

## **Calendar year 2019 Aquatic Plant Management Plan for Lake Seminole**

This report will list the target plant and any planned activities associated with management operations.

### **I. SUBMERSED AQUATIC PLANTS**

The Record of Decision for the Lake Seminole Hydrilla Action Plan GA-FL dated June 1998 is the controlling document for management activities associated with hydrilla. This document and the associated Final Supplement to the Master Plan and Final Supplement to the Environmental Impact Statement define a general plan for hydrilla management activities on Lake Seminole. All hydrilla control activities for 2019 will be within the guidelines of this document. The Final Supplement to the Master Plan and Final Supplement to the Environmental Impact Statement (EIS) did not address other nuisance aquatic plant management activities, e.g., water hyacinths, giant cutgrass, Cuban bulrush, American lotus, fanwort, etc, other than in general terms of acceptable percent of aquatic plant coverage for the four management compartments (Chattahoochee River, Flint River, Spring Creek, and Fish Pond Drain) on the lake. Management of these types of invasive aquatic plants was addressed in two earlier EISs – 1) Lake Seminole and Jim Woodruff Lock and Dam, AL-FL, and GA, Operation and Maintenance Final Environmental Impact Statement, 1976, and 2) Aquatic Plant Control Program, Mobile District, Final Environmental Impact Statement, 1978.

Two primary methods of control will continue to be used to manage the submersed vegetation levels (chemical and biological). For chemical control, the primary herbicides used will be endothall, diquat dibromide, fluridone, penoxsulam, triclopyr, imazapyr, 2,4-D, flumioxazin, and copper compounds. For biological control there will be continued monitoring the releases of triploid grass carp, hydrilla flies, and hydrilla weevils. Alligator weed flea beetle continues to keep alligator weed under a maintenance level in most areas.

Hurricane Michael in October 2018 destroyed the south barrier to the Cypress Pond confinement area and damaged the Fish Pond Drain barrier near Seminole State Park. Funding has been requested to rebuild the barriers and stock triploid grass carp once repaired.

The following actions anticipated to help manage submersed aquatic vegetation levels on Lake Seminole.

#### **a. CHEMICAL:**

A table with the areas that may be treated including acreage, target plant, and map plate number can be found at the end of this section. Additional areas may be treated based on need.

**List of currently used herbicides for submersed treatments**

<b>Herbicide</b>	<b>Maximum Rate</b>	<b>Brand Name</b>
Fluridone	150 ppb per annual growth cycle	Avast SC®: EPA Reg. No. 67690-30 Sonar PR®: EPA Reg. No. 67690-12 Sonar AS®: EPA Reg. No. 67690-4
Dipotassium Salt of Endothall	5.0 ppm	Aquathol K®: EPA Reg. No. 70506-176 Aquathol Super K®: EPA Reg. No. 4581-388
Mono Salt of Endothall	3.0 ppm	Hydrothol 191®: EPA Reg. No. 70506-175
Copper (Elemental)	1.0 ppm	Symmetry®: EPA Reg. No. 81943-2 K-Tea™: EPA Reg. No. 67690-24
Copper (Carbonate)	12.0 gal/ac per 4 foot water depth	Nautique™: EPA Reg. No. 67690-10
2,4-D Amine	2.84 gal/acre foot	Alligare: EPA Reg. No. 81927-38
Flumioxazin	400 ppb	Clipper®: EPA Reg. No. 59639-161
Diquat	2.0 gal/ac per 4 foot water depth	Reward®: EPA Reg. No. 100-1091 Diquat E-Pro: EPA Reg. No. 79676-75
Triclopyr	2.5 ppm	Triclopyr 3®: EPA Reg. No. 81927-13
Penoxsulam	150 ppb per annual growth cycle	Galleon SC™: EPA Reg. No. 62719-546-67690

**Table containing list of areas scheduled for treatment in 2019.** The map plate number refers to the attached set of map plates.

