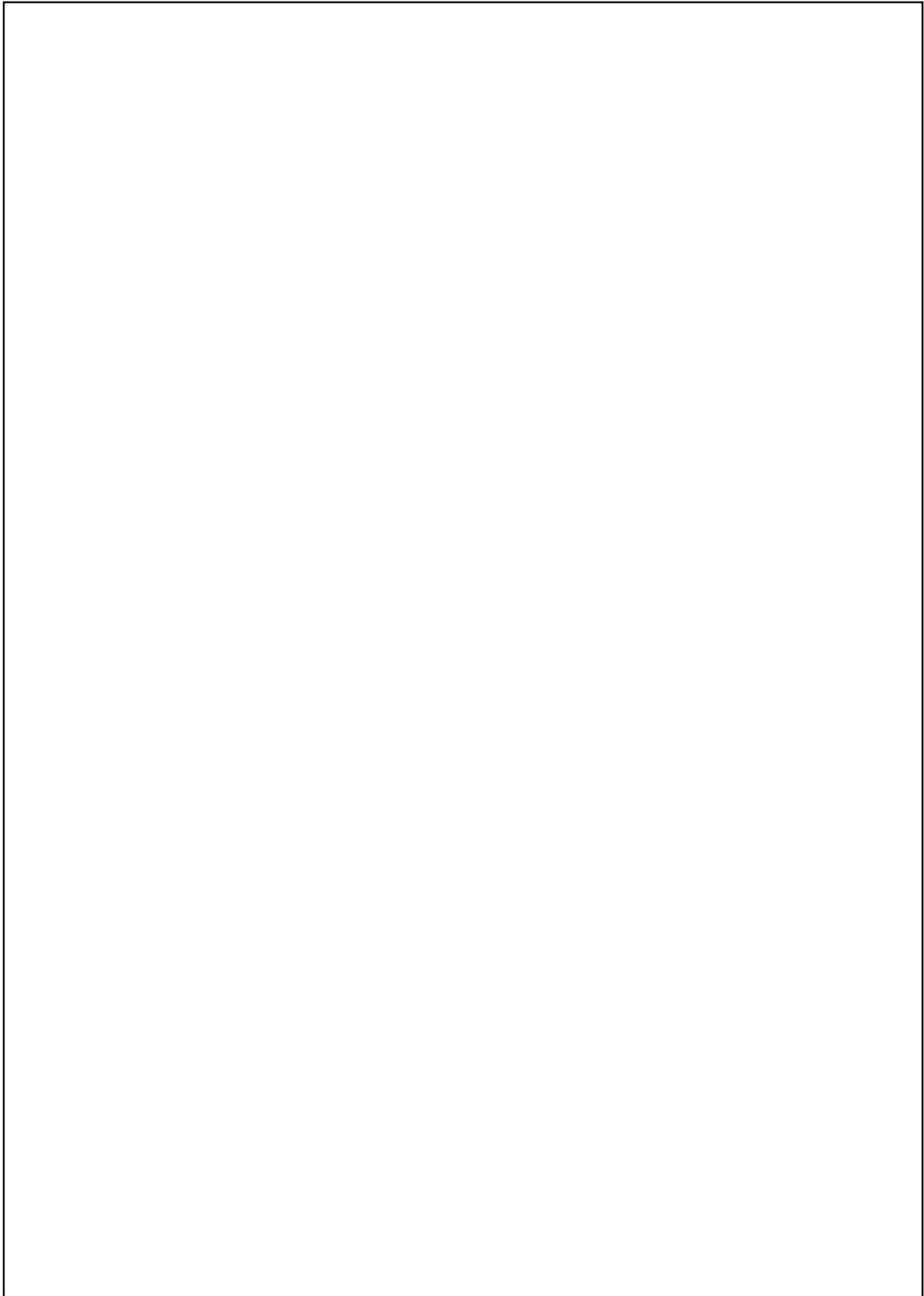
6. The DNR and S-C will meet annually to review the results of the monitoring and treatment programs to determine the effectiveness of the programs, and to develop annual work plans. Every five years the parties will meet to conduct a comprehensive review of the programs and to determine the success in meeting the overall management goals. Based upon this review, the provisions of this agreement may be modified, as deemed appropriate, by the mutual consent of the parties.

  
Santee Cooper

  
SCDNR

**APPENDIX F**

**Summary of Aquatic Plant  
Control Expenditures**



## SUMMARY OF AQUATIC PLANT CONTROL EXPENDITURES

During 1981, the Council received \$60,000 in Federal matching funds through the U.S. Army Corps of Engineers. The Council allocated \$57,000 of these funds to the S.C. Public Service Authority for plant management at Lake Marion. The Authority used these funds to chemically treat approximately 500 acres of the area uplake of the Rimini railroad trestle. The herbicide diquat was used to treat for Brazilian elodea and other submersed weed species. The remainder of the Federal funds were used to assist in development of the Council's management program.

During 1982, \$30,000 in Federal funds were allocated to the S.C. Public Service Authority for control of hydrilla and other nuisance plants at Lake Marion. An additional \$13,500 were allocated to Berkeley County for control of water hyacinths at Goose Creek Reservoir.

During 1983, \$155,000 in Federal matching funds were allocated to the S.C. Public Service Authority for plant control at Lake Marion. These funds were used to treat approximately 1,400 acres of upper Lake Marion with diquat, endothall and fluridone for control of Brazilian elodea, hydrilla and other submersed plants. The Council also provided \$4,500 in Federal matching funds to Berkeley County for maintenance control of water hyacinths at Goose Creek Reservoir.

During 1984, \$249,500 in Federal funds and \$40,500 in State funds were allocated to the S.C. Public Service Authority for aquatic weed control at Lake Marion. The S.C. Electric and Gas Company was allocated \$25,000 for control of hydrilla and other submersed aquatic weeds at Back River Reservoir. Berkeley County was allocated \$5,000 for maintenance control of water hyacinth at Goose Creek Reservoir.

Calendar year 1985 represented the first year of significant funding for aquatic plant management in South Carolina since the establishment of the Aquatic Plant Management Program in 1980. Funding was available from State and Federal sources over separate fiscal years. A total expenditure of \$701,349 was used to control nuisance aquatic plant populations on 29 water bodies around the State. Of this expenditure, \$98,377 was used for biological control by triploid grass carp and \$602,972 was used for chemical control operations.

During 1986, a mild winter coupled with low lake levels and clear water due to a severe drought resulted in an abundance of submersed aquatic plants. Hydrilla populations in Lake Marion and Back River Reservoir increased in coverage and new populations were discovered in the Cooper River ricefields. A total of 38 water bodies (4,925 acres) were managed for aquatic weeds at a cost of \$704,090. Herbicide applications were made on 33 lakes (4,441 acres) at a cost of \$673,979. Biological controls were implemented on nine water bodies around the State at a cost of \$30,111.

During 1987, a total of \$604,695 in State and Federal funds were expended for aquatic weed control in public waters. Chemical control work amounting to \$599,445 was conducted in 26 public water bodies. Biological control, including stocking triploid grass carp and alligator-

weed flea beetles, was conducted at eight water bodies for a total expenditure of \$5,250.

During 1988, a total of \$631,164 in State, Federal, and local funds were expended for aquatic plant control activities in 25 water bodies. Because of reductions in the amount of Federal match from 70 percent to 50 percent of total control cost, local sponsors were for the first time required to provide at least 15 percent of control costs. Approved aquatic herbicides were applied to 3,258 acres on 21 water bodies at a total cost of \$583,764. Biological controls were implemented on four water bodies at a cost of \$47,400.

During 1989, a total of \$827,630 in Federal, State, and local funds were expended for aquatic plant control operations in 23 water bodies. Aquatic herbicides were applied to 2620 acres on 21 water bodies at a cost of \$422,009. A three year triploid grass carp stocking project was initiated on Lake Marion with the release of 100,000 sterile grass carp. Because this represents the largest such stocking in the country to date, biological control expenditures were substantially higher than in previous years, totaling \$405,621.

During 1990, a total of \$944,194 were expended for aquatic plant control activities on 24 water bodies. Herbicide treatments were made to all water bodies (2850 acres) at a cost of \$524,194. Lake Marion received its second installment of 100,000 triploid grass carp at a cost of \$420,000. Because of limited federal funds and a substantial increase in local funds (primarily from Santee Cooper), this was the first year that there were insufficient federal funds available to match all planned control operations. The Corps of Engineers provided 47 percent of total funding, while state and local entities provided 16 percent and 37 percent, respectively.

In 1991, aquatic plant management operations were conducted on 18 public water bodies at a total cost of \$1,965,387. The exceptionally large expenditure was a result of emergency control operations to alleviate blockage of the St. Stephen Hydroelectric facility on Lake Moultrie by hydrilla. A record high 6838 acres was treated with aquatic herbicides at a cost of \$1,505,771. Biological control agents were used on five lakes at a cost of \$459,615. Most of this included the third stocking of triploid grass carp in upper Lake Marion. While 50 percent of program funding was provided by the U.S. Army Corps of Engineers, 9 percent was provided by the State and 41 percent by local entities.

In 1992, 22 water bodies received control operations at a total cost of \$1,859,709. While last year's expenditures were higher, over 1,000 acres were treated by Santee Cooper at a cost of over \$200,000 but were not cost shared through the State program. Fifty percent of funding was provided by the U.S. Army Corps of Engineers, 8 percent by the State, and 42 percent by local entities. About 6,888 acres were treated with aquatic herbicide at a cost of \$1,447,864. Biological control agents (sterile grass carp and Tilapia) were introduced to six water bodies at a cost of \$411,845. This was the first year in which widespread hydrilla control was evident in upper Lake Marion from the grass carp. Hydrilla was controlled in over 6,500 acres in Stumphole, Low Falls, Elliotts Flats, and tree line areas. Compared to 1990 coverage, this represents an 80 percent reduction.

During 1993, a total of \$2,050,736 were expended for aquatic plant control activities on 27 water bodies. Forty-six percent of the funding was provided by the U.S. Army Corps of Engi-

neers, 5 percent by the Department of Natural Resources, and 49 percent by various local sponsors. Aquatic herbicide treatments were made on 23 water bodies (8,125 acres) at a total cost of \$1,828,335. Biological control agents (grass carp and tilapia) were used on 11 lakes at a cost of \$222,400. Grass carp stocked in upper Lake Marion in 1989-92 provided control (over 9,000 acres) for the second consecutive year. As a result of this success, stocking efforts were initiated in Lake Moultrie with the release of 50,000 grass carp. Hydrilla was discovered in Lake Murray this year resulting in unplanned treatment operations at several boat ramps and swimming beaches.

During 1994, aquatic plant management operations were conducted on 28 water bodies at a total cost of \$2,876,763. The U.S. Army Corps of Engineers provided 50 percent of all funds, while the State provided 7 percent and local entities provided 43 percent. Aquatic herbicide treatments were conducted on all water bodies (9,090 acres) at a cost of \$2,370,025. Grass carp were stocked in five lakes to control 10,242 acres at a cost of \$506,738. Lake Moultrie received the most grass carp (150,000 fish) to help increase the number of fish to target levels. Grass carp continue to control over 9,000 acres in upper Lake Marion for the third straight year. This year hydrilla was found in Lake Wateree for the first time resulting in unplanned treatments to attempt to eliminate it.

In 1995, a total of \$2,804,206 were expended for aquatic plant control activities on 30 water bodies. Fifty percent of the funding was provided by the U.S. Army Corps of Engineers, 44 percent was provided by local sponsors, and the state contributed 6 percent. Some level of herbicide treatment occurred on all the water bodies totalling about 9,710 acres at a cost of \$2,367,622. A total of 97,526 grass carp were stocked in five lakes at a total cost of \$435,084. Most of these were stocked in the Santee Cooper lakes (91,000) and Goose Creek Reservoir (6,000). Hydrilla was found in Lake Keowee for the first time this year which resulted in an unplanned treatment. Also *Salvinia molesta*, a federal noxious weed, was discovered in a private pond in Colleton County. Efforts were made to eradicate the infestation with treatments by the landowner and the state. Grass carp continue to provide excellent control in over 9,000 acres in upper Lake Marion; however, floating water hyacinths now infest much of this area impacting primarily shoreline and swamp areas.

Control expenditures in 1996 were about one-half of those in 1995 due in part to successful results from control efforts in previous years and in part to reductions in federal funding. A total of 19 water bodies were managed for nuisance species at a total cost of \$1,151,501; the Corps of Engineers provided 31%, the State provided 10%, and local entities provided 59%. Herbicide treatments were conducted in 4,920 acres at a cost of \$888,685; biocontrol agents were used in four lakes at a cost of \$262,816. Hydrilla coverage on the Santee Cooper lakes (Lakes Marion and Moultrie) declined by almost 80% due apparently to the successful stocking of sterile grass carp. As a result, herbicide treatments of hydrilla were reduced by a comparable amount. Hydrilla coverage has been essentially eliminated on Lake Wateree and substantially reduced on Lake Keowee through a combination of herbicide treatments and drawdowns. A large drawdown and treatment on Lake Murray this year is hoped to have similar results.

During 1997, aquatic plant management operations were conducted on 21 water bodies at a total cost of \$459,783. This represents a 60% reduction from control costs in 1996 due to very successful hydrilla management efforts on the Santee Cooper lakes and Lake Murray coupled

with limited Federal matching funds. Matching funds from the Corps of Engineers composed only 2 percent of total costs, while State and Local funds made up 38 percent and 60 percent, respectively. Sterile grass carp were stocked in five lakes to control 292 acres of submersed plants at a cost of \$15,951. Aquatic herbicides were used to treat 3,762 acres at a total cost of \$443,832. Most herbicide treatments (58%, 2,181 acres) were focused on water hyacinth which has expanded its range and now is found on six major water bodies. Water hyacinth treatments on the Ashepoo River were greater than originally planned and treatments on the Waccamaw River were unanticipated. Hydrilla coverage on the Santee Cooper lakes continued to decline in 1997 due to successful control by sterile grass carp resulting in sharp reductions in management expenditures. The drawdown and herbicide treatment on Lake Murray in 1996 resulted in better than anticipated hydrilla control this year. Hydrilla acreage was reduced 88 percent with a 45 percent reduction in shoreline miles.

Limited hydrilla coverage on the Santee Cooper Lakes, Lake Murray and Goose Creek Reservoir during 1998 helped reduce overall control expenditures for the third consecutive year. Total control cost for 1998 were 40% less than in 1997. A total of 1,862 acres on 17 water bodies were managed at a cost of \$273,223. The Department of Natural Resources provided 47% of total funding, while 25% was provided by the Corps of Engineers, and 28% by various local entities. Sterile grass carp are effectively controlling hydrilla growth in the Santee Cooper Lakes and Goose Creek Reservoir. About one-half of all herbicide treatments (940 ac.) were focused on water hyacinth control on coastal rivers and impoundments.

A total of 3,259 acres on 19 water bodies were managed in 1999 at a total cost of \$453,071. Funding support was 34% State (SCDNR), 21% Federal (USACOE), and 45% local match. Most herbicide treatments (1506 acres, 46%) were directed at controlling the growth of water hyacinth in seven water bodies. Hydrilla growth remains limited statewide due to control operations in previous years. Grass carp in the Santee Cooper Lakes (Lakes Marion and Moultrie) and Goose Creek Reservoir are effectively controlling hydrilla growth in those lakes. Hydrilla regrowth was evident in Lake Murray at the end of the year; however, higher than normal lake levels restricted herbicide treatments. Therefore, significant regrowth is expected next year.

During 2000, aquatic plant management operations were conducted on 21 water bodies at a total cost of \$483,236. State budget cuts at the end of the calendar year reduced control efforts by 21% of planned expenditures and shifted costs to local sponsors. Seventy percent of total costs were borne by local entities with the state paying the rest. Most of the control effort was focused on water hyacinth (31%), followed by hydrilla (25%) and Pithophora (19%). Hydrilla regrowth was significant on Lake Murray as predicted. Grass carp continue to control hydrilla on Goose Creek Reservoir and Lake Marion and Lake Moultrie.

During 2001, aquatic plant management operations were conducted on 2,775 acres on 25 water bodies at a total cost of \$508,075. Due to State budget cuts virtually all control costs were paid for with federal (41%) and local funds (59%). Hydrilla treatments were up this year (1,550 acres) because of a resurgence of hydrilla growth on Lake Murray; however, water hyacinth treatments were especially low (186 acres) due to a very cold period in December. Grass carp continue to provide effective control of hydrilla on Goose Creek Reservoir and the Santee Cooper Lakes.

During 2002, aquatic plant management operations were conducted on 2,239 acres on 17 water bodies at a total cost of \$297,236. Due to State budget cuts virtually all control costs were paid for with federal (37%) and local funds (63%). Water hyacinth treatments were up this year (1,186 acres) because of a milder than normal winter; however, hydrilla treatments were especially low (390 acres) due to the inability to treat Lake Murray. Grass carp continue to provide effective control of hydrilla on Goose Creek Reservoir and the Santee Cooper Lakes.

In 2003, aquatic plant management operations were conducted on 6135.40 acres in 12 water bodies at a total cost of \$639,328. Due to state budget cuts all control costs were paid for with federal (38%) and local funds (62%). Included in this total are the stocking of 64,500 sterile grass carp in Lake Murray to control 4300 acres of hydrilla at a cost of \$369,529. About 57% of all herbicide treatments (1005 ac.) were focused on water hyacinth control on coastal rivers and impoundments. Grass carp continue to provide effective control of hydrilla on Goose Creek Reservoir and the Santee Cooper Lakes.

