2026 WALTER F. GEORGE LAKE AQUATIC PLANT MANAGEMENT PLAN

Abstract

This Aquatic Pesticide Application Plan is the guiding document for all aquatic plant management activities for calendar year 2026.

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Contents

BACKGROUND INFORMATION:

Aquatic Plants and Invasive Species at Walter F. George Lake

Aquatic plants play a vital role in lake ecosystems. They provide habitat and food for wildlife, protect shorelines from erosion, stabilize water temperature, and produce oxygen. However, when non-native, invasive plants are introduced, they can grow quickly and take over, disrupting the balance of the ecosystem. In Walter F. George Lake, invasive plants have caused problems such as:

- Loss of fish and wildlife habitat
- Reduced diversity of native plants
- Deterioration of wetlands and water quality
- Reduced space for recreation and boating
- Clogged water supply lines and flooding

Legal Authority for Aquatic Plant Management
The control of invasive aquatic plants is authorized under several federal laws, regulations, and policies, including:

- Section 104 of the River and Harbor Act of 1958, as amended (33 U.S.C. § 610). Control of aquatic plant growths and invasive species.
- Section 501 of the Water Resources Development Act of 2020 (Public Law 116-220). Update on Invasive Species Policy Guidance.
- Section 7001 of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (Public Law 116-9) dated March 12, 2019.Wildlife habitat and conservation.
- National Invasive Species Act of 1996, Section 1039(b) of the Water Resources Reform and Development Act of 2014, as amended (16 U.S.C. § 4701 note).
- Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (Public Law 101-646) dated November 29, 1990, as amended (Public Law 115-282) dated December 4, 2018 (16 U.S.C. § 4701 et seq.).
- Section 1039(b) of the Water Resources Reform and Development Act of 2014, as amended (16 U.S.C. § 4701 note). Aquatic Invasive Species Prevention.
- Executive Order 13112, as amended by Executive Order 13751;

Safeguarding the Nation from the Impacts of Invasive Species, December 8, 2016.

- National Invasive Species Council, 2023 National Invasive Species Management Plan, dated October 29, 2022.

- Chapter 3, Pest Control Program for Civil Works Projects, Engineer Regulation 1130-2-540 dated November 15, 1996.

- USACE Invasive Species Policy dated February 21, 2023.

- Chapter 3, Pest Control Program for Civil Works Projects, Engineer Pamphlet 1130-2-540 dated November 15, 1996.

History of Aquatic Plant Management at Walter F. George Lake

- The 1979 Environmental Impact Statement (EIS) for the lake recognized the need to manage nuisance aquatic plants, but invasive plants were not a widespread problem at that time. Early management included chemical herbicides like 2,4-D for water hyacinth and biological controls such as Alligatorweed flea beetles and stem borer moths.

- Hydrilla, an invasive submerged plant, has since become widespread. In response, USACE developed a 2007 Environmental Assessment (EA) and updated it in 2020, recommending an integrated management approach. This approach combines triploid grass carp, chemical herbicides, mechanical removal, and the establishment of native plants.

Purpose of the Aquatic Pesticide Application Plan (APAP)
This APAP is a comprehensive plan for managing aquatic plants and algae in Walter F. George Lake. It:

- Describes the types of plant and algae problems in the lake

- Lists the aquatic pesticides that may be used

- Outlines monitoring programs and Best Management Practices (BMPs)

- Ensures compliance with state and federal permits

Pesticide Use
Aquatic pesticide treatments help maintain the authorized uses of the lake, protect water quality, and manage nuisance vegetation. Treatment needs vary throughout the year based on factors such as water temperature, sunlight, nutrient availability, and plant growth rates. When used properly, herbicides are an effective, practical, and environmentally responsible tool for managing invasive aquatic plants.

Key reasons include:

1. **Effective control of invasive species**
   Invasive aquatic plants often spread rapidly and outcompete native vegetation. Herbicides can selectively target these species and reduce their dominance, allowing native plants to recover.