<b>Area Name</b>	<b>Acreage</b>	<b>Map Plate</b>	<b>Target Plant</b>	<b>Comments</b>
Acorn Drive Canal	3	21	Limnophila, milfoil	Access to channel
Bluebird Pond Channel	7	22	Hydrilla, pondweed	Recreation
Brockett's Slough	48	23,24	Hydrilla, milfoil	Recreation, channel access
Buena Vista Upper	25	46,55	Hydrilla, cutgrass	Recreation, fisheries habitat
Buena Vista West	16	46	Hydrilla, cutgrass	Recreation, fishery habitat
Bully Arnold North Lower	11	29	Hydrilla, Limnophila, primrose	Recreation, boat ramp access to river

<b>Area Name</b>	<b>Acres</b>	<b>Map Plate</b>	<b>Target Plant</b>	<b>Comments</b>
Bully Arnold North Upper	9	29	Hydrilla, primrose	Recreation, boat ramp access to river
Bully Arnold Ramp	3	29	Hydrilla, Cabomba, watershield	Recreation, boat ramp
Bully Arnold River	11	29	Hydrilla, Limnophila	Boat ramp access to river, fisheries habitat
Chattahoochee Park Canal	3	12	Milfoil, hydrilla, cutgrass, primrose	Recreation
Chattahoochee Park Ramp	4	12	Hydrilla	Boat ramp access to river, recreation
Corps Boat Basin	3	3	Hydrilla, coontail	Operations, Corps boat house
Corps Boat Basin Channel	2	3	Hydrilla	Operations, Boat Basin access
Cypress Pond	35	21	Milfoil, Limnophila, pondweed	Channel, fisheries habitat
Cypress Pond Barrier	4	21	Hydrilla, Cabomba, Limnophila, pondweed	Operations, electric barrier
Desser	2	47	Hydrilla, Cabomba, Limnophila, cutgrass	Recreation, boat ramp
Desser Lower Westside	24	47	Hydrilla, hyacinth, cutgrass	Fisheries habitat
Desser Upper	20	47	Hydrilla	Fisheries habitat
Eastbank CG Canal	1	3	Hydrilla, milfoil, pondweed	Recreation, fisheries habitat
Eastbank CG Ramp	7	3	Hydrilla, milfoil, pondweed	Recreation
Faceville Landing	5	25	Hydrilla, primrose, Cuban bulrush	Recreation, Ramp, Campground, Fisheries habitat

<b>Area Name</b>	<b>Acres</b>	<b>Map Plate</b>	<b>Herbicide</b>	<b>Comments</b>
Fairchild's Ramp	13	29	Hydrilla	Recreation, fisheries habitat, boat ramp
Fairchild's Slough	41	29	Hydrilla, pondweed, Cabomba, cutgrass	Fisheries habitat, recreation, boat access
Fireman's Cut	26	22,23	Hydrilla, Cabomba, cutgrass, Cuban bulrush	Recreation, channel access from Flint river to Spring Creek
FPD Barrier	5	30	Hydrilla, Limnophila	Operations, electric barrier, Limnophila
FPD Lower Section 1	11	21	Hydrilla	Recreation, Fish Pond Drain channel Access to main lake body
FPD Lower Section 2	11	21	Hydrilla	Recreation, Fish Pond Drain channel Access to main lake body
FPD Lower Section 3	13	21	Hydrilla	Recreation, Fish Pond Drain channel access to main lake body
FPD Lower Section 4	11	21	Hydrilla	Recreation, Fish Pond Drain channel Access to main lake body
FPD Lower Section 5	11	21	Hydrilla	Recreation, Fish Pond Drain channel Access to main lake body
FPD Lower Section 6	21	21	Hydrilla	Recreation, Fish Pond Drain channel Access to main lake body
FPD Upper Section 1	6	30	Hydrilla, Limnophila, milfoil	Recreation, channel access from Rays Lake to State Park
FPD Upper Section 2	27	21,30	Hydrilla, Limnophila, milfoil	Recreation, channel access from Rays Lake to State Park
Frog Pond Channel	6	21	Limnophila	Recreation, Fisheries habitat
Goat Island	29	23	Hydrilla, primrose,	Fisheries habitat