A total of 2764 acres were treated in 2004 at a total cost of \$470,815. Local sponsors provided 41% of the cost, while the Corps of Engineers provided 30%. Funds from the State's Water Recreational Resource Fund (boat gas tax) paid for 29% of all control costs. The focus of most control was on water hyacinth (931 acres) and Phragmites (710 acres). Grass carp continue to provide effective control of hydrilla on Goose Creek Reservoir and the Santee Cooper Lakes. Preliminary surveys of Lake Murray indicate that grass carp stocked in 2003 are beginning to provide some control of hydrilla. The drawdown on Lake Murray over the past two years is also providing good hydrilla control in the drawdown zone.

In 2005 the focus of the Aquatic Nuisance Species Program was Phragmites control in coastal South Carolina, 1983 acres were treated at a cost of \$349,174. In all, a total of \$655,535 was spent on 3,935 acres of control of invasive plants. Local sponsors provided 32% of the cost, while the Corps of Engineers provided 35%. Funds from the State's Water Recreational Resource Fund (boat gas tax) paid for 33% of all control costs. Grass carp continue to provide effective control of hydrilla on the Santee Cooper Lakes and have provided excellent control on Lake Murray.

For 2006, Phragmites control was center stage and once again led the control efforts with 1950 acres treated at a cost of \$352,804. This is second only to last year's acreage of phragmites treated. In total 3984 acres of invasive species were treated at a cost of \$722,316. Funding from the Corps of Engineers was not available this year and the costs were almost evenly split between the local cost share monies and Water Recreation funds. Additional funding was used from the U.S. Navy, Naval Weapons Station in Goose Creek. Included in that total was 242 acres of Phragmites and about 70 acres of pond work in the Marrington Recreation area. Findings in Goose Creek Reservoir and the Santee Cooper Lakes indicate that additional stockings of Triploid Grass Carp may need to be reconsidered in 2007.

Increasing hydrilla and the abundance of native submersed vegetation in 2007 brought about maintenance stocking of Triploid Grass Carp in Lake Marion, Lake Moultrie, and Goose Creek Reservoir. A total of 2620 sterile carp were stocked in the Santee Cooper Lakes with an

additional 185 fish stocked into Goose Creek Reservoir. In total 4208 acres of invasive species were treated at a cost of \$774,671. Costs were almost evenly split between the local cost share monies and Water Recreation funds. Additional funding was used from the U.S. Navy, Naval Weapons Station in Goose Creek and U. S. Army Corps of Engineers for treatment of phragmites on spoil areas in Charleston Harbor and the Intracoastal Waterway. Santee coastal WMA managers should now have gained the upper hand with an additional 714 acres treated on Santee Coastal. Yawkey continued treatment of phragmites (120 acres) with several problem areas which remain persistent throughout treatment. Additionally 904 acres of phragmites have been treated from Colleton County through Georgetown County.

**Table 2002-A. Summary of Expenditures by Source for Control Operations During 2002.**

<b>Water Body Name</b>	<b>Total Cost</b>	<b>Federal</b>	<b>State</b>	<b>Local</b>	<b>Local Sponsor</b>
Back River Reservoir	\$92,071	\$38,877	\$0	\$53,194	CCPW/SCE&G/NWS
Black Mingo Creek	\$1,223	\$611	\$0	\$611	Georgetown County
Combahee River	\$1,279	\$640	\$0	\$640	Colleton County
Cooper River	\$36,414	\$18,207	\$0	\$18,207	Berkeley County
Goose Creek Reservoir	\$21,194	\$10,597	\$0	\$10,597	Charleston CPW
Lake Greenwood	\$31,556	\$15,778	\$0	\$15,778	Duke Power/ Greenwd Co.
Pee Dee River	\$10,436	\$5,218	\$0	\$5,218	Georgetown County
Santee Coastal Reserv	\$47,717	\$0	\$0	\$47,717	SCDNR-WFF Div.
Waccamaw River	\$1,249	\$625	\$0	\$625	Georgetown County
Lake Marion	\$15,444	\$5,838	\$0	\$9,606	Santee Cooper
Lake Moultrie	\$7,060	\$2,765	\$0	\$4,295	Santee Cooper
Church Branch Impoun	\$9,563	\$4,300	\$0	\$5,263	Santee Cooper
Dean Swamp Impound	\$10,852	\$4,297	\$0	\$6,555	Santee Cooper
Fountain Lake	\$348	\$104	\$0	\$243	Santee Cooper
Taw Caw Cr. Impoundm	\$5,781	\$1,734	\$0	\$4,046	Santee Cooper
Barnwell State Park	\$3,250	\$0	\$0	\$3,250	SC Parks, Rec, Tourism
Kings Mt. State Park	\$1,800	\$0	\$0	\$1,800	SC Parks, Rec, Tourism
<i>State Park Lake Total</i>	\$5,050	\$0	\$0	\$5,050	
<i>Non Santee Cooper Tot</i>	\$248,190	\$90,553	\$0	\$157,637	
<i>Santee Cooper Total</i>	\$49,047	\$19,038	\$0	\$30,009	
<b>GRAND TOTAL</b>	<b>\$297,236</b>	<b>\$109,591</b>	<b>\$0</b>	<b>\$187,646</b>	

Table 2002-B: Summary of S.C. Aquatic Plant Management Program Control Operations and Expenditures During 2002								
Waterbody	Target Plants	Acres Treated	Total Cost	Cost/Acre	Control Agent	Treatment Rate	Management Objectives	Control Effectiveness
Buck River Reservoir	Hydrilla	229.00	\$50,597.98	\$220.96/Kormen		16 gal/ac	Reduce problem plants to enhance public access, use water quality.	85% control of hydrilla except Foster Creek which was 50% control
	Water hyacinth	499.00	\$39,220.33	\$83.27/Forward		0.5 gal/ac	and maintain electric power generation and minimize impacts to water intakes.	90% control of water hyacinth
	Water primrose	40.00	\$3,251.60	\$81.29/Egare		7.5 pt/ac		75% control of water primrose
<b>Total</b>		<b>728.00</b>	<b>\$92,070.51</b>	<b>\$126.47</b>				
Black Mingo Creek	Algaltonweed	10.00	\$1,222.80	\$122.28/Asensal (EUP), Egare		24 oz/6 pt/ac	Reduce problem plants to enhance public access and use.	75% control of algaltonweed with some regrowth after 2 months
	Algaltonweed	7.00	\$855.96	\$122.28/Asensal (EUP), Egare		24 oz/6 pt/ac	Provide public access for bank fishing	95% control after three treatments
Combahee River	Parrot feather, frog's bit	4.00	\$423.28	\$105.82/Forward		0.75 gal/ac		
	<b>Total</b>	<b>11.00</b>	<b>\$1,279.24</b>	<b>\$116.29</b>				
Cooper River	Hydrilla	25.00	\$5,430.50	\$217.22/Kormen		16 gal/ac	Provide boat trails to main channel through hydrilla.	70% control of hydrilla
	Water hyacinth	355.00	\$29,590.35	\$83.27/Forward		0.5 gal/ac	Reduce water hyacinth to greatest extent possible. Reduce problem plants to enhance public access and use.	90% control of water hyacinth
	Water primrose	1.00	\$122.28	\$122.28/Asensal (EUP), Egare		24 oz/6 pt/ac		90% control of water primrose
<b>Total</b>		<b>397.00</b>	<b>\$39,414.27</b>	<b>\$91.72</b>				
Goose Creek Reservoir	Water hellice, water hyacinth	225.00	\$19,568.45	\$83.27/Forward		0.5 gal/ac	Reduce water hyacinth & water hellice to greatest extent possible.	90% control of water hyacinth
	Water primrose	20.00	\$1,625.80	\$81.29/Egare		7.5 pt/ac	Reduce water primrose for public use and flood flow.	75% control of water primrose, hydrilla still controlled by grass carp.
	<b>Total</b>	<b>255.00</b>	<b>\$21,194.25</b>	<b>\$83.11</b>				
Lake Greenwood	Hydrilla	109.50	\$27,121.81	\$247.69/Aquaticol K		5 gal/ac	Eradicate hydrilla from site.	99% control of hydrilla. Note: Eradication of hydrilla yet to be determined.
	Slender reed	16.50	\$4,434.33	\$268.75/Aquaticol K		5 gal/ac	Reduce reed along developed shoreline.	85% control of Slender reed
	<b>Total</b>	<b>126.00</b>	<b>\$31,556.14</b>	<b>\$250.45</b>				
Pee Dee River	Thoughtless Creek Water hyacinth	72.00	\$5,995.44	\$83.27/Forward		0.5 gal/ac	Reduce water hyacinth to greatest extent possible to enhance public access.	90% control of hyacinth
	Sandy Island Water hyacinth	25.00	\$4,440.75	\$177.63/Forward		0.75 gal/ac		95% control of hyacinth with two retreatments
	<b>Total</b>	<b>97.00</b>	<b>\$10,436.19</b>	<b>\$107.69</b>				
Santee Coastal Reserve	Phragmites	299.00	\$47,717.41	\$159.59/Asensal (EUP), Rodco		24 oz/6 pt/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control of phragmites
	Water hyacinth	15.00	\$1,249.05	\$83.27/Forward		0.75 gal/ac	Reduce water hyacinth to greatest extent possible to enhance public access.	90% control of water hyacinth
Santee Cooper Lakes	American lotus, waterlily, water shield	1.00	\$174.53	\$174.53/Forward, Glyphosate		5 gal/ac	Reduce problem plant species in priority use areas to enhance public access and use.	>90% control of plant in areas treated
	Grass carpgrass	50.50	\$7,255.61	\$143.88/Asensal (EUP), Glyphosate		125 - 375 gal/ac; 50 - 75 gal/ac	Reduce problem plant species in priority use areas to enhance public access and use.	>95% control of plant in areas treated
	Lyngella, Pithophora	18.00	\$2,541.55	\$141.20 K-Tea, Forward		6.0 gal/ac; 2.0 gal/ac	Reduce problem plant species in priority use areas to enhance public access and use.	65% control of plant in areas treated.
Lake Marion	Water hyacinth	14.50	\$1,354.90	\$94.13/Forward		5 gal/ac	Reduce problem plant species in priority use areas to enhance public access and use.	>85% control of plant in areas treated.
	Water primrose, Algaltonweed, Water pool, water willow, Slender reed, pondweed	29.00	\$4,014.22	\$138.42/Asensal (EUP), Glyphosate		125 - 375 gal/ac; 50 - 75 gal/ac		>85% control of plant in areas treated.
	<b>Total</b>	<b>113.25</b>	<b>\$15,443.66</b>	<b>\$136.37</b>				>90% control of plant in areas treated
Lake Moultrie	American lotus, waterlily, water shield	36.50	\$3,688.61	\$101.06/Glyphosate		7.5 gal/ac	Reduce problem plant species in priority use areas to enhance public access and use.	>90% control of plant in areas treated
	Bladderwort, pondweed	1.25	\$357.04	\$285.63/Forward		2 gal/ac	Reduce problem plant species in priority use areas to enhance public access and use.	>90% control of plant in areas treated
	Hydrilla	0.50	\$162.51	\$325.02/Kormen/Forward		4.0/2.0 gal/ac	Reduce problem plant species in priority use areas to enhance public access and use.	>90% control of plant in areas treated
Total	Water primrose, Algaltonweed, Giant cutgrass, cattail	11.25	\$1,606.54	\$142.80/Asensal (EUP), Glyphosate		125 - 375 gal/ac; 50 - 75 gal/ac		>85% control of plant in areas treated
		11.25	\$1,245.20	\$110.68/Asensal (EUP), Glyphosate		125 - 375 gal/ac; 50 - 75 gal/ac		>85% control of plant in areas treated
	<b>Total</b>	<b>60.75</b>	<b>\$7,059.30</b>	<b>\$116.21</b>				

Table 2002-B. Summary of S.C. Aquatic Plant Management Program Control Operations and Expenditures During 2002									
Waterbody	Target Plants	Acres Treated	Total Cost	Cost/Acre	Control Agent	Treatment Rate	Management Objectives	Control Effectiveness	Waterbody
									Church Branch Impoundment
	Water primrose, Alligatorweed	2.50	\$317.35	\$126.94	\$126.94/Arsenal (EUP), Glyphosate	.125 - .375 gal/ac, 50 - .75 gal/ac	Reduce problem plant species to enhance public access and use and to enhance waterfowl habitat.	>85% control of plant in areas treated.	Church Branch Impoundment
	Giant culgrass, cattail	1.00	\$126.94	\$126.94	\$126.94/Arsenal (EUP), Glyphosate	1.25 - .375 gal/ac, 50 - .75 gal/ac		>90% control of plant in areas treated.	
	Lynghya, Pithophora	2.00	\$251.91	\$125.96	\$125.96/K-Tea, Reeward, Hydrothol 191 Granular & Liquid	6 gal/ac, 2 gal/ac, 5 gal/ac & 100 lbs/ac		>90% control of plant in areas treated.	
	Water milfoil, parrot feather	7.75	\$3,037.74	\$391.97	\$391.97/2,4-D Granular	150 - 200 lbs/ac		>95% control of plant in areas treated.	
	Coottail	1.25	\$629.67	\$503.74	\$503.74/Reeward	2.0 gal/ac		>90% control of plant in areas treated.	
	Pondweed	16.00	\$4,888.83	\$305.55	\$305.55/Aquathol K Liquid	6.0 gal/ac		>90% control of plant in areas treated.	
	Slender naiad	1.00	\$3,104.43	\$3,104.43	\$3,104.43/Aquathol K Liquid	6.0 gal/ac		>80% control of plant in areas treated.	
	<b>Total</b>	<b>31.50</b>	<b>\$9,562.87</b>	<b>\$303.58</b>					
<b>Dean Swamp</b>	Hydrilla	26.50	\$7,657.66	\$288.97	\$288.97/Aquathol K, hydrothol 191 Liquid, Reeward, Komeen	6.0 gal/ac, .50 gal/ac, 2.0 gal/ac, 4.0 gal/ac	Reduce problem plant population to improve recreational access	75% control of areas treated.	
	Coottail	2.00	\$581.91	\$290.96	\$290.96/Aquathol K	5 gal/ac		>80% control of plant in areas treated.	
	Water primrose, Alligatorweed	3.00	\$261.28	\$87.09	\$87.09/Arsenal (EUP), Glyphosate	1.25 - .375 gal/ac, 50 - .75 gal/ac		>85% control of plant in areas treated.	
	Lynghya, Pithophora	12.00	\$2,331.21	\$194.27	\$194.27/Hydrothol 191 Liquid / Granular, Reeward, K-Tea	5 - 1.0 gal / 60-80 lbs/ac, 2.0 gal/ac, 6.0 gal/ac		85% control of plant in areas treated.	
	<b>Total</b>	<b>43.50</b>	<b>\$10,852.06</b>	<b>\$249.47</b>					
<b>Fountain Lake</b>	Water primrose, Alligatorweed	2.00	\$173.76	\$86.88	\$86.88/Arsenal (EUP), Glyphosate	1.25 - .375 gal/ac, 50 - .75 gal/ac	Reduce problem plant population to improve recreational access	>85% control of plant in areas treated.	
	American lotus, fragrant waterlily, watershield	2.00	\$173.76	\$86.88	\$86.88/Glyphosate	.75 gal/ac		>90% control of plant in areas treated.	
	<b>Total</b>	<b>4.00</b>	<b>\$347.52</b>	<b>\$86.88</b>					
<b>Taw Caw Impoundment</b>	Coottail	10.00	\$2,590.95	\$259.10	\$259.10/Aquathol K	5 gal/ac	Reduce problem plant population to improve recreational access	>80% control of plant in areas treated.	
	Bladderwort, slender naiad	2.00	\$518.20	\$259.10	\$259.10/Aquathol K	5 gal/ac		>80% control of plant in areas treated.	
	Giant culgrass, cattail	2.00	\$241.48	\$120.74	\$120.74/Arsenal (EUP), Glyphosate	1.25 - .375 gal/ac, 50 - .75 gal/ac		>85% control of plant in areas treated.	
	Water primrose, Alligatorweed,	20.00	\$2,429.85	\$121.50	\$121.50/Arsenal (EUP), Glyphosate	1.25 - .375 gal/ac, 50 - .75 gal/ac		>85% control of plant in areas treated.	
	<b>Total</b>	<b>34.00</b>	<b>\$5,780.58</b>	<b>\$170.02</b>					
<b>Barnwell State Park - Swimming Lake</b>	Waterlily	10.00	\$3,250.00	\$325.00	\$325.00/2,4-D granular	200 lbs/ac	Reduce problem plant population to improve recreational access	85% control of waterlily	
<b>King's Mt. State Park - Lake Crawford</b>	Slender naiad	4.00	\$1,800.00	\$450.00	\$450.00/Aquathol K	4.0 gal/ac	Reduce problem plant population to improve recreational access	75% control of slender naiad	
	<b>Total</b>	<b>14.00</b>	<b>\$5,050.00</b>	<b>\$360.71</b>					
<b>SCDNR Total</b>		<b>1938.00</b>	<b>\$245,139.86</b>	<b>\$125.46</b>					
<b>Santee Cooper Total</b>		<b>287.00</b>	<b>\$49,046.69</b>	<b>\$170.89</b>					
<b>State Park Lakes Total</b>		<b>14.00</b>	<b>\$5,050.00</b>	<b>\$360.71</b>					
<b>Grand Total</b>		<b>2239.00</b>	<b>\$297,236.45</b>	<b>\$132.75</b>					