2. **Protection of ecosystems**
   Dense infestations can alter water quality, reduce dissolved oxygen, and degrade fish and wildlife habitat. Managing invasives helps restore more natural ecological balance.

3. **Improved water access and use**
   Invasive plants can obstruct boating, fishing, swimming, navigation, irrigation intakes, and hydropower operations. Herbicide treatments can reopen waterways and maintain safe access.

4. **Cost-effectiveness for large infestations**
   For widespread or submerged infestations, herbicides are often more practical and affordable than mechanical harvesting or manual removal, especially over large water bodies.

5. **Ability to treat submerged and rooted plants**
   Many problematic species grow below the surface where mechanical methods are limited. Aquatic herbicides can reach and control plants throughout the water column.

6. **Selective management options**
   Some herbicides are species-specific or can be applied in ways that minimize impacts to non-target plants and animals, supporting targeted management rather than wholesale removal.

7. **Reduced spread compared to mechanical methods**
   Mechanical removal can fragment plants like hydrilla or Eurasian watermilfoil, potentially increasing spread. Herbicides kill plants in place, reducing fragmentation and re-infestation.

8. **Support for integrated management plans**
   Herbicides are often one component of an Integrated Pest Management (IPM) strategy, used alongside biological controls, mechanical removal, and prevention efforts.

9. **Longer-lasting control**
   Some herbicides provide season-long or multi-season control, reducing the frequency of treatments compared to purely mechanical approaches.

10. **Regulatory and safety oversight**
    Aquatic herbicides are rigorously tested and regulated, and when applied by certified applicators under permits, they can be used safely with minimal risk to people and the environment.

The APAP provides guidance to ensure that aquatic vegetation management is safe, effective, and protective of the lake ecosystem and public use.

Permit Coverage

The General Permit (No. ALG870050 and GAG820066) regulates the discharge of registered pesticides into and adjacent to waters of Alabama and Georgia.

Limitations of Coverage

This general permit does not cover:

1. Pesticide applications that do not require an NPDES permit, including:
    - Runoff from non-point source agricultural and forestry activities, such as orchards, crops, pastures, and forest lands.
    - Return flows from irrigated agriculture.
2. Impaired waters:
    - Under the Clean Water Act (CWA), states assess water quality and identify waters that do not meet their designated uses.
    - Pesticide applications are not permitted in waters listed as impaired for the pesticide or its breakdown products.
    - Lists of impaired waters are available at:
        - ADEM
        - EPD Streams
        - EPD Lakes
3. Pesticides labeled only for terrestrial use.
4. Discharges covered by another permit:
    - If the discharges are covered by another NPDES permit.
    - If the discharges were covered by a permit that has been denied, terminated, or revoked within the past five years.

Waters of the United States

The General Permit applies to “waters of the United States,” including:

- Traditional navigable waters

        - Rivers, lakes, and waters used (or capable of use) in interstate or foreign commerce.

- Territorial seas
    - Coastal waters subject to federal authority.
- Relatively permanent waters
    - Streams, rivers, lakes, and similar waters that are:
        - Continuous or standing.
        - Not merely ephemeral (not flowing only after rainfall) Intrastate lakes, rivers, streams, ponds, wetlands, sloughs, and other waters that could affect interstate commerce.
- Wetlands with continuous surface connection.
    - Wetlands that:
        - Are adjacent to jurisdictional water and
        - Have a continuous surface connection, making it difficult to tell where the water ends, and the wetland begins.

Excluded:

- Isolated wetlands
- Ephemeral streams (flow only in response to rain)
- Wetlands separated by berms, roads, levees, or uplands
- Ditches (unless they function as relatively permanent waters)
- Ponds or depressions with no surface connection
- Groundwater

Water Quality Standards

Under the CWA, water quality standards establish:

- Designated uses for waterbodies
- Water quality criteria based on these uses
- Anti-degradation policies to protect water quality

States are responsible for setting, reviewing, and revising these standards. In Alabama, they are published in Alabama Administrative Code 335-6-10 and 335-6-11. In Georgia, they are in Chapter 391-3-6-.03 of the Georgia Rules and Regulations for Water Quality Control.

