FY2023-2024
ANNUAL SOUTH CAROLINA
AQUATIC PLANT MANAGEMENT PLAN

Prepared by the
Aquatic Nuisance Species Program
South Carolina Department of Natural Resources
and Approved by the
South Carolina Aquatic Plant Management Council
2023

2023 SOUTH CAROLINA
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PART II – FY2023-2024 ANNUAL MANAGEMENT PLAN

INTRODUCTION

The Annual Management Plan for 2023 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 l) 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			
Common Name	***Scientific Name***	**Common Name**	***Scientific Name***
Alligatorweed	*Alternanthera philoxeroides*	**Giant salvinia**	*Salvinia molesta*
Bladderwort	*Utricularia spp.*	**Hydrilla**	*Hydrilla verticillata*
Brazilian elodea	*Egeria densa*	**East Indian hygrophila**	*Hygrophila polysperma*
Bur Marigold	*Bidens spp.*	**Illinois Pondweed**	*Potamogeton illinoensis*
Cattails	*Typha spp.*	**Lotus**	*Nelumbo lutea*
Chinese Tallow	*Sapium sebiferum*	**Musk-grass**	*Chara spp.*
Coontail	*Ceratophyllum demersum*	**Parrotfeather**	*Myriophyllum aquaticum*
Common reed (Phragmites)	*Phragmites australis*	**Pondweed**	*Potamogeton spp.*
Common salvinia	*Salvinia minima*	**Slender naiad**	*Najas minor*
Creeping rush	*Juncus repens*	**Smartweed**	*Polygonum densiflorum*
Crested Floating-heart	*Nymphoides cristata*	**Southern naiad**	*Najas guadalupensis*
Cuban bulrush	*Cyperus blepharoleptos*	**Spatterdock**	*Nuphar luteum macrophyllum*
Curly-leaf pondweed	*Potamogeton crispus*	**Spikerush**	*Eleocharis spp.*
Cyanobacteria	*Anabaena, Aphanizomenon, and Microcystis spp., etc.*	**Stonewort**	*Nitella*
Duckweed	*Lemna spp.*	**Swamp loosestrife**	*Decodon verticillatus*
Eel Grass	*Vallisneria americana*	**Variable-leaf pondweed**	*Potamogeton diversifolius*
Eurasian watermilfoil	*Myriophyllum spicatum*	**Water hyacinth**	*Eichhornia crassipes*
Fanwort	*Cabomba caroliniana*	**Water lettuce**	*Pistia stratiotes*
Filamentous algae	*Pithophora, Lyngbya, Hydrodictyon spp.*	**Waterlily**	*Nymphaea odorata*
Floating bladderwort	*Utricularia inflata*	**Watermilfoil**	*Myriophyllum spp.*
Floating heart	*Nymphoides spp.*	**Water pennywort**	*Hydrocotyle ranunculoides*
Frog's bit	*Limnobium spongia*	**Water primrose**	*Ludwigia hexapetala*
Giant cutgrass	*Zizaniopsis miliacea*	**Watershield**	*Brasenia schreberi*

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 (SCDNR) 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 2021. Some water bodies are not active every year but remain in the plan because of previous major problems. Problematic species may change throughout the current year and

inclusion in the plan is no guarantee the listed work will be done this year. All control work is based on existing funding and priority levels of both the invasive species and the water bodies in the plan. SPECIAL NOTE: Due to budget constraints and to continue to serve all the areas around the state, each water body will only be eligible for up to $30,000 of cost share money from the SCDNR.

Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Ashepoo River	Colleton County	Unknown	Water hyacinth, Alligatorweed, Water primrose, Parrotfeather, Frog's bit, Pennywort	150	Boating, hunting, fishing, public access
Back River Reservoir	Berkeley County	850	Hydrilla, Water hyacinth, Water primrose, Fanwort, Cutgrass, Phragmites	360	Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, electric power generation, public access
Baruch Institute	Georgetown County	Unknown, adjacent to Winyah Bay	Phragmites	50	Boating, hunting, fishing, public access
Black Mingo Creek	Georgetown County	Unknown	Alligatorweed, Parrotfeather, Water hyacinth, Frog's bit, Pennywort	50	Boating, hunting, fishing, public access
Black River	Georgetown County	Unknown	Alligatorweed, Water primrose, Water hyacinth, Parrotfeather, Frog's bit, Pennywort, Phragmites	120	Boating, hunting, fishing, public access
Bonneau Ferry WMA	Berkeley County	Multiple Reserves and impoundments	Water hyacinth, Water primrose, Frog's bit, Lotus, Cattails, Cutgrass, Pennywort, Parrotfeather, Fanwort, Coontail, Duckweed	40	Boating, hunting, fishing, public access
Charleston County Parks	Charleston County (CawCaw and Laurel Hill)	Unknown	Hydrilla, Water primrose, Water hyacinth, Phragmites, Chinese tallow, Milfoil, Waterlily	5	Recreational and public access
Combahee River	Colleton County	Unknown	Water hyacinth, Hydrilla, Water primrose, Alligatorweed, Parrotfeather, Frog's bit	150	Boating, hunting, fishing, public access
Cooper River (and adjacent rice fields)	Berkeley County	Unknown	Hydrilla, Water primrose, Water hyacinth, Brazilian elodea, Fanwort	approx. 2,800	Boating, hunting, fishing, public access

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Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Donnelley / Bear Island WMA	Colleton County	Multiple impound-ments and rivers	Cutgrass, Frog's bit, Cattails, Phragmites, Swamp loosestrife, Cuban bulrush, Tallow tree	200	Hunting, public access, Wood stork nesting site
Dungannon Plantation Heritage Preserve	Charleston County	Unknown	Cutgrass, Frog's bit, Cattails, Water primrose, Swamp loosestrife, Bur Marigold	14	Wood stork nesting site, public access
Goose Creek Reservoir	Berkeley County	600	Water hyacinth, Water lettuce, Water primrose, Hydrilla, Common salvinia, Spatterdock, East Indian hygrophyla, Watermilfoil, Fanwort, Duckweed, Bladderwort	180	Boating, fishing, public access, industrial water supply, floodway
Lake Bowen & Reservoir #1	Spartanburg County	1534 & 272	Muskgrass (Chara), Bladderwort	175	Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, public access
Lake Cunningham	Greenville County	160	Brazilian elodea, Water primrose, Fragrant Waterlily, Spatterdock	10	Boating, hunting, fishing, public access
Lake Greenwood	Laurens and Greenwood counties	11,400	Hydrilla, Slender naiad, Eel grass (Vallisneria), Water primrose	<100	Electric power generation, boating, swimming, vector control, public access
Lake Keowee	Pickens and Oconee counties	18,300	Hydrilla, Slender naiad	10	Electric power generation, municipal water supply, boating, swimming, vector control, public access
Lake Lyman	Spartanburg County	350	Water primrose	75	Boating, swimming fishing, public access
Lake Monticello (Recreation Lake)	Fairfield County	6,700 (400)	Hydrilla	<1 (Recreation Lake)	Boating, swimming, fishing, vector control, public access
Lake Murray	Lexington and Richland counties	50,000	Hydrilla, Illinois pondweed, Water primrose, Southern naiad, Alligatorweed	50	Boating, swimming, domestic and municipal water intakes, public access
Lake Wateree	Kershaw County	13,710	Hydrilla, cutgrass, Filamentous algae	30	Potential impacts to boating, swimming, vector control, public access

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Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Little Pee Dee River	Marion and Horry counties	Unknown	Alligatorweed, Water hyacinth	30	Boating, hunting, fishing, public access
Lumber River	Marion and Horry counties	Unknown	Alligatorweed	5	Boating, hunting, fishing, public access
Pee Dee River	Georgetown County	Unknown	Water hyacinth, Phragmites, Common salvinia	30	Boating, hunting
Prestwood Lake	Darlington County	300	Milfoil, Watershield, Filamentous algae, Water hyacinth	75	Boating, fishing, recreation
Samworth WMA	Georgetown County	Unknown	Phragmites, Water hyacinth, Common salvinia, Zizaniopsis	60	Hunting, public access
Santee Coastal Reserve WMA	Georgetown County	Unknown	Phragmites	3000	Hunting, public access
Santee Delta WMA	Georgetown County	Unknown	Phragmites	100	Hunting, public access
Waccamaw River	Georgetown and Horry counties	Unknown	Water hyacinth, Phragmites, Common salvinia	200	Boating, hunting, fishing, public access
Yawkey Wildlife Center	Georgetown County	Unknown	Phragmites, Cattails, Cutgrass	25	Hunting, public access
Santee Cooper Lakes					
Lake Marion	Sumter, Clarendon, Calhoun, Berkeley, and Orangeburg counties.	110,000	Alligatorweed, Brazilian elodea, Hydrilla, Water primrose, Water hyacinth, Crested floating heart, Giant salvinia, Common salvinia, Filamentous algae*, Fanwort*, Giant cutgrass*, Water milfoil*, Waterwillow* *When necessary.	TBD	Boating, swimming, public access, electric power generation, domestic and irrigation water withdrawals
Lake Moultrie	Berkeley County	60,400	Alligatorweed, Brazilian elodea, Hydrilla, Water primrose, Water hyacinth, Crested floating heart, Giant salvinia, Common salvinia, Filamentous algae*, Fanwort*, Giant cutgrass*, Water milfoil*, Waterwillow* *When necessary.	TBD	Electric power generation, boating, swimming, public access, domestic and irrigation water withdrawals

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Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Santee Cooper Area WMA'S					
Hatchery WMA	Berkeley County	Unknown	Crested Floating Heart, Cattails, Hydrilla, Water Primrose, Giant salvinia, Common salvinia, Alligatorweed	70	Boating, hunting, fishing, public access
Hickory Top WMA	Clarendon County	Unknown	Cutgrass, Cattails, Misc. Woody Species, Giant salvinia, Common salvinia	30	Boating, hunting, fishing, public access
Potato Creek WMA	Clarendon County	Unknown	Hydrilla, Water Hyacinth, Water Primrose, Bladderwort, Cutgrass, Lotus, Giant salvinia, Common salvinia	20	Boating, hunting, fishing, public access
Sandy Beach WMA	Berkeley County	Unknown	Crested Floating Heart, Cattails, Cutgrass, Lotus, Water Primrose, Misc. Woody Species, Hydrilla, Giant salvinia, Common salvina	40	Boating, hunting, fishing, public access
Santee Cooper WMA	Orangeburg County	Unknown	Crested Floating Heart, Cattails, Cutgrass, Lotus, Water Primrose, Waterlily, Misc. Woody Species, Giant salvinia, Common salvinia	150 (multiple waterbodies)	Boating, hunting, fishing, public access
SC Parks, Recreation and Tourism, State Park Lakes					
Aiken State Park	Aiken County	16	Floating heart, Cattails, Lemon bacopa, Watershield	10	Fishing, swimming, aesthetics
Barnwell State Park	Barnwell County	12	Waterlily, Cattails, Pondweed, Maidencane	9	Fishing, swimming, aesthetics
Charles Towne Landing State Park	Charleston County	5	Duckweed, Alligatorweed, Pennywort, Cyanobacteria, Algae	4	Fishing, tourism, aesthetics
Cheraw State Park	Chesterfield County	280	Floating heart, Waterlily, Spatterdock, Watermilfoil	10	Fishing, swimming, aesthetics
Croft State Park	Spartanburg County	145	Hydrilla	50	Fishing, swimming, aesthetics
H. Cooper Black Recreation Area	Chesterfield County	2	Spatterdock, Waterlily, Watershield	2	Recreational activities

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Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Hunting Island State Park	Beaufort County	1	Duckweed, Parrot-feather	1	Fishing, swimming, aes-thetics
Huntington Beach State Park	Horry County	84	Cutgrass, Phragmites, Cattails	20	Recreational activities
Kings Moun-tain State Park Crawford Lake	York County	9	Slender naiad, Misc. species	4	Swimming, boating
Lee State Park	Lee County	2	Watermilfoil	1	Fishing, swimming, aes-thetics
Little Pee Dee State Park	Dillon County	75	Spikerush, Spatterdock, Waterlily, Watershield	15	Fishing, boating
N.R. Goodale State Park	Kershaw County	160	Waterlily, Watershield, Bladderwort	60	Boating, fishing
Paris Mountain State Park	Greenville County	9.5	Slender naiad, Wa-tershield, Pondweed	6	Fishing, swimming, aes-thetics
Poinsett State Park	Sumter County	9	Spatterdock, Cattails, Watermilfoil	5	Fishing, swimming, aes-thetics
Sesquicenten-nial State Park	Richland County	25	Waterlily, Watershield, Fanwort, Watermilfoil	12	Swimming, fishing
SCDNR State Lakes					
Lake Cherokee	Cherokee County	50	Water primrose	5	Boating, fishing
Lake Edwin Johnson	Spartanburg County	40	Water primrose, Hy-drilla, Pondweed	10	Boating, fishing
Jonesville Res-ervoir	Union County	25	Water primrose, Pond-weed	10	Boating, fishing
Mountain Lakes	Chester County	70	Water primrose, Alliga-torweed, Parrotfeather	5	Boating, fishing
Lancaster Res-ervoir	Lancaster County	61	Water primrose, Alliga-torweed	8	Boating, fishing, hunt-ing
Sunrise Lake	Lancaster County	25	Pondweed	15	Boating, fishing
Lake Ashwood	Lee County	75	Waterlily	spotty	Boating, fishing
Lake Edgar Brown	Barnwell County	100	Water primrose, Coon-tail, Water hyacinth	40	Boating, fishing

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Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Lake George Warren	Hampton County	400	Cattails, Water primrose, Coontail	20	Boating, fishing
Lake Thicketty	Cherokee County	100	Hydrilla	5	Boating, fishing
Dargan's Pond	Darlington County	50	Pondweed	15	Boating, fishing
Lake Paul Wallace	Marlboro County	300	Hydrilla, naiad	200	Boating, fishing
Draper WMA Lakes	York County	5	Naiad	5	Fishing
South Carolina Border Lakes					
Lake Wylie	York County, SC; Gaston and Mecklenburg County, NC	13,443	Hydrilla, Alligatorweed	<100 (all in NC waters)	Electric power generation, boating, swimming, public access, domestic and irrigation water withdrawals
Lake Thurmond	South Carolina, Georgia Border	71,100	Hydrilla	> 7000	Electric power generation, boating, swimming, public access, domestic and irrigation water withdrawals

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. Problematic species may change based on environmental conditions. Therefore, this plan is fluid and will utilize an adaptive management approach. 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 SCDNR in cooperation with the local sponsor. A summary of proposed expenditures for 2023 and a location map of problem water bodies are located at the end of this section.
SPECIAL NOTE: Due to budget constraints (to serve all the areas around the state), each water body will only be eligible for up to $30,000 of cost share money from the SCDNR.

Public Waters

1. **Ashepoo River (Colleton County)**

Problem plant species:

Water hyacinth, Alligatorweed, Water Primrose, Parrotfeather, Frog's bit, Pennywort

Management objectives:

Reduce water hyacinth populations to enhance public access, navigation, and water flow.

Selected control method:

Problem Species	Control Agent
Water hyacinth, Alligatorweed,	Triclopyr, Diquat, Imazamox, Imazapyr, Glyphosate,
Water primrose	ProcellaCOR-SC, Flumioxazin
Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Frog's bit, Parrotfeather	Diquat, Penoxsulam, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied:

Through river system upstream and downstream of US 17 bridge.

Rate of control agents to be applied:

Triclopyr - 0.500 - 0.750 gallons per acre.

Diquat - 0.500 gallons per acre.

Imazamox - 0.250 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Imazapyr – 0.250 - 0.750 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agents:

Triclopyr, Diquat, Imazapyr, Imazamox, ProcellaCOR-SC, Glyphosate, and Flumioxazin - spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application:

Apply herbicide periodically to vegetation from May through October as needed.

Other control application specifications:

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

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. Label rate of herbicide will be stringently adhered to.

Entity to apply control agents:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

$20,000

Potential sources of funding:

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Colleton County 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

2. Back River Reservoir (Berkeley County)

Problem plant species:

Hydrilla, Water hyacinth, Fanwort, Water primrose, Cutgrass, Phragmites

Management objectives:

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.

Reduce hydrilla in upper Foster Creek and Chicken Creek areas to improve water quality, water flow and navigation.

Reduce hydrilla and fanwort in 62.50-acre area adjacent to Dominion Energy's Williams Station intake to enhance water flow, minimize clogging of water intake, and enhance public boating and fishing use in this area.

Reduce hydrilla and fanwort in a 2-acre area at Bushy Park Landing to enhance public boating and fishing use in this area.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method:

Problem Species	Control Agent
Water hyacinth, Water primrose	Triclopyr, Diquat, Imazamox, Penoxsulam, Imazapyr, Glyphosate, ProcellaCOR-SC, Flumioxazin
Cutgrass	Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Hydrilla	Copper*, Copper*/Diquat, ProcellaCOR-SC

Fanwort, Coontail	Copper*, Copper*/Diquat
Phragmites	Imazapyr, Glyphosate, Imazamox

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

Area to which control is to be applied:

Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC and Penoxsulam - 300 acres of water hyacinth, water primrose and cutgrass throughout the lake.

Copper*/Diquat, Penoxsulam, ProcellaCOR-SC - 167 acres of hydrilla; 2 treatments of 62.50-acre area near Dominion Energy intake, 2 acres of hydrilla adjacent to Bushy Park Landing, 25 acres of hydrilla in Foster Creek (2 treatments of 12.50 acres each), 15 acres of hydrilla in Chicken Creek (2 treatments of 7.5 acres each).

Rate of control agents to be applied:

Triclopyr - 0.500 - 0.750 gallons per acre.

Diquat - 0.500 gallons per acre.

Imazamox - 0.250 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre

Imazapyr – 0.250 - 0.750 gallons per acre.

Penoxsulam - Submersed 0.174 fl oz/acre foot to achieve minimum effective concentration of 25 to 75 ppb, Floating species – 2 to 6 fl oz/acre as foliar application.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agents:

Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin and Penoxsulam - spray on surface of foliage with appropriate surfactant.