**Table 2003-A. Summary of Expenditures by Source for Control Operations During 2003.**

<b>Water Body Name</b>	<b>Total Cost</b>	<b>Federal</b>	<b>State</b>	<b>Local</b>	<b>Local Sponsor</b>
Back River Reservoir	\$69,929	\$27,971	\$0	\$41,957	SCE&G, CCPW
Black Mingo Creek	\$2,144	\$858	\$0	\$1,286	Georgetown Co.
Black River	\$476	\$191	\$0	\$286	Georgetown Co.
Cooper River	\$46,906	\$18,762	\$0	\$28,144	Berkeley Co., SCE&G
Goose Creek Reservoir	\$19,085	\$7,634	\$0	\$11,451	Charleston CPW
Lake Greenwood	\$6,890	\$2,756	\$0	\$4,134	Greenwood Co.
Lake Murray	\$369,529	\$147,811	\$0	\$221,717	SCE&G, Lexington Co., Richland Co.
Pee Dee River	\$772	\$386	\$0	\$386	Georgetown Co.
Santee Coastal Reserve	\$25,128	\$0	\$0	\$25,128	Santee Coastal Reserve
Waccamaw River	\$515	\$257	\$0	\$257	Horry Co.
Lake Marion	\$16,984	\$6,794	\$0	\$10,190	Santee Cooper
Lake Moultrie	\$14,272	\$5,709	\$0	\$8,563	Santee Cooper
Taw Caw Impoundment	\$26,808	\$10,723	\$0	\$16,085	Santee Cooper
Potato Creek Imp.	\$14,620	\$5,848	\$0	\$8,772	Santee Cooper
Dean Swamp	\$22,313	\$8,925	\$0	\$13,388	Santee Cooper
Fountain Lake	\$1,264	\$506	\$0	\$758	Santee Cooper
Church Branch Imp.	\$1,693	\$677	\$0	\$1,016	Santee Cooper
<b><i>State Park Lake Total</i></b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	
<b><i>Non Santee Cooper Total</i></b>	<b>\$541,374</b>	<b>\$206,626</b>	<b>\$0</b>	<b>\$334,747</b>	
<b><i>Santee Cooper Total</i></b>	<b>\$97,954</b>	<b>\$39,182</b>	<b>\$0</b>	<b>\$58,772</b>	
	<b>\$639,328</b>	<b>\$243,295</b>	<b>\$0</b>	<b>\$389,750</b>	

Table 2003-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2003								
Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness
Back River Reservoir	Hydrilla	131.25	\$29,354.06	\$223.65	Komeen	16 gal/ac	Reduce problem plants to enhance public access, use, water quality, and maintain electric power generation and minimize impacts to water intakes.	> 95% control
	Water hyacinth	153.00	\$13,122.81	\$85.77	Reward	0.5 gal/ac		90% control
	Water hyacinth	2.00	\$238.24	\$119.12	Renovate	0.75 gal/ac		> 95% control
	Water hyacinth/primrose	221.00	\$25,155.12	\$113.82	Renovate	0.5 - 0.75 gal/ac		90% control
	Water hyacinth/primrose	24.00	\$2,058.48	\$85.77	Reward	0.5 gal/ac		90% control
<b>TOTAL:</b>		531.25	\$69,928.71	\$131.63				
Black Mingo Creek	Alligatorweed	18.00	\$2,144.16	\$119.12	Renovate 3	0.75 gal/ac	Reduce problem plants to enhance public access, use and water quality.	75% control with some regrowth.
<b>TOTAL:</b>		18.00	\$2,144.16	\$119.12				
Black River	Alligatorweed	4.00	\$476.48	\$119.12	Renovate 3	0.75 gal/ac	Reduce problem plants to enhance public access, use and water quality.	75% control with some regrowth.
<b>TOTAL:</b>		4.00	\$476.48	\$119.12				
Cooper River	Hydrilla	37.50	\$6,386.88	\$223.65	Komeen	16 gal/ac	Provide boat trails to main channel through hydrilla.	> 95% control
	Water hyacinth	99.00	\$8,491.23	\$85.77	Reward	0.5 gal/ac	Reduce problem plants to enhance public access and use.	90% control
	Water hyacinth/primrose	224.00	\$26,662.88	\$119.12	Renovate	0.75 gal/ac		> 95% control
	Water hyacinth/primrose	39.00	\$3,345.03	\$85.77	Reward	0.5 gal/ac		90% control
<b>TOTAL:</b>		399.50	\$46,906.02	\$117.41				
Goose Creek Reservoir	Water hyacinth/primrose	16.00	\$1,905.92	\$119.12	Renovate	0.75 gal/ac	Reduce water hyacinth & water lettuce to greatest extent possible.	> 95% control
	Water hyacinth/Water lettuce	34.00	\$3,677.68	\$108.17	Renovate	0.5 - 0.75 gal/ac		> 95% control
	Water hyacinth/Water lettuce	156.00	\$13,501.62	\$86.55	Reward	0.5 gal/ac		> 95% control
<b>TOTAL:</b>		206.00	\$19,085.22	\$92.65				
Lake Greenwood	Hydrilla	25.00	\$6,889.50	\$275.58	Aquathol-k	5 gal/ac	Eradicate hydrilla from site.	> 98% control of Hydrilla. <b>Note: Eradication of hydrilla yet to be determined.</b>
<b>TOTAL:</b>		25.00	\$6,889.50	\$275.58				
Lake Murray	Hydrilla	4300.00	\$369,528.60	\$85.94	Sterile Grass Carp	15 per vegetated acre	Reduce hydrilla to minimize spread and impacts to public access and use.	Control of hydrilla using grass carp not readily identifiable.
<b>TOTAL:</b>		4300.00	\$369,528.60	\$85.94				
Pee Dee River	Water Hyacinth	9.00	\$771.93	\$85.77	Reward	0.5 gal/ac	Reduce hyacinth to minimize spread and impacts to public access and use.	> 95% control
<b>TOTAL:</b>		9.00	\$771.93	\$85.77				
Santee Coastal Reserve	Phragmites	156.00	\$25,128.48	\$161.08	Arsenal/Rodeo	24 oz/6 pints	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
<b>TOTAL:</b>		156.00	\$25,128.48	\$161.08				
Waccamaw River	Water hyacinth	6.00	\$514.62	\$85.77	Reward	0.5 gal/ac	Reduce hyacinth to minimize spread and impacts to public access and use.	90% control
<b>TOTAL:</b>		6.00	\$514.62	\$85.77				
<b>Santee Cooper Lakes</b>								
Lake Marion	Lynghya, Pithophora	8.00	\$1,142.79	\$142.85	Hydrothol 191 Liquid / Granular,	0.5 - 1.0 gal / 60-80 lb/ac, 2.0	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	65% control at end of season
	Water hyacinth	22.00	\$2,381.46	\$108.25	Reward / Renovate	0.5 gal/ac		> 95% control
	Water primrose, Alligatorweed,	56.50	\$7,177.00	\$127.03	Arsenal EUP, Arsenal	0.25 - 0.375 gal/ac, 0.125 - 0.25		> 85% control
	Water pod, Water willow				EUP/Glyphosate, Glyphosate	/0.5 gal/ac, 0.75 gal/ac		
<b>TOTAL:</b>		86.50	\$10,701.25	\$123.71				
Lake Moultrie	American lotus, Water lily, Water shield	30.00	\$2,684.20	\$89.47	Glyphosate	0.75 gal/ac.	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	> 90% control
	Bladderwort, Pondweed	0.60	\$131.41	\$219.02	Reward	2 gal/ac		> 90% control
	Cabomba, Watermilfoil	4.00	\$970.71	\$242.68	Avast SRP	10 lbs/ac		> 90% control
	Hydrilla	0.20	\$116.87	\$584.35	Komeen / Reward	4.07/2.0 gal/ac		> 90% control
	Water primrose, Alligatorweed	76.00	\$8,996.64	\$118.38	Arsenal EUP, Arsenal	0.25 - 0.375 gal/ac, 0.125 - 0.25		> 85% control
					EUP/Glyphosate, Glyphosate	/0.5 gal/ac, 0.75 gal/ac		
	Giant cutgrass, Cattail	11.00	\$1,372.52	\$124.77	Arsenal EUP, Arsenal	0.25 - 0.375 gal/ac, 0.125 - 0.25	Reduce problem plants to enhance waterfowl habitat, public access and use.	> 95% control
<b>TOTAL:</b>		121.80	\$14,272.35	\$117.18	EUP/Glyphosate, Glyphosate	/0.5 gal/ac, 0.75 gal/ac		

**Table 2004-A. Summary of Expenditures by Source for Control Operations During 2004.**

<b>Water Body Name</b>	<b>Total Cost</b>	<b>Federal</b>	<b>State</b>	<b>Local</b>	<b>Local Sponsor</b>
Back River Reservoir	\$94,772	\$47,386	\$23,693	\$23,693	SCE&G, CCPW
Black Mingo Creek	\$2,523	\$1,262	\$630	\$631	Georgetown Co.
Black River	\$2,523	\$1,262	\$630	\$631	Georgetown Co.
Bonneau Ferry	\$10,736	\$0	\$10,736	\$0	SCDNR
Cooper River	\$62,011	\$31,006	\$15,502	\$15,503	Berkeley Co., SCE&G
Delta Plantation	\$2,158	\$0	\$2,158	\$0	SCDNR
Edisto River	\$1,733	\$0	\$520	\$1,213	SCDNR, USF&W
Goose Creek Reservoir	\$19,066	\$9,533	\$4,766	\$4,767	Charleston CPW
Lake Greenwood	\$10,711	\$5,356	\$2,677	\$2,678	Greenwood Co.
Lake Murray	\$1,364	\$682	\$341	\$341	SCE&G, Lexington Co., Richland Co.
Little Pee Dee River	\$7,131	\$3,566	\$1,783	\$1,783	Horry Co.
Lumber River	\$803	\$401	\$201	\$201	Horry Co.
Pee Dee River	\$4,206	\$2,103	\$1,052	\$1,051	Georgetown Co.
Santee Coastal Reserve	\$114,517	\$0	\$34,355	\$80,162	Santee Coastal Reserve
Yawkey Wildlife Center	\$43,294	\$0	\$12,988	\$30,306	Yawkee Wildlife Center
Lake Marion	\$24,531	\$12,265	\$6,133	\$6,133	Santee Cooper
Lake Moultrie	\$9,167	\$4,583	\$2,292	\$2,292	Santee Cooper
Taw Caw Impoundment	\$3,750	\$1,875	\$937	\$938	Santee Cooper
Potato Creek Imp.	\$12,692	\$6,346	\$3,173	\$3,173	Santee Cooper
Dean Swamp	\$20,883	\$10,441	\$5,221	\$5,221	Santee Cooper
Fountain Lake	\$819	\$409	\$205	\$205	Santee Cooper
Church Branch Imp.	\$9,425	\$4,712	\$2,356	\$2,357	Santee Cooper
Charlestown Landing SP	\$1,815	\$0	\$0	\$1,815	SCPRT
Kings Mt. SP Lk. Crawford	\$3,325	\$0	\$0		\$3,325 SCPRT
Sesquicentennial SP	\$6,860	\$0	\$0		\$6,860 SCPRT
<b><i>SCDNR Total</i></b>	<b>\$377,548</b>	<b>\$102,555</b>	<b>\$112,034</b>	<b>\$162,958</b>	
<b><i>State Park Lake Total</i></b>	<b>\$12,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$12,000</b>	
<b><i>Santee Cooper Total</i></b>	<b>\$81,266</b>	<b>\$40,633</b>	<b>\$20,317</b>	<b>\$20,316</b>	
<b><i>Grand Total</i></b>	<b>\$470,814</b>	<b>\$143,188</b>	<b>\$132,348</b>	<b>\$195,276</b>	

Table 2004-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2004						
Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate
Back River Reservoir	Hydrilla	167.25	\$ 38,119.92	\$ 227.92	Komeen	16 gal/ac
	Hydrilla	25.00	\$ 16,281.75	\$ 651.27	Aquathol Super K	40 lbs/ac
	Water hyacinth	228.00	\$ 19,927.20	\$ 87.40	Reward	0.5 gal/ac
	Water hyacinth	90.00	\$ 10,707.40	\$ 118.97	Renovate	0.5 - 0.75 gal/ac
	Cabomba	4.00	\$ 1,282.56	\$ 320.64	Hydrothol 191 Liquid	7 gal/ac
	Water primrose	75.00	\$ 8,453.10	\$ 112.71	Renovate	0.5 - 0.75 gal/ac
TOTAL:		589.25	\$ 94,771.63	\$ 160.83		
Black Mingo Creek	Alligatorweed	20.00	\$ 2,523.00	\$ 126.15	Habitat/Glypro	0.250 gal/ac/750 gal/ac
TOTAL:		20.00	\$ 2,523.00	\$ 126.15		
Black River	Alligatorweed	20.00	\$ 2,523.00	\$ 126.15	Habitat/Glypro	0.250 gal/ac/750 gal/ac
TOTAL:		20.00	\$ 2,523.00	\$ 126.15		
Cooper River	Hydrilla	60.25	\$ 13,792.18	\$ 227.92	Komeen	16 gal/ac
	Water hyacinth	193.00	\$ 16,888.20	\$ 87.40	Reward	0.5 gal/ac
	Water hyacinth	174.00	\$ 21,120.12	\$ 121.38	Renovate	0.75 gal/ac
	Water hyacinth	66.00	\$ 9,413.58	\$ 142.63	Habitat/Glypro	0.250 gal/ac/750 gal/ac
	Water primrose	8.00	\$ 877.36	\$ 109.67	Habitat	0.250 gal/ac
TOTAL:		501.25	\$ 62,011.44	\$ 123.71		
Goose Creek Reservoir	Water hyacinth	51.00	\$ 4,457.40	\$ 87.40	Reward	0.5 gal/ac
	Water hyacinth	28.00	\$ 3,988.64	\$ 142.63	Renovate	0.5 - 0.75 gal/ac
	Water lettuce	125.00	\$ 10,925.00	\$ 87.40	Reward	0.5 gal/ac
	Cutgrass/Water primrose	2.00	\$ 285.26	\$ 142.63	Habitat/Glypro	0.250 gal/ac/750 gal/ac
TOTAL:		206.00	\$ 19,066.30	\$ 92.55		
Edisto River	Phragmites	12.00	\$ 1,733.52	\$ 144.46	Habitat	0.375 gal/ac
TOTAL:		12.00	\$ 1,733.52	\$ 144.46		
Lake Greenwood	Hydrilla	25.00	\$ 7,020.75	\$ 280.83	Aquathol-k	5 gal/ac
	Naiad	20.00	\$ 3,690.60	\$ 184.53	Aquathol-k	3 gal/ac
TOTAL:		45.00	\$ 10,711.35	\$ 238.03		
Lake Murray	Hydrilla	5.00	\$ 1,363.80	\$ 272.76	Nautique	12 gal/ac
TOTAL:		5.00	\$ 1,363.80	\$ 272.76		
Lumber River	Alligatorweed	6.00	\$ 802.86	\$ 133.81	Habitat/Eagre	250 gal/ac/500 gal/ac
Little Pee Dee River	Alligatorweed	50.00	\$ 7,131.50	\$ 142.63	Habitat/Glypro	250 gal/ac/500 gal/ac
Bonneau Ferry	Water Primrose, Water hyacinth, Frog's bit, Lotus, Cutgrass, Cattails	56.00	\$ 7,934.36	\$ 141.69	Habitat/Glypro	0.250 - 0.375 gal/ac/0.750 gal/ac
TOTAL:		66.00	\$ 10,735.60	\$ 162.66		
Delta Plantation	Salvinia Molesta	66.00	\$ 10,735.60	\$ 162.66	Reward	1 gal/ac
	Salvinia Molesta	4.00	\$ 538.84	\$ 134.71	Reward	0.500 gal/ac
TOTAL:		70.00	\$ 11,274.44	\$ 160.79		
Pee Dee River	Water Hyacinth	6.00	\$ 2,157.70	\$ 359.62	Reward	0.5gal/ac
Sandy Island	Phragmites	4.00	\$ 709.68	\$ 177.42	Habitat/Glypro	375 gal/ac/750gal/ac
Santee Coastal Reserve	Phragmites	44.00	\$ 4,205.68	\$ 95.58	Habitat/Glypro	375 gal/ac/750gal/ac
TOTAL:		494.00	\$ 114,516.98	\$ 231.82		
Tom Yawkey	Phragmites	494.00	\$ 114,516.98	\$ 231.82	Habitat/Glypro	375 gal/ac/750gal/ac
TOTAL:		200.00	\$ 43,294.00	\$ 216.47		
Santee Cooper Lakes	American Lotus, Water hyacinth, Cabomba, Variable Leaf Water Milfoil, Parrot's Feather	14.00	\$ 1,575.66	\$ 112.55	Reward, Glyphosate	5 gal/ac, 75 gal/ac
	Giant Cutgrass, Arundo Donax	0.50	\$ 60.49	\$ 120.98	Sonar, Renovate	40 lbs/ac, 5 gal/ac
	Lynghya, Pithophora	51.50	\$ 5,884.02	\$ 114.25	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	25 - 375 gal/ac, 125 - 25 / 50 gal/ac, 75 gal/ac
	Water Hyacinth	13.00	\$ 1,507.99	\$ 116.00	Hydrothol 191 Liquid / Granular, Cutrine Plus Granular, K-Tea	5 - 10.0 gal/60-80 lb/ac, 60 lbs/ac, 2.0 - 6.0 gal/ac
	Water Primrose, Alligatorweed, Water Pod, Water Willow	110.50	\$ 10,654.73	\$ 96.42	Reward, Renovate	50 gal/ac, .5 gal/ac
		36.50	\$ 4,847.96	\$ 132.82	Habitat/Glyphosate, Glyphosate, Renovate	50 gal/ac, 125 - 25 / 50 gal/ac, 75 gal/ac, 50 gal/ac
TOTAL:		226.00	\$ 24,530.87	\$ 108.54		