Effluent Limitations

NPDES permits require:

- Use of Best Available Technology (BAT) and Best Conventional Technology (BCT) to control discharges.
- Effluent limits to prevent or correct water quality standard violations.
- Narrative effluent limits for aquatic pesticides, since numeric limits are not feasible.

Receiving Water Limitations:

- Applications must not cause exceedances of water quality standards:
    - Outside the treatment area at any time
    - Inside the treatment area after the treatment is complete

Pesticide Residues:

- Pesticides are effective at killing or controlling target species during treatment.
- After the active concentration drops below effective levels, the chemical becomes a residue.
- The time and concentration needed depend on site-specific factors such as water flow, chemistry, and target species.

Monitoring:

- Post-treatment monitoring is required once sufficient time has passed to observe the effects of the pesticide application.

MONITORING REQUIREMENTS:

The General Permit requires dischargers to follow the Monitoring and Reporting Program (MRP)**.** The main goals of the MRP are to:

1. Identify and document algaecide or aquatic herbicide applications.
2. Ensure compliance with receiving water limitations and other permit requirements.

3. Evaluate and improve the effectiveness of the Aquatic Pesticide Application Plan.

4. Support the implementation and success of Best Management Practices (BMPs).

5. Assess the chemical, physical, and biological impacts of pesticide applications on the receiving waters.

6. Conduct visual checks during applications and post-application follow-ups to verify effectiveness and safety.

7. Submit annual reports to ADEM and biennial reports to EPD**.**

This Plan has been prepared to meet these monitoring requirements and those specified in the General Permit.

DESCRIPTION OF THE WATER SYSTEM

Walter F. George Lake is maintained by the U.S. Army Corps of Engineers. Nuisance aquatic vegetation in the lake can negatively affect its uses by:

- Restricting navigation
- Limiting hydropower generation
- Reducing recreational opportunities
- Impeding water flow
- Decreasing fish and wildlife habitat

To address these impacts, the Corps has used herbicides since the 1970s to prevent aquatic vegetation from interfering with the lake's beneficial uses.

Figure 1: Geographical extent of Walter F. George Lake AL/GA.

DESCRIPTION OF THE TREATMENT AREAS

At different times of the year, many areas of Walter F. George Lake are affected by nuisance growths of floating, emergent, and submerged aquatic vegetation. The main plant species causing impacts include:

- **Submerged plants*:** Hydrilla (*Hydrilla verticillata*), East Indian Hygrophila (*Hygrophila polysperma*)
- **Floating plants:** Water hyacinth (*Eichhornia crassipes*), American lotus (*Nelumbo lutea*), Common salvinia (*Salvinia minima*)
- **Emergent and shoreline plants:** Giant cutgrass (*Zizaniopsis miliacea*), Common reed (*Phragmites australis*), Cuban bulrush (*Oxycaryum blepharoleptos*), Alligatorweed (*Alternanthera philoxeroides*), Torpedograss (*Panicum repens*), Giant reed (*Arundo donax*), water primrose species (*Ludwigia* sp.), Chinese tallowtree (*Triadica sebifera*), and Chinese rattlebox (*Sesbania punicea*)

*Algae may also be targeted in the future if it reaches nuisance levels.

The lake has a surface area of 45,181 acres. Hydrilla coverage peaked at approximately 7,000 acres in 2007 but has been reduced to minimal levels since Hurricane Michael in 2018. However, many areas of the lake continue to experience growth of floating and emergent vegetation.