			cutgrass, Cuban bulrush	
<b>Area Name</b>	<b>Acres</b>	<b>Map Plate</b>	<b>Herbicide</b>	<b>Comments</b>
Hickory Pond	6	21	Limnophila, pondweed, Bacopa	Recreation, Fisheries Habitat
Hickory Pond Barrier	6	22	Hydrilla	Operations, electric barrier
Holly Isles Canal	10	21	Limnophila, milfoil	Channel access
Holly Isles Bridge	10	21	Limnophila, pondweed	Small boat channel
Howells Ramp	7	11	Hydrilla	Boat ramp
Kelly's Slough	12	23	Cabomba, hydrilla, cutgrass, primrose	Subdivision, fisheries
Lewis Pond	275	30	Limnophila, hydrilla, cutgrass, Cuban bulrush, milfoil	Small boat channel, recreation, fisheries habitat
Little Dothan	3	38	Hydrilla	Channel, access to subdivision
Parramore Run	9	38	Hydrilla, cutgrass	Recreation, boat ramp access
Pear Orchard Head	14	10	Hydrilla, cutgrass, primrose, Cuban bulrush	Recreation, fisheries habitat
Pear Orchard Lower	11	11	Hydrilla, cutgrass, primrose	Recreation, fisheries habitat, subdivision access
Pear Orchard Middle	10	11	Hydrilla, Cabomba	Recreation, fisheries habitat, subdivision access
Pear Orchard Upper	8	11	Hydrilla, Cabomba, Naiad	Recreation, fisheries habitat, subdivision access

<b>Area Name</b>	<b>Acres</b>	<b>Map Plate</b>	<b>Herbicide</b>	<b>Comments</b>
Pickle Slough	23	30	Limnophila, hydrilla, cutgrass, cattail, Cuban bulrush, hyacinth	Fisheries habitat, access to Lewis Pond
Ranger Station Inner	4	20	Hydrilla, cutgrass, Cuban bulrush	Operations, access to Ranger Station
Ranger Station Outer	5	20	Hydrilla, cutgrass, Cuban bulrush	Operations, access to Ranger Station
Rays Lake	11	30	Hydrilla, milfoil, pondweed, hyacinth	Recreation, fishing pier, boat ramp
River Junction Ramp	5	12,13	Hydrilla, pondweed	Boat ramp
Sealy Ramp	2	21	Hydrilla	Recreation, channel to boat ramp
Sealy Run	8	12,21	Hydrilla	Recreation, channel for River to Sealy Ramp
Seminole Lodge Channel	9	11	Hydrilla	Recreation, marina, boat ramp, channel
Seminole State Park	25	21,30	Hydrilla, Limnophila	Seminole State Park
Sneads Park	22	11	Hydrilla	Recreation, swimming, bank fishing
Spring Creek Park Channel	6	22,31	Hydrilla, Cabomba, milfoil, bulrush, hyacinth	Recreation, marina
Spring Creek Park East	6	31	Hydrilla, Cabomba, cutgrass, lotus, water lily	Recreation, boat ramp
Spring Creek Park Marina	4	31	Hydrilla, Cabomba, milfoil, Limnophila, primrose	Recreation, marina

Area Name	Acres	Map Plate	Herbicide	Comments
Spring Creek Park West	8	31	Hydrilla	Recreation
Spring Creek Run	114	12, 21,22,31,32,41	Hydrilla, hyacinth, cutgrass, Cuban bulrush, primrose	Recreation, channel
Three Rivers State Park	38	11	Hydrilla, cutgrass, Cuban bulrush, cattail	Recreation, fisheries habitat
Trails End Marina	8	20	Hydrilla, Cabomba, Limnophila, Cuban bulrush, cutgrass	Recreation, marina
Turkey Pond	21	21	Limnophila	Recreation, fisheries habitat
Turkey Pond Drain	34	21	Limnophila, hydrilla, pondweed	Recreation, channel
Wingate's Marina	21	23	Hydrilla, Cabomba, primrose, cutgrass, Cuban bulrush	Recreation, marina, channel

**b. BIOLOGICAL:**

**1. Triploid Grass Carp (*Ctenopharyngodon idella*):**

The triploid grass carp are confined within two areas, known as Fish Pond Drain and Cypress Pond with low voltage electric barriers. The Cypress Pond barrier was destroyed and the Fish Pond Drain barrier was damaged by Hurricane Michael in 2018. Plans are to rebuild the barrier and restock triploid grass carp when funding is secured. Monitoring of the submersed vegetation within the confinement areas will continue. Hydrilla within the Fish Pond Drain area has expanded along with Eurasian milfoil and pondweed. *Limnophila sessiliflora* has expanded and herbicide treatments will occur inside the barriers for this plant. Native vegetation within the Cypress Pond area has not been reduced as significantly as in the Lewis Pond area. The electronics for the low voltage electric barriers are inspected once a year by

Smith-Root, Inc. in February. Approximately 16,000 triploid grass carp were released in November/December 2017.