Water Body	Target Plants	Acres	Total Cost	Cost/acre	Control Agent	Rate	Management Objective	Control Effectiveness	
Lake Moultrie	American Lotus, Waterlily, Water Shield	28.80	\$ 2,934.25	\$ 101.88	Reward, Glyphosate	5 gal/acre, .75 gal/acre	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, and water quality.	> 90% control	
	Bladderwort, Pondweed, Slender Naid	1.50	\$ 273.63	\$ 182.42	Reward, Aquathol K Liquid, Aquathol Super K	2.0 gal/acre, 5.0 gal/acre, 40 lb./ac		> 90% control	
	Cabomba, Watermilfoil	2.50	\$ 692.30	\$ 276.92	Sonar	40 lbs/acre		> 90% control	
	Water Primrose, Alligatorweed	42.30	\$ 3,801.89	\$ 89.88	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	50 gal/acre, 125 - 25 / 50 gal/acre, 75 gal/acre, 50 gal/acre		> 90% control	
	Water Hyacinth	7.00	\$ 713.62	\$ 101.95	Renovate, Reward	50 gal/acre		> 85% control	
	Giant Cutgrass, Cattail, Arundo Donax	9.00	\$ 750.87	\$ 83.43	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	50 gal/acre, 125 - 25 / 50 gal/acre, 75 gal/acre, 50 gal/acre	Reduce problem plants to enhance waterfowl habitat, public access and use.	> 95% control	
	TOTAL:	91.10	\$ 9,166.56	\$ 100.62					
	Taw Caw Impoundment	Coontail	4.00	\$ 1,240.12	\$ 310.03	Aquathol K Liquid	5 gal/acre	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, and water quality.	> 80% control
		Hydrilla	6.00	\$ 1,860.16	\$ 310.03	Aquathol K Liquid, Sonar	5 - 10 gal/acre, 10 lbs/acre		> 80% control
		Water Primrose, Alligatorweed	7.00	\$ 650.09	\$ 92.87	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	25 - 37.5 gal/acre, 125 - 25 / 50 gal/acre, 75 gal/acre		85% control
TOTAL:	Hydrilla	17.00	\$ 3,750.37	\$ 220.61	Aquathol K Liquid, Sonar	5 - 10 gal/acre, 10 lbs/acre	Reduce problem plant populations to provide residential and public access to open water an prevent the spread to other areas.	> 90% control	
Potato Creek Impoundment	Hydrilla	36.50	\$ 12,892.12	\$ 347.73	Aquathol K Liquid, Sonar	5 - 10 gal/acre, 10 lbs/acre	Reduce problem plant populations to provide residential and public access to open water an prevent the spread to other areas.	> 90% control	
*SCDNR Waterfowl Management Area	TOTAL:	36.50	\$ 12,892.12	\$ 347.73					
Dean Swamp	Hydrilla	52.00	\$ 16,452.85	\$ 310.63	Aquathol K Liquid, Sonar	5 - 10 gal/acre, 10 lbs/acre	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, and water quality.	75% control	
	Water Primrose, Alligatorweed	14.00	\$ 1,534.79	\$ 109.63	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	25 - 37.5 gal/acre, 125 - 25 / 50 gal/acre, 75 gal/acre		85% control	
	Cabomba	3.00	\$ 1,030.88	\$ 343.63	Sonar	40 lbs/acre		> 90% control	
	Lyngbya, Pithophora	18.00	\$ 2,164.05	\$ 120.23	Hydrothol 191 Liquid / Granular, Cutrine Plus Granular, K-Tea	5 - 1.0 gal / 60-80 lb/acre, 60 lbs/acre, 2.0 - 6.0 gal/acre			
TOTAL:	Water primrose, Alligatorweed	87.00	\$ 20,892.57	\$ 240.03	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	25 - 37.5 gal/acre, 125 - 25 / 50 gal/acre, 75 gal/acre	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, and water quality.	85% control	
Church Branch Impoundment	TOTAL:	5.00	\$ 819.15	\$ 163.83	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	25 - 37.5 gal/acre, 125 - 25 / 50 gal/acre, 75 gal/acre	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, and water quality.	85% control	
	Water Primrose, Alligatorweed	3.00	\$ 516.92	\$ 172.31	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	25 - 37.5 gal/acre, 125 - 25 / 50 gal/acre, 75 gal/acre		> 95% control	
	Lyngbya, Pithophora	0.75	\$ 107.76	\$ 143.68	K-Tea, Reward, Hydrothol 191 Granular & Liquid	6 gal/acre, 2 gal/acre, .5 gal/acre & 100 lbs/acre		> 90% control	
	Water Milfoil, Parrot Feather	2.50	\$ 1,276.79	\$ 510.72	2.4D Granular	150 - 200 lbs/acre	Reduce problem plants to enhance waterfowl habitat, public access and use.	> 90% control	
	Pondweed	30.25	\$ 7,523.08	\$ 248.70	Reward, Aquathol K Liquid, Aquathol Super K	2.0 gal/acre, 5.0 gal/acre, 40 lb./ac		> 90% control	
TOTAL:		36.50	\$ 9,424.55	\$ 258.21					
State Park Lakes	Duck weed	5.00	\$ 1,815.00	\$ 226.88	Euforone	1 pint/acre	Reduce problem plants to enhance public access and use.	95% control	
Charles Towne Landing SP	alligator weed & penny wort	3.00	\$ 1,815.00	\$ 226.88	Glyphosate	7.5 pnts/acre	Reduce problem plants to enhance public access and use.	> 85% with some regrowth	
TOTAL:	Slender naid	7.00	\$ 3,325.00	\$ 475.00	Aquathol K	4 gallons/acre	Reduce problem plants to enhance public access and use.	80% control	
Kings Mountain SP	TOTAL:	7.00	\$ 3,325.00	\$ 475.00					
Seesquecentennial:	Waterlily, watershed	8.50	\$ 6,860.00	\$ 807.06	2.0 D-Bee granular	200 lbs./acre	Reduce problem plants to enhance public access and use.	85-90% with some regrowth.	
TOTAL:		8.50	\$ 6,860.00	\$ 807.06					
SCDNR TOTAL		2284.50	\$ 377,548.36	\$ 166.72					
SANTEE COOPER TOTAL		499.10	\$ 81,266.19	\$ 162.83					
STATE PARKS TOTAL		23.50	\$ 12,000.00	\$ 510.64					
GRAND TOTAL		2787.10	\$ 470,814.55	\$ 168.93					

**Table 2005-A. Summary of Expenditures by Source for Control Operations During 2005.**

<b>Water Body Name</b>	<b>Total Cost</b>	<b>Federal</b>	<b>State</b>	<b>Local</b>	<b>Local Sponsor</b>
Back River Reservoir	\$77,533	\$31,952	\$21,516	\$24,066	SCE&G, CPW
Barauch/Winyah Bay	\$14,100	\$0	\$4,230	\$9,870	Baruch Institute
Black River	\$1,040	\$520	\$260	\$260	Georgetown Co.
Bonneau Ferry WMA	\$20,072	\$0	\$20,072	\$0	SCDNR
Cooper River	\$32,635	\$13,609	\$9,127	\$9,898	Berkeley Co., SCE&G
Delta Plantation	\$399	\$0	\$399	\$0	SCDNR
Donnelley WMA	\$12,700	\$0	\$3,810	\$8,890	SCDNR
Ace Basin	\$4,054	\$0	\$1,267	\$2,787	SCDNR, USF&W
Goose Creek Reservoir	\$20,993	\$8,406	\$5,854	\$6,733	CPW
Lake Greenwood	\$14,028	\$5,611	\$4,208	\$4,208	Greenwood Co.
Lake Marion	\$22,102	\$8,841	\$6,631	\$6,631	Santee Cooper
Lake Moultrie	\$7,405	\$2,962	\$2,222	\$2,222	Santee Cooper
S/C Impoundments	\$83,353	\$33,341	\$25,006	\$25,006	Santee Cooper
Lake Murray	\$1,481	\$740	\$370	\$370	SCE&G, Lexington Co., Richland Co.
Pee Dee River	\$1,335	\$668	\$334	\$334	Georgetown Co.
Samworth WMA	\$8,480	\$3,436	\$2,544	\$2,500	SCDNR
Santee Coastal Reserve	\$304,736	\$121,174	\$94,946	\$88,617	SCDNR
Santee Delta WMA	\$5,727	\$661	\$1,718	\$3,349	SCDNR
Waccamaw River	\$617	\$207	\$185	\$225	Horry Co.
Yawkey Wildlife Center	\$18,506	\$0	\$5,552	\$12,954	Yawkey Foundation
Charlestown Landing	\$0	\$0	\$0	\$0	SCPRT
Kings Mt. Lk. Crawford	\$0	\$0	\$0	\$0	SCPRT
Lee	\$0	\$0	\$0	\$0	SCPRT
Little Pee Dee	\$0	\$0	\$0	\$0	SCPRT
Paris Mountain	\$0	\$0	\$0	\$0	SCPRT
Santee (swimming lake)	\$0	\$0	\$0	\$0	SCPRT
Sesquicentennial	\$0	\$0	\$0	\$0	SCPRT
<b><i>SCDNR Total</i></b>	<b>\$538,437</b>	<b>\$186,984</b>	<b>\$175,060</b>	<b>\$176,393</b>	
<b><i>State Park Lake Total</i></b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	
<b><i>Santee Cooper Total</i></b>	<b>\$112,861</b>	<b>\$50,683</b>	<b>\$38,284</b>	<b>\$38,284</b>	
<b><i>Grand Total</i></b>	<b>\$651,298</b>	<b>\$232,128</b>	<b>\$210,251</b>	<b>\$208,919</b>	
		<b>36%</b>	<b>32%</b>	<b>32%</b>	

**Table 2005-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2005**

Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness
Back River Reservoir	Hydrilla	179.50	47,979.60	267.30	Kornen, Kornen/Reward	16 gal/ac, 49gal/239gal/ac	Reduce problem plants to enhance public access, use water quality, and maintain electric power generation and minimize impacts to water intakes.	> 95% control
	Water hyacinth	275.50	25,444.01	92.36	Renovate 3	0.500 - 0.750 gal/ac		90% control
	Water primrose	40.00	3,360.00	84.50	Reward	0.500 gal/ac		90% control
TOTAL:		547.00	4,988.25	95.54	Renovate 3	0.500 - 0.750 gal/ac		90% control
Baruch/ Winyah Bay	Phragmites	80.00	81,771.86	149.49			Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
	TOTAL:	80.00	14,100.00	176.25	Habitat	0.375 gal/ac		90% control
Black River	Alligatorweed	12.00	14,100.00	176.25			Reduce problem plants to enhance waterfowl habitat, public access and use.	95% control with some regrowth.
	TOTAL:	12.00	1,039.50	86.63	Habitat	0.187 gal/ac		95% control with some regrowth.
Bonneau Ferry Misc Ponds & Reserves	Water Primrose, Water hyacinth, Frog's bit, Lotus, Cutgrass, Cattails	142.00	1,039.50	86.63			Reduce phragmites to enhance waterfowl habitat, public access and use. This is Year 2 of a 3 year plan to restore Bonneau Ferry.	> 95% control
	Frog's bit, Lotus, Cutgrass, Cattails	4.00	19,650.75	138.29	Habitat	0.250 - 0.1875 gal/ac		> 95% control
	TOTAL:	4.00	421.50	105.38	Renovate 3	0.750 gal/ac		> 95% control
Cooper River	Hydrilla	146.00	20,072.25	137.48			Provide boat trails to main channel through hydrilla. Reduce problem plants to enhance public access and use.	> 95% control
	Water hyacinth	60.50	16,020.40	264.80	Kornen	16 gal/ac		> 95% control
	Water primrose	183.00	15,139.00	82.73	Renovate 3	0.750 gal/ac		> 95% control
TOTAL:		297.50	32,634.65	126.74	Habitat	0.250 gal/ac		90% control
Delta Plantation - Jasper County	Salvinia Molesta	1.50	114.63	76.42	Reward	1 gal/ac	Eradicate Salvinia from site.	> 99% control of areas treated at the end of season.
	Salvinia Molesta	1.50	282.74	188.49	Sonar	0.500 gal/ac		
	TOTAL:	3.00	397.37	132.46				
Donnelly/WMA	Frog's Bit, Cattails, swamp looseleaf	62.00	9,327.00	150.44	Habitat	0.250 gal/ac	Reduce problem plants to enhance waterfowl habitat, public access and use.	95% control with some regrowth.
	Frog's Bit	29.00	3,373.38	116.32	Renovate 3	0.500 - 0.75 gal/ac		
ACE Basin/Leticia & Combahee (Rivers)	Phragmites	23.00	4,053.75	176.25	Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	> 95% control
	TOTAL:	114.00	16,754.13	146.97				
Goose Creek Reservoir	Water hyacinth	67.00	7,060.13	105.38	Renovate 3	0.750 gal/ac	Reduce water hyacinth & water lettuce to greatest extent possible.	> 95% control
	Water lettuce	24.00	1,974.00	82.25	Renovate 3	0.500 - 0.750 gal/ac		> 95% control
	Water lettuce	120.00	10,140.00	84.50	Reward	0.500 gal/ac		> 95% control
TOTAL:		232.00	20,993.26	90.49	Habitat	0.187 gal/ac		90% control
Lake Greenwood	Hydrilla	27.00	12,528.00	464.00	Aquathol-k	5 gal/ac	Eradicate hydrilla from site.	> 90% control of Hydrilla. Note: Eradication of hydrilla yet to be determined.
	Nalad	6.00	1,500.00	250.00	Aquathol-k	3 gal/ac	Reduce problem plants to enhance public access, use and water quality.	> 95% control
Lake Murray	Water primrose	18.00	1,480.50	82.25	Renovate 3	0.500 gal/ac	Reduce hydrilla to minimize spread and impacts to public access and use.	> 95% control
	TOTAL:	33.00	14,028.00	425.09				
Pee Dee River	Phragmites	18.00	1,480.50	82.25			Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
	TOTAL:	9.00	1,335.00	148.33	Habitat	0.375 gal/ac		90% control
Santee Coastal Reserve	Phragmites	9.00	1,335.00	148.33			Reduce phragmites and water hyacinth to enhance waterfowl habitat, public access and use.	90% control
	Water hyacinth	2.90	440.49	176.20	Habitat	0.375 gal/ac		90% control
	TOTAL:	64.00	8,040.00	125.63	Habitat	0.1875 gal/ac		90% control
Santee Delta WMA	Phragmites	66.50	8,480.49	127.53			Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
	TOTAL:	1729.00	304,736.25	176.25	Habitat	0.375 gal/ac		90% control
Santee Delta WMA	Phragmites, willows	1729.00	304,736.25	176.25			Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
	TOTAL:	32.50	5,727.45	176.23	Habitat	0.375 gal/ac		90% control
Waccamaw River/Sandy Island	Water Hyacinth	4.00	342.25	85.56	Habitat	0.1875 gal/ac	Reduce hydrilla to minimize spread and impacts to public access and use.	90% control
	Phragmites	2.00	274.50	137.25	Habitat	0.375 gal/ac	Reduce phragmites to enhance public access and use.	> 95% control
Tom Yawkey Wildlife Center	Phragmites	6.00	616.75	102.79			Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
	TOTAL:	105.00	18,506.25	176.25	Habitat	0.375 gal/ac		90% control
TOTAL:		105.00	18,506.25	176.25				
SCDNR TOTAL:		3,390.50	542,673.71	160.06				