Table 1: Treatment Areas

Area Name	Acreage	Target Plant	Comments
Bagby Boat Marina and Ramp	10	Hydrilla, primrose, Cuban bulrush, cutgrass, torpedograss	Marina, boat ramp, recreation
Bagby Cabins	18	Hydrilla	Recreation
Bagby Lodge	3.5	Hydrilla, giant cane	Recreation
Bagby Swim Beach	4	Hydrilla, primrose	Recreation
Barbour Creek	53	Cutgrass, hygrophila, primrose, hyacinth, tallowtree	Habitat restoration
Barbour Creek Boat Ramp	1	Cutgrass, primrose, hyacinth	Boat ramp, recreation
Bluff Creek CG	27.5	Cutgrass, hydrilla, primrose, hyacinth	Boat ramp, recreation, habitat restoration
Causeway	28	Cutgrass, hyacinth, giant cane	Habitat restoration
Cheneyhatchee Creek	7.5	Cutgrass, primrose	Habitat restoration
Cheneyhatchee Park	0.3	Cutgrass, Primrose	Recreation, access
Chewalla Creek	37.5	Cuban bulrush, primrose, hyacinth, cutgrass,	Habitat restoration
Chewalla Creek Marina	11	Primrose, hyacinth, Cuban bulrush	Marina, recreation
Cool Branch Park	7	Hydrilla, cutgrass, primrose	Boat ramp, recreation
Corps Boat Basin	58.7	Hydrilla, hygrophila, primrose, giant cane, cutgrass, torpedograss	Operations, boat ramp, habitat restoration
Corps Office	32	Hydrilla, giant cane, cutgrass	Operations, habitat restoration
Corps Office Day Use	14	Hydrilla, cutgrass, primrose, torpedograss	Recreation, habitat restoration

Area Name	Acreage	Target Plant	Comments
Cottonhill CG	84	Hydrilla, primrose, hyacinth, cutgrass, torpedograss	Recreation, habitat restoration
Cowikee Creek	2026	Primrose, hyacinth, Cuban bulrush, common salvinia, tallowtree	Habitat restoration
Eufaula NWR	61	Hygrophila, hydrilla, cutgrass, hyacinth, primrose, Cuban bulrush, lotus, tallowtree	Habitat restoration, recreation
Eufaula NWR Intake Structures	70	Primrose, hyacinth, cutgrass, Cuban bulrush	Operations, habitat restoration
Florence Marina	133	Hydrilla, parrotsfeather, cutgrass, hyacinth, primrose, Cuban bulrush, torpedograss	Marina, boat ramp, recreation
Florence Marina West	53	Cutgrass, hyacinth, primrose, Cuban bulrush	Habitat restoration
Grass Creek	172	Primrose, hyacinth, cutgrass, Cuban bulrush	Habitat restoration
Hannahatchee Creek	81	Primrose, hyacinth, cutgrass	Habitat restoration
Hardridge Creek CG	30	Hydrilla, lotus, primrose	Boat ramp, recreation, habitat restoration
Hardridge Creek Swim Beach	13	Hydrilla, primrose	Recreation
Hatchechubbee Creek	120	Hydrilla, cutgrass, primrose, hyacinth	Boat ramp, recreation, habitat restoration
Highland Park	17	Hydrilla	Boat ramp, recreation
Lakepoint State Park	6	Hydrilla, cutgrass, primrose, hyacinth, Cuban bulrush, lotus, tallowtree	Marina, boat ramp, recreation, habitat restoration
Little Barbour Creek	92	Primrose, hyacinth, cutgrass	Habitat restoration
Old Creek Town Beach	1	Hydrilla, primrose, torpedograss	Recreation