Copper*, Copper*/Diquat, ProcellaCOR-SC - subsurface injection from airboat.

Timing and sequence of control application:

Three hundred (300) acres of water hyacinth, water primrose and cutgrass treated with Triclopyr, Imazamox, Imazapyr, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin (May-October), Diquat (October, November). The initial treatments are to be followed in 1-2 days with a cleanup treatment.

12.50 acres of hydrilla in Foster Creek to be treated 2 times (April-October) with Copper, Copper/Diquat, ProcellaCOR-SC.

7.50 acres of hydrilla in Chicken Creek to be treated 2 times (April-October) with Copper, Copper/Diquat, ProcellaCOR-SC.

Hydrilla and fanwort located adjacent to public boat ramp to be treated with Copper*, Copper*/Diquat, ProcellaCOR-SC.

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Hydrilla and fanwort located near the Dominion Energy water intake to be treated periodically during the year with Copper*, Copper*/Diquat, ProcellaCOR-SC (up to three times in the same 62.50-acre area), treatment area may be expanded as control is realized in target area.

Other control application specifications:

Herbicide used only upon approval by the SCDHEC.

All herbicide treatments conducted within 1600 feet of the Charleston Commissioners of Public Works (CPW) water intake will use Triclopyr at a rate of 0.5 gallons per acre or less or Penoxsulam at a rate of 2 to 6 oz/acre. Diquat treatments will be conducted at least 1600 feet from the intake. Following any application of Diquat within 1600 feet of the CPW water intake, herbicide residue concentrations may be monitored according to a plan agreed to by the SCDNR, CPW, and the SCDHEC.

If filamentous algae are present on submersed macrophytes, an algaecide, 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. Label rate of herbicide will be stringently adhered to.

Entity to apply control agents:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

$45,000

Potential sources of funding:

Water primrose and water hyacinth -

CPW 30%

Dominion Energy 20%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

Hydrilla and fanwort (near Dominion Energy intake) -

Dominion Energy. 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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

CPW 30%

Dominion Energy 20%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

Long term management strategy:

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a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

3. Baruch Institute (Georgetown County)

Problem plant species:

Phragmites

Management objective:

Through a comprehensive, multi-year approach, reduce Phragmites populations to the greatest extent possible.

Selected control method:

Problem Species	Control Agent
Phragmites	Imazapyr, Glyphosate, Imazamox

Area to which control is to be applied:

50 acres of phragmites throughout area

Rate of control agent to be applied:

Imazapyr - 0.250 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Imazamox - up to 5 % solution for spot spray.

Method of application of control agent:

Helicopter - 50 acres of Imazapyr, Glyphosate, Imazamox with appropriate surfactant applied to phragmites.

Other applications - Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application:

Apply when plants are actively growing (July - Oct.). Note: Proceed as funds are available from Baruch Institute.

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Other control application specifications:

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator

Estimated cost of control operations:

$5,000

Potential sources of funding:

Baruch Institute 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

4. Black Mingo Creek (Georgetown County)

Problem plant species:

Alligatorweed, Parrot feather, Frog's bit, Pennywort, Water hyacinth

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.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method:

Problem Species	Control Agent
Alligatorweed, Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Frog's bit, Parrot feather	Diquat, Penoxsulam, ProcellaCOR-SC, Flumioxazin

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Water Hyacinth Diquat, Triclopyr, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied:

50 acres of problematic plants throughout river

Rate of control agent to be applied:

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 - 0.750 gallons per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent:

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application:

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

Other control application specifications:

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

$5000

Potential sources of funding:

Georgetown County 50%

SCDNR 50% (up to $30,000 cost share per waterbody)
(Percentage of match subject to change based on availability of Federal and State funding.)

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 using 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.

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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.

5. Black River (Georgetown County)

Problem plant species:

Alligatorweed, Water Primrose, Parrot feather, Frog's bit, Pennywort, Phragmites, Water hyacinth

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.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method:

Problem Species	Control Agent
Alligatorweed, Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Frog's bit, Parrot feather	Diquat, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites	Imazapyr, Imazamox, Glyphosate
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Water hyacinth	Triclopyr, Diquat, Imazapyr, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied:

120 acres of problematic plants throughout river

Rate of control agent to be applied:

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 - 0.750 gallons per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

Penoxsulam - Floating species – 2 to 6 fl oz/acre as foliar application.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent:

Spray on surface of foliage with appropriate surfactant.

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Timing and sequence of control application:

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

Other control application specifications:

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

$20,000

Potential sources of funding:

Nature Conservancy 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

6. Bonneau Ferry (Berkeley County)

Problem plant species:

Water Primrose, Water hyacinth, Cattails, Lotus, Cutgrass, Pennywort, Frog's bit, Parrotfeather, Duckweed, Fanwort, Coontail

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.

Selected control method:

Problem Species	Control Agent

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Water primrose, Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Cattails, Cutgrass, Parrotfeather	Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin
Water hyacinth, Frog's bit	Triclopyr, Diquat, Imazamox, ProcellaCOR-SC, Penoxsulam, Flumioxazin
Duckweed	Flumioxazin
Fanwort, Coontail	Copper*, Copper*/Diquat

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

Area to which control is to be applied:

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

Rate of control agent to be applied:

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 - 0.750 gallons per acre.

Imazamox - up to a 5% solution for spot spray.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.

Glyphosate - up to 0.937 gallons per acre.

Penoxsulam - Floating species – 2 to 6 fl oz/acre as foliar application, submersed approximately 0.174 gallons/acre foot.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre

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

Method of application of control agent:

Helicopter - 20 acres of Imazapyr, Glyphosate, Imazamox with appropriate surfactant.

Other applications - Spray on surface of foliage with appropriate surfactant from boat.

Timing and sequence of control application:

Apply when plants are actively growing.

Other control application specifications:

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator

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Estimated cost of control operations:

$5,750

Potential sources of funding:

SCDNR 100% (50/50 split between ANS and WMA)

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

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 using 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.

7. Charleston County Parks (Caw Caw Interpretative Center, Laurel Hill Plantation) (Charleston County)

Problem plant species:

Phragmites, milfoil, waterlily, hydrilla, water primrose, water hyacinth, Chinese tallow

Management objective:

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method:

Problem Species	Control Agent
Watermilfoil	2,4-D, Triclopyr/2,4-D, Imazamox, ProcellaCOR-SC
Waterlily	2,4-D, Imazapyr, Glyphosate, Imazamox, ProcellaCOR-SC
Phragmites	Imazapyr, Glyphosate, Imazamox
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Water hyacinth	Triclopyr, Diquat, Imazapyr, ProcellaCOR-SC, Flumioxazin
Hydrilla	Copper*, Copper*/Diquat, ProcellaCOR-SC
Chinese Tallow	Imazapyr, Imazamox, Glyphosate

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

Area to which control is to be applied:

5 acres

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Rate of control agent to be applied:

Imazapyr - 2 to 3 pints per acre.
Triclopyr/2,4-D – 200 lbs per acre.
Imazamox - up to 5% solution for spot spray.
Glyphosate - up to 0.937 gallons per acre.

2,4-D - up to 5 gallons per acre.

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre

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

Method of application of control agent:

Spray on surface of foliage with appropriate surfactant and subsurface injection from airboat. Granular herbicides spread evenly using appropriate rate.

Timing and sequence of control application:

Apply when plants are actively growing.

Other control application specifications:

Monitor plant growth prior to treatment.

Other control application specifications :

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

$1,000

Potential sources of funding:

Charleston Co. Parks 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using federal and state approved control methods.

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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.

8. Combahee River (Colleton County)

Problem plant species:

Water hyacinth, Alligatorweed, Parrot feather, Frog's bit, Hydrilla, Water primrose

Management objective:

Reduce or remove vegetation infestation at public access points, the main river channel, and connecting lakes.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method:

Problem Species	Control Agent
Water hyacinth	Triclopyr, Diquat, Imazapyr, ProcellaCOR-SC, Flumioxazin
Alligatorweed	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Frog's bit, Parrot feather	Diquat, Penoxsulam, ProcellaCOR-SC
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Hydrilla	Copper*, Copper*/Diquat, ProcellaCOR-SC

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

Area to which control is to be applied:

150 acres of problematic plants to be treated 2-4 times during the growing season.

Rate of control agent to be applied

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 2 to 3 pints per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 6 pints per acre.

Penoxsulam - Floating species – 2 to 6 fl oz/acre as foliar application.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

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Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre

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

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

$20,000

Potential sources of funding

Colleton County 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

9. Cooper River (Berkeley County)

Problem plant species

Hydrilla, Water hyacinth, Water primrose, Brazilian elodea, Fanwort

Management objectives

Reduce water hyacinth populations to the greatest extent possible in the Main River and public rice fields.

Reduce water primrose growth along boat channels to maintain navigation.

Open limited boat trails in hydrilla infested rice fields to enhance public access to the river and selected rice fields.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agent
Water hyacinth	Triclopyr, Diquat, Imazamox, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Hydrilla	Copper*, ProcellaCOR-SC

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

Area to which control is to be applied

Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Penoxsulam, Flumioxazin - 500 acres of water hyacinth and water primrose throughout river system and in narrow boat channels in French Quarter Creek, Rice Hope Plantation rice field, and Berkeley Country Club rice field.

Copper, ProcellaCOR-SC - 48 acres (16 acres treated 3 times yearly, spring and fall) to open boat trails in Pimlico, Berkeley Yacht Club and Rice Hope Plantation rice fields and French Quarter Creek canal.

Rate of control agents to be applied

Imazapyr - 2 to 4 pints per acre.

Diquat - 2 quarts per acre.

Triclopyr - up to 4 quarts per acre

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

*Copper - up to 1 ppm (about 16 gallons per acre).

Penoxsulam - Floating species – 2 to 6 fl oz/acre as foliar application.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

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

Method of application of control agent

Triclopyr, Diquat, Imazapyr, Penoxsulam, ProcellaCOR-SC, Flumioxazin - spray on surface of foliage with appropriate surfactant.

Copper*, ProcellaCOR-SC - subsurface injection from airboat.

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

$42,000

Potential sources of funding

Berkeley County 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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

10. Donnelley WMA/Bear Island WMA/ACE Basin (Colleton County)

Problem plant species

Frog's bit, Cattails, Cutgrass, Phragmites, Swamp loosestrife, Cuban bulrush, Chinese tallow

Management objective

Reduce problem plant populations to enhance waterfowl habitat, public access and use.

Selected control method

Problem Species	Control Agent
Frog's bit	Triclopyr, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites, Cattails, Chinese tallow	Imazapyr, Imazamox, Glyphosate
Cutgrass, Swamp loosestrife	Imazapyr, Imazamox, Glyphosate
Cuban bulrush	ProcellaCOR-SC, Flumioxazin, Diquat

Area to which control is to be applied

200 acres of Frog's bit, Phragmites, Cattails, Cutgrass, Swamp loosestrife, Chinese tallow, and Cuban bull rush throughout the area.

Rate of control agent to be applied

Triclopyr - 0.500 to 0.750 gallons per acre

Imazapyr - 2 to 3 pints per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

Penoxsulam - Floating species – 2 to 12 fl oz/acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

Application to be conducted by airboat and helicopter. Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator

Estimated cost of control operations

$30,000

Potential sources of funding

Donnelley WMA/USF&W/Nature Conservancy 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

Long term management strategy

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a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

11. Dungannon Plantation Heritage Preserve (Charleston County)

Problem plant species

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

Management objective

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

Selected control method

Problem Species	Control Agent
Frog's bit, Water primrose, Bur marigold	Triclopyr, Imazapyr, Imazamox, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Cattails	Imazapyr, Imazamox, Glyphosate
Cutgrass, Swamp loosestrife	Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

14 acres of Frog's bit, Water primroses, and Bur marigold

14 acres of Cattails, Cutgrass, and Swamp loosestrife

Rate of control agent to be applied

Triclopyr - 0.500 to 0.750 gallons per acre.
Imazapyr - 2 to 3 pints per acre.
Imazamox - 1 to 4 pints per acre.
Glyphosate - up to 6 pints per acre.
Penoxsulam - Floating species – 2 to 12 fl oz/acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

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Application to be conducted by airboat and Jon-boat. Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator

Estimated cost of control operations

$2,000

Potential sources of funding

Dungannon HP 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

12. Goose Creek Reservoir (Berkeley County)

Problem plant species

Hygrophila, Water hyacinth, Water primrose, Water lettuce, Hydrilla, Watermilfoil, Fanwort, Common salvinia, Duckweed, Spatterdock, Bladderwort

Management objective

Reduce water hyacinth and water lettuce populations to the greatest extent possible throughout the lake.

Reduce water primrose, water lettuce and water hyacinth in the upper portion of the lake to enhance water flow and public access.

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.

Reduce common salvinia and duckweed growth throughout populated portions of the lake to minimize adverse impacts to public use and access.

Reduce filamentous algae growth throughout populated portions of the lake to minimize adverse impacts to public use and access.

Maintain diverse aquatic plant community through selective application of control methods.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agent
Water primrose, Hygrophila	Triclopyr, Triclopyr/2,4-D, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Water hyacinth, Water lettuce	Triclopyr, Diquat, Penoxsulam, Flumioxazin, ProcellaCOR-SC
Watermilfoil, fanwort	Diquat, 2,4-D, Imazamox
Hydrilla, Hygrophila	Endothall, *Copper, triploid grass carp, ProcellaCOR-SC
Common salvinia, Duckweed	Fluridone, Diquat, Penoxsulam, Flumioxazin
Spatterdock	Triclopyr, Imazapyr, Imazamox, ProcellaCOR-SC, Flumioxazin
Filamentous Algae	*Copper
Bladderwort	Triploid grass carp, Copper*, Fluridone, ProcellaCOR-SC

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

Area to which control is to be applied

Triclopyr, Imazapyr, Imazamox, Glyphosate- 100 acres water primrose in upper reservoir and boat ramp.

Diquat - 50 acres of water hyacinth and water lettuce throughout reservoir.

Triclopyr, Diquat, Penoxsulam, ProcellaCOR-SC - 100 acres of water hyacinth and water lettuce throughout the reservoir.

Diquat, 2,4-D, Penoxsulam, ProcellaCOR-SC - 20 acres of submersed growth throughout the reservoir.

Triclopyr, Imazapyr, Imazamox, Glyphosate, Endothall – up to 30 acres of Hygrophila 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 reservoir to achieve as even a distribution as possible.

Fluridone, Diquat, Penoxsulam, Flumioxazin – 50 acres of duckweed near populated areas of the reservoir.

Copper* – 50 acres of filamentous algae near populated areas of the reservoir.

Rate of control agents to be applied

Diquat - 0.500 gallon per acre.
Triclopyr - 0.500 to 0.750 gallons per acre.
Imazapyr - up to 4 pints per acre.
Imazamox - 1 to 4 pints per acre.
Glyphosate - up to 6 pints per acre.
2,4-D - up to 5 gallons per acre.
Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).
Penoxsulam - Submersed 0.174 fl oz/acre foot to achieve minimum effective concentration of 25 to 75 ppb, Floating species – 2 to 6 fl oz/acre as foliar application.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

**Triploid Grass Carp – Temporarily suspend stocking based on lack of hydrilla being seen. Continue intensive surveying for sprouting tubers. 800 fish in the entire reservoir. Based on a 32% mortality to maintain existing population.

Method of application of control agents

Triclopyr, Imazapyr, Glyphosate, Diquat, Flumioxazin, Penoxsulam, ProcellaCOR-SC - spray on surface of foliage with appropriate surfactant.

Diquat, 2,4-D, Penoxsulam, ProcellaCOR-SC - subsurface injection from airboat.

The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in Goose Creek Reservoir to provide long-term control of hydrilla. A maintenance stocking plan approved for other water bodies provided for stocking a small number of grass carp, 1 carp to 8 or 10 surface acres, to control hydrilla while encouraging the expansion of a diverse, native aquatic plant community.

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.

Entity to apply control agents

Herbicides - Commercial Applicator, SCDNR staff.

Triploid Grass Carp - SCDNR or a commercial supplier with supervision by the SCDNR.

Estimated cost of control operations

$45,000

Potential sources of funding

CPW 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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

13. Lake Bowen, Reservoir #1 (Spartanburg County)

Problem plant species

Muskgrass (Chara), Bladderwort

Note: Reservoir 1, which is fed by Lake Bowen, is a direct potable water supply lake for Spartanburg Water. Control in either water body of algae/diatoms or bacteria that increases levels of Geosmin or MIBs, which affects potable water supplies, will be accomplished for Spartanburg Water by independent contractors. All contractors must be properly certified and licensed. SCDNR will be pre-notified of the details and timing of this control so as not to cause unexpected problems with any control carried out for regular aquatic plant management activities by either SCDNR or Spartanburg Water's contractors. For information concerning taste and odor issues for potable water please contact Spartanburg Water directly.

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem Species	Control Agent
Chara, Bladderwort	Triploid grass carp, Copper*, Fluridone, ProcellaCOR-SC

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

Area to which control is to be applied

175 acres in lake.

Rate of control agent to be applied

Triploid grass carp: initial stocking to control Bladderwort and then stock to maintain 1 fish per 6 surface acre density when population levels dictate.
Lake Bowen – 65 triploid grass carp for maintenance control
Reservoir #1 – 25 triploid grass carp for maintenance control

Copper* - up to 1 ppm

Fluridone – up to 30 ppb in treatment area

ProcellaCOR-SC - 1-5 PDUs per acre for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agents

Copper*, Fluridone, ProcellaCOR-SC - subsurface application by airboat.

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

Timing and sequence of control application

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Herbicide - Apply when plants are actively growing.
Triploid grass carp to be released as soon as possible in the spring of 2023 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Lake Bowen and Reservoir #1 will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake and additional incremental stockings may be necessary based on the possibility of escape via the outflow at the dam. Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator

Estimated cost of control operations

$1,000

Potential sources of funding

Spartanburg CPW 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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) A long-term integrated management strategy has been implemented to control submersed nuisance species. Triploid grass carp have been stocked to control submersed nuisance species 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 submersed nuisance species but to minimize impacts on desirable native plant populations.

d) 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.

e) Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.