Table 2005-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2005

Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness	
Santee Cooper Lakes Lake Marion	American Lotus, Waterlily, Water Shield, Floating Heart	2.0	\$ 148.16	\$ 74.58	Glyphosate, Renovate	.75 gal/ac, .50 gal/ac	Provide access to open water areas for public use	>90% control of plant in areas treated at the end of season.	
	Giant Cutgrass, Arundo Donax	48.0	\$ 6,286.76	\$ 130.97	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac	Reduce plant encroachment on lake-front property and public access areas. Restoration of waterfowl habitat.	>95% control of plant in areas treated at the end of season. * Arundo ~50% control	
	Lynghya, Pithophora	16.0	\$ 2,267.45	\$ 141.72	K-Tea / Cide Kick	4 - 6 gal/ac	Reduce algal mats to enhance recreational use of water and reduce interference in agricultural irrigation intakes.	90% control of plant in areas treated at the end of season.	
	Water Hyacinth	77.5	\$ 9,908.57	\$ 127.85	Reward, Renovate	5 gal/ac, .5 gal/ac	Reduce problem plant population to provide public access to open water areas and prevent movement into other areas	>90% control of plant in areas treated.	
	Water Primrose, Alligatorweed, Water Pot, Water Willow	14.0	\$ 3,490.36	\$ 249.31	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.375 - .50 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Reduce problem plant population to provide public and shoreline access.	>85% control of plant in areas treated at end of season. Retreatment was necessary in areas where leaves of plant were partially submerged during initial treatment	
	TOTAL:	157.5	\$ 22,102.30	\$ 140.33		.75 gal/ac, .50 gal/ac	Reduce plant population to provide public access to coves and open water areas. Restoration of waterfowl habitat.	>90% control of plant in areas treated at end of season.	
	Lake Moultrie	American Lotus, Water Lily, Water Shield	21.0	\$ 2,102.31	\$ 100.11	Glyphosate, Renovate	.75 gal/ac, .50 gal/ac	Reduce plant population to provide public access to coves and open water areas. Restoration of waterfowl habitat.	>90% control of plant in areas treated at end of season.
		Cabomba, Watermilfoil	1.0	\$ 403.11	\$ 403.11	Sonar Q / PR	11 lbs/ac	Reduce problem plants in dead-end coves where navigation and recreation are adversely affected.	~80% control of plant in areas treated at end of season.
		Hydrilla	0.5	\$ 115.94	\$ 231.88	Aquathol K Liquid	6 - 8 gal/ac	Eliminate plant population to provide access to coves and prevent spread to other areas of lake.	>90% control of plant in areas treated at end of season.
		Water Primrose, Alligatorweed	2.0	\$ 174.83	\$ 87.42	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.50 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Reduce problem plant population to provide public and shoreline access.	>85% control of plant in areas treated at end of season. Retreatment was necessary in areas where leaves of plant were partially submerged during initial treatment
Water Hyacinth		2.0	\$ 179.74	\$ 89.87	Renovate, Reward	.50 gal/ac	Reduce problem plant population to provide public and shoreline access.	>95% control of plant in areas treated at the end of season.	
Water Willow		0.7	\$ 259.68	\$ 370.97	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.375 - .50 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Reduce problem plant population to provide public and shoreline access.	75% control of plant in areas treated at the end of season.	
Giant Cutgrass, Cattail, Arundo		29.0	\$ 4,169.52	\$ 143.78	Habitat, Habitat/Glyphosate,	.375 - .50 gal/ac, .125 - .25 /	Reduce plant encroachment on shoreline property and public	>85% control of plant in areas	
TOTAL:		56.20	\$ 7,405.13	\$ 131.76					
<b>SAMTEE COOPER LAKES TOTAL:</b>		<b>213.70</b>	<b>\$ 29,507.43</b>	<b>\$ 138.08</b>					
Santee Cooper Impoundments Taw Caw Impoundment		Coontail	18.70	\$ 6,297.96	\$ 336.79	Aquathol K Liquid	5 - 6 gal/ac	Reduce plant population to provide public access to shoreline, coves and open water areas	<50% control of plant in areas treated at the end of season.
	Hydrilla	31.00	\$ 10,677.76	\$ 344.44	Aquathol K Liquid	6 - 8 gal/ac	Eliminate plant population to provide public access to coves and open water areas and prevent spread to other areas of lake.	<50% control of plant in areas treated at the end of season.	
	Water Primrose, Alligatorweed,	8.00	\$ 917.97	\$ 114.75	Habitat/Glyphosate, Glyphosate,	.25 - .375 gal/ac, .125 - .25 / .50	Reduce problem plant population to provide public and	>85% control of plant in areas	
	Hydrilla	57.70	\$ 17,893.69	\$ 310.12	Aquathol K Liquid, Sonar Q / PR, AS	5 - 8 gal/ac, .125 - 1.35 lbs/ac, .025 gal/ac	Reduce plant population to provide residential and public access to open water areas and prevent spread to other	Undetermined	
	Giant Cutgrass, Cattail	2.00	\$ 279.79	\$ 139.90	Habitat, Habitat/Glyphosate, Glyphosate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac	Reduce plant population to provide residential and public access to open water areas. To improve waterfowl access to SCDNR duck boxes	~100% control of areas treated at the end of season.	
	TOTAL:	122.00	\$ 22,266.47	\$ 182.51			Reduce plant population to provide residential and public access to open water areas and prevent spread to other	<50% control of areas treated at the end of season.	
	Hydrilla	47.70	\$ 16,998.16	\$ 356.36	Aquathol K Liquid	6 - 8 gal/ac	Reduce plant population to provide residential and public access to open water areas and prevent spread to other	85% control of plant in areas treated at end of season	
	Water Primrose, Alligatorweed	5.50	\$ 713.83	\$ 127.97	Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac	Provide shoreline access.	>90% control of areas treated at the end of season.	
	Cabomba	4.00	\$ 1,696.16	\$ 424.04	Sonar PR / Q	11 lbs/ac	Provide shoreline access.	>90% control of areas treated at the end of season.	
	Lynghya, Pithophora	11.00	\$ 1,495.64	\$ 135.97	K-Tea / Cide Kick	4 - 6 gal/ac	Reduce algal mats to enhance recreational use of water.	~80% control of plant in areas treated at the end of season.	
TOTAL:	68.20	\$ 20,903.79	\$ 306.51						

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**Table 2005-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2005**

Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness
Fourtain Lake	Water Primrose, Aligatorweed	5.50	645.62	117.39	Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac., .125 - .25 / .50 gal/ac., .75 gal/ac., .50 gal/ac.	Provide shoreline access.	>85% control of plant in areas treated at end of season. Retreatment was necessary in areas where leaves of plant were partially submerged during initial treatment
TOTAL:		5.50	645.62	117.39				
Church Branch Impoundment	Giant Cutgrass, Cattail	4.25	573.89	135.03	Habitat, Habitat/Glyphosate, Glyphosate	.25 - .375 gal/ac., .125 - .25 / .50 gal/ac., .75 gal/ac.	Open areas at head of coves to reduce sediment buildup through increased flow and provide shoreline access.	>90% control of plant in areas treated at the end of season.
	Lyngbya, Rhizophora	12.00	1,239.23	103.27	K-T-1ea / Cide Kick	4 - 6 gal/ac	Eliminate plant population to provide public access to coves and open water areas and prevent spread to other areas of lake.	>90% control of plant in areas treated at the end of season.
	Cakomba	3.00	1,389.39	463.13	Sonar PR / Q	11 lbs/ac	Reduce plant population to provide public access to coves and open water areas	>90% control of plant in areas treated at the end of season.
	Pondweed	14.70	4,701.13	319.80	Aquathol K Liquid	5 - 6 gal/ac	Open areas at head of coves to provide shoreline access.	>40% control of plant in areas treated at the end of season.
	Water Shield	1.00	41.70	41.70	Glyphosate, Aquathol	.75 gal/ac., 25 gal/ac	Open areas at head of coves to reduce sediment buildup through increased flow and provide shoreline access.	>80% control of plant in areas treated at the end of season.
	Slender Naiad	42.00	13,698.58	326.16	Aquathol K Liquid	5 - 6 gal/ac	Open areas at head of coves to reduce sediment buildup through increased flow and provide shoreline access.	>90% control of plant in areas treated at the end of season.
TOTAL:		76.96	21,643.92	281.27				
IMPOUNDMENTS TOTAL		330.38	83,353.49	252.32				
SCDNR TOTAL		3,390.50	542,573.71	160.06				
SANTEE COOPER TOTAL		544.06	112,860.92	207.45				
GRAND TOTAL		3934.56	665,534.63	166.61				

**Table 2006-A. Summary of Expenditures by Source for Control Operations During 2006.**

<b>Water Body Name</b>	<b>Total Cost</b>	<b>Federal</b>	<b>State</b>	<b>Local</b>	<b>Local Sponsor</b>
1 Back River Reservoir	\$64,488	\$0	\$32,244	\$32,244	SCE&G, CPW
2 Baruch Institute	\$19,879	\$0	\$9,939	\$9,939	Baruch Inst.
3 Belle Isle	\$730	\$0	\$730	\$-	Belle Isle
4 Bonneau Ferry WMA	\$7,955	\$0	\$7,955	\$-	SCDNR
5 Cooper River	\$19,934	\$0	\$9,966	\$9,967	Berkeley Co., SCE&G
6 Donnelley WMA	\$3,817	\$0	\$1,908	\$1,908	SCDNR, USF&W
7 Dungannon HP	\$1,123	\$0	\$561	\$561	SCDNR
8 Goose Creek Reservoir	\$27,516	\$0	\$13,758	\$13,758	CPW
9 Lake Darpo	\$2,406	\$0	\$1,203	\$1,203	Darlington Co.
10 Lake Greenwood	\$16,219	\$0	\$8,110	\$8,110	Greenwood Co.
11 Lake Marion	\$55,784	\$0	\$27,892	\$27,892	Santee Cooper
12 Lake Moultrie	\$9,073	\$0	\$4,537	\$4,537	Santee Cooper
13 Santee Cooper	\$139,905	\$0	\$52,171	\$87,734	Santee Cooper
14 Naval Weapons Station	\$53,436	\$0	\$-	\$53,436	US Navy
15 Santee Coastal Reserve	\$243,154	\$0	\$181,154	\$62,000	Santee Coastal Reserve
16 Waccamaw River/ Georgetown Parks	\$6,774	\$0	\$4,774	\$2,000	Georgetown Co.
17 Samworth WMA	\$912	\$0	\$912	\$-	SCDNR
18 Yawkey Wildlife Center	\$36,475	\$0	\$18,238	\$18,238	Yawkey Wildlife Center
19 Barnwell SP	\$1,517	\$0	\$759	\$759	SCPRT
20 Charlestowne Landing SP	\$413	\$0	\$206	\$206	SCPRT
21 H Cooper Black	\$1,012	\$0	\$506	\$506	SCPRT
22 King's Mountain SP	\$1,040	\$0	\$520	\$520	SCPRT
23 Little Pee Dee SP	\$5,058	\$0	\$2,529	\$2,529	SCPRT
24 Santee SP	\$1,170	\$0	\$585	\$585	SCPRT
25 Sesquicentennial SP	\$2,529	\$0	\$1,265	\$1,265	SCPRT
<b><i>SCDNR Total</i></b>	<b><i>\$504,816</i></b>	<b><i>\$0</i></b>	<b><i>\$291,452</i></b>	<b><i>\$213,363</i></b>	
<b><i>State Park Lake Total</i></b>	<b><i>\$12,739</i></b>	<b><i>\$0</i></b>	<b><i>\$6,369</i></b>	<b><i>\$6,369</i></b>	
<b><i>Santee Cooper Total</i></b>	<b><i>\$204,761</i></b>	<b><i>\$0</i></b>	<b><i>\$84,598</i></b>	<b><i>\$120,162</i></b>	
<b><i>Grand Total</i></b>	<b><i>\$722,316</i></b>	<b><i>\$0</i></b>	<b><i>\$382,419</i></b>	<b><i>\$339,896</i></b>	

Table 2006-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2006									
Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness	
Back River Reservoir	Hydrilla	125.00	\$ 35,883.00	\$ 287.06/Komeen/Komeen-Reward	16 gal/ac/4 gal/ac-2gal/ac	Reduce problem plants to enhance public access, use water quality, and maintain electric power generation and minimize impacts to water intakes.	> 95% control Reward/Komeen mix proved to be more effective		
	Water hyacinth	283.00	\$ 24,976.79	\$ 88.26/Renovate	0.500 - 0.750 gal/ac		90% control		
	Fanwort	1.50	\$ 265.00	\$ 190.00/Hardball	5 gal/ac		80% control		
Baruch Institute (Winyah Phragmites Bay)	Water primrose	33.00	\$ 3,342.99	\$ 101.30/Renovate	0.5 - 0.75 gal/ac		90% control		
	TOTAL:	442.50	\$ 64,467.78	\$ 145.74					
Belle Isle (Winyah Phragmites Bay)	Water primrose	109.00	\$ 19,878.88	\$ 182.38/Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	Effectiveness not yet known		
	TOTAL:	109.00	\$ 19,878.88	\$ 182.38					
Bonneau Ferry Misc Ponds & Reserves	Water Primrose/Water Hyacinth, Frog's bit, Lotus, Cutgrass,	4.00	\$ 729.50	\$ 182.38/Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use. Done in conjunction with private application of site.	Effectiveness not yet known		
	TOTAL:	4.00	\$ 729.50	\$ 182.38					
Cooper River	Water Primrose/Water Hyacinth, Frog's bit, Lotus, Cutgrass,	62.00	\$ 7,955.19	\$ 128.31/Renovate 3	0.250 - 0.1875 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control		
	TOTAL:	62.00	\$ 7,955.19	\$ 128.31					
Donnelley WMA	Hydrilla	49.25	\$ 13,023.20	\$ 264.43/Komeen	16 gal/ac	Provide boat trails to main channel through hydrilla.	> 95% control		
	Water hyacinth	86.00	\$ 6,910.47	\$ 80.35/Renovate	0.500 gal/ac	Reduce problem plants to enhance public access and use.	> 95% control		
Dungannon HP	TOTAL:	135.25	\$ 19,933.67	\$ 147.38					
	Frog's bit, cutgrass, primrose, & Habitat-Glyphosate	39.00	\$ 3,070.61	\$ 78.73/Habitat-Glyphosate	0.125/0.625 gal/ac/0.1875 gal/ac	Reduce problem plants to enhance waterfowl habitat, public access and use.	Effectiveness not yet known		
Georgetown Morgan Park	TOTAL:	39.00	\$ 3,070.61	\$ 78.73					
	Water Primrose/Bur Marigold	11.00	\$ 1,122.50	\$ 102.05/Habitat/Glyphosate/Clearcast EUP	0.125/0.625 gal/ac/0.1875 gal/ac	Reduce problem plants to enhance waterfowl habitat, public access and use.	Effectiveness not yet known		
Goose Creek Reservoir	TOTAL:	11.00	\$ 1,122.50	\$ 102.05					
	Phragmites	31.00	\$ 5,653.63	\$ 182.38/Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	> 90% control		
Edisto River	TOTAL:	14.00	\$ 1,120.00	\$ 80.00/Clearcast EUP	0.500 gal/ac				
	Phragmites	45.00	\$ 6,773.69	\$ 150.53					
Lake Dapso	TOTAL:	22.00	\$ 2,040.47	\$ 92.75/Renovate 3	0.500 gal/ac	Reduce water hyacinth & water lettuce to greatest extent possible.	> 95% control		
	Water lettuce	136.00	\$ 13,075.27	\$ 96.14/Renovate3 / Habitat	0.500 gal/ac/0.250-0.500 gal/ac		> 95% control		
Lake Greenwood	TOTAL:	136.00	\$ 12,036.00	\$ 88.50/Reward	0.500 gal/ac		> 95% control		
	Water lettuce	4.00	\$ 364.75	\$ 91.19/Habitat	0.500 gal/ac				
Lake Marion	TOTAL:	298.00	\$ 27,516.49	\$ 92.34					
	Phragmites	5.00	\$ 746.01	\$ 149.20/Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control		
Marrington Forest	TOTAL:	5.00	\$ 746.01	\$ 149.20					
	Water lily/milfoil	11.00	\$ 2,405.80	\$ 218.71/Hangdollar/Hardball	200 lbs/ac/5 gal/ac	Reduce problem plants to enhance public access, use and water quality.	80% control		
Santee Coastal Reserve	TOTAL:	11.00	\$ 2,405.80	\$ 218.71					
	Hydrilla	25.50	\$ 5,764.00	\$ 226.04/Aquathol-K/Komeen	5 gal/ac/10 gal/ac	Eradicate hydrilla from site.	> 90% control of Hydrilla. Note: No Eradication of Hydrilla. Hydrilla found @ state park.		
Santee Delta	TOTAL:	25.50	\$ 5,764.00	\$ 226.04					
	Naiad	34.50	\$ 10,455.00	\$ 303.04/Aquathol-K	3-8 gal/ac	Reduce problem plants to enhance public access, use and water quality.	> 95% control		
Santee Cooper Lakes	TOTAL:	34.50	\$ 10,455.00	\$ 303.04					
	Phragmites	60.00	\$ 16,219.00	\$ 270.32					
Tom Yankey	TOTAL:	60.00	\$ 16,219.00	\$ 270.32					
	Phragmites	242.00	\$ 44,134.75	\$ 182.38/Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	Effectiveness not yet known		
Santee Cooper Lakes	TOTAL:	70.00	\$ 9,301.25	\$ 132.88/Habitat/Glyphosate	0.125/0.637 gal/ac	Reduce problem plants to enhance public access, use and water quality.	Effectiveness not yet known		
	Phragmites/Chinaberry	312.00	\$ 53,436.00	\$ 171.27					
Santee Coastal Reserve	TOTAL:	312.00	\$ 53,436.00	\$ 171.27					
	Phragmites/Chinaberry	5.00	\$ 911.88	\$ 182.38/Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	Effectiveness not yet known		
Santee Delta	TOTAL:	5.00	\$ 911.88	\$ 182.38					
	Phragmites	1340.00	\$ 243,154.00	\$ 181.46/Habitat/Clearcast EUP (12 ac.)	3.75 gal/ac/0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control		
Santee Cooper Lakes	TOTAL:	1340.00	\$ 243,154.00	\$ 181.46					
	Phragmites	200.00	\$ 36,475.00	\$ 182.38/Habitat	3.75 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control		
Santee Cooper Lakes	TOTAL:	200.00	\$ 36,475.00	\$ 182.38					
	American Lotus, Waterlily, Water	53.00	\$ 5,254.90	\$ 99.15/Glyphosate, Renovate	7.5 gal/ac, .50 gal/ac	Provide access to open water and shoreline areas for	>90% control of plant in areas		
Santee Coastal Reserve	TOTAL:	53.00	\$ 5,254.90	\$ 99.15					
	Cabomba	6.00	\$ 2,752.25	\$ 458.71/Sonar Q / PR	15 lbs/ac / 20 lbs/ac	Reduce problem plants in dead-end coves where	75% control of plant in areas		
Santee Delta	TOTAL:	6.00	\$ 2,752.25	\$ 458.71					
	Coonhail	1.50	\$ 523.13	\$ 348.75/Reward	2.0 gal/ac	Reduce problem plants in residential areas where	100% control of plant in areas		
Santee Cooper Lakes	TOTAL:	1.50	\$ 523.13	\$ 348.75					
	Giant Cutgrass, Cattail,	38.00	\$ 5,422.82	\$ 142.71/Habitat / Glyphosate	25 / .50 gal/ac	Reduce plant encroachment on lake-front property and	>95% control of plant in areas		
Santee Coastal Reserve	TOTAL:	38.00	\$ 5,422.82	\$ 142.71					
	Lilyponds, Filiponora	39.00	\$ 6,038.05	\$ 154.82/Cumme Ultra	4 - 6 gal/ac	Reduce algal mats to enhance recreational use of water	90% control of plant in areas		
Santee Delta	TOTAL:	39.00	\$ 6,038.05	\$ 154.82					
	Water Hyacinth	202.00	\$ 21,876.08	\$ 108.30/Reward, Renovate	3 gal/ac, .5 gal/ac	Remove non-native, invasive plant population to prevent	>90% control of plant in areas		
Santee Cooper Lakes	TOTAL:	202.00	\$ 21,876.08	\$ 108.30					