2. **Hydrilla Leaf-mining Fly (*Hydreillia pakistanae*):**

There will not be new releases of the hydrilla leaf-mining fly within the confines of Lake Seminole 2019. We do expect the existing hydrilla fly population to minimal impact on the hydrilla that is topped out at the water surface.

c. **MECHANICAL:**

At the present time, there are no plans to utilize mechanical harvesters. Mechanical harvesters however, may be authorized by permit.

d. **PHYSICAL:**

There are no plans by the Corps to perform any large scale physical removal of submersed aquatic plants; however specified acts permits may be given to shoreline permit holders for large scale physical removal.

e. **PERMITS:**

The Corps is not authorized to treat aquatic plants around private docks. Docks may receive the benefits from herbicide dispersal from aquatic plant treatments; however specified acts permits may be given to shoreline permit holders for herbicide treatments through a certified aquatic pesticide applicator. Permit applications can be obtain at the Woodruff/Seminole Site website located [here](#).

II. **FLOATING**

a. **WATER HYACINTH (*Eichhornia crassipes*):**

Anticipated to treat up to 200 acres with glyphosate/2,4-D combination, glyphosate/diquat, or 2,4-D/diquat. Treatments will start in early April and continue into November. This early start to the treatment will assist in the reduction of herbicide needed for control in late summer. The focused areas will be the Chattahoochee River, Spring Creek, and Flint River.

III. **EMERGENT**

a. **GIANT CUTGRASS (*Zizaniopsis miliacea*):**

Anticipated to treat up to 500 acres of giant cutgrass using glyphosate, imazapyr, and diquat/glyphosate. A large portion of the treatments will be in the Chattahoochee River and Spring Creek arms of the lake. The treatments will consist of treating the outer edges of the cutgrass beds; this will be a continuing program attempting to reduce the surface acreage of giant cutgrass to the shoreline. In an effort to reduce the biomass, prescribed fire may be used where appropriate. If funding allows, aerial spraying contracts may be used.



b. **PHRAGMITES (*Phragmites australis*):**

Anticipated to treat up to 50 acres of phragmites are scheduled for treatment. These areas will be treated twice, once in the spring with imazapyr and again in mid-summer using imazapyr/glyphosate. Phragmites continues to expand with small isolated pockets becoming established in the Chattahoochee River arm of Lake Seminole from Fairchild's to Three Rivers State Park. In an effort to reduce the biomass, prescribed fire may be used where appropriate. If funding allows, aerial spraying contracts may be used.

c. **AMERICAN LOTUS (*Nelumbo lutea*):**

The American lotus populations have steadily expanded and are causing recreational navigation problems in parts of the lake. The Chattahoochee River arm of the lake has the highest infestation particularly near Mercer Subdivision and south of Fairchild's Park. Early summer treatments of American lotus have been successful. If the American lotus is prevalent again this year, treatments will start in early summer, probably during June. Treatments will start near Parramore's and extend down the Chattahoochee River to include the Howells Landing area. The anticipated treatment area will be approximately 100 acres with a glyphosate herbicide.

d. **WATER PRIMROSE (*Lugwigia grandiflora*)**

Water primrose is another exotic invasive that has a population that has exploded on Lake Seminole. It is difficult to treat because of both emergent and submersed parts of the plant. It doesn't readily uptake herbicide from the water and treating the emergent portions brown the tops, but doesn't translocate to roots. Do to the other plants that it typically found with such as water hyacinth and Cuban bulrush it will be treated with similar herbicide combinations of 2,4-D/diquat, 2,4-D/glyphosate, or diquat/glyphosate. These combinations will have effect on both the submersed and emergent portions of the plant.

e. **CUBAN BULRUSH (*Oxycaryum cubense*)**

Cuban bulrush is steadily expanding along the margins of Lake Seminole and is reducing open water area. Treatment with a combination of 2,4-D/diquat, 2,4-D/glyphosate, and diquat/glyphosate appear to be having positive effect.