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14. Lake Cunningham (Greenville County)

Problem plant species

Brazilian elodea, Fragrant waterlily, Water primrose, Spatterdock

Management objective

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agent
Brazilian elodea	Copper*, triploid grass carp
Water primrose	Triclopyr, Imazapyr, Imazamox, Flumioxazin
Fragrant waterlily, spatterdock	Triclopyr, Imazapyr, Imazamox, ProcellaCOR-SC, Flumioxazin

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

Area to which control is to be applied

10 acres of problematic plants throughout Lake Cunningham.

Rate of control agent to be applied

Triclopyr - 0.500 to 0.750 gallons per acre.
Imazapyr - 2 to 3 pints per acre.
Imazamox - 1 to 4 pints per acre.
Copper* – up to 1 ppm.

ProcellaCOR-SC - 1-5 PDUs per acre for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.
Triploid grass carp – Stock to maintain 1 fish per 8 surface acre density when population levels dictate.

Method of application of control agent

Herbicides spray on surface of foliage with appropriate surfactant from boat or 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 Brazilian elodea growth.

Timing and sequence of control application

Herbicide - Apply when plants are actively growing.
Triploid grass carp to be released as soon as possible in the spring of 2023 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

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If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Lake Cunningham will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake and additional incremental stockings may be necessary based on the possibility of escape via the outflow at the dam. Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator

Estimated cost of control operations

$7,000

Potential sources of funding

Greer CPW 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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) A long-term integrated management strategy has been implemented to control Brazilian elodea. Triploid grass carp have been stocked to control Brazilian elodea 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 Brazilian elodea but to minimize impacts on desirable native plant populations.

d) 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.

e) Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.

15. Lake Greenwood (Greenwood and Laurens County)

Problem plant species

Slender naiad, Hydrilla, Water primrose, Eel grass (Vallisneria)

Management objectives

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Maintain reduced 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 drinking water withdrawals and public use and access.

Monitor water primrose growth and consider control options if impacts are greater than anticipated.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes. When possible, some if this problematic vegetation may be transplanted to undeveloped areas to improve overall fish and wildlife habitat.

Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

Selected control method

Triploid grass carp – stock 375 sterile grass carp to maintain a 1 carp to 5 surface acre ratio.

Aquatic herbicides - selected areas of water primrose infestation to provide public access.

Problem Species	Control Agent
Slender naiad, Hydrilla	Endothall, Fluridone, Triploid Grass Carp, Copper*, ProcellaCOR-SC, Diquat
Vallisneria (Eel grass)	Endothall, Fluridone, Copper*, Diquat
Water primrose	Triclopyr, Glyphosate, Imazapyr, Imazamox

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

Area to which control is to be applied

If needed, release triploid grass carp in areas of the lake with greatest hydrilla growth.

Use aquatic herbicides to provide control at high priority public access points, such as boat ramps and park sites

Rate of control agents to be applied

Endothall - 0.500 to 4 ppm (about 3 to 8 gallons per acre depending on depth)

Imazapyr – 0.250 – 0.750 gallons per acre

Imazamox _up to 5% spot spray

Fluridone - 0.075 to 0.250 ppm

Copper* _ up to 1 ppm

Fluridone Q, Fluridone PR - up to .40 ppm (approx 10 pounds/acre)

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Triploid Grass Carp – Stock to maintain 1 to 5 surface acres density when population dictates and to add different age class fish. 375 sterile grass carp to maintain a density of 1 grass carp per 5 surface acres (2280 fish). The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in Lake Greenwood to provide long-term control of hydrilla.

The Aquatic Plant Management Council, with recommendations from DNR and Lake Greenwood staff, agrees that the adaptive stocking plan should be continued, based on current observations of collected data, Herbicide treatments may be utilized to provide temporary control of hydrilla when necessary. Changes to the strategy will be implemented if survey results, regrowth, or habitat loss warrant.

Method of application of control agents

Endothall, Fluridone, Copper* - Subsurface application by airboat.

Triclopyr, Glyphosate, Imazapyr, Imazamox - 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.

Timing and sequence of control application

Agent to be applied when plants are actively growing.

Agent to be applied to hydrilla when plants are actively growing but prior to tuber production.

Triploid grass carp to be released as soon as possible in the spring of 2023 (March-May).

Other control application specifications

Herbicide used only upon approval by the SCDHEC.

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. Label rate of herbicide will be stringently adhered to.

Hydrilla may require multiple treatments.

Entity to apply control system

Commercial applicator

Estimated cost of control operations

$10,000

Potential sources of funding

Greenwood County 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using federal and state approved control methods.

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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.

16. Lake Keowee (Pickens and Oconee County)

Problem plant species

Hydrilla, Slender naiad

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.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Triploid grass carp – stock sterile grass carp as needed for maintenance of Hydrilla

Aquatic herbicides - selected areas of water primrose infestation to provide public access.

Problem Species	Control Agent
Slender naiad, Hydrilla	Endothall, Fluridone, ProcellaCOR-SC, Triploid Grass Carp, 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.

Area to which control is to be applied

If needed, release triploid grass carp in areas of the lake with greatest hydrilla growth.

Herbicide - 10 acres

Drawdown - entire lake

Rate of control agent to be applied

125 sterile grass carp for maintenance of hydrilla

Endothall - 0.500 to 4 ppm (about 3 to 8 gallons per acre depending on depth)

Fluridone - 0.075 to 0.250 ppm

Copper* - up to 1 ppm

Fluridone Q, Fluridone PR - up to .40 ppm (approx 10 pounds/acre)

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Triploid Grass Carp – Future stocking to attain and maintain 1 to 8 surface acres density when population dictates.

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Drawdown - to the greatest extent possible within project limits.

Method of application of control agent

Endothall, Fluridone, Copper*, ProcellaCOR-SC - Subsurface application by airboat.

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

Drawdown - draw lake down.

Timing and sequence of control application

Agent to be applied when plants are actively growing.

Agent to be applied to hydrilla when plants are actively growing but prior to tuber production.

125 Triploid grass carp to be released as soon as possible in the spring of 2023 (March-May).

Drawdown - Drawdown Lake from October through February.

Other control application specifications

Herbicide application - Herbicide used only upon notification of all local potable water supply authorities and approval by SCDHEC. Treatment of control area will be conducted in a manner that will not significantly degrade water quality. Label rate of herbicide will be stringently adhered to.

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

Entity to apply control system

Herbicide application - Commercial applicator or Duke Energy

Drawdown - Duke Energy

Estimated cost of control operations

Herbicide application - $0

Triploid Grass Carp - $1,250

Drawdown - Undetermined

Potential sources of funding

Duke Energy 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using federal and state approved control methods.

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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.

17. Lake Lyman (Spartanburg County)

Problem plant species:

Water primrose

Management objective:

Reduce or remove vegetation infestation at public access points and navigation channels.

Treat native vegetation only in areas where it is impeding navigation or access.

Selected control method:

Problem Species	Control Agent
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin

Area to which control is to be applied:

75 acres of problematic plants to be treated 2-4 times during the growing season.

Rate of control agent to be applied

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 2 to 3 pints per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 6 pints per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

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Commercial applicator, SCDNR staff.

Estimated cost of control operations

$5,000

Potential sources of funding

SJWD Water District 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

Long term management strategy

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

e) 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.

f) 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.

18. Lake Monticello (Recreation Lake) (Fairfield County)

Problem plant species

Hydrilla

Management objectives

Manage hydrilla growth throughout the Recreation Lake section to minimize its spread to Lake Monticello, help prevent its spread to adjacent public waters, and minimize adverse impacts to agricultural irrigation withdrawals, and public use and access.

Selected control method

Problem Species	Control Agent
Hydrilla	Endothall, Fluridone, ProcellaCOR-SC, Triploid Grass Carp, Copper*

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

Area to which control is to be applied

Hydrilla - Perform maintenance stocking in future years as needed (1 per 6 acres- 30 carp) to provide long term control option.

Rate of control agents to be applied

Endothall - 0.500 to 4 ppm (about 3 to 8 gallons per acre depending on depth)

Fluridone - 0.075 to 0.250 ppm

Copper* - up to 1 ppm

Fluridone Q, Fluridone PR - up to .40 ppm (approx. 10 pounds/acre)

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Triploid Grass Carp – Perform maintenance stocking in future years (1 per 6 acres- 30 carp) to provide long term control option.

Method of application of control agents

Endothall, Fluridone, Copper*, ProcellaCOR-SC - Subsurface application by airboat.

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

Timing and sequence of control application

Agent to be applied to hydrilla when plants are actively growing but prior to tuber production.

Maintenance stocking of Triploid grass carp to be released in subsequent years as population dictates. RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

Herbicide used only upon approval by the SCDHEC.

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 SCDNR district fisheries biologist. In general, treatment will be limited to developed shoreline areas, public access sites, and areas of high public use. Label rate of herbicide will be stringently adhered to.

Hydrilla may require multiple treatments.

Entity to apply control system

Commercial applicator

Estimated cost of control operations

$250

Potential sources of funding

Triploid grass carp:

Dominion Energy, Lexington and Richland Counties 50%, SCDNR 50% (up to $30,000 cost share per waterbody)

Mechanical harvester:

Dominion Energy, Commercial marina operators, and residential property owners.

Aquatic herbicides:

Dominion Energy, Lexington and Richland Counties 50%, SCDNR 50% (up to $30,000 cost share per waterbody)

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

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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 using 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. Lake Murray (Lexington, Newberry, Richland and Saluda Counties)

Problem plant species

Hydrilla, Water Primrose, Illinois Pond Weed, Southern Naiad, Alligatorweed

Management objectives

Minimize hydrilla growth throughout the lake to prevent its spread within the lake, help prevent its spread to adjacent public waters, and avoid adverse impacts to drinking water withdrawals and public use and access.

Monitor water primrose growth and consider control options if impacts are greater than anticipated.

Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Triploid grass carp – stock triploid grass carp to maintain the population.

Aquatic herbicides - selected areas of vegetation infestation to provide public access.

Problem Species	Control Agents
Hydrilla, Illinois Pondweed	Copper*, Endothall, Fluridone, Imazamox, ProcellaCOR-SC
Water primrose	Triclopyr, Imazapyr, Imazamox, Glyphosate
Southern Naiad	Diquat, Endothall, Fluridone, Flumioxazin
Alligatorweed	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin

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

Area to which control is to be applied

Release approximately one-half of the triploid grass carp on the north side of the lake and one-half on the south side.

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Use aquatic herbicides to provide control at high priority public access points, such as boat ramps and park sites.

Rate of control agent to be applied

Triploid Grass Carp: Stock 1700 sterile grass carp to maintain the population at a 1 fish to 6 surface acres density and to add different age class fish. The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in Lake Murray to provide long-term control of hydrilla. The Aquatic Plant Management Council, with recommendations from SCDNR and Lake Murray staff, agrees that the adaptive stocking plan should be continued, based on current observations of collected data. Herbicide treatments may be utilized to provide temporary control of hydrilla when necessary. Changes to the strategy will be implemented if survey results, regrowth, or habitat loss warrant.

Water primrose treatment:
Triclopyr - 0.500 to 0.750 gallons per acre.
Imazapyr - 2 to 4 pints per acre.
Imazamox - 1 to 4 pints per acre.

Method of application of control agent

Triploid grass carp - See section 3 above.

All agents to be applied when plants are actively growing.

Timing and sequence of control application

Additional grass carp should be stocked in the spring/fall following Council approval.

Apply herbicides to aquatic vegetation as it becomes problematic.

Other control application specifications

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.

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 using 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 Dominion Energy. Harvesting precautions as stated in item above must be adhered to.

2) Aquatic herbicides – Dominion Energy 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 have been stocked by SCDNR to control nuisance aquatic vegetation. Stocking additional grass carp in Lake Murray without written consent by the SCDNR is prohibited.

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Entity to apply control agent

Triploid grass carp - Commercial supplier with supervision by the SCDNR.

Aquatic herbicides - Commercial applicator under supervision by the SCDNR.

Estimated cost of control operations

Triploid grass carp - $17,000

Aquatic herbicides - $0

Potential sources of funding

Triploid grass carp:

Dominion Energy, Lexington and Richland Counties 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

Mechanical harvester:

Dominion Energy, Commercial marina operators, and residential property owners.

Aquatic herbicides:

Dominion Energy, Lexington and Richland Counties 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

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20. Lake Wateree (Fairfield, Kershaw and Lancaster Counties)

Problem plant species

Hydrilla, Filamentous algae

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.

Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

Selected control method

Fall/winter water level drawdown

Aquatic herbicides - selected areas of invasive plant infestation to provide public access.

Problem Species	Control Agent
Hydrilla	Endothall, Fluridone, Triploid Grass Carp, ProcellaCOR-SC, Copper*
Filamentous algae	Copper*, peroxide-based products

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

Area to which control is to be applied

Use aquatic herbicides to provide control at high priority public access points, such as boat ramps and park sites

Drawdown - Entire Lake

Rate of control agent to be applied

Endothall – up to 4 ppm (about 8 gallons per acre depending on depth)

Fluridone - 0.075 to 0.250 ppm

Copper* - up to 1 ppm

Fluridone Q, Fluridone PR - up to .40 ppm (approx. 10 pounds/acre)

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Drawdown - To the greatest extent possible within project limits.

Method of application of control agent

Endothall, Fluridone, ProcellaCOR-SC, Copper*, peroxide-based products - Subsurface application by airboat.

Copper* - 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.

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Drawdown - Draw lake down

Timing and sequence of control application

Agent to be applied when plants are actively growing.

Agent to be applied to hydrilla when plants are actively growing but prior to tuber production.

Drawdown - Drawdown lake from October through February.

Other control application specifications

Herbicide used only upon notification of all local potable water supply authorities and approval by SCDHEC. Treatment of control area will be conducted in a manner that will not significantly degrade water quality. Label rate of herbicide will be stringently adhered to.

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

Entity to apply control agent

Herbicide application - Commercial applicator or Duke Energy

Drawdown - Duke Energy

Estimated cost of control operations

Herbicide application - $3,000.00 (Hydrilla has been observed in a few spots, prior to a drawdown. Application may be needed if plants reoccur after lake returns to full pool.)

Drawdown - Undetermined

Potential sources of funding

Duke Energy 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

21. Little Pee Dee River (Marion and Horry Counties)

Problem plant species

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Alligatorweed, Water hyacinth

Management objective

Through a comprehensive, multi-year approach; reduce water hyacinth and alligatorweed populations to the greatest extent possible

Selected control method

Problem Species	Control Agent
Water hyacinth	Triclopyr, Diquat, Imazamox, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Alligatorweed	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Biological Control	Alligatorweed flea beetles (*Agasicles hygrophila)*

Area to which control is to be applied

30 acres of alligatorweed and water hyacinth throughout river

Rate of control agent to be applied

Imazapyr - 0.250 to 0.750 gallons per acre.
Diquat - 0.500 gallons per acre.
Triclopyr - 0.250 to 0.750 gallons per acre.
Imazamox - 0.125 to 0.750 gallons per acre.
Glyphosate - up to 0.937 gallons per acre.
Penoxsulam - 2 to 6 fluid ounces per acre as foliar application.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

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

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator or SCDNR staff

Estimated cost of control operations

$5,000

Potential sources of funding

Horry and Marion Counties 50%

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SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

22. Lumber River (Marion and Horry Counties)

Problem plant species

Alligatorweed

Management objective

Reduce or remove alligatorweed infestation at public access points, the main river channel, and connecting lakes.

Selected control method

Herbicides - Triclopyr, Imazapyr, Imazamox, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin

Biological Control - Alligatorweed flea beetles (*Agasicles hygrophila)*

Area to which control is to be applied

5 acres of problematic plants throughout river

Rate of control agent to be applied

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 to 0.750 gallons per acre.

Imazamox - 0.250 to 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Penoxsulam - 2 to 6 fluid ounces per acre as foliar application.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

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Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

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

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff

Estimated cost of control operations

$1,500

Potential sources of funding

Horry and Marion counties 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

23. Pee Dee River (Georgetown County)

Problem plant species

Water hyacinth, Phragmites, Common salvinia

Management objective

Through a comprehensive, multi-year approach; reduce water hyacinth and Phragmites populations to the greatest extent possible

Selected control method

Problem Species	Control Agents
Water hyacinth	Diquat, Triclopyr, Imazamox, Imazapyr, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites	Imazapyr, Glyphosate, Imazamox
Common salvinia	Fluridone, Diquat, Penoxsulam, Flumioxazin

Area to which control is to be applied

25 acres of water hyacinth throughout river and adjacent public rice fields.

5 acres of phragmites in the Sandy Island area.

5 acres of common salvina throughout river and adjacent public rice fields

Rate of control agent to be applied

Diquat - 0.500 gallons per acre.
Glyphosate – up to 0.937 gallons per acre
Triclopyr - 0.500 to 0.750 gallons per acre.
Imazapyr - 0.250 to 0.750 gallons per acre.
Imazamox - 0.250 to 0.750 gallons per acre.
Penoxsulam - 2 to 6 fluid ounces per acre as foliar application.
ProcellaCOR-SC - 1-5 PDUs per acre foot as submersed application, 1-2 PDUs per acre foliar application.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 6-12 oz/acre for foliar application to common salvinia.

Method of application of control agent

Helicopter, airboat - 35 acres of herbicide applied to water hyacinth (Sandy Island Area 10 acres). 5 acres of Imazapyr applied to phragmites (Sandy Island Area 5 acres).

Timing and sequence of control application

Diquat, Triclopyr, Imazamox, Imazapyr, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin - to be applied periodically to water hyacinth from May through October.

Imazapyr, Imazamox, Glyphosate - Apply when plants are actively growing.

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator or SCDNR staff

Estimated cost of control operations

$4,000

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Potential sources of funding

Georgetown County 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

24. Prestwood Lake (Darlington County)

Problem plant species

Milfoil, Watershield, Filamentous algae, Water hyacinth

Management objective

Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Aquatic herbicides - selected areas of invasive plant infestation to provide public access.