Table 2006-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2006									
Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness	
	Water Primrose, Alligatorweed	26.50	\$ 4,113.69	\$ 155.23	Renovate	.50 gal/ac	Reduce non-natives and promote native shoreline plant	>80% control of plant in areas	
	Water Willow	38.50	\$ 8,097.57	\$ 210.33	Renovate	5 - 2.0 gal/ac	Reduce problem plants in residential area where	>20% control of plant in areas	
	Slender Naiad, Pondweed	1.00	\$ 405.20	\$ 405.20	Reward, Cutrine-Ultra	2.0 gal/ac / 4.0 gal/ac	Reduce problem plants in residential area where	>95% control of plant in areas	
	Rush	6.00	\$ 768.01	\$ 128.00	Habitat / Glyphosate	.25 / .50 gal/ac	Reduce plant encroachment on waterfowl management	100% control of plant in areas	
	Panotisfeather	2.00	\$ 260.09	\$ 130.05	Renovate	.50 gal/ac	Reduce plant encroachment in SNWR - Bluff Unit ditches	>75% control of plant in areas	
	Duckweed	1.00	\$ 271.82	\$ 271.82	Reward	1.0 gal/ac	Reduce plant population to prevent spread to other	>90% control of plant in areas	
	<b>TOTAL:</b>	<b>414.50</b>	<b>\$ 55,783.61</b>	<b>\$ 134.58</b>					
Lake Moultrie	American Lotus, Water Lily, Water	49.00	\$ 4,822.21	\$ 98.41	Glyphosate, Renovate	.75 gal/ac, .50 gal/ac	Provide access to open water areas for public use. Restore	>90% control of plant in areas	
	Bladderwort, Pondweed, Slender	0.10	\$ 131.32	\$ 1,313.20	Aquathol Super K Granular	70 lbs/ac	Reduce problem plants in dead-end coves where	>90% control of plant in areas	
	Cabomba, Watermilfoil	5.50	\$ 1,684.40	\$ 306.25	Sonar PR	70 lbs/ac	Reduce problem plants in dead-end coves where	>80% control of plant in areas	
	Hydrilla	0.10	\$ 131.32	\$ 1,313.20	Aquathol Super K Granular	70 lbs/ac	Eliminate plant population to prevent spread to other areas	>90% control of plant in areas	
	Water Primrose, Alligatorweed	9.00	\$ 1,351.74	\$ 150.19	Renovate	.50 gal/ac	Reduce problem plant population to provide public and	>80% control of plant in areas	
	Water Willow	0.50	\$ 74.42	\$ 148.84	Habitat / Glyphosate	.25 - .375 gal/ac / .50 gal/ac	Reduce problem plant population to provide public and	>20% control of plant in areas	
	Giant Cutgrass, Cattail	6.50	\$ 877.75	\$ 135.04	Habitat / Glyphosate	.25 / .50 gal/ac	Reduce plant encroachment on lake-front property and	>95% control of plant in areas	
	<b>TOTAL:</b>	<b>70.70</b>	<b>\$ 9,073.16</b>	<b>\$ 128.33</b>					
Taw Caw Impoundment	Cabomba	3.00	\$ 868.09	\$ 289.36	Sonar Q / PR	11 lbs/ac	Reduce plant population to provide public access to coves	>80% control of plant in areas	
	Hydrilla	144.00	\$ 54,093.24	\$ 375.65	Aquathol K Liquid	6 - 8 gal/ac	Eliminate plant population to provide public access to	<50% reduction of plant biomass	
	Giant Cutgrass, Cattail	2.00	\$ 207.83	\$ 103.92	Habitat, Habitat/Glyphosate,	.25 - .375 gal/ac, .125 - .25 / .50	Open areas at head of coves to reduce sediment buildup	>95% control of plant in areas	
	Water Primrose, Alligatorweed	9.00	\$ 858.06	\$ 95.34	Renovate	.50 gal/ac	Reduce problem plant population to provide public and	>85% control of plant in areas	
	<b>TOTAL:</b>	<b>158.00</b>	<b>\$ 56,027.22</b>	<b>\$ 354.60</b>					
Potato Creek Impoundment *	Hydrilla	56.00	\$ 25,590.60	\$ 456.98	Aquathol K Liquid	8-10 gal/ac	Remove non-native vegetation and promote native	<50% reduction of plant biomass	
	<b>TOTAL:</b>	<b>56.00</b>	<b>\$ 25,590.60</b>	<b>\$ 456.98</b>					
Dean Swamp	Hydrilla	104.00	\$ 39,998.74	\$ 384.60	Aquathol K Liquid	6 - 8 gal/ac	Remove non-native vegetation and promote native	<50% reduction of plant biomass	
	Water Primrose, Alligatorweed	2.00	\$ 564.74	\$ 94.12	Renovate	.50 gal/ac	Reduce problem plant population to provide public and	>80% control of plant in areas	
	Cabomba	6.00	\$ 534.44	\$ 267.22	Sonar PR / Q	11 lbs/ac	Provide shoreline access	>60% control of areas treated at	
	Lyngbya, Pithophora	22.00	\$ 3,115.02	\$ 141.59	Cutrine-Ultra	4 - 6 gal/ac	Reduce algal mats to enhance recreational use of water	>85% control of plant in areas	
	<b>TOTAL:</b>	<b>134.00</b>	<b>\$ 44,212.94</b>	<b>\$ 329.95</b>					
Fountain Lake	Water Primrose, Alligatorweed	1.00	\$ 56.51	\$ 56.51	Renovate	.50 gal/ac	Reduce problem plant population to provide public and	>90% control of plant in areas	
	American Lotus, Fragrant Water	3.00	\$ 169.53	\$ 56.51	Glyphosate, Renovate	.75-1.0 gal/ac, .50 gal/ac	Reduce plant population to provide public access to coves	>80% control of plant in areas	
	<b>TOTAL:</b>	<b>4.00</b>	<b>\$ 226.04</b>	<b>\$ 56.51</b>					
Church Branch Impoundment	Water Primrose, Alligatorweed	6.00	\$ 554.47	\$ 92.41	Renovate	.50 gal/ac	Open areas at head of coves to reduce sediment buildup through increased flow and provide shoreline access.	85% control of plant in areas treated at end of season.	
	Lyngbya, Pithophora	6.50	\$ 1,417.78	\$ 218.12	Cutrine-Ultra	4 - 6 gal/ac	Eliminate plant population to provide public access to coves and open water areas and remove algal	80% control of plant in areas treated at end of season	
	Cabomba	8.00	\$ 5,943.31	\$ 742.91	Sonar PR / Q	11 lbs/ac	Reduce plant population to provide public access to coves and open water areas	>90% control of plant in areas treated at end of the season	
	Pondweed	10.75	\$ 5,200.88	\$ 483.80	Aquathol K Liquid	5 - 6 gal/ac	Reduce plant population to provide public access to coves and open water areas	>80% control of plant in areas treated at end of season	
	Water Shield	5.50	\$ 731.26	\$ 132.96	Glyphosate	.75 gal/ac	Reduce plant population to provide public access to coves and open water areas	>95% control of plant in areas treated at end of season	
	<b>TOTAL:</b>	<b>36.75</b>	<b>\$ 13,847.70</b>	<b>\$ 376.81</b>					
<b>Santee Cooper Total:</b>		<b>873.95</b>	<b>\$ 204,761.27</b>	<b>\$ 234.29</b>					
SC State Parks	Water Lily	3.00	\$ 1,517.40	\$ 505.80	2,4-D Granular	200 lbs/ac	Reduce problem plants to enhance public access and use.	>95% control of plant in areas treated at end of season	
Barnwell SP	Alligatorweed, Pennywort	0.50	\$ 55.50	\$ 111.00	Renovate	3 qts/ac	Reduce problem plants to enhance public access and use.	>95% control of plant in areas treated at end of season	
Charlestowne Landing SP	Duckweed	1.50	\$ 357.37	\$ 238.25	Sonar	1pt/ac	Reduce problem plants to enhance public access and use.	>95% control of plant in areas treated at end of season	
H Cooper Black	Spatterdock	2.00	\$ 1,011.60	\$ 505.80	Navigate	200 lbs/ac	Reduce problem plants to enhance public access and use.	>95% control of plant in areas treated at end of season	
King's Mountain SP	Naiads	4.00	\$ 1,040.00	\$ 260.00	Aquathol K	4 gal/ac	Reduce problem plants to enhance public access and use.	>95% control of plant in areas treated at end of season	
Little Pee Dee SP	Water Shield	10.00	\$ 5,058.00	\$ 505.80	2,4-D Granular	200 lbs/ac	Reduce problem plants to enhance public access and use.	>95% control of plant in areas treated at end of season	
Santee SP	Coottail	5.00	\$ 1,170.00	\$ 234.00	Reward	2 gal/ac	Reduce problem plants to enhance public access and use.	>95% control of plant in areas treated at end of season	
Seasickentennial SP	Water Shield	5.00	\$ 2,529.00	\$ 505.80	2,4-D Granular	200 lbs/ac	Reduce problem plants to enhance public access and use.	>95% control of plant in areas treated at end of season	
	<b>TOTAL:</b>	<b>31.00</b>	<b>\$ 12,738.87</b>	<b>\$ 410.93</b>					
	SCDNR TOTAL	3078.75	\$ 504,815.94	\$ 163.97					
	SANTEE COOPER TOTAL	873.95	\$ 204,761.27	\$ 234.29					
	STATE PARKS TOTAL	31.00	\$ 12,738.87	\$ 410.93					
	<b>GRAND TOTAL</b>	<b>3983.70</b>	<b>\$ 722,316.08</b>	<b>\$ 181.32</b>					

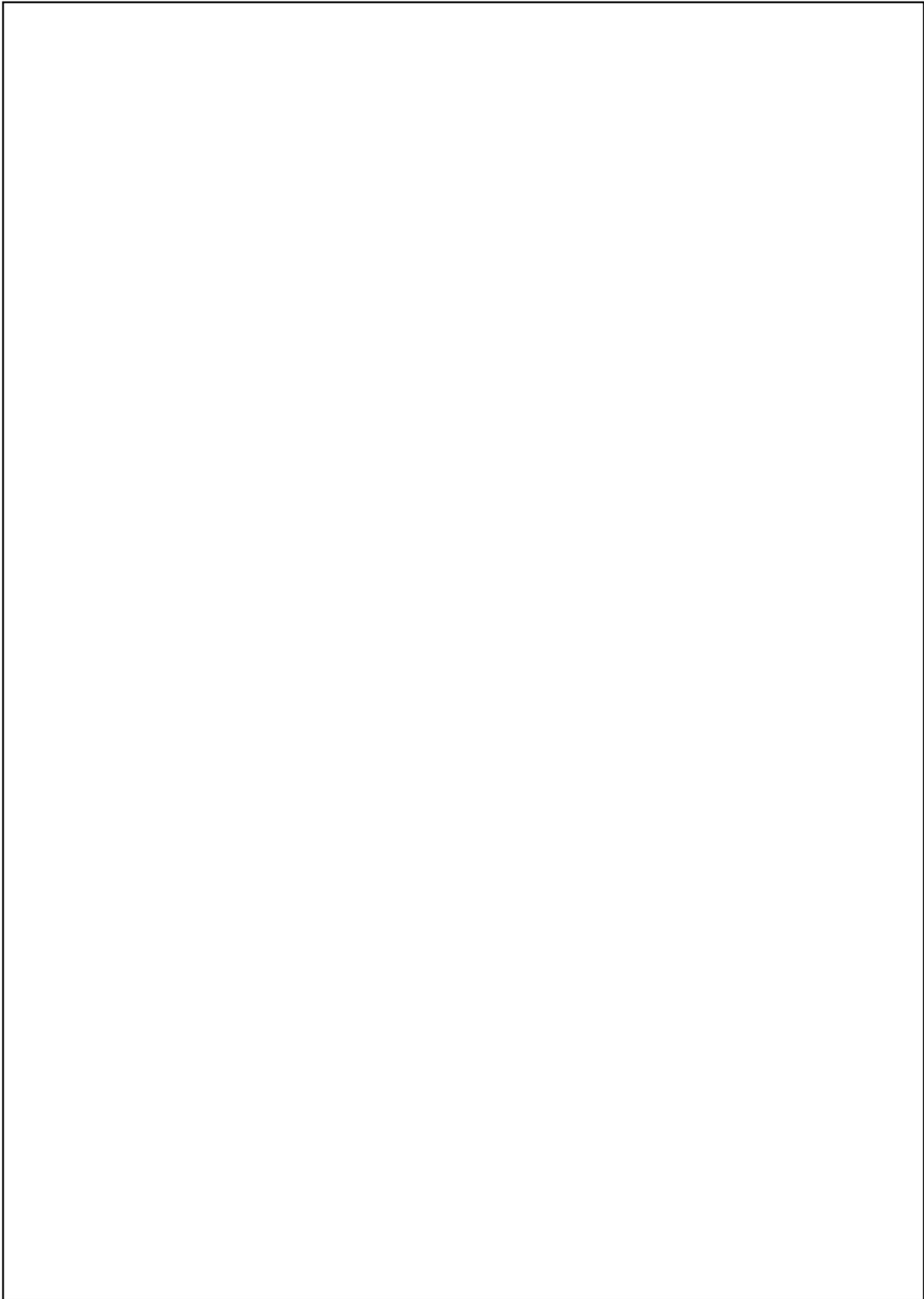
**Table 2007-A. Summary of Expenditures by Source for Control Operations During 2007.**

	<b>Water Body Name</b>	<b>Total Cost</b>	<b>Federal</b>	<b>State</b>	<b>Local</b>	<b>Local Sponsor</b>
1	Back River Reservoir	\$61,116	\$0	\$30,558	\$30,558	SCE&G, CPW
2	Baruch Institute	\$17,388	\$0	\$8,694	\$8,694	Baruch Institute
3	Black River	\$4,815	\$0	\$2,408	\$2,408	Georgetown Co.
4	Black Mingo Creek	\$828	\$0	\$414	\$414	Georgetown Co.
5	Bonneau Ferry	\$5,889	\$0	\$5,889	\$0	SCDNR
6	Caw Caw Natural Area	\$3,477	\$0	\$1,738	\$1,738	Char Co. Parks
7	Combahee River	\$3,272	\$0	\$3,272	\$0	SCDNR
8	Cooper River	\$43,126	\$0	\$21,563	\$21,563	Berkeley Co.
9	Donnelley WMA	\$10,225	\$0	\$5,113	\$5,113	SCDNR
10	Edisto River	\$4,090	\$0	\$4,090	\$0	SCDNR
11	Georgetown Parks	\$366	\$0	\$183	\$183	Georgetown Co.
12	Gibson Pond	\$713	\$0	\$356	\$356	City of Lexington
13	Goose Creek Reservoir	\$27,047	\$0	\$13,524	\$13,524	Charleston CPW
14	Lake Darpo	\$3,111	\$0	\$1,555	\$1,555	Darlington Co.
15	Lake Greenwood	\$36,469	\$0	\$18,235	\$18,235	Greenwood Co.
16	Little Pee Dee River	\$724	\$0	\$724	\$0	SCDNR
17	Pee Dee River	\$818	\$0	\$409	\$409	Georgetown Co.
18	Samworth WMA	\$12,934	\$0	\$6,467	\$6,467	SCDNR
19	Sandy Island	\$134	\$0	\$67	\$67	Georgetown Co.
20	Santee Coastal Reserve	\$123,554	\$0	\$61,777	\$61,777	Santee Coastal Reserve
21	US ArmyCOE	\$117,717	\$117,717	\$0	\$0	Charleston COE
22	US Naval Weapons Sta.	\$37,358	\$37,358	\$0	\$0	US Navy
23	Waccamaw River	\$3,643	\$0	\$1,821	\$1,821	Horry Co., Geo. Co.
24	Yawkey	\$20,865	\$0	\$10,433	\$10,433	Yawkey Foundation
	Santee Cooper Lakes	\$223,666	\$0	\$111,833	\$111,833	
25	Lake Marion	\$122,756	\$0	\$61,378	\$61,378	Santee Cooper
26	Lake Moultrie	\$7,393	\$0	\$3,697	\$3,697	Santee Cooper
	SC State Parks					
27	Barnwell SP	\$704	\$0	\$352	\$352	SCPRT
28	Charlestowne landing	\$403	\$0	\$201	\$201	SCPRT
29	H Cooper Black SP	\$391	\$0	\$196	\$196	SCPRT
30	Huntington Beach SP	\$2,739	\$0	\$1,370	\$1,370	SCPRT
31	King's Mountain SP	\$1,070	\$0	\$535	\$535	SCPRT
32	Little Pee Dee SP	\$1,955	\$0	\$978	\$978	SCPRT
33	NR Goodale SP	\$391	\$0	\$196	\$196	SCPRT
34	Santee SP	\$1,195	\$0	\$598	\$598	SCPRT
35	Sesquicentennial SP	\$978	\$0	\$489	\$489	SCPRT
	<b>SCDNR Total</b>	<b>\$539,678</b>	<b>\$155,075</b>	<b>\$199,289</b>	<b>\$185,314</b>	
	<b>State Park Lake Total</b>	<b>\$9,827</b>	<b>\$0</b>	<b>\$4,913</b>	<b>\$4,913</b>	
	<b>Santee Cooper Total</b>	<b>\$223,666</b>	<b>\$0</b>	<b>\$111,833</b>	<b>\$111,833</b>	
	<b>GRAND TOTALS:</b>	<b>\$773,171</b>	<b>\$155,075</b>	<b>\$316,036</b>	<b>\$302,061</b>	