Area Name	Acreage	Target Plant	Comments
Old Creek Town Boat Ramp	12	Hydrilla, cutgrass, primrose, hyacinth, Cuban bulrush	Boat ramp, recreation
Pataula Creek Park	34	Hydrilla, primrose, torpedograss	Boat ramp, recreation
Pataula Shores Ramp	0.8	Hydrilla, primrose, torpedograss	Boat ramp, recreation
River Bend	786	Cutgrass, hyacinth, primrose	Access, habitat restoration
River Bend Boat Ramp	3	Hydrilla, cutgrass	Boat ramp, recreation
River Bluff Boat Ramp	1	Hydrilla, primrose, cutgrass	Boat ramp, recreation
Rood Creek	108	Hydrilla, cutgrass, hyacinth, primrose	Access, recreation, habitat restoration
Sandy Branch	37	Hydrilla, primrose	Access, recreation, habitat restoration
Sandy Creek	7	Hydrilla	Access
Thomas Mill Boat Ramp	0.7	Hydrilla, primrose, torpedograss	Boat ramp, recreation
Tobananee Creek	59	Cutgrass, primrose	Access, habitat restoration
US Coast Guard Eufaula	2	Primrose	Operations
White Oak Creek Boat Ramp	1	Hydrilla, cutgrass, primrose, torpedograss	Boat ramp, recreation
White Oak Creek CG	24.5	Hydrilla, cutgrass, primrose, torpedograss	Recreation, habitat restoration
White Oak Creek Day Use	5	Hydrilla, cutgrass, primrose, torpedograss	Recreation, habitat restoration
Wylaunee Creek	92	Primrose, cutgrass, Cuban bulrush, hyacinth, Hygrophila, tallowtree	Access, habitat restoration