Problem Species	Control Agent
Filamentous algae	Copper*
Water milfoil	Imazamox, Flumioxazin, 2,4-D, Triclopyr OTF Triclopyr/2,4-D, Diquat, Triploid Grass Carp, ProcellaCOR-SC
Water hyacinth	Imazamox, Triclopyr, Triclopyr/2,4-D, Diquat, ProcellaCOR-SC, Flumioxazin
Watershield	2,4-D, Triclopyr OTF, Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin

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

Area to which control is to be applied

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Use aquatic herbicides to provide control at high priority public access points, such as boat ramps and park sites

Rate of control agent to be applied

Copper* – up to 1 ppm.

Imazamox – up to 0.500 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, submersed application 1 lb/ac foot.

2,4-D - up to 5 gallons per acre.

Triclopyr – up to 1 gallon per acre

Triclopyr/2,4-D - up to 200 pounds per acre.

Triclopyr OTF – 40 pounds per acre

Diquat - 2 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

*Triploid Grass Carp –0 fish

Method of application of control agent

Copper*, Imazamox, 2,4-D, Diquat, ProcellaCOR-SC - application by airboat with adjuvant.

Copper* - subsurface application with appropriate surfactant.

Triclopyr/2,4-D, Triclopyr OTF - Granular broadcast evenly from airboat.

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

Timing and sequence of control application

Agent to be applied when plants are actively growing.

Other control application specifications

Herbicide used only upon notification of all local potable water supply authorities and approval by SCDHEC as needed. Treatment of control area will be conducted in a manner that will not significantly degrade water quality. Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator or SCDNR staff

Estimated cost of control operations

$3,000

Herbicide application - $2,000

Triploid Grass Carp – $1,000

Potential sources of funding

City of Hartsville 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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. Samworth WMA (Georgetown County)

Problem plant species

Water hyacinth, Phragmites, Zizaniopsis, Common salvinia

Management objective

Through a comprehensive, multi-year approach; reduce water hyacinth and Phragmites populations to the greatest extent possible

Selected control method

Problem Species	Control Agents
Water hyacinth	Diquat, Triclopyr, Imazamox, Imazapyr, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites, Zizaniopsis	Imazapyr, Imazamox, Glyphosate
Common salvinia	Fluridone, Diquat, Penoxsulam, Flumioxazin

Area to which control is to be applied

50 acres of water hyacinth throughout river and adjacent public rice fields.

10 acres of phragmites and Zizaniopsis in the Sandy Island area and Samworth WMA.

Rate of control agent to be applied

Diquat - 0.500 gallons per acre.
Triclopyr - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazapyr - 0.250 to 0.750 gallons per acre.
Imazamox - 0.250 to 0.750 gallons per acre.
Penoxsulam - 2 to 6 fluid ounces per acre as foliar application.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Fluridone AS - 10 to 30 ppb.

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Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 6-12 oz/acre for foliar application to common salvinia.

Method of application of control agent

Helicopter, airboat - 50 acres of herbicide applied to water hyacinth and common salvinia. 10 acres of Imazapyr, Glyphosate applied to phragmites, Zizaniopsis.

Timing and sequence of control application

Diquat, Triclopyr, Imazamox, Imazapyr, Glyphosate, Penoxsulam, ProcellaCOR-SC - to be applied periodically to water hyacinth from May through October.

Imazapyr, Imazamox, Glyphosate - Apply when plants are actively growing.

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator or SCDNR staff

Estimated cost of control operations

$10,000

Potential sources of funding

Samworth WMA 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

26. Santee Coastal Reserve WMA (Charleston and Georgetown Counties)

Problem plant species

Phragmites

Management objective

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Through a comprehensive, multi-year approach, reduce Phragmites populations to the greatest extent possible throughout the Santee Coastal Reserve.

Selected control method

Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

3,000 acres of phragmites throughout the rice fields.

Rate of control agent to be applied

Imazapyr - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazamox - 0.500 to 0.750 gallons per acre.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

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. Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff

Estimated cost of control operations

$400,000

Potential sources of funding

Santee Coastal Reserve 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

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27. Santee Delta WMA (Georgetown County)

Problem plant species

Phragmites

Management objective

Through a comprehensive, multi-year approach, reduce Phragmites populations to the greatest extent possible.

Selected control method

Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

100 acres of Phragmites throughout the rice fields.

Rate of control agent to be applied

Imazapyr - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre
Imazamox - 0.500 to 0.750 gallons per acre.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

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. Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff

Estimated cost of control operations

$14,000

Potential sources of funding

Santee Coastal Reserve 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using federal and state approved control methods.

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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.

28. Waccamaw River (Horry County)

Problem plant species

Water hyacinth, Phragmites, Common salvinia

Management objective

Through a comprehensive, multi-year approach, reduce water hyacinth, common salvinia and Phragmites populations to the greatest extent possible.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agents
Water hyacinth	Diquat, Triclopyr, Imazamox, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites	Imazapyr, Imazamox, Glyphosate
Common salvinia, Duckweed	Fluridone, Diquat, Penoxsulam, Flumioxazin

Area to which control is to be applied

200 acres throughout river system where needed.

Rate of control agent to be applied

Diquat - 0.500 gallons per acre.
Triclopyr - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazapyr - 0.500 to 0.750 gallons per acre.
Imazamox - 0.500 to 0.750 gallons per acre.
Penoxsulam - 2 to 6 fluid ounces per acre as foliar application.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 6-12 oz/acre for foliar application to common salvinia and duckweed.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Herbicide to be applied to water hyacinth periodically from late May through November.

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Other control application specifications

Herbicide used only upon approval by SCDHEC. Treatment of control area will be conducted in a manner that will not significantly degrade water quality.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

$ 25,000

Potential sources of funding

Horry County 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

29. Yawkey Wildlife Center (Georgetown County)

Problem plant species

Phragmites, Cattails, Cutgrass

Management objective

Through a comprehensive, multi-year approach, reduce Phragmites populations to the greatest extent possible.

Selected control method

Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

25 acres of Phragmites, cattails, and cutgrass throughout the ricefields.

Rate of control agent to be applied

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Imazapyr - 0.500 to 0.750 gallons pints per acre.
Imazamox - 0.500 to 0.750 gallons per acre.
Glyphosate - up to 0.937 gallons per acre

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

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.

Entity to apply control agent

Commercial applicator, SCDNR staff

Estimated cost of control operations

$4,000

Potential sources of funding

Yawkey Foundation 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

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Santee Cooper Lakes

30. Lake Marion (Calhoun, Clarendon, Orangeburg, Berkeley, and Sumter Counties)

31. Lake Moultrie (Berkeley County)

NOTE: The following management plan applies to both lakes.

Problem plant species

Hydrilla, Brazilian elodea, Alligatorweed, Water hyacinth, Water primrose, Crested floating heart, Giant salvinia, Common salvinia, **Giant cutgrass, ** algae **Cattail, **Fanwort, **Watermilfoil, **Waterwillow

**Species are only treated when they impede access or navigation in priority use areas, or when they pose a threat to drinking water quality.

Management objectives

Foster a diverse aquatic plant community through selective treatment of nuisance aquatic vegetation (to avoid adverse impacts to existing native plant species) and the introduction of desirable native plant species when and where appropriate.

Control hydrilla growth throughout the main lakes and sub-impoundments to minimize its spread within the lakes, help prevent its spread to adjacent public waters, and minimize adverse impacts to native plant populations, electric power generation, agricultural irrigation withdrawals, public drinking water withdrawals, and public use and access.

Control water hyacinth populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake to minimize adverse impacts to native plant populations, agricultural irrigation withdrawals, public drinking water withdrawals, and public use and access.

Control Crested floating heart populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake to minimize adverse impacts to native plant populations, agricultural irrigation withdrawals, public drinking water withdrawals, and public use and access.

Control and eradicate giant salvinia populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake to minimize adverse impacts to native plant populations, agricultural irrigation withdrawals, public drinking water withdrawals, and public use and access.

Reduce giant cutgrass populations throughout the lakes, especially in Wildlife Management Areas and upper Lake Marion, to enhance wildlife habitat and hunting opportunities.

Reduce crested floating heart, fragrant waterlily, American lotus and giant cutgrass populations throughout Wildlife Management Areas to enhance wildlife habitat and hunting opportunities.

Reduce other nuisance aquatic vegetation in priority use areas, such as electric power generation facilities, public drinking water intakes, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas in the main lake and sub impoundments.

Selected control method

Problem Species	Control Agents
Hydrilla	Endothall, Fluridone, Copper*, Komeen Crystal, ProcellaCOR-SC, Triploid grass carp
Algae	Copper*, Endothall, peroxygen compounds
Water hyacinth	Diquat, Triclopyr, Imazamox, 2,4-d, ProcellaCOR-SC
Giant Salvinia	Diquat, Triclopyr, 2,4-d, Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsul furon-Methyl (Special Local Need Registration), salvinia weevils (*Cyrtobagous salviniae)*
Fanwort	Flumioxazin, Fluridone
Coontail, slender naiad, slender pondweed	Endothall, Fluridone, Diquat, Flumioxazin
Water primrose, alligatorweed, giant cutgrass	Glyphosate, Imazapyr, Triclopyr, Imazamox, Flumioxazin, ProcellaCOR-SC
Crested floating heart	Endothall, Imazamox / Glyphosate, Triclopyr/2,4-D, Fluridone, ProcellaCOR-SC, Flumioxazin

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

Area to which control is to be applied

Water hyacinth - Approximately 500 acres throughout the system but mostly in upper Lake Marion above I-95 Bridge.

Hydrilla - Release triploid grass carp near areas of the lake system with the greatest hydrilla growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

Crested floating heart - Approximately 2,000 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), and State and Federal wildlife management areas.

Giant cutgrass - Approximately 500 acres along shoreline areas throughout lake system, as well as within State and Federal wildlife management areas.

Other target species - Approximately 600+ 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.

Giant and Common Salvinia- Approximately 2,500 acres throughout the system, focusing on the densest populations above I-95 bridge.

Isolated Sub-Impoundments:

Fountain Lake Impoundment (53 acres), Dean's Swamp Impoundment (100 acre), Church Branch Impoundment (80 acres)

The general management strategy is to transition from hydrilla dominated plant communities to ones dominated by a diversity of 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 SCDNR staffs.

Fountain Lake Impoundment - 600 triploid grass carp
Dean's Swamp Impoundment - 1150 triploid grass carp
Church Branch Impoundment –860 triploid grass carp

Methods and goals will be 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.

Rate of control agents to be applied

Endothall - 3.0-4.0 ppm (full water column treatment)
Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Triclopyr - 0.375 to 0.750 gallons per acre for emergent species, per label for submersed plants.
Imazapyr - 0.250 to 0.750 gallons per acre.
Fluridone AS - 10 to 30 ppb.
*Copper- up to 1 ppm.
Glyphosate - up to 1.25 gallons per acre.
Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).
Imazamox - 0.250 to 1.00 gallons per acre.
Triclopyr/2,4-D – up to 320 pounds per acre.

Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre
Komeen Crystal - 0.5-1.0 ppm

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.
Flumioxazin - 6-12 oz. per surface acre (not to exceed 400ppb)

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. The Aquatic Plant Management Council, with recommendations from SCDNR and Santee Cooper staff, agrees that we should return to a true maintenance stocking rate on the system, based on current observations of collected survey data, historical relevant data sets, and triploid grass carp surveys conducted jointly by SCDNR and Santee Cooper staff. The estimated grass carp population in 2022 was 34,450. Recent data indicates young grass carp are robust and in good condition, meaning that aquatic vegetation is abundant enough to keep the population well fed. This information supports maintaining the grass carp population near its current level, and annual stocking that offsets mortality is needed to accomplish this goal. A reduced rate stocking of 10,000 grass carp has occurred annually since 2017, and this has moderated the decline in the grass carp population and diversified the age structure of the population. However, the Santee Cooper staff has seen an increase in hydrilla in 2022. Stocking 12,000sterile grass carp in the spring of 2023 will replace the fish lost annually due to normal mortality and add almost an additional 1,000 fish to the system. While the total of 35,426 fish is slightly above the ratio of 1 grass carp per 5 surface acres of water (1:5 ratio), SCDNR and Santee Cooper staff believe this number will prove beneficial in slowing the expansion of hydrilla while also allowing for the continued expansion of native submerged vegetation, especially if the lake waters remain clear.

Annual data should include estimates of hydrilla acreage, estimates of native vegetation acreage, and triploid grass carp surveys. Grass carp surveys should function to further assess the relative condition of the population and aid in yearly stocking decisions. All efforts will be made to

determine an appropriate balance in the Santee Cooper system by maintaining control of hydrilla while promoting beneficial native vegetation. Herbicide treatments may be utilized to provide temporary control of hydrilla when necessary. Changes to the strategy will be implemented if survey results, regrowth, or habitat loss warrant.

Method of application of control agents

Endothall, Copper, Fluridone, ProcellaCOR-SC, Komeen Crystal – Granular application, subsurface application by airboat or surface application by helicopter.

Diquat, ProcellaCOR-SC - (water hyacinth) spray on surface of foliage using handgun from airboat or by helicopter with appropriate surfactant; (submersed plants) subsurface application.

Salvinia weevil- Using industry standards for stocking while targeting areas of the lake with the greatest salvinia growth.

Triclopyr, Glyphosate, Imazapyr, Imazamox, ProcellaCOR-SC - spray on surface of foliage with appropriate surfactant.

Triclopyr/2,4-D – Distribute granular product evenly over the surface at the prescribed rate.

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

Timing and sequence of control application

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

Triploid grass carp – 12,000, to be released as soon as possible in 2023. If available, all sterile grass carp will be a minimum of 10-12 inches in length. Sterile grass carp shipments for the Santee Cooper Lakes will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

Salvinia weevils- released as early as possible in 2023.

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.

Hydrilla, Giant Salvinia, Water hyacinth and Crested floating heart treatments will 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. Areas inaccessible by boat or large acreages will be treated aerially. Frequent treatments in these areas will be necessary to meet management objectives.

Entity to apply control agents

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

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

Estimated cost of control operations

$1,600,000

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 2023 and available funds provided by South Carolina Public Service Authority.

Potential sources of funding

S.C. Public Service Authority 100%

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 a minimum of 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 using federal and state approved control methods.

c) A long-term integrated adaptive 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 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.

Santee Cooper Area WMA's

32. Hatchery WMA (Includes Pond1 adjacent to old ramp) (Berkeley County)

Problem plant species

Crested Floating Heart, Cattails, Hydrilla, Water Primrose, Giant salvinia, Common salvinia, Alligatorweed

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem Species	Control Agents
Crested Floating Heart	Triclopyr, Imazamox, Flumioxazin, ProcellaCOR-SC
Cattails	Imazapyr, Glyphosate, Imazamox
Hydrilla	Fluridone, ProcellaCOR-SC
Water Primrose, Alligatorweed	Imazapyr, Glyphosate, Triclopyr, Imazamox, ProcellaCOR-SC, Flumioxazin
Giant Salvinia	Diquat, Triclopyr, 2,4-d Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsul furon-Methyl (Special Local Need Registration), salvinia weevils (*Cyrtobagous salviniae)*

Area to which control is to be applied

70 acres (Lake Moultrie), 3 acres (Pond 1)

Rate of control agent to be applied

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Triclopyr - 0.375 to 0.750 gallons per acre for emergent species, per label for submersed plants.
Triclopyr/2,4-D – 200 lbs per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazamox – up to 1 gallon per acre.
Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.
Fluridone – up to 45 ppb
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)

Method of application of control agent

Foliar application using appropriate surfactant from airboat. Granular herbicides spread evenly using appropriate rate. Subsurface application using appropriate rate

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

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Commercial applicator or SCDNR staff.

Estimated cost of control operations

$20,000

Potential sources of funding

Hatchery WMA 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

33. Hickory Top WMA (and Greentree Reservoir) (Clarendon County)

Problem plant species

Hyacinth, Giant Salvinia, Common salvinia, Cutgrass, Cattails, Misc. Woody Species

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem Species	Control Agents
Water hyacinth	Diquat, Triclopyr, Imazamox, 2,4-d, ProcellaCOR-SC
Giant Salvinia	Diquat, Triclopyr, 2,4-d, Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsulfuron-Methyl (Special Local Need Registration), salvinia weevils (*Cyrtobagous salviniae)*
Cutgrass, Cattails, Misc. Woody Species	Imazapyr, Glyphosate, Imazamox

Area to which control is to be applied

30 acres

Rate of control agent to be applied

Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazamox – up to 1.000 gallon per acre.

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Triclopyr - 0.375 to 0.750 gallons per acre for emergent species, per label for submersed plants.
Triclopyr/2,4-D – up to 320 pounds per acre.
Fluridone AS - 10 to 30 ppb.
Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).
Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)

Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.
Flumioxazin - 6-12 oz. per surface acre (not to exceed 400ppb)

Method of application of control agent

Foliar application using appropriate surfactant from airboat, ATV, or helicopter.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator or SCDNR staff.

Estimated cost of control operations

$8,000

Potential sources of funding

Hickory Top WMA 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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

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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. Potato Creek WMA (Clarendon County)

Problem plant species

Hydrilla, Water Hyacinth, Water Primrose, Bladderwort, Cutgrass, Lotus, Giant salvinia, Common salvinia

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem Species	Control Agents
Hydrilla, Bladderwort, Lotus	Fluridone, ProcellaCOR-SC
Water Hyacinth	Triclopyr, Flumioxazin
Water Primrose, Lotus	Triclopyr, Imazapyr, Glyphosate, Imazamox, Flumioxazin
Cattails	Imazapyr, Glyphosate, Imazamox
Giant Salvinia	Diquat, Triclopyr, 2,4-d, Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsulfuron-Methyl (Special Local Need Registration), salvinia weevils (Cyrtobagous salviniae)

Area to which control is to be applied

20 acres

Rate of control agent to be applied

Fluridone – up to 45 ppb.
Triclopyr - 0.500 – 0.750 gallons per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazamox – up to 1.000 gallon per acre.

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)

Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

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Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Foliar application using appropriate surfactant from airboat. Subsurface application spread evenly using appropriate rate.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator or SCDNR staff.