Table 2007-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2007									
Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness	
Back River Reservoir	Hydrilla	117.63	\$ 35,789.11	\$ 304.26	Komeen/Komeen/Reward	16 gal/ae/4 gal/ae-2gal/ae	Reduce problem plants to enhance public access, use, water quality, and maintain electric power generation and minimize impacts to water intakes.	> 95% control	Reward/Komeen
TOTAL:		304.00	\$ 25,327.28	\$ 83.31	Renovate/Reward/Clearcast	0.5 - 0.75 gal/ae		90% control	
Baruch Institute (Winyah Bay)	Water hyacinth	421.63	\$ 61,116.39	\$ 144.95					
TOTAL:	Phragmites	100.00	\$ 17,387.50	\$ 173.88	Habitat	0.375 gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
Black River	Phragmites	100.00	\$ 17,387.50	\$ 173.88	Habitat	0.375 gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
TOTAL:	Phragmites	4.00	\$ 674.60	\$ 168.65	Habitat	0.375 gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
TOTAL:	Alligatorweed, Pennywort	30.00	\$ 4,140.75	\$ 138.03	Habitat/Glyphosate	0.375 gal/ae 0.250 gal/ae	Reduce problem plants to enhance waterfowl habitat, public access and use.	90% control	
Black Mingo Creek	Alligatorweed, Pennywort	34.00	\$ 4,815.35	\$ 141.63	Habitat/Glyphosate	0.375 gal/ae 0.250 gal/ae	Reduce problem plants to enhance waterfowl habitat, public access and use.	90% control	
TOTAL:	Water Primrose, Water hyacinth	6.00	\$ 828.15	\$ 138.03	Habitat	0.250 - 0.1875 gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
Bonneau Ferry, Misc Ponds & Reserves	Phragmites	53.00	\$ 5,888.75	\$ 111.11	Habitat	0.750 gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
TOTAL:	Phragmites	53.00	\$ 5,888.75	\$ 111.11	Renovate 3	0.500gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
Caw Caw Natural Area	Phragmites	17.00	\$ 3,476.50	\$ 204.50	Habitat	0.500gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
TOTAL:	Phragmites	17.00	\$ 3,476.50	\$ 204.50	Habitat	0.500gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
Combahee River (Bonnie Hall)	Phragmites	16.00	\$ 3,272.00	\$ 204.50	Habitat	0.500gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
Cooper River	Hydrilla	16.00	\$ 3,272.00	\$ 204.50	Habitat	0.500gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
TOTAL:	Water hyacinth	31.25	\$ 9,701.26	\$ 310.44	Komeen	16 gal/ae	Provide boat trails to main channel through hydrilla. Reduce problem plants to enhance public access and use.	> 95% control	
Donnelley WMA	Water hyacinth	298.00	\$ 33,424.78	\$ 112.16	Renovate	0.50 gal/ae	Reduce problem plants to enhance waterfowl habitat, public access and use.	> 95% control	
TOTAL:	Frog's bit, cutgrass, primrose, #	329.25	\$ 43,126.04	\$ 130.98	Habitat/Renovate/Clearcast EUP		Reduce problem plants to enhance waterfowl habitat, public access and use.	90% control	
Edisto River	Phragmites	50.00	\$ 10,225.00	\$ 204.50	Habitat-Glyphosate		Reduce problem plants to enhance waterfowl habitat, public access and use.	90% control	
TOTAL:	Phragmites	20.00	\$ 4,090.00	\$ 204.50	Habitat	0.375 gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
Georgetown Parks	Phragmites	3.50	\$ 365.81	\$ 104.52	Clearcast/Glyphosate	0.375 gal/ae / 0.375 gal/ae/0.375 gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
Gibson Pond	Water primrose, alligatorweed	8.00	\$ 712.92	\$ 89.12	Renovate 3	0.500 gal/ae	Reduce water hyacinth & water lettuce to greatest extent possible.	> 95% control	
TOTAL:	Water hyacinth	83.50	\$ 6,779.48	\$ 81.19	Renovate3/Clearcast/Reward	0.500 gal/ae	Reduce water hyacinth & water lettuce to greatest extent possible.	> 95% control	
Goose Creek Reservoir	Water lettuce	155.00	\$ 14,166.20	\$ 91.39	Renovate3/Clearcast/Reward	0.500 gal/ae / 0.250-0.500 gal/ae	Reduce problem plants to enhance public access and use.	> 95% control	
TOTAL:	Duckweed	48.00	\$ 4,970.70	\$ 103.56	Reward/Sonar	0.5 gal/ae / 0.125 gal/ae	Reduce problem plants to enhance public access and use.	90% control	
Lake Diarpo	Cutgrass/Water primrose	12.25	\$ 1,130.86	\$ 92.32	Habitat	0.5 gal/ae	Reduce problem plants to enhance public access, use and water quality.	> 95% control	
TOTAL:	Water lily/milfoil	298.75	\$ 27,047.24	\$ 90.53	Habitat	200 lbs/ae/5 gal/ae	Reduce problem plants to enhance public access, use and water quality.	> 95% control	
Lake Greenwood	Hydrilla	15.00	\$ 3,110.70	\$ 207.38	Navigate/Hardball	5 gal/ae/10 gal/ae	Eradicate hydrilla from site.	> 90% control of Hydrilla. Note: No eradication of Hydrilla. Hydrilla found @ state mark	
TOTAL:	Primrose	5.00	\$ 445.58	\$ 89.12	Renovate 3	0.500 gal/ae	Reduce problem plants to enhance public access, use and water quality.	> 95% control	
Little Pee Dee River	Naiad	30.63	\$ 7,770.39	\$ 253.73	Aquathol-k	3-8 gal/ae	Reduce problem plants to enhance public access, use and water quality.	> 95% control	
TOTAL:	Water hyacinth	140.25	\$ 36,469.15	\$ 260.03	Reward	0.500 gal/ae	Reduce problem plants to enhance public access, use and water quality.	< 40% control	
Pee Dee River	Water hyacinth	8.00	\$ 724.00	\$ 90.50	Reward	0.125 gal/ae	Reduce problem plants to enhance public access, use and water quality.	> 90% control	
TOTAL:	Phragmites	13.00	\$ 818.25	\$ 62.94	Clearcast	0.375 gal/ae	Reduce phragmites to enhance waterfowl habitat, public access and use.	> 95% control	
Savannah WMA	Phragmites	9.00	\$ 1,566.10	\$ 174.01	Habitat	0.1875 gal/ae	Reduce phragmites to minimize spread and impacts to public access and use.	> 90% control	
TOTAL:	Water hyacinth	99.00	\$ 11,367.75	\$ 114.83	Clearcast	0.1875 gal/ae	Reduce phragmites to minimize spread and impacts to public access and use.	> 90% control	
TOTAL:		108.00	\$ 12,933.85	\$ 119.76					

Table 2007-2b Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2007									
Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness	
Sand Island	Phragmites	1.00	\$ 134.10	\$ 134.10	Habitat	0.375 gal/acre	Reduce phragmites to enhance public access and use.	> 95% control	
<b>TOTAL:</b>		1.00	\$ 134.10	\$ 134.10					
Santee Coastal Reserve	Phragmites	714.00	\$ 123,554.20	\$ 173.05	Habitat/Clearcast EUP	3.75 gal/acre/0.375 gal/acre	Reduce phragmites to enhance waterfowl habitat, public access and use.	> 90% control	
<b>TOTAL:</b>		714.00	\$ 123,554.20	\$ 173.05					
US Army Corps of Engineers Charleston Harbor	Phragmites	282.25	\$ 57,720.13	\$ 204.50	Habitat	0.500 gal/acre	Reduce phragmites to enhance waterfowl habitat, public access and use.	> 95% control	
ICWW	Phragmites	294.75	\$ 59,996.38	\$ 203.55	Habitat / Clearcast	0.500 gal/acre		> 95% control	
<b>TOTAL:</b>		577.00	\$ 117,716.51	\$ 204.01					
US Naval Weapons Station Area	Phragmites	156.00	\$ 3,1472.25	\$ 201.75	Habitat	0.375-0.500 gal/acre	Reduce phragmites to enhance waterfowl habitat, public access and use.	> 95% control	
4/1 organic Brown/Harrington Forest	Frogs bit, cutgrass, primrose, etc	45.00	\$ 5,885.90	\$ 130.80	Habitat/Glyphosate / Renovate 3	0.375 gal/acre/0.250 gal/acre / 0.500-1.0 gal/acre	Reduce problem plants to enhance public access, use and water quality.	> 95% control	
<b>TOTAL:</b>		201.00	\$ 37,588.15	\$ 185.86					
Waccamaw River	Water hyacinth	4.00	\$ 356.46	\$ 89.12	Renovate 3	0.500 gal/acre	Reduce hyacinth to minimize spread and impacts to public access and use.	> 95% control	
	Water hyacinth	20.00	\$ 1810.00	\$ 90.50	Reward	0.500 gal/acre			
	Water hyacinth	20.00	\$ 1476.25	\$ 73.81	Clearcast EUP	0.1875 gal/acre			
<b>TOTAL:</b>		44.00	\$ 3,642.71	\$ 82.79					
Yamkey	Phragmites	120.00	\$ 20,865.00	\$ 173.88	Habitat	3.75 gal/acre	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control	
<b>TOTAL:</b>		120.00	\$ 20,865.00	\$ 173.88					
<b>Santee Cooper Lakes</b>									
Lake Marton	Fragrant Water Lily	5	\$889.31	\$177.86	Touchdown, Renovate	1.0 gal/acre, .50 gal/acre	Provide access to open water and shoreline areas for public use.	>95% control of plant at end of season, most treatment areas now de-watered	
	Vallisneria	1.3	\$629.82	\$484.48	Hydrothol 191 Liquid, Curtime Ultra	5.0 gal/acre, 2.5 gal/acre	Provide access to open water and shoreline areas for public use.	85% control of plant after treatment, most sites now de-watered	
	Crested Floating Heart	128.1	\$25,695.09	\$200.59	Renovate, Clearcast, Habitat / Touchdown	3.0 gal/acre, .5 gal/acre, .25 / .50 gal/acre	Provide access to open water and shoreline areas for public use and prevent spread to other areas of the lake	2.5% control of plant at end of season, most treatment areas now de-watered	
	Coonail	0.2	\$135.89	\$679.45	Reward	2.0 gal/acre	Reduce problem plants in residential area where navigation and recreation are adversely affected.	>95% control of plant at end of season. Site cut off from lake.	
	Giant Cutgrass, Cattail	240.3	\$42,642.16	\$177.45	Clearcast, Habitat / Touchdown	.50 gal/acre, .25/.50 gal/acre	Reduce plant encroachment on lake-front property and public access areas. Restoration of waterfowl habitat.	>90% control of plant after treatment. Plants are now de-watered due to drought. TBD once water level returns	
	Hydrilla	58	\$16,581.39	\$285.89	Aquathol K Liquid	6 - 8 gal/acre	Reduce problem plant population to prevent spread to other areas of the lake. Maintain level until adequate grass carp population from restocking can maintain control	83% control of plant at end of season, treatment sites de-watered in most areas	
	Lyngbya, Pithophora	52.2	\$8,590.58	\$164.57	Curtime Ultra	4 - 6 gal/acre	R reduce algal mats to enhance recreational use of water and reduce interference in agricultural irrigation intakes.	80% control of plant at end of season	
	Water Hyacinth	28	\$3,064.12	\$109.43	Reward, Renovate	.5 gal/acre, .5 gal/acre	Remove non-native, invasive plant population to prevent	80% control of plants after treatment	
	Water Primrose	12.8	\$1,717.95	\$134.21	Renovate	.50 gal/acre	Reduce non-natives and promote native shoreline plant populations	>95% control of plant at end of season	
	Water Willow	66.6	\$22,265.68	\$334.32	Renovate	2.0 gal/acre	Reduce problem plants in residential area where navigation and recreation are adversely affected.	>95% control of plant at end of season	
	Duckweed	1.5	\$543.54	\$362.36	Reward	1.0 gal/acre	Reduce plant population to prevent spread to other quietest areas of the lake	80% control of plant at end of season. Site cut off from lake.	
	<b>TOTAL:</b>	<b>594</b>	<b>\$122,755.53</b>	<b>\$206.66</b>					
<b>Lake Moultrie</b>									
	American Lotus	1.4	\$154.15	\$110.11	Touchdown	1.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	>95% control of plant at end of season	
	Fragrant Water Lily	1.3	\$357.75	\$275.19	Touchdown	1.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	>95% control of plant at end of season	
	Vallisneria	0.2	\$91.67	\$458.35	Hydrothol 191 Liquid, Curtime Ultra	5.0 gal/acre, 2.5 gal/acre	Provide access to open water areas for public use.	85% control of plant at end of season	
	Native Floating Heart	0.1	\$279.94	\$279.40	Reward, Curtime Ultra	2.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	90% control of plant at end of season	
	Giant Cutgrass, Cattail	1	\$109.40	\$109.40	Touchdown	1.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	100% control of plant at the end of season	
	Hydrilla	0.1	\$184.75	\$1,847.50	Aquathol Super K Granular	10 lbs/acre ft	Eliminate plant population at public landing to prevent spread to other areas of lake and other water bodies.	90% control of plant after treatment, area now de-watered	
	Lyngbya, Pithophora	0.1	\$27.95	\$279.50	Curtime Ultra	4 - 6 gal/acre	Reduce algal mats in dead-end coves where navigation and recreation are adversely affected.	85% control of plant after treatment, area now de-watered	
	Water Primrose, Alligatorweed	2.2	\$437.09	\$198.68	Touchdown	1.0 gal/acre	Provide access to open water areas for public use.	>95% control of plant at end of season	
	Water Willow	1.5	\$501.57	\$334.38	Renovate	2.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	90% control of plant at end of season	
	Slender Naid	0.8	\$167.65	\$209.56	Reward, Curtime Ultra	2.0 gal/acre, 4.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	100% control after treatment, area now de-watered	
	Pondweed	1.3	\$442.97	\$340.75	Reward, Curtime Ultra	2.0 gal/acre, 4.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	100% control after treatment, area now de-watered	
	Backpa	2.8	\$979.99	\$350.00	Reward, Curtime Ultra	2.0 gal/acre, 4.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	95% control after treatment, area now de-watered	
	Milfoil	5	\$2,766.88	\$553.38	Renovate	4.0 - 5.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	100% control after treatment, area now de-watered	
	Bladderwort	3.3	\$1,143.63	\$346.55	Reward	2.0 gal/acre	Reduce problem plants in residential area where recreation are adversely affected.	90% control after treatment, area now de-watered	
	<b>TOTAL:</b>	<b>21.1</b>	<b>\$7,393.39</b>	<b>\$350.40</b>					





**APPENDIX G**

**Summary of Public Comments, Responses, and Plan  
Modifications to the Draft South Carolina Aquatic Plant  
Management Plan**

## **Summary of Public Comments, Responses, and Plan Modifications to the Draft 2008 South Carolina Aquatic Plant Management Plan**

### **Lake Murray:**

**Commenters: Grayson Mathis**

### **Comments:**

Why is the state pouring more money into fighting the “weed” problem? Is it because of pleasure boaters and jet skiers who are too lazy to go around the weeds? Why does the DNR constantly comply with whatever these well-to-do people want, rather than focus on what is best for the NATURAL RESOURCES. Look at the state of Georgia, they are not killing off their fisheries by taking out the weeds. Since you have killed the hydrilla in Lake Murray, the fishing is getting worse. Tournament weights are down, considerably. This is a major problem since fishing is a large, large portion of the attractiveness of the Lake Murray region. I just don’t understand why the DNR continuously pursues these pork belly projects to make a few people happy. You should be focusing on what your job title is, dealing with natural resources, not destroying them because those with money want.

### **Response:**

The budget for 2008 of \$760,000 is lower than the average cost in the 90’s of 1.484 million dollars spent per year. The budget has decreased in part because early detection and proactive management techniques have kept invasive species in check. Municipal water intakes, recreational activities, hunting, fishing and various other water uses are affected by invasive species in South Carolina. The Aquatic Plant Management Program tries to take into account all of the varied uses of our waterways when determining management methods. In all cases an integrated, balanced management approach is used to minimize impact to the habitat of South Carolina waters while aggressively pursuing control of any federally and state listed invasive species.

There is no plan to stock grass carp in 2008 for Lake Murray and only a limited number of acres in the plan for primrose control. A late fall survey showed no appreciable hydrilla, so a dramatic increase in that acreage would have to occur to even consider stocking more carp. The information in the 2008 plan pertaining to triploid grass carp stockings for hydrilla control is part of an early detection, rapid response protocol for long term control of hydrilla in Lake Murray. The state of Georgia does indeed use and recommend aquatic weed control methods using triploid grass carp in several lakes. Georgia has also recently created the Georgia Exotic Pest Plant Council in response to increasing awareness of non-native invasive species. Hydrilla is listed as one of their most problematic invasive weeds.

Tournament weights were up in the last major tournaments held at Lake Murray. There were four new records set at the February 2006 FLW tour event held on Lake Murray which occurred after the 2003 stocking. Inspection of BASS events from 1991 to 2006 on Lake Murray has shown that the tournament weights appear to have remained fairly constant. In addition, SCDNR Fisheries

biologists have stated that Lake Murray was at or above average when looking at the condition factors for largemouth bass, their population numbers were at favorable levels as well and the overall health of the system is good for a large impoundment with other fish species also having healthy populations represented.

**Plan Modifications:**

**None at present.**

## **Summary of Public Comments, Responses, and Plan Modifications to the Draft 2007 South Carolina Aquatic Plant Management Plan**

### **Santee Cooper Lakes:**

**Commenters:** Hunter Suggs, Rep. Phillip Lowe

### **Comments:**

1. "I am in complete opposition to releasing any additional carp into the Santee Cooper Lakes. Ever since the original stocking occurred, ALL of the native and non-native grasses and vegetation disappeared, and the Upper End of Lake Marion has become a mud hole. The ducks that used to winter in this area do not visit "The Swamp" anymore. Please do not release any additional carp into the Santee Cooper Lake System." (Suggs)
2. "Aquatics do not currently pose a problem. Your previous overstocking hurt waterfowling and fishing. You have proved you can stock enough to control vegetation. The vegetation you state has recovered is not hydrilla. Let more vegetation return. Do not restock yet!!!" (Lowe)

### **Response:**

The original grass carp stocking between 1989 and 1996 added over 760,000 sterile grass carp to Lakes Marion and Moultrie. That amount was needed to control the 48,000 acres of hydrilla that was present at the time. That multi-year stocking was successful, but after hydrilla was controlled the fish also impacted desirable native vegetation. That was ten years ago and since then the number of grass carp have declined to about 5,800 fish and beneficial vegetation has come back. Native vegetation has shown a 60% increase in acreage from 2005 to 2006 for a total of 12,960 vegetated acres. Total vegetative coverage now is conservatively estimated at 9.3 % in Lake Marion and 6.2% in Lake Moultrie based on annual aerial surveys and photography. Some hydrilla is beginning to return in the main lakes. To avoid the occurrence of widespread hydrilla infestations again in the Santee Cooper Lakes, a small maintenance stocking of sterile grass carp is needed. The maintenance stocking plan calls for adding a small number of grass carp to the system to equal the number present at the beginning of 2006 when hydrilla was under control yet native species were present (8,200 fish). That additional number is 2,100 fish in Lake Marion and 520 in Lake Moultrie. This is a very small number of grass carp for a lake system that is over 170,000 acres in size and about one percent of the original stocking. The proposed stocking plan was reviewed and approved by DNR fisheries and waterfowl biologists to help ensure the protection of fish and wildlife populations. In addition to the maintenance stocking; the plan calls for efforts to increase habitat by promoting vegetation beneficial to wildlife and waterfowl through other habitat enhancement projects. Those efforts include the planting of desirable native plant species, improvements to the current WMAs, and additional support for the Santee National Wildlife Refuge.

### **Plan Modifications:**

None at present.

**East Branch of the Cooper River:****Commenters: Tommy Kellum****Comments:**

1. “My concern is the East Branch of the Cooper River and the adjoining rice fields and French Quarter, Quemby, and Huger Creeks. I reviewed your Management Plan Draft and it stated that the coverage was approximately 3000 acres. If this is referring to weed coverage it is highly under estimated. I live on French Quarter Creek and I see air boats spraying approximately every other year. The weeds are closing off virtually all adjoining creeks and rice fields. It appears that after the weeds gain control then silt fills the creeks even further. Your draft mentions the use of carp in the Santee cooper lakes as one method of control. What other options are there for the creeks besides spraying? If there is none, what would be the effects of spraying more often? Recreational use is on the rise and our useable water area has greatly been reduced over the past ten years.” (Kellum)

**Response:**

The main aquatic weed problem in the creeks you refer to is the growth of water primrose and water hyacinth. Neither of these plants can be controlled by grass carp. Other biological controls are available for water hyacinth but have not been successful in this part of the country. So there aren't many options for the creeks along the Cooper River except for herbicide application. In trying to manage a complete system, one must start small by treating the main channels and creeks most used by the public. After a certain level of control is established then efforts can expand to include the smaller creeks. Timing, water levels, and available funding play a crucial part in all control efforts. Additional herbicide treatments are possible if additional federal, state or local funding were available. We are committed to a systematic approach where control efforts are focused on the areas of greatest public use first then expanded into adjoining creeks where public use is less.

**Plan Modifications:**

None at present.

## Summary of Public Comments, Responses, and Plan Modifications to the Draft 2006 South Carolina Aquatic Plant Management Plan

*Note: All comments received refer to Lake Murray. No other comments were received.*

### Lake Murray:

Commenters: Sam Gustafson, George King, Roy Parker, Herlong (cherlong@greenwood.net), John & Heide Hoppe, Robert Shealy Jr., Robert King, Roger A. Becker, Julius A. Bell, Billy F. Peake, E. Gobbel, Mr. & Mrs. Henry C. Blakewood, Mary Autrey, Martin Blackford, Charles F. Noll Jr., David McElyea, Don & Deloris Rains, Michelle Elles, Jimmy & Cathy Woods, Harvey Cubb, Robert C. Rucker, Bernard H. Long, Hans N. Fagg, Tom & June Schmitt, Benji & Joe Barnhill.

### Comments:

1. 300 acres...that's real impressive. As I recall prior to the carp the coverage on Lake Murray was several thousand acres. Congratulations and thanks to you and SCDNR for on a great job! (George King)

The 2006 Aquatic Plant Management Plan for Lake Murray looks fine to me. Thanks for the work you do to prevent the spread of invasive species of aquatic weeds. I think the grass carp stocked in 2003 have done a wonderful job of controlling hydrilla and Illinois Pondweed. Keep up the good work! (Parker)

2. We are concerned about the influx of weeds that prevents enjoyment of the lake. The plan calls for 4300 acres to be the trigger point for control action to begin. This is too high of a level to begin control actions. (Gustafson)

3. THE PURPOSE OF THIS LETTER IS TO MAKE IT CLEAR THAT THE HYDRILLA IS NOT GONE ... IT HAS JUST MIGRATED TO A TWO MILE LONG COVE WHICH IS SANDWICHED BETWEEN HIGHWAY 378 AND HORSE CREEK RD. The water adjoining our property had no nuisance vegetation until after the long drawdown for construction of the back-up dam. When the water returned in 2005, most of the cove quickly filled with hydrilla and a little water primrose. Because hydrilla is a perennial plant and because there are certainly tubers under the water and in the mud, we expect the hydrilla problem to explode when the weather warms. The property owners in this area of the lake need a three prong attack. Probably most importantly, we need to be scheduled for sterile grass carp stocking before the weed Gets a full grip on the cove this Spring. It would seem that early use of the appropriate herbicide might also help curtail the invasion. Finally, we may need commercial mechanical removal this Summer. (Hoppe, Shealy, Robert King, Becker, Bell, Peake, Gobbel, Blakewood, Autrey, Blackford, Noll, McElyea, Rains, Elles, Woods, Cubb, Rucker, Long, Fagg, Schmitt, Barnhill)

4. I think the drawdown alone was enough to control hydrilla for a couple years. Why didn't we learn a lesson from the effects of eradication of hydrilla from Santee? Total elimination has a negative affect on fishing and ducks. Why not find a balance? Hydrilla as we speak is no longer in Lake Murray. Why have a control plan? You have succeeded in killing it all and it can't come back with all the carp. (Herlong)

**Response:**

1. Even though no hydrilla was found in a late fall survey it shouldn't be taken for granted that it is gone. The carp and the drawdown both helped to control the hydrilla and pondweed problems that were being experienced on the lake. However, hydrilla tubers and pondweed seeds are still viable and abundant in Lake Murray. The goal is to provide long-term control of these invasive species, which will take several years to fully assess.

2. The trigger mechanism of 4300 acres of hydrilla only applies to use of grass carp. Other control activities may be initiated at lower infestation levels. This year's plan is consistent with the 2005 plan. The 2006 plan calls for no stocking of grass carp on Lake Murray unless hydrilla coverage exceeds 4,300 acres above the 330-foot contour at which time the Aquatic Plant Management Council may reconsider the need for additional grass carp. A late fall survey showed no appreciable hydrilla, so a dramatic increase in that acreage would have to occur to consider stocking more carp. However, this year's plan does include the option of select herbicide control around municipal water intakes and high traffic landings if needed.

3. A survey of this area by SCDNR staff and discussions with SCE&G staff familiar with the area in question indicate that a plant other than hydrilla caused the problem. Water primrose and different terrestrial vegetation are routinely being confused with hydrilla. The drawdown exposed a lot of unvegetated shoreline where water primrose quickly spread and re-established at the 345-348 foot contour level. Water primrose is normally a shoreline species. It extends out into the water but is rooted close to the shoreline. While this plant can be invasive and cause localized problems, it has been in the lake for decades and is typically not a threat to general public access and use of the waterway. Based on past experience, it is expected that most of the plants that are rooted in deep water will not survive after the lake level returns to full pool. Another problem associated with primrose control is that all available herbicides require some set back or water use restriction for irrigation or potable water. Therefore, there are no plans to control its growth this year. However, the SCDNR and SCE&G will monitor aquatic plant growth in this area and reconsider control options as needed.

4. Drawdowns have a limited effect on hydrilla. Normally for 2-3 years after a drawdown, the zone where the drawdown occurred has little hydrilla growth. However, large amounts of hydrilla still existed in the areas below the drawdown level and still presented major problems. Although hydrilla was under control last year, a plan is needed to address the potential for regrowth of hydrilla and Illinois pondweed this year.

**Plan Modifications:**

**None at present.**

## **Summary of Public Comments, Responses, and Plan Modifications to the Draft 2005 South Carolina Aquatic Plant Management Plan**

**Commenters:** Lee Bacot, Teresa Cannon, Jeremiah Jensen, Alan Rae, David Rogers, Randy Saliga, Michael Sizer, Joseph M. Walker, Mark West, Jesse N. Williams III, Jon & Judy Willkomm, Sharpep2

### **Lake Murray:**

#### **Comments:**

I support the management plan at the level APMC has recommended for 2005. (Saliga)

I'd voice my opinion against the use of more grass carp... I have no problem with the spot treatment of access points and intakes, but I'm worried that the use of more carp could result in a situation similar to Santee where the grass was totally exterminated. (Jensen)

Why can't we just come to an agreement on the hydrilla (Lake Murray) like they did on Lake Guntersville, AL? (Rae)

Replacing vegetation removed by carp with artificial habitat would be a great compromise for fishermen. (Rogers)

The reason the fishing is good is because of the grass! Take a note from Va. And Maryland they treat it as a natural resource up there, they even have signs at the landings asking people to protect it! (Walker)

Introducing the grass carp to Lake Murray is killing the grass off too fast, before long there is going to be no grass left, Murray is a recreational lake and fishing is going to suffer. (West)

The idea of releasing large numbers of grass carp is frightening. (Williams)

I'm afraid to purchase a pontoon because of the weeds. (Cannon)

Primrose is blocking access and navigation for many residents. (Sizer)

We are very concerned about water primrose and hope that serious steps are being taken. (Willkomm)

I am anxious about the continual uncontrolled spread of primrose in the upper part of the lake. I urge the DNR to recognize the rapidly expanding growth of water primrose as a major threat to Lake Murray and to include the control of this plant in the 2005 plan. (Bacot)

It comes as no surprise to any of us that there is no plan to address the primrose problem and that DNR fails to even mention it. We are not in the more affluent section of the lake. (Sharpep2)

**Response:**

Aquatic vegetation in general is beneficial to the lake ecology and the plan clearly acknowledges this point by specifying as one of the management objectives (2.c.) to maintain diverse aquatic plant community. Along those lines, the DNR hopes to reinvigorate the Lake Murray Habitat Enhancement Program that it initiated several years ago to plant desirable native vegetation to enhance fish and wildlife habitat and help control shoreline erosion. Also, one of the main reasons for stocking while the lake was down is to be able to achieve control using fewer grass carp, thus minimizing the possibility of controlling too much of the vegetation.

This year's plan is consistent with the 2004 plan. The 2005 plan calls for no stocking of grass carp on Lake Murray unless hydrilla coverage **exceeds 4,300 acres above the 330-foot contour at which time the Aquatic Plant Management Council may reconsider the need for additional grass carp. A late fall survey showed only 2,400 acres of hydrilla, a dramatic increase in that acreage would have to occur to consider stocking more carp. However, this year's plan does include the option of select herbicide control around municipal water intakes and high traffic landings if needed.**

**Water primrose is normally a shoreline species. It extends out into the water but is rooted close to the shoreline. During the two-year drawdown water primrose established its self at various locations throughout the upper part of Lake Murray. However, as water levels rise and the lake returns to its normal elevation, the water primrose problem is expected to subside. SCE&G and DNR will monitor the growth and extent of the primrose throughout 2005 and reconsider control options as needed.**

**Plan Modifications:**

A long-term management goal is added in Section 12-f.

Section 12-f states: Water primrose - Water primrose, a shoreline plant, became problematic in the upper portion of the lake last year. The two-year drawdown exposed a lot of unvegetated shoreline where water primrose quickly spread and re-established at the 345-348 foot contour level. While this plant can be invasive and cause localized problems, it has been in the lake for decades and is typically not a threat to general public access and use of the waterway. Based on past experience, it is expected that most of the plants that are rooted in deep water will not survive after the lake level returns to full pool. Therefore, there are no plans to control its growth this year. However, the SCDNR and SCE&G will monitor water primrose growth and consider control options if impacts are greater than anticipated.

**Santee Cooper Lakes:****Comments:**

What's this stuff I read on 2004 Santee Cooper about allowing fish to have 10% surface vegetation area for fish? What sense does that make? (Rae)

I implore you to not stock more grass carp in our impoundments. There are so many other methods, some are which expensive and you have listed in the management plan. Our natural

resources, which include our fish and wildlife, need to be cared for with all parties in mind, not just hunters and fishermen, and not just wealthy property owners that ski and pleasure boat.  
(Williams)

One suggestion I have is that before we release more grass carp into any impoundments, let's consult **B.A.S.S.** or other organizations that have the funding and database to do the research.  
(Williams)

**Response:**

The language in the draft plan is consistent with the comments not to stock more grass carp in the Santee Cooper Lakes. No additional grass carp are planned for 2005, but the Council may reconsider the need for additional fish if hydrilla regrowth and regrowth potential warrants it.

The long-term management strategy for hydrilla control in the Santee Cooper Lakes is to maintain a sufficient number of grass carp in the system to keep hydrilla suppressed while allowing desirable native vegetation to flourish. The DNR and Santee Cooper recognize that although the grass carp have been effective in controlling hydrilla they have also controlled many desirable submersed aquatic plant species. In response to this concern, the agencies have signed an agreement that identifies management goals and objectives that try to maintain 10% of the lakes' surface area as beneficial vegetated habitat for fish, waterfowl and other aquatic organisms. The Aquatic Plant Management Council has adopted the management agreement as part of the long-term management strategy for the Santee Cooper Lakes and has included it in the final 2005 Aquatic Plant Management Plan. An important part of the agreement between the agencies is accurate and timely monitoring of aquatic vegetation. The agencies will work together in developing a monitoring work plan. Decisions regarding subsequent stocking of grass carp will be determined by the Council following assessment of monitoring results by DNR, Santee Cooper, and other agency representatives on the Council.

Submersed and emergent vegetation provides important habitat for waterfowl and fish as well as other types of wildlife. Management plans in public waters always attempt to control invasive species while trying to maintain desirable vegetation. Grass carp are used only after other more selective control methods have proven ineffective and after ample discussion in public meetings and plan reviews. Except for two sub-impoundments of Lake Marion, no grass carp are planned for any state waterways in 2005.

**Plan Modifications:**

None at present.

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