Estimated cost of control operations

$6,000

Potential sources of funding

Potato Creek WMA 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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

35. Sandy Beach WMA (Berkeley County)

Problem plant species

Crested Floating Heart, Cattails, Cutgrass, Lotus, Water Primrose, Misc. Woody Species, Hydrilla, Giant salvinia, Common salvinia

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem Species	Control Agents
Crested Floating Heart	Imazamox, Flumioxazin, ProcellaCOR-SC
Cattails, Cutgrass,	Imazapyr, Glyphosate, Imazamox
Misc. Woody Species	
Lotus, Water Primrose	Triclopyr, 2,4-d, Flumioxazin
Hydrilla	Fluridone, ProcellaCOR-SC (ditches within WMA)
Giant Salvinia	Diquat, Triclopyr, 2,4-d Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsul furon-Methyl (Special Local Need Registration), salvinia weevils (*Cyrtobagous salviniae)*

Area to which control is to be applied

40 acres

Rate of control agent to be applied

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Triclopyr – 0.500 – 0.750 gallons per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazamox – up to 1.000 gallon per acre.
Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, up to 0.750 lbs per acre for submersed application.
2,4-d – up to 1.000 gallon per acre.
Fluridone – up to 45 ppb.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)
Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre

Method of application of control agent

Foliar application using appropriate surfactant from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

$10,000

Potential sources of funding

Sandy Beach WMA 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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

36. Santee Cooper WMA (Orangeburg County)

Problem plant species

Crested Floating Heart, Cattails, Cutgrass, Lotus, Water Primrose, Misc. Woody Species, Water lily, Giant salvinia, Common salvinia

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agents
Crested Floating Heart, Water lily	Imazamox, Flumioxazin, ProcellaCOR-SC
Cattails, Cutgrass, Misc. Woody Species, Water lily	Imazapyr, Glyphosate, Imazamox
Lotus, Water Primrose	Triclopyr, 2,4-d, Flumioxazin
Giant Salvinia	Diquat, Triclopyr, 2,4-d Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsul furon-Methyl (Special Local Need Registration), salvinia weevils (*Cyrtobagous salviniae)*

Area to which control is to be applied

150 acres on multiple waterbodies based on priority.

Rate of control agent to be applied

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Triclopyr – 0.500 – 0.750 gallons per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazamox – up to 1.000 gallon per acre.
Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, submersed application up to 0.750 lbs per acre.
2,4-d – up to 1.000 gallon per acre.
Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Carfentrazone – 4 to 8 oz per acre

Penoxsulam – 4 oz per acre

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agent

Foliar application using appropriate surfactant from airboat or helicopter

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

$25,000

Potential sources of funding

Santee Cooper WMA 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

South Carolina Department of Parks, Recreation and Tourism
State Park Lakes (SCPRT)

37. Aiken State Park (Aiken County)

Problem plant species

Floating Heart, Cattails, Lemon Bacopa, Watershield

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem Species	Control Agents
Floating Heart	Triclopyr/2,4-D, ProcellaCOR-SC
Cattails	Imazapyr, Glyphosate
Watershield	2,4-D, Triclopyr OTF, Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin
Lemon Bacopa	ProcellaCOR-SC

Area to which control is to be applied

10 acres in three lakes

Rate of control agent to be applied

Triclopyr/2,4-D – 200 lbs per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agent

Foliar application using appropriate surfactant from airboat. Granular herbicides spread evenly using appropriate rate.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

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Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$6,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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. Barnwell State Park (Swimming Lake) (Barnwell County)

Problem plant species

Waterlily, Cattails, Pondweed, Maidencane

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem Species	Control Agents
Waterlily, Pondweed	Triclopyr/2,4-D, ProcellaCOR-SC
Cattails, Maidencane	Imazapyr, Glyphosate

Area to which control is to be applied

4 acres in swimming lake.
3 acres in upper lake.

Rate of control agent to be applied

Triclopyr/2,4-D – 200 lbs per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agent

Foliar application using appropriate surfactant from airboat. Granular herbicides spread evenly using appropriate rate.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$5,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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. Charles Towne Landing State Park (Charleston County)

Problem plant species

Duckweed, Alligatorweed, Pennywort, Cyanobacteria, Algae

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem species	Control Agent
Duckweed	Fluridone, Flumioxazin, Penoxsulam
Alligatorweed	Triclopyr, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin
Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC
Algae (planktonic)	*Copper

Area to which control is to be applied

Fluridone, Penoxsulam - 3 acres

Triclopyr, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin - 4 acres

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

Rate of control agents to be applied

Fluridone - 0.125 gallons per acre.
Imazapyr – 0.250 – 0.750 gallons per acre.
Imazamox – 0.500 – 0.750 gallons per acre.
Glyphosate - up to 0.937 gallons per acre.
Renovate - 0.500 to 0.750 gallons per acre.
Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, submersed application up to 0.09375 gallons per acre.
Penoxsulam - 2 to 12 fl oz per acre.

*Copper- up to 1 ppm.

Method of application of control agents

Fluridone, Penoxsulam - Apply subsurface throughout lake

Glyphosate, Flumioxazin, Renovate - Spray on surface of foliage with appropriate surfactant

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Timing and sequence of control application.

Herbicides to be applied when plants are actively growing

Other control application specifications

None

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$4,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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. Cheraw State Park (Lake Juniper) (Chesterfield County)

Problem plant species

Floating heart, Waterlily, Spatterdock, Watermilfoil

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem Species	Control Agents
Floating heart, Waterlily, Spatterdock, Watermilfoil	Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin
Floating heart, Spatterdock	Imazapyr, Glyphosate, Flumioxazin

Area to which control is to be applied

10 acres along boardwalk, main swimming area, and swimming areas at Camps Forest & Juniper

Rate of control agent to be applied

Triclopyr/2,4-D – 200 lbs per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

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Method of application of control agent

Foliar application using appropriate surfactant from airboat. Granular herbicides spread evenly using appropriate rate.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$6,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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. Croft State Park (Spartanburg County)

Problem plant species

Hydrilla

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Hydrilla – Triploid Grass Carp

Area to which control is to be applied

50 acres

Rate of control agent to be applied

Triploid Grass Carp – 125 fish

Method of application of control agent

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

Timing and sequence of control application

Triploid grass carp to be released as soon as possible in the spring of 2023 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

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.

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

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator contracted and monitored by SCPRT.

Estimated cost of control operations

$1,250

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

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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. H. Cooper Black State Recreation Area (Chesterfield County)

Problem plant species

Waterlily, Watershield, Spatterdock

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

2,4-D, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

2 acres in lake.

Rate of control agent to be applied

Imazapyr – 0.250 – 0.750 gallons per acre.
Imazamox – 0.500 – 0.750 gallons per acre.
Glyphosate - up to 0.937 gallons per acre.
2,4-D – up to 5 gallons per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Subsurface injection from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$500

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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. Hunting Island State Park (Beaufort County)

Problem plant species

Duckweed, Parrot's feather

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Fluridone, Flumioxazin, Penoxsulam, ProcellaCOR-SC

Area to which control is to be applied

1 acre adjacent to the parks use area

Rate of control agent to be applied

Fluridone - 0.125 gallons per acre.
Flumioxazin –2 oz/ac as an efficacy booster for foliar application, 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.
Penoxsulam - 2 to 12 fl oz per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant or subsurface injection broadcast evenly from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

DRAFT

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$1,200

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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. Huntington Beach State Park (Georgetown County)

Problem plant species

Phragmites, Cutgrass, Cattails

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

20 acres in 3 different lakes.

Rate of control agent to be applied

Imazapyr - 0.500 – 0.750 gallons per acre.

Imazamox - 0.500 – 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Method of application of control agent

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Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

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

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$6,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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 using 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. Kings Mountain State Park - Crawford Lake, Lake York (York County)

Problem plant species

Slender naiad, Misc. species

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Endothall
Flumioxazin
Triploid Grass Carp

Area to which control is to be applied

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4 acres in swimming and paddle boat area, Crawford Lake
Entirety of Lake York

Rate of control agent to be applied

Endothall - Four (4) gallons per acre.
Flumioxazin – 1.6 pounds per acre foot.
Triploid Carp – 15 fish per vegetated acre.

Method of application of control agent

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

Timing and sequence of control application

Apply in May or June when naiad growth is initiated.
Triploid grass carp to be released as soon as possible in the spring of 2023 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

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

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$2,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

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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.

46. Lee State Park (Lee County)

Problem plant species

Watermilfoil

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Triclopyr/2,4-D, ProcellaCOR-SC

Area to which control is to be applied

3 acres adjacent to the park's day use area, along the park dam and adjacent to the campground

Rate of control agent to be applied

Triclopyr/2,4-D - 200 lbs per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$1,500

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

Long term management strategy

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a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

47. Little Pee Dee State Park (Dillon County)

Problem plant species

Spatterdock, Water lily, Watershield, Spikerush

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Triclopyr/2,4-D-, Imazamox, Glyphosate, Imazapyr, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

15 acres adjacent to the park's day use area, along the park dam and adjacent to the campground

Rate of control agent to be applied

Triclopyr/2,4-D - 200 lbs per acre.
Imazamox – 0.500 – 0.750 gallons per acre.
Imazapyr - 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

DRAFT

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$3,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

48. N.R. Goodale State Park (Kershaw County)

Problem plant species

Waterlily, Watershield, Bladderwort

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

2,4-D, Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

20 acres in lake.

Rate of control agent to be applied

2,4-D - Up to 5 gallons per acre.
Triclopyr/2,4-D – 200 lbs per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$10,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

49. Paris Mountain State Park (Greenville County)

Problem plant species

Slender Naiad, Watershield, Pondweed

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Triclopyr/2,4-D, Imazamox, Glyphosate, Imazapyr

Area to which control is to be applied

Lake Placid: slender naiad 5 acres - Treat with grass carp

Lake Buckhorn: Watershield, pondweed treat 1 acre

Rate of control agent to be applied

Triploid Grass Carp – 15 fish per vegetated acre

Triclopyr/2,4-D - 200 lbs per acre.

Method of application of control agent

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

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

Timing and sequence of control application

Triploid grass carp to be released as soon as possible in the spring of 2023 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Herbicide - Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment. 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.

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

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$1,300

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using federal and state approved control methods.

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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.

50. Poinsett State Park (Sumter County)

Problem plant species

Spatterdock, Cattails, Water milfoil

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Imazapyr, Glyphosate, Imazamox, Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

3 acres in swimming and bank fishing portions of the lake.

Rate of control agent to be applied

Imazamox - Up to 1 gallon per acre.
Imazapyr - Up to 0.750 gallons per acre.
Glyphosate - Up to 0.750 gallons per acre.
Triclopyr/2,4-D – 200 lbs per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

DRAFT

$1,500

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

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 using 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.

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51. Sesquicentennial State Park (Richland County)

Problem plant species

Waterlily, Watershield, Fanwort, Water milfoil

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

2,4-D, Triclopyr/2,4-D ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

5 acres in swimming and bank fishing portions of the lake.

Rate of control agent to be applied

2,4-D - Up to 5 gallons per acre.
Triclopyr/2,4-D – 200 lbs per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.
Flumioxazin –2 oz/ac as an efficacy booster for foliar application, submersed application 1-3 pounds per acre foot.

Komeen – 2 gallons per acre.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

$3,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to $30,000 cost share per waterbody)

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

DRAFT

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 using 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.

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

52. Lake Cherokee (Cherokee County)

Problem plant species

Water primrose, Chara, Hydrilla

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem species	Control Agent
Water Primrose	Triclopyr, Flumioxazin
Chara	Triploid grass carp, Copper*, Fluridone, ProcellaCOR-SC
Hydrilla	Triploid grass carp, Komeen/Diquat, ProcellaCOR-SC

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

Area to which control is to be applied

Water primrose - 5 acres in lake, two (2) times per year.

Release triploid grass carp during late spring in close proximity to areas of the lake with the greatest problematic growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

Rate of control agent to be applied

Triclopyr - 0.500 – 0.750 gallons per acre.

Komeen/Diquat - 4 gallons per acre / 2 gallons per acre.

Copper* - up to 1 ppm

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Triploid Grass Carp – 10 fish per vegetated acre.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant. Submersed vegetation should be treated using either a surface spray or trail hoses depending on the herbicide used.

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

53. Lake Edwin Johnson (Spartanburg County)

Problem plant species

Water primrose, Hydrilla, Pondweed

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Problem species	Control Agent
Water Primrose	Triclopyr, Flumioxazin

Pondweed	Komeen/Diquat
Hydrilla	Triploid Grass Carp, Komeen/Diquat, ProcellaCOR-SC

Rate of control agent to be applied

Triclopyr - 0.500 – 0.750 gallons per acre.

Komeen/Diquat - 4 gallons per acre / 2 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Triploid Grass Carp – 10 fish per vegetated acre.

Area to which control is to be applied

Primrose - 7 acres in lake two (2) times per year.

Hydrilla/Pondweed - 4 acres in lake two (2) times per year.

If conditions warrant, release triploid grass carp during late spring in close proximity to areas of the lake with the greatest problematic growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

Method of application of control agent

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.

Timing and sequence of control application

Apply when plants are actively growing.
Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

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.

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

Entity to apply control agent

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

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SCDNR 0%

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

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 using 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.

54. Jonesville Reservoir (Union County)

Problem plant species

Water primrose, Pondweed

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Triclopyr, Glyphosate, Flumioxazin

Area to which control is to be applied

10 acres in lake.

Rate of control agent to be applied

Triclopyr - 0.500 – 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

DRAFT

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

55. Mountain Lakes (Chester County)

Problem plant species

Water primrose, Alligatorweed, Parrotfeather

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Triclopyr, Glyphosate, Flumioxazin

Area to which control is to be applied

5 acres in lake.

Rate of control agent to be applied

Triclopyr - 0.500 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

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Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

56. Lancaster Reservoir (Lancaster County)

Problem plant species

Water primrose, Alligatorweed

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Triclopyr, Glyphosate, Flumioxazin

Area to which control is to be applied

8 acres in lake.

Rate of control agent to be applied

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Triclopyr - 0.500 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

57. Sunrise Lake (Lancaster County)

Problem plant species

Pondweed

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

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Selected control method

Glyphosate

Area to which control is to be applied

15 acres in lake.

Rate of control agent to be applied

Glyphosate - up to 0.937 gallons per acre.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

58. Lake Ashwood (Lee County)

Problem plant species

Waterlily

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

<5 acres of spotty coverage

Rate of control agent to be applied

Triclopyr/2,4-D - 200 pounds per acre

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

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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.

59. Lake Edgar Brown (Barnwell County)

Problem plant species

Water primrose, Coontail, water hyacinth

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities. Control efforts will extend into the Turkey Creek area adjacent to the Barnwell Hatchery.

Selected control method

Water Primrose - Imazapyr, Glyphosate, Triclopyr, Flumioxazin

Water Hyacinth - Imazapyr, Glyphosate, Triclopyr, Flumioxazin, ProcellaCOR-SC

Coontail - Diquat

Area to which control is to be applied

60 acres in lake.

Rate of control agent to be applied

Imazapyr - up to 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Triclopyr – 0.500 - 0.750 gallons per acre.

ProcellaCOR-SC – 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, submersed application 1 lb/ac foot.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

Estimated cost of control operations

$*

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Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

60. Lake George Warren (Hampton County)

Problem plant species

Water primrose, Cattails, Coontail, Naiad

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Glyphosate, Imazapyr, Triploid Grass Carp

Area to which control is to be applied

20 acres in lake.

Rate of control agent to be applied

Glyphosate - up to 0.937 gallons per acre.

Imazapyr - 0.250 - 0.500 gals/ac

If conditions warrant, release triploid grass carp during late spring near the areas of the lake with the greatest problematic growth and use herbicide applications to provide immediate short-term control of localized growth in those areas. For 2023, the lake manager has requested 400 carp to be stocked.

Method of application of control agent

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.

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Timing and sequence of control application

Apply when plants are actively growing.
Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

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.

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

Entity to apply control agent

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

61. Lake Thicketty (Cherokee County)

Problem plant species

Hydrilla

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Triploid grass carp, Copper*

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

Area to which control is to be applied

5 acres in lake.

Rate of control agent to be applied

Approximately 5 acres in priority areas such as, public access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas. 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. 10 fish per vegetated acre.

Copper* - up to 1 ppm

Glyphosate- up to 1 gallon per acre.

Method of application of control agents

Copper*- subsurface application by airboat.

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

Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

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

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.

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

Entity to apply control agent

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

62. Dargan's Pond (Darlington County)

Problem plant species

Pondweed

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Glyphosate, Triploid Grass Carp

Area to which control is to be applied

15 acres in lake.

Rate of control agent to be applied

Glyphosate - up to 0.937 gallons per acre.

Triploid Grass Carp – 10 fish per vegetated acre

Method of application of control agents

Glyphosate - subsurface application by airboat.

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

Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

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

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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.

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

Entity to apply control agent

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

63. Lake Paul Wallace (Marlboro County)

Problem plant species

Hydrilla, Naiad

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Fluridone, Triploid Grass Carp

Area to which control is to be applied

200 acres in lake.

Rate of control agent to be applied

Fluridone – up to 30 ppb in treatment area

Triploid Grass Carp – 10 fish per vegetated acre

Method of application of control agents

Fluridone – Granular or subsurface application by airboat.

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

Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

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

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.

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

Entity to apply control agent

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using federal and state approved control methods.

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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.

64. Draper WMA Lakes (York County)

Problem plant species

Naiad

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

Selected control method

Fluridone, Triploid Grass Carp

Area to which control is to be applied

5 acres in 3 lakes.

Rate of control agent to be applied

Fluridone – up to 30 ppb in treatment area

Triploid Grass Carp – 10 fish per vegetated acre

Method of application of control agents

Fluridone – Granular or subsurface application by airboat.

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

Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

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

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.

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

Entity to apply control agent

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Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

Estimated cost of control operations

$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

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 using 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.

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South Carolina Border Lakes

Approval for Lake Wylie was accomplished by SCDNR staff in conjunction with staff from North Carolina Natural Resource agencies, Duke Energy staff, and the Lake Wylie Marine Commission.

65. Lake Wylie (York County, SC; Gaston and Mecklenburg County, NC)

Problem plant species

Hydrilla, Alligatorweed

Management objective

Reduce hydrilla growth lake-wide and prevent the spread of hydrilla to other systems.

Achieve measurable reduction of hydrilla within two or three years and once hydrilla has been controlled, prevent it from reestablishing.

Control hydrilla by using a low enough density of triploid grass carp that potentially other forms of native vegetation can become established.

Selected control method

Triploid (sterile) grass carp used lake wide for long-term control.

Registered and properly applied herbicides should be used for initial suppression and by homeowners for spot treatments.

Area to which control is to be applied

Triploid grass carp will be released from boat ramps near the greatest concentration of hydrilla.

Rate of control agent to be applied

Recommendation for supplemental grass carp stocking in the spring of 2023. Because of the loss of sterile grass carp to mortality (disease, predation, fishing, bow hunting, etc.) we recommend 576 grass carp, be stocked in the lake during the spring of 2023. This is a supplemental stocking of 32% (average of national grass carp annual mortality curves, Phil Kirk pers. com.) of the original 1800 grass carp introduced in 2009. Duke Energy will continue to monitor the effectiveness of the introduced fish.

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

Method of application of control agents

Herbicide- subsurface application by airboat.

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

Timing and sequence of control application

Herbicide applications - To be applied when plants are actively growing.

Triploid grass carp to be released as soon as possible in the spring of 2023 (March-May) and yearly at the same time for at least the next three years. RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS. After hydrilla has been controlled, follow up stocking,

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currently estimated at maintaining triploid grass carp stocking densities of approximately 1 fish per every 8 surface acres of Lake Wylie will be continued using mortality estimates derived from the population and population models.

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.

Triploid grass carp will be a minimum of 12 inches total length. All shipments will be examined for condition and length specified in the contract with the vendor.

Estimated cost of control operations

All work to be done in North Carolina Section of the lake.

Entity to apply control agent

Herbicide application - Commercial applicator or Duke Energy

Drawdown - Duke Energy

Potential sources of funding

Duke Energy 100% - All control work at present time is in North Carolina.

Long term management strategy

a) Manage hydrilla's potential adverse impacts to the Lake Wylie ecosystem using primarily triploid grass carp after initial suppression using approved herbicides.

b) Maintain or enhance native aquatic vegetation by maintaining the lowest possible stocking rates of triploid grass carp, especially once major stands of hydrilla have been controlled.

c) Seek to prevent further introduction and distribution of problem aquatic species through public education and enforcement of existing laws and regulations.

d) Periodically revise management plans and strategy as new environmental data becomes available.

e) Plan for long-term control of hydrilla, once control has been achieved, by maintaining very low densities of triploid grass carp. Stockings will be determined from mortality estimates generated from triploid grass carp collected on Lake Wylie and the use of age-structure population models developed for fisheries.

66. Lake Thurmond (South Carolina - Georgia)

Lake Thurmond is a U.S. Army Corps of Engineers (USACOE) lake which borders South Carolina and Georgia. The control and maintenance issues associated with this lake fall under the jurisdiction of the USACOE. The USACOE coordinates with both Georgia and SC natural resource agencies on a variety of issues that affect natural resource management. A consensus has not been reached by the entities involved on management activities for invasive species, specifically hydrilla. Ongoing meetings and correspondence will continue on this and many other subjects.

NOTE: The following description is not binding for management activities but represents the Aquatic Plant Management Council's opinion on managing hydrilla in Lake Thurmond.

Problem plant species

Hydrilla

Management objective

Reduce hydrilla growth lake-wide and prevent the spread of hydrilla to other systems.

Achieve measurable reduction of hydrilla within two or three years and once hydrilla has been controlled, prevent it from reestablishing.

Control hydrilla by using a low enough density of triploid grass carp that potentially other forms of native vegetation can become established.

Selected control method

Triploid (sterile) grass carp used lake wide for long-term control.

Registered and properly applied herbicides should be used for initial suppression and by home-owners for spot treatments.

Area to which control is to be applied

Triploid grass carp will be released from boat ramps near the greatest concentration of hydrilla.

Rate of control agent to be applied

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

Drawdown - To the greatest extent possible within project limits.

Method of application of control agents

Herbicide- subsurface application by airboat.

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

Drawdown - Draw lake down

Timing and sequence of control application

Herbicide applications - To be applied when plants are actively growing.

Triploid grass carp to be released as soon as possible. RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS. After hydrilla has been controlled, follow up stocking, currently estimated at maintaining triploid grass carp stocking densities of approximately 1 fish per every 8 surface acres of Lake Thurmond will be continued using mortality estimates derived from the population and population models.

Drawdown - Drawdown lake from October through February.

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.

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Triploid grass carp will be a minimum of 12 inches total length. All shipments will be examined for condition and length specified in the contract with the vendor.

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

Estimated cost of control operations

No estimate available

Entity to apply control agent

Herbicide application - Commercial applicator or USACOE

Drawdown - USACOE

Potential sources of funding

USACOE 100%

Long term management strategy

a) Manage hydrilla's potential adverse impacts to the Lake Thurmond ecosystem using primarily triploid grass carp after initial suppression using approved herbicides.

b) Maintain or enhance native aquatic vegetation by maintaining the lowest possible stocking rates of triploid grass carp, especially once major stands of hydrilla have been controlled.

c) Seek to prevent further introduction and distribution of problem aquatic species through public education and enforcement of existing laws and regulations.

d) Periodically revise management plans and strategy as new environmental data becomes available.

e) Plan for long-term control of hydrilla, once control has been achieved, by maintaining very low densities of triploid grass carp. Stockings will be determined from mortality estimates generated from triploid grass carp collected on Lake Thurmond and the use of age-structure population models developed for fisheries.

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Summary of Proposed Management Operation Expenditures for 2023-2024

	Water Body Name	Total Cost	Local	State	Federal	Local Sponsor
1	Ashepoo	$20,000	$10,000	$10,000	$0	Colleton County
2	Back River Reservoir	$45,000	$22,500	$22,500	$0	Dominion Energy, CPW
3	Baruch	$5,000	$2,500	$2,500	$0	Baruch
4	Black Mingo Creek	$5,000	$2,500	$2,500	$0	Georgetown Co.
5	Black River	$20,000	$10,000	$10,000	$0	Nature Conservancy
6	Bonneau Ferry WMA	$5,750	$2,875	$2,875	$0	SCDNR
7	Charleston Co. Parks	$1,000	$500	$500	$0	Charleston Parks
8	Combahee River	$20,000	$10,000	$10,000	$0	Colleton Co.
9	Cooper River	$42,000	$21,000	$21,000	$0	Berkeley Co.
10	Donnelley/ACE Basin	$30,000	$7,500	$15,000	$ 7,500	SCDNR, USF&W, Nature Conservancy
11	Dungannon WMA	$2,000	$1,000	$1,000	$0	SCDNR, USF&W
12	Goose Creek Reservoir	$45,000	$22,500	$22,500	$0	CPW
13	Lake Bowen	$1,000	$500	$500	$0	Spartanburg CPW
14	Lake Cunningham	$7,000	$3,500	$3,500	$0	Greer CPW
15	Lake Greenwood	$10,000	$5,000	$5,000	$0	Greenwood Co.
16	Lake Keowee	$1,250	$625	$625	$0	Duke Energy
17	Lake Lyman	$5,000	$2,500	$2,500	$0	SJWD Water District
18	Lake Monticello (Rec. Lake)	$250	$250	$0	$0	Dominion Energy
19	Lake Murray	$17,000	$8,500	$8,500	$0	Dominion Energy, Lex. & Rich. Cos.
20	Lake Wateree	$3,000	$1,500	$1,500	$0	Duke Energy
21	Little Pee Dee River	$5,000	$2,500	$2,500	$0	Horry & Marion Cos.
22	Lumber River	$1,500	$750	$750	$0	Horry & Marion Cos.
23	Pee Dee River	$4,000	$2,000	$2,000	$0	Georgetown Co.
24	Prestwood Lake	$3,000	$1,500	$1,500	$0	City of Hartsville
25	Samworth WMA	$10,000	$5,000	$5,000	$0	SCDNR
26	Santee Coastal Reserve	TBD	TBD	TBD	$0	SCDNR, WFF Division
27	Santee Delta WMA	$14,000	$7,000	$7,000	$0	SCDNR
28	Waccamaw River	$25,000	$12,500	$12,500	$0	USF&W/Horry Co.
29	Yawkey Wildlife Center	$4,000	$2,000	$2,000	$0	SCDNR
	Santee Cooper Lakes					
30	Lake Marion	$1,000,000	$1,000,000	$0	$0	Santee Cooper
31	Lake Moultrie	$600,000	$600,000	$0	$0	Santee Cooper
	Santee Cooper Area WMA's					
32	Hatchery WMA	$20,000	$10,000	$10,000	$0	SCDNR
33	Hickory Top WMA	$8,000	$4,000	$4,000	$0	SCDNR
34	Potato Creek WMA	$6,000	$3,000	$3,000	$0	SCDNR

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35	Sandy Beach WMA	$10,000	$5,000	$5,000	$0	SCDNR
36	Santee Cooper WMA	$25,000	$12,500	$12,500	$0	SCDNR
	State Parks					
37	Aiken State Park	$6,000	$3,000	$3,000	$0	SCPRT
38	Barnwell SP	$6,000	$3,000	$3,000	$0	SCPRT
39	Charlestown Landing SP	$4,000	$2,000	$2,000	$0	SCPRT
40	Cheraw SP	$6,000	$3,000	$3,000	$0	SCPRT
41	Croft SP	$1,200	$600	$600	$0	SCPRT
42	H Cooper Black SP	$500	$250	$250	$0	SCPRT
43	Hunting Island SP	$1,200	$600	$600	$0	SCPRT
44	Huntington Beach SP	$6,000	$3,000	$3,000	$0	SCPRT
45	Kings Mountain SP	$2,000	$1,000	$1,000	$0	SCPRT
46	Lee SP	$1,500	$750	$750	$0	SCPRT
47	Little Pee Dee SP	$3,000	$1,500	$1,500	$0	SCPRT
48	NR Goodale	$10,000	$5,000	$5,000	$0	SCPRT
49	Paris Mountain SP	$1,300	$650	$650	$0	SCPRT
50	Poinsett SP	$1,500	$750	$750	$0	SCPRT
51	Sesquicentennial SP	$3,000	$1,500	$1,500	$0	SCPRT
*	52-64 done entirely by SCDNR State Lakes Program, budget not provided					
	65-66 are border lakes with either Federal or other State jurisdictions, budget not provided					
	SCDNR Total	$ 420,750	$203,000	$210,250	$ 7,500	
	State Park Lake Total	$53,200	$26,600	$26,600	$0	
	Santee Cooper Total	$1,600,000	$1,600,000	$0	$0	
	SCDNR/State Parks Total	**$ 473,950**	**$ 229,600**	**$236,850**	**$ 7,500**	
	Grand Total	**$2,073,950**	**$1,829,600**	**$236,850**	**$ 7,500**	

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 2023 (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.

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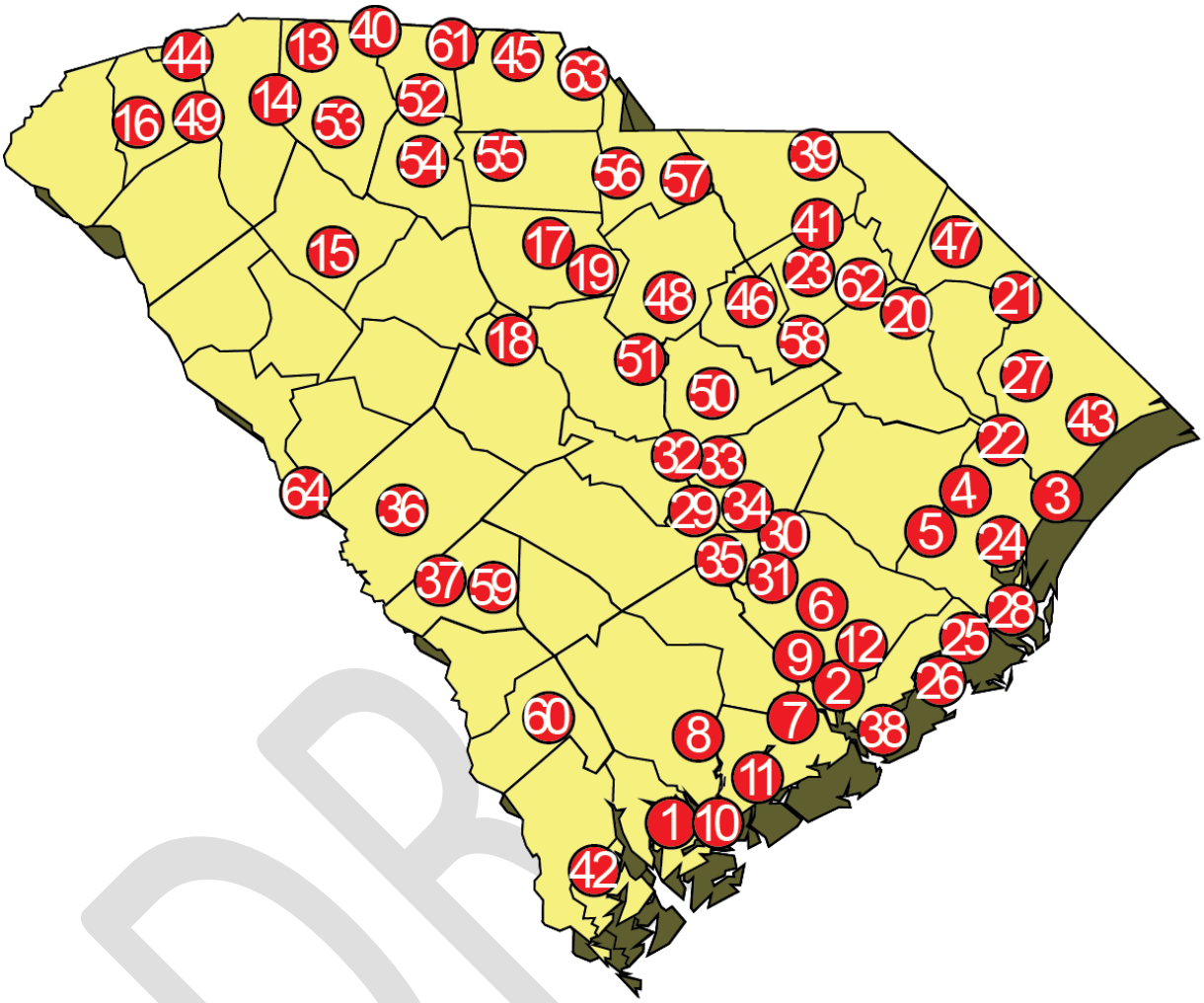
Location of 2023 Management Sites



Appendices

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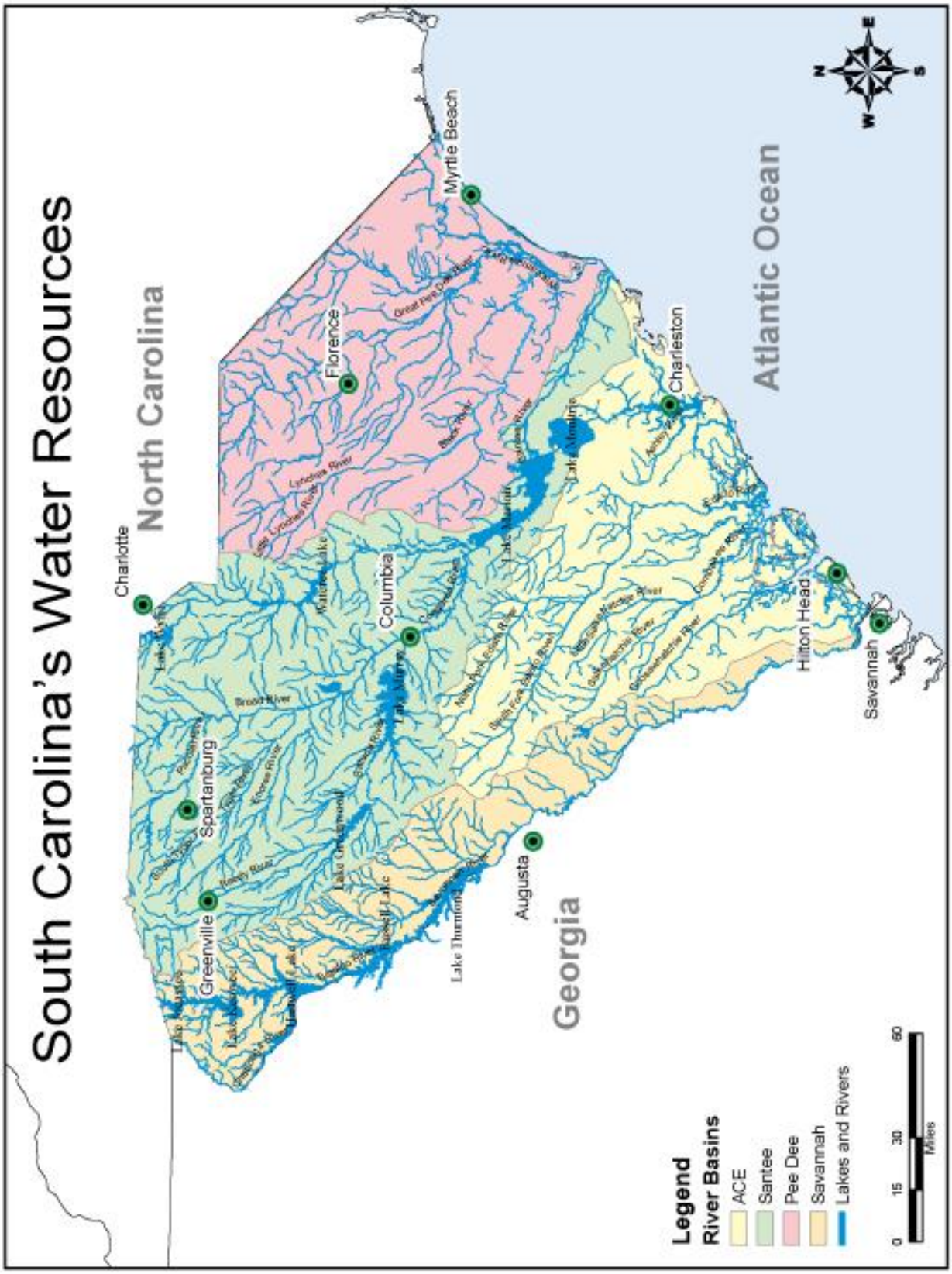
APPENDIX A

Major River Basins in South Carolina



APPENDIX B

Additional Documentation for NPDES General Permit

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NPDES Required Information Details

Aquatic Nuisance Species Program Emergency Numbers

SCDNR Columbia Office 803-734-4016	Chemical Spill/Fish Kill Emergency Number (SCDHEC) 888-481-0125	Clemson Department of Pesticide Regulation 864-646-2150
SCDNR Emergency Number 800-922-5431	SCDHEC Statewide Fish Kill Coordinator - Jim Rice 803-896-4114(O) 803-960-0539(C)	Poison Control Hotline 800-222-1222
Radio Room – Law Enforcement 803-955-4000		National Response Center 800-424-8802
Julie Holling SCDNR Program Manager ANS Program 2730 Fish Hatchery Road West Columbia, SC 29172 803-755-2836 Voice 803-528-4720 Cell	Matthew Puckhaber SCDNR Field Supervisor ANS Program 2730 Fish Hatchery Road West Columbia, SC 29172 803-755-2836 Voice 803-767-7958 Cell	John Crabb President Estate Management Services 305 Indigo Drive Brunswick, GA 31525 Toll-Free: 888-307-6637 Phone: 912-466-9800

DNR Region	Counties	Freshwater Fisheries Fish Kills	Wildlife Problems	Law Enforcement	Marine Resources
Region I (Clemson) 311 Natural Resources Drive Clemson, SC 29631 (864) 654-1671	Oconee, Pickens, Greenville, Spartanburg, Anderson, Laurens, Abbeville, Greenwood, Union, Cherokee, McCormick, and Edgefield	Dan Rankin 864-986-6246 864-982-2175 (Cell)	Pat Cloninger 864-986-6248 864-506-5402 (Cell)	CPT DJ Riley 864-654-8266 864-982-1785 (Cell)	Saltwater Fish Kills Only
Region II (Florence) 295 S. Evander Drive Florence, SC 29506 (843) 661-4766	York, Chester, Fairfield, Lancaster, Kershaw, Lee, Chesterfield, Marlboro, Darlington, Dillon, Florence, Marion, Williamsburg	Robert Stroud 803-366-7024 803-609-7018 (Cell)	Sam Stokes 843-661-4768 843-870-3771 (Cell)	CPT Matt McCaskill 864-661-4766 843-616-3777 (Cell)	Saltwater Fish Kills Only
Region III (Columbia) PO Box 167 1000 Assembly St. Columbia, SC 29202 (803) 734-4303	Newberry, Saluda, Aiken, Lexington, Richland, Calhoun, Orangeburg, Barnwell, Allendale, Bamberg, Sumter, Clarendon	Jason Bettinger 803-353-8232 803-904-6710 (Cell)	Willie Simmons 803-734-3898 803-609-7010 (Cell)	CPT Ken Simmons 803-755-1822 803-609-6924 (Cell)	Saltwater Fish Kills Only
Region IV (Charleston) PO Box 12559 217 Ft. Johnson Rd. Charleston, SC 29412 (843) 953-9307	Horry, Hampton, Georgetown, Berkeley, Charleston, Dorchester, Colleton, Jasper, Beaufort	Vacant 843-825-3387 843-870-5807 (Cell)	Alicia Farrell 843-953-5291 843-729-1955 (Cell)	CPT Henry Stackhouse 843-953-9307 843-870-5629 (Cell)	Mike Denson 843-953-9819 843-214-8178 (Cell)

Pest Management Area Description

(See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)

Control Measure Description

(See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)

Schedules and Procedures

(See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)

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PESTICIDE SPILL POLICY AND PROCEDURES

a. **Put on protective clothing as may be appropriate: rubber boots, aprons, gloves, mask, and respirator. Use special caution if two different materials are spilled and mix together. They may react chemically to form noxious fumes.**
b. **Immediately contain the spill. Use absorbents, dikes, mops or brooms, dirt or sand to retard the spread of the spill.**
c. **Notify your Contacts listed above or person in charge.**
d. **Recover the spill into containers (usually 5-gallon buckets or 30-gallon drums). Each warehouse should have at least one clean, empty 30-gallon drum for the purpose.**
e. **After sealing each recovered material container, mark it or attach a tag clearly to identify its contents, approximate quantity and date.**
f. **Move containers of spilled materials to a secure area.**
g. **Prepare a spill report giving relevant information including date; location; material spilled; approximate quantity; actions taken; location of recovered material; cause or circumstances leading to spill; and recommendations on how to avoid this problem in the future.**
h. **Contact the office for disposal instructions.**

DO NOT USE OR DISPOSE OF SPILLED MATERIALS WITHOUT PRIOR REVIEW.

i. **Depending on the circumstances, the best disposal method will differ. Some potential alternatives are:**
    1. **Use in the normal course of business;**
    2. **Dilute and wash into sanitary sewer;**
    3. **Shipment to an approved hazardous waste facility; neutralization / detoxification on site.**
    4. **Since a decision on how best to dispose of a spill may be quite complex, we may want input from manufacturers, regulatory officials or technical advisors. Consult the office before acting.**

SPILL RESPONSE

Purpose: To ensure the safety of all individuals participating in or affected by herbicide use, to minimize the SCDNR's and Contractor's exposure to liability, to ensure the appropriate and effective application of herbicides as a management tool, and to minimize detrimental effects to the environment.

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The following information will be provided following the discovery and initial telephonic reporting of the spill:	
1.	Time spill occurred or was first observed: _____
2.	Name of person first observing spill: _____
3.	Location of initial spill and present location if moving: * _____
4.	Type of spilled material: _____
5.	Estimate of amount spilled or rate of release if continuing: _____
6.	Environmental conditions e.g., wind direction and speed, wave action, and currents: _____
7.	If from mobile container (e.g., 2.5, 5, 15, 30, 55, tote): _____
8.	Description of area likely to be affected by spill --e.g., riverbanks, lakes, land areas, wildlife areas: _____ _____
9.	Cause of spill, if determined: _____
10.	Action taken to combat spill, if any: _____ _____ _____
11.	Activities or authorities notified: _____ _____ _____
12.	_____ ***Please provide lat/long and attach detailed map of spill area if possible**.

SPILL KIT CONTENTS

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A spill kit is required to be assembled and placed in locations where pesticides are mixed, and on vehicles, which transport pesticides.

Shop Kit Quantity	Vehicle Kit Quantity	Item
1 (55 gal)	1 (5 gal)	open-head drum
1	1	pesticide spill policy and procedures
4	2	pairs of nitrile gloves
2	1	pairs of unvented goggles
2	1	respirator and pesticide cartridges
2	1	aprons (chemical resistant)
2	1	pairs of rubber boots
2	1	pairs of Tyvek coveralls
1	1	dustpan
1	1	shop brush
12	6	heavy ply, polyethylene bags w/ties
1	1	first aid kit
80	10	lbs absorbent material
1	1	dozen blank labels
0	1	portable eyewash
1	0	synthetic fiber push broom
1	0	square-point "D" handle shovel

SCDNR Required Practices

Required practices, described below, are designed to ensure that the SCDNR's standards for use of herbicides meet or exceed the U.S. EPA's Worker Protection Standard for Agricultural Pesticides.

a. **Prior to implementing use of any herbicide, the need for its use relative to management goals shall be described in the S.C. Aquatic Plant Management Plan, and/or in a Weed Plan specific to the site.**
b. **Only employees or contractors, who are certified/licensed by state and/or local regulations, are authorized to apply herbicides.**
c. **Application techniques, monitoring strategies, and impacts/progress toward goals and required reporting information shall be documented.**
d. **Standard safety practices for storage, mixing, transportation, disposal of containers and unused herbicide, and spill management will be followed.**
e. **Herbicide containers and related equipment will be stored in a secure containment area away from people, animals and food. Herbicide containers will be stored closed and inspected periodically. Hazardous waste will be labeled appropriately and include accumulation start dates.**

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f. **Additional training required for the proper use and maintenance of personal protective equipment (PPE) and other equipment or required by the Occupational Safety and Health Administration (OSHA) shall be coordinated.**
g. **The point(s) of contact and threshold size for spills that must be reported shall be verified in advance with the appropriate local agency. This information and other emergency related information shall be provided to all applicators and initial responders through a written contingency plan.**
h. **Directions and contact numbers of the nearest emergency medical treatment facility will be provided to all applicators.**
i. **Investigations of herbicide related accidents and receipt of employee suggestions or complaints relating to safety and health issues involving herbicides will be used as a feedback mechanism that can be used to improve the program.**
j. **Decontamination kits must be readily available and must include two one-gallon (or more) containers filled with potable water, eyewash kits or eyewash bottles with buffered isotonic eyewash, hand or body soap, paper or other disposable towels, a full Tyvek coverall with foot covers, and a map and directions to the nearest medical facility. Whenever possible, those who apply herbicides shall have access (within 15 minutes travel time or at the nearest vehicle access point, whichever is closest) to an eyewash kit and either a 1) shower or large sink, or 2) emergency decontamination and first aid kits.**
k. **Treated areas should be closed to public access until they are judged safe for re-entry (or until the herbicide dries or for the minimum period required by the product label, whichever is longer). Posting is not required in most places, but where it is required (usually by local statute), place notices at points of entry or the perimeter of treated areas. Posting notices should include a statement that the area has been or will be treated, name of the herbicide, date of treatment, appropriate precautions to be taken or the date when re-entry is judged to be safe, and a phone number for additional information. Notices should be removed after it is judged safe to re-enter the area.**
l. **Under the NPDES Permit requirements, the SCDNR is required to maintain records for all herbicide application activities. These records shall include information on site(s), purpose(s), name(s) and amount(s) of product(s) used, name(s) of applicator(s), and licensing requirements for all herbicide applications in the previous 12 months. In addition, a yearly report shall include the same information, with estimates for the upcoming 12 months.**

Adverse Incident Response

Any incident which results in adverse impacts to fish, wildlife, or non-target plant species will be reported to the appropriate contacts as listed in the Section 1 contacts table. Additionally, the causes of the adverse impact will be determined through a scientific assessment to prevent or mitigate future problems.

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Pesticide Monitoring Requirements

a. **While there are no specific pesticide residue monitoring requirements the SCDNR will maintain the following information along with any required monitoring data:**
b. **Records of equipment maintenance and calibration are to be maintained only by the entity performing the pest application activity (on behalf of self or client).**
c. **A copy of the NOI submitted to the Department and any correspondence exchanged between you and the Department specific to coverage under this permit;**
d. **The date on which you knew or reasonably should have known that you would exceed an annual treatment area threshold during any calendar year, as identified in Part 1.2.2;**
e. **Surveillance method(s) used, date(s) of surveillance activities, and findings of surveillance;**
f. **Target pest(s);**
g. **Pest density prior to pesticide application;**
h. **Company name and contact information for pesticide applicator;**
i. **Pesticide application date(s);**
j. **Description of treatment area, including location and size (acres or linear feet) of treatment area and identification of any waters, either by name or by location, to which you discharged any pesticide(s) (a GIS record of the specific area where discharge of herbicide occurs);**
k. **Name of each pesticide product used, including the EPA registration number;**
l. **Quantity of pesticide applied (and specify if quantities are for the pesticide product as packaged or as formulated and applied);**
m. **Concentration (%) of active ingredient in formulation;**
n. **For pesticide applications directly to waters, the effective concentration of active ingredient required for control;**
o. **Any unusual or unexpected effects identified to non-target organisms;**
p. **Documentation of any equipment cleaning, calibration, and repair (to be kept by pesticide application equipment operator); and**
q. **A copy of your PDMP, including any modifications made to the PDMP during the term of this permit.**

General Specifications

a. **The Contractor and SCDNR shall utilize equipment specifically designed for commercial application of herbicides. Equipment shall be kept in good operating condition at all times and must meet or exceed all safety requirements for this type of work. The equipment must be calibrated to disperse herbicides at the prescribed rate as outlined in the plan and records of said calibration shall be maintained. As a minimum requirement, the equipment shall meet the following conditions:**
b. **The Contractor shall have a minimum of two watercraft (airboats) and a skiff with a "mudmotor" capable of traveling through heavily vegetated waterways. The watercraft shall be equipped with depth finders capable of locating vegetation underwater, such as an Eagle Ultra or equivalent make and model. The Contractor shall also have a computerized herbicide delivery spray system which is calibrated and has Global Positioning System capability on each watercraft capable of recording exact positions of all**

treatments. Such unit shall be capable of creating a file, such as a shape file, which will be capable of being imported into a Geographic Information System program such as ESRI's ArcView or any Arc Info based software and will provide SCDNR with a copy of such file in a timely manner. All data will become the property of SCDNR. The watercraft shall be capable of operation by one or two persons and shall be set up for underwater injection, handgun application, or granular broadcast application. A helicopter contract or access must also be available to the Contractor for performing aerial application of herbicides as needed at specified sites when needed.

c. **SCDNR reserves the right to inspect and approve all equipment to be utilized prior to the award. Non-conformance of equipment to SCDNR standards shall be reason for rejection of daily work.**
d. **Regulations and Standards:**
e. **The work shall comply with all laws, ordinances, and regulations of all legally constituted authorities that have jurisdiction over any part of this work. These requirements supplement these specifications and shall take precedence in case of conflict.**
f. **All work shall be performed and completed in a thoroughly workman like manner in accordance with best modern practices and any permit requirements, regardless of any omissions from the attached specifications and/or drawings.**

Qualifications

a. The Contractor must have a minimum of five years of professional experience around chemical aquatic weed control on large public waterbodies.
b. All persons applying chemicals must be certified by the Clemson University Department of Pesticide Regulation in Category 5 (Aquatic Pest Control) or must work under the direct supervision of a person so tested and present on the spray boat.
c. All persons applying chemicals must be capable of identifying target plants in the field.
d. The Contractor must maintain liability insurance coverage of at least Five Million Dollars ($5,000,000) to fulfill requirements of PART II.A.12.

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APPENDIX C

Enabling Legislation

South Carolina Code of Laws Section 49-6-10/40

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.

<u>Some of the Specific State Laws which pertain to Illegal, Noxious, or Nuisance Species:</u>

Title 46 - Agriculture

Chapter 9 - State Crop Pest Commission

SECTION 46-9-10. Commission established; duties and responsibilities; membership of commission.
The State Crop Pest Commission is established. It shall execute this chapter, Section 46-1-140, Chapters 10, 13, 25, 26, 33, 35, and 37 of this title and other duties and responsibilities assigned by law. The commission consists of no less than three members of the Agriculture and Natural Resources Committee of the Clemson University Board of Trustees, or the committee's successor, as designated by the board.

SECTION 46-9-15. Definitions.

(5) "Plant pest" means a living stage of insects, mites, nematodes, slugs, animals, protozoa, snails or other invertebrate animals, bacteria, weeds, fungi, other parasite plants or their reproductive parts, or viruses, or organisms similar to or allied with the foregoing, including genetically engineered organisms or infectious substances which directly or indirectly may injure or cause disease or damage in plants or

their parts or processed, manufactured, or other products of plants, and which may be a serious agricultural threat to the State, as determined by the director.

SECTION 46-9-40. Authority to promulgate and enforce regulations; other powers of commission.

The commission, in accordance with the Administrative Procedures Act, may promulgate and enforce reasonable regulations as in the judgment of the commission may be necessary to eradicate or prevent the introduction, spread, or dissemination of plant pests, including genetically engineered plants or plant pest organisms, and prevent fraud or misrepresentation in the sale and dissemination of fruit trees, nut trees, shade and ornamental trees, vines, shrubs, plants, bulbs, and roots for propagation purposes. The commission may regulate or prohibit the shipment within, or the importation into, this State of plants, farm products, or other articles of any nature or character from a state, territory, or foreign country when, in the opinion of the commission, the regulation or prohibition is necessary to prevent the introduction or dissemination of plant pests.

The commission may carry out operations, including quarantines or measures to locate, suppress, control, or eradicate or to prevent or retard the spread of plant pests, independently or in cooperation with counties or their political subdivisions, municipalities, farmers' associations or similar organizations, individuals, federal agencies, or agencies of other states, by regulation, compliance agreement, judicial action, or other appropriate means.

Title 46, Chapter 23 - South Carolina Noxious Weed Act

SECTION 46-23-30. Commission may prevent introduction and dissemination of noxious weeds in State; remedies of owner of property destroyed or disposed of; regulations.

(a) The commission may, when it deems it necessary as an emergency measure in order to prevent the introduction into or the dissemination within South Carolina of any noxious weed new to or not theretofore widely prevalent or distributed within and throughout the State, 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. Provided, that no such noxious weed, product, article, or means of conveyance shall be destroyed, exported, or returned to the shipping point or so ordered to be destroyed, exported, or returned to the shipping point, unless in the opinion of the commission, there is no less drastic action which would be adequate to prevent the introduction or dissemination of noxious weeds.

SECTION 46-23-80. Penalty.

Any person who violates any provision of this chapter is guilty of a misdemeanor and, upon conviction, shall be punished by a fine not exceeding five hundred dollars, or by imprisonment not exceeding one year, or both.

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) A person may not 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 or eggs of the 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 erythrophtalmu*-Linneaus); and
(10) snakehead (all members of family Channidae).

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

(C) (1) The department may issue special permits for the stocking of sterile white amur or grass carp hybrids in the waters of this State. The special permits must certify that the permitee's white amur or grass carp hybrids have been tested and determined to be sterile. The department may charge a fee of one dollar for each white amur or grass carp hybrid that measures five inches or longer or twenty-five cents for each white amur or grass carp hybrid that measures less than five inches. The fee collected for sterility testing must be retained by the department and used to offset the costs of the testing.

(2) The department is authorized to promulgate regulations to establish a fee schedule to replace the fee schedule contained in item (1) of this subsection. Upon these regulations taking effect, the fee schedule contained in item (1) of this subsection no longer applies.

(D) The department may issue special permits for the importation, breeding, and possession of nonsterile white amur or grass carp hybrids. The permits must be issued pursuant to the requirements con-

tained in Chapter 18 of this title. Provided, however, that no white amur or grass carp hybrids imported, bred, or possessed pursuant to a special permit issued pursuant to this section may be stocked in the waters of this State except as provided in subsection (C) of this section.

(E) 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.

(F) 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.

South Carolina Code of Regulations

Chapter 27 Clemson University (Statutory Authority: 1976 Code §§ 46–9–40; 46–13–30; 46–13–55)

ARTICLE 10

DESIGNATION OF PLANT PESTS

27–135. Designation of Plant Pests.

1. The Commission hereby delegates to the Director the authority to determine and implement appropriate measures to eradicate, control, or slow the spread of plant pests in South Carolina. This authority extends to a decision that a plant pest has become so widespread that the initiation or continuation of control measures would be ineffective.

2. An advisory committee made up of at least 5 members will meet at least annually to review and make recommendations on the official listing of plant pests in SC. The committee members will be: The State Plant Regulatory Official for South Carolina (or designee), the USDA State Plant Health Director for South Carolina (or designee), a Clemson University Cooperative Extension Service Representative, and at least 2 at large representatives from other stakeholder agencies, such as the SC Department of Natural Resources, the SC Forestry Commission, or the SC Department of Agriculture. At large members shall be nominated and voted on by the advisory committee at its annual meeting. Additional at large members may be nominated and voted in at the annual advisory committee meeting. At large members from stakeholder agencies shall each serve a three-year term.

3. The official listing of plant pests in SC shall be maintained and made publicly available on Clemson's website located at: www.clemson.edu/invasives .

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APPENDIX D

Aquatic Plant Problem Identification Form

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Aquatic Plant Problem Site Identification Form

Name and location of affected water body

_____

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

_____

Public or private water

_____

Name of problem plant (if known)

_____

Does the plant grow above or below the surface of the water?

_____

Approximate area of water covered by the problem plant

_____

Type of water use(s) affected by the plant

_____

Length of time problem has existed

_____

Plant control methods that have been used

_____

Contact for additional information: _____

Name _____

Address _____

Phone _____

Please Return To: Aquatic Nuisance Species Program

S.C. Department of Natural Resources
2730 Fish Hatchery Road
West Columbia, South Carolina 29170
(803) 755-2836 email: invasiveweeds@dnr.sc.gov

** *Please include a sample of the plant, if possible, or a detailed digital image. Wrap the plant in a moist towel and place in a "baggie". The sample or photo should include flowers, if visible, along with leaf structure and stem*. A photo or drawing of the affected area with an approximate acreage should also accompany this form.

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APPENDIX E

Aquatic Plant Control Agents

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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, Tribune, Solera)

Target Plants

Submersed species - Bladderwort, coontail, elodea, naiad, pondweeds, watermilfoil, and hydrilla. Floating species - Pennywort, Salvinia, water hyacinth, water lettuce, and duckweed.

Application Rate

Submersed species - One to two gallons per surface acre. Floating species - One half to one gallon per surface acre, depending on target species.

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.

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.

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, Renovate Max G)

Target Plants

Emergent species - Broadleaf species such as water primrose, waterlily, spatterdock, watershield, smartweed, pondweeds, and floating heart. Submersed species - Watermilfoil, bladderwort, and coontail. Floating species - Water hyacinth.

Application Rate

Granular form (2,4-D BEE) - 150 to 200 pounds per acre depending on target species. Liquid form - (2,4-D DMA) - 5 gallons per acre.

Cost

The granular form of 2,4-D costs about $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. 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

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.

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, Natrix)

Target Plants

Algae - Cutrine Plus, K-TEA, Captain

Submersed species (Hydrilla, Brazilian elodea, pondweed and southern naiad) - Komeen, Nautique, Cutrine Plus, Clearigate, and Captain

Application Rate

Algae - Treatment concentration of 0.2-0.5 parts per million of copper. Submersed species - 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.

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.

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.

Water Use Restrictions - Copper complexes may be used in domestic and irrigation water supplies without water use restrictions.

D. Endothall - (AquaStrike, Aquathol, Aquathol K, Aquathol Super K granular, Hydrothol 191granular and liquid)

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.

Application Rate

Aquathol

Liquid form (Aquathol K) - three gallons or more per acre depending on the target species. 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

Heavy Infestations - Evenly spread 160 - 270 pounds per acre foot of water (0 - 0 ppm) applied evenly. Moderate or light infestations - Use 55 - 110 pounds per acre foot (0 - 0 ppm) applied evenly.

Cost

Aquathol

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. 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

Hydrothol 191 costs approximately $64 per gallon. Assuming an application rate of 7gallons per acre and an application cost of $41, the total cost would be $492 per acre.

Hydrothol 191 granular costs approximately $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.

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.

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.

Aquastrike

Aquastrike costs approximately $73 per gallon.

Use Considerations - AquaStrike is a convenient combination of Aquathol K and Diquat. AquaStrike is designed and formulated for fast and effective control of many submersed nuisance and exotic aquatic plants, especially spike rush when used with a Flumioxazin product.

Water Use Restrictions – Do not use water treated with Aquastrike for irrigation to food crops or ornamentals for 7 days. Do not treat within 600 feet of a potable water intake. There are no fishing or swimming restrictions.

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

Target Plants - Emergent broadleaf plants and grasses such as alligatorweed, water primrose, smartweed, and Phragmites.

Application Rate - Up to 7 1/2 pints per acre, the specific rate depending on the target species.

Cost - Glyphosate products range in price from $21-$39 per gallon. At an application rate of 5 pints per acre and an application cost of $41 per acre, the total would range from $63-$78 per acre per application.

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.

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. Flumioxazin (Clipper, Schooner)

Target Plants – Duckweed, water meal, water lettuce, frog's-bit, water fern, alligatorweed

Application Rate - Up to 12 ounces of formulated product per acre, on surface applications or 200 -400 ppb for subsurface treatment.

Cost - Flumioxazin products range in price from $120-140 per pound. At an application rate of 12 ounces per acre and an application cost of $41 per acre, the total would range from $131-$146 per acre per application.

Use Considerations - Flumioxazin is not toxic to mammals, birds or fish at recommended use concentrations. Flumioxazin 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.

Water Use Restrictions There are no restrictions on potable water use or recreation after treatment. Treated water may not be used for irrigation purposes on food crops until at least five (5) days after application. Do not use in water utilized for crawfish farming. Do not re-treat the same section of water with *Clipper* Herbicide more than 6 times per year. Do not exceed 400 ppb of *Clipper H*erbicide during any one application. On surface spray applications of less than 3 feet of depth there is a 12-hour restriction for irrigation of turf and landscape ornamentals and a restriction of subsurface treatment applications of 1 to 3 days depending on the concentration used. There is also a 5-day restriction for ornamentals grown for production in greenhouses and nurseries for both surface and subsurface application.

G. Fluridone (Sonar, Avast)

Target Plants - Primarily submersed plants, such as hydrilla, Brazilian elodea, watermilfoil, pondweeds, duckweeds and naiads; also, effective on lilies and some grasses.

Application Rate - Liquid form (Sonar AS, Avast) - 1-4 pints per acre depending on water depth. Pellet forms (Sonar PR, Sonar SRP, Avast SRG) - 15 to 80 pounds per acre depending on water depth.

Cost - The liquid formulation ranges from $1468-$1650 per gallon. Assuming an application rate of 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. The pellet formulations range in price from $200-$200 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.

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.

Water Use Restrictions - Do not apply within 1/4 mile of a functioning potable water intake unless concentrations are less than 20 ppm. Water treated with fluridone cannot be used for irrigation for 7-30 days depending on target crop.

H. Imazapyr (Habitat)

Target Plants - Phragmites, Alligatorweed, Water primrose, and Cutgrass.

Application Rate - 1 to 6 pints per acre depending on target species.

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.

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.

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 0 ppb or less.

Aerial Applications may only be made by helicopter.

I. Imazamox (Clearcast)

Target Plants - Phragmites, Alligatorweed, Water primrose, and Cutgrass.

Application Rate - 1 to 6 pints per acre depending on target species.

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.

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

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 0 ppb or less.

Aerial Applications may only be made by helicopter.

J. Triclopyr (Renovate 3, Tahoe)

Target Plants - Alligatorweed, Eurasian watermilfoil, water hyacinth, parrotfeather, and water primrose.

Application Rate - 2-8 qts. per acre depending on target species.

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.

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.

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.

K. Penoxsulam (Galleon SC)

Target Plants

Submersed species – Hydrilla, Cabomba, Egeria, Eurasian watermilfoil

Floating species – Floating species – Water hyacinth, Water lettuce, Water fern, Duckweed, Frog's bit, Mosquito fern

Application Rates

0.174 fl oz per acre foot to achieve minimum effective concentration of 25 – 75 ppb.

Floating species – 2- 6 fl oz per acre as foliar application.

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 6 fl oz per acre, and an application cost of $41 per acre, total cost would be $113 per acre for emergent plants.

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).

Water Use Restrictions - Food crop irrigation waters cannot be used if penoxsulam concentrations are above 1ppb

L. Florpyrauxifen-benzyl (ProcellaCOR-SC)

Target Plants

Submersed/emergent species – Hydrilla, Egeria, Watermilfoil, Eurasian watermilfoil, Lotus, Alligatorweed, Water primrose, Watershield, Crested floating heart, Parrotfeather, Water pennywort

Floating species – Floating species – Water hyacinth, Frog's bit, Mosquito fern

Submerged species - 1-5 PDU's per acre foot to achieve effective control based on density and species.

Floating species – 1-2 PDU's per acre as foliar application.

Cost –ProcellaCOR-SC costs approximately$3800 per gallon. The application rate is conveniently provided in PDU's directly from a built-in measurement device. 1 PDU equals approximately 1.35 ounces of product. Application rates for foliar are 1-2 PDU's per acre and for submersed from 1-5 PDU's per average acre foot. Assuming an application rate of 4 PDU per acre foot at a dept of 4 feet (4 PDU X 4 ac/ft=16 PDU's) and an application cost of $41 per acre, total cost would be $681 per acre for submersed plants. Assuming an application rate of 1 PDU acre, and an application cost of $41 per acre, total cost would be $81 per acre for emergent plants.

Use considerations – ProcellaCOR-SC has no potable water restrictions or irrigation restrictions except for irrigation of food crops and some landscape plants.

Water Use Restrictions - Food crop irrigation waters cannot be used if ProcellaCOR-SC concentrations are above 1 ppb

NOTE: This unique formula requires 40x-100x less active ingredient and achieves significantly longer control. With a *Reduced Risk* classification from the EPA, it is designed to reduce risk *To Our Health, Nontarget Plants, And Our Water Supply*

II. Biological Control

A. Alligatorweed Flea Beetle (*Agasicles hygrophila*)

Target Plant - Alligatorweed

Stocking Rate - 600-1,000 per acre.

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.

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*)

Target Plant - Alligatorweed

Cost - Approximately the same as for flea beetle.

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 (*Ctenopharygodon idella*)

Target Plant - Primarily submersed plants including Brazilian elodea, hydrilla, bladderwort, coontail, naiads, pondweeds.

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.

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 SCDNR 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 SCDNR.

III. Mechanical Control

Harvesters, Cutters, Dredges and Draglines

Target Plants - All species

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.

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.

Fiberglass Bottom Screens

Target Plants - All species which root in the bottom.

Cost $10,000 per acre.

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

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.

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 SCDHEC, and through the wastewater discharge permitting program (NPDES) also administered by the SCDHEC.

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APPENDIX F

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

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DRAFT- Currently under legal review by both agencies

MEMORANDUM OF AGREEMENT
BETWEEN SANTEE COOPER AND SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES
REGARDING AQUATIC PLANT AND HABITAT MANAGEMENT GOALS
FOR THE SANTEE COOPER LAKES

This AGREEMENT (hereinafter "Agreement") is between Santee Cooper (hereinafter "S-C") and the South Carolina Department of Natural Resources (hereinafter "DNR"). This Agreement is effective on the date of the last signatory to the Agreement.

WHEREAS, S-C and DNR recognize Lakes Marion and Moultrie (hereinafter "Lakes") as a significant natural resource of the State of South Carolina, and

WHEREAS, in order to provide balanced benefits to natural resources and the multiple uses of the Lakes, DNR and S-C (hereinafter "Parties") agree to cooperate in the management of aquatic vegetation and the habitat that it provides, and

WHEREAS, the Parties' goal is to maintain, at a minimum, 15% of the surface area of the waters within the Santee Cooper Project boundary as beneficial vegetated habitat for waterfowl, wildlife, fish and other aquatic organisms,

WHEREAS, the Parties agree that aquatic vegetation in the Lakes is, in many years and during certain cycles, driven by dynamic environmental forces that cannot be effectively controlled and

THEREFORE, in order to achieve this goal, the Parties agree to the following:

1) The aquatic plant management goal for the Lakes is to achieve a diverse assemblage of native aquatic vegetation in and on, at a minimum, 15% of the total surface area of the Lakes and to effectively control non-native invasive species. The aquatic plant coverage should include a combination of submersed, floating leaf, and emergent plant species, as well as diverse wetland habitat. These wetland habitats include Sparkleberry/Stumphole swamp and similar areas dominated by wetland tree and shrub species, such as Cypress, Tupelo, Black Willow and Buttonbush, as well as managed wetlands within SCDNR Wildlife Management Areas and US Fish & Wildlife Service Santee National Wildlife Refuge. The goal is to establish and maintain habitat and food for native fish and wildlife species throughout the lake system.

2) 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, in order to map 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 work plan for the following year.

3) The Parties will cooperate in monitoring the health of the fishery and in monitoring of wintering waterfowl populations. Wintering waterfowl population monitoring may consist of aerial or other

census techniques as deemed appropriate by the Parties. When waterfowl census is utilized, DNR will provide personnel and prepare an annual report to be distributed to both agencies, and S-C will provide the flight time.

4) Sterile grass carp will continue to be a major component of the long-term management strategy in controlling hydrilla (*Hydrilla verticillata*). The Parties 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 South Carolina Aquatic Plant management Council (hereinafter "Council"). The implementation of these recommendations will be subject to approval by the Council.

5) 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 or poses a threat to the Lakes.

6) Localized aquatic vegetation control using approved chemical or mechanical methods may be necessary in areas where vegetation interferes with power production, drinking water withdrawals, navigation, recreation or other legitimate uses of the Lakes regardless of plant coverage and distribution.

7) In order to enhance native plant growth and habitat throughout the lake system, the Parties will cooperate in implementing adaptive management techniques. These techniques could include such measures as, introducing desirable native plant species, enhancing wildlife/waterfowl management areas, and implementing strategic lake level management measures.

8) The Parties will meet annually to review the results of monitoring and treatment programs, to determine the effectiveness of the programs, and to develop annual work plans.

9) The Parties will meet annually 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.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date hereof.
Santee Cooper
By:
Date:
South Carolina Department of Natural Resources
By:
Date:

- NOTE: This is a draft of the agreement which is currently being reviewed by SCDNR and Santee Cooper lawyers for revision.

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APPENDIX G

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

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Summary of Public Comments, Responses, and Plan Modifications to the Draft 2023 South Carolina Aquatic Plant Management Plan

Comments and Revisions:

Response: The 10,000 Triploid grass carp mentioned in the plan are part of an integrated approach along with spot herbicide applications to control of the federally listed invasive species hydrilla. That 10,000 number represents an age class stocking more so than an increase in numbers as every year a 32% mortality rate takes more fish than we are stocking. It also represents a concerted scientific effort to never have to place 100,000 + fish into that system. By doing maintenance stocking the Council is trying to strike a balance which will allow control of the hydrilla while allowing the other submersed species to flourish and not have massive stockings in the future. Current number of carp in the system based on 160,000 acres is close to 1 fish per 4 surface acres. This is a well thought out adaptive management approach which does not rely on being reactive but proactive. The goal is within reach with some patience.

Health index studies of the currently present carp have also been questioned. The most recent study shows that the carp in age class 6 and below compare directly to 1994 when the carp in 1994 had more than they could eat with 37,000+ acres of hydrilla present. The current condition is 0.88 compared to 1994 fish 1.0. This number does not indicate malnourishment nor do those fish appear to be underweight as many have said. The study is done yearly by SCDNR Fisheries biologist working with bow fishermen to collect samples which can be weighed, sized and aged. The study was done with diligent scientific methods in the fall in 2017 and 2018, will continue for several more years to get scientifically sound data.

The two CAT 2 waterfowl areas of Potato Creek and the Hatchery WMA were remnants of previous years when stocking was considered. They will be removed from the plan and prescriptions provided will be utilized to make sure ramp access is available and the water hyacinth, crested floating heart, cutgrass, and primrose is controlled for better access to open water areas.

On Lake Greenwood and Lake Murray, we were asked in the comments to remove Southern Naiad, Illinois Pondweed, and Vallisneria americana from the nuisance list. Those species are not on the State's invasive species list but can be problematic in some areas on public waters.

Plan Modifications:

The grass carp stockings in the two CAT 2 waterfowl areas of Potato Creek and the Hatchery WMA will be removed from the plan and prescriptions provided will be utilized to make sure ramp access is available and the water hyacinth, crested floating heart, cutgrass, and primrose is controlled for better access to open water areas.

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The South Carolina Department of Natural Resources prohibits discrimination on the basis of race, color, national origin, disability, age, sex, or religion. Direct all inquiries to the

Office of Human Resources,

P.O. Box 167, Columbia, SC 2920

Revised: 1/11/2023

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