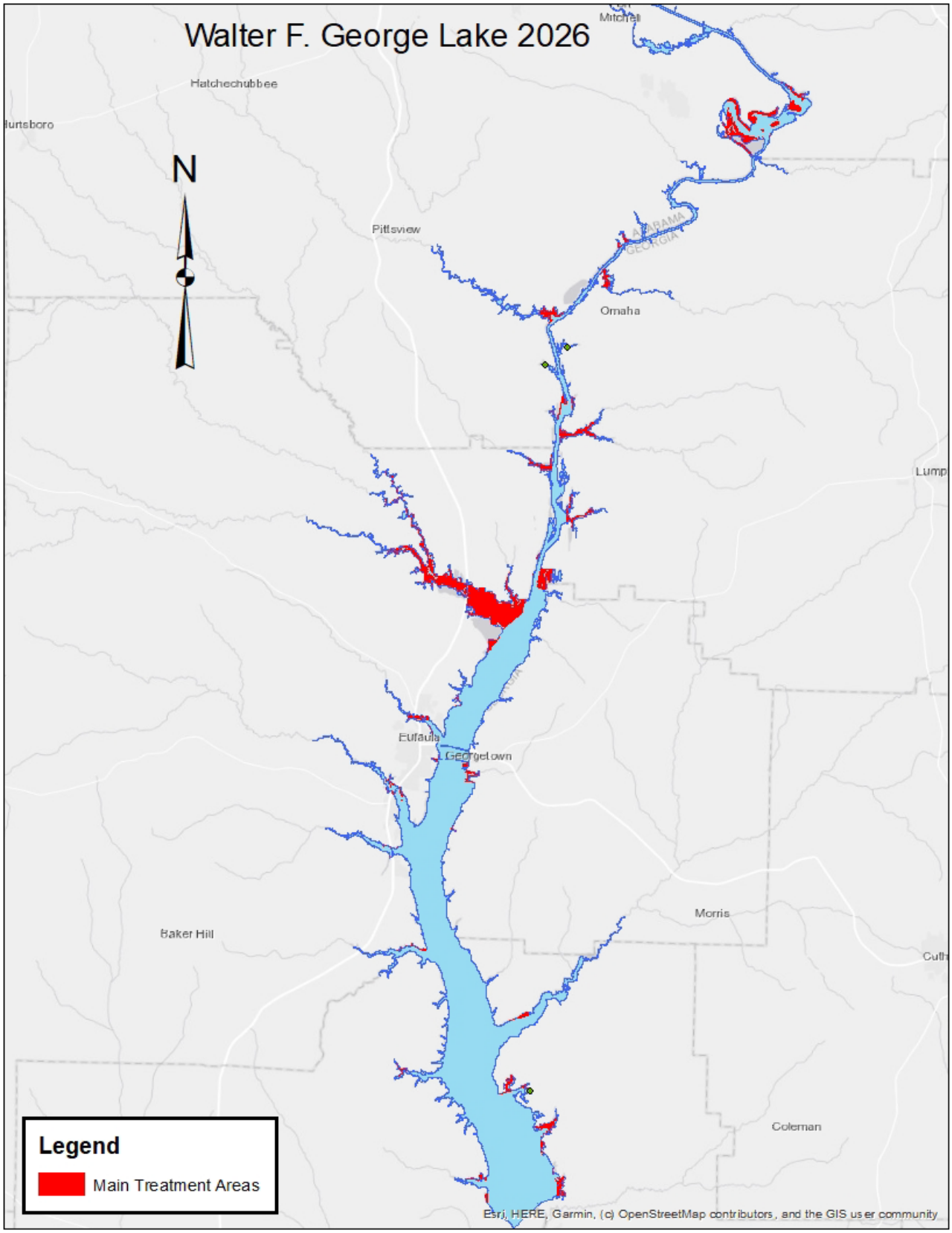

Figure 2: Overview Map of Treatment Areas

Application Schedule

The U.S. Army Corps of Engineers (USACE) Aquatic Plant Manager determines which areas of the lake will be treated. Treatment decisions are based on:

- Management goals of the lake
- Location and timing of vegetation growth
- Available herbicide inventory
- Funding

Applications are carried out by certified aquatic pesticide applicators, including USACE staff, their Operation and Maintenance contractors, or other contracted certified applicators. Due to the number of treatments and the size of the lake, treatments will begin in late winter/early spring when active growth begins and continue throughout the growing season which can stretch into December. Submersed plant treatments can occur all year long.

Public Notice

The Aquatic Pesticide Application Plan is available on the Walter F. George Lake project website. Treatment locations may change without notice due to onsite conditions or other factors.

AQUATIC PESTICIDES, ADJUVANTS, AND APPLICATION METHODS

The table below lists the aquatic pesticides that may be used in the lake's plant control program. Treatment needs are determined based on vegetation growth and visual monitoring.

Table 2. Aquatic Pesticides Used

Herbicide/Algaecide*	***Swimming Restrictions***	***Fish Consumption Restrictions***	***Irrigation Turf and Food Crop Restrictions***	***Adjuvant***
2,4-D	0	0	3 weeks or 0.1 ppm or less	Aquatic Labeled
Flumioxazin	0	0	3 Days	Aquatic labeled 80% non-ionic surfactant
Copper Complexes	0	0	0	Aquatic labeled d-limonene or similar surfactant
Diquat Dibromide	0	0	3-5 Days	Aquatic labeled surfactant
Endothall	0	0	0	Not Applicable

Fluridone	0	0	14 Days	Not Applicable
Glyphosate	0	0	0	Aquatic labeled 50% min non-ionic surfactant
Imazamox	0	0	Less than or equal to 50 ppb	Aquatic labeled surfactant
Imazapyr	0	0	120 Days or less than or equal to 1 ppb	Aquatic labeled surfactant
Penoxsulam	0	0	Less than or equal to 1 ppb	Aquatic labeled surfactant
Triclopyr	0	0	120 Days or until Non-detectable by immunoassay test	Aquatic non-ionic surfactant
Carfentrazone	0	0	14 days	MSO or non-ionic surfactant
Bispryribac-sodium	0	0	Less than or equal to 1 ppb	Aquatic labeled 80% non-ionic surfactant
Florpyrauxifen-benzyl	0	0	Up to 35 days or use FasTEST	MSO

Refer to Product Labels and SDS's for Further Information

Aquatic Pesticide Applications

All aquatic pesticide applications at Walter F. George Lake are performed using Best Management Practices (BMPs) by licensed personnel in compliance with the states of Alabama and Georgia. Applications are carried out by USACE staff or contractors certified to apply aquatic herbicides.

- Floating and emergent vegetation is treated using a handgun sprayer or boom, applied from a boat, shore-based trailer, or helicopter.

- Submerged vegetation is treated from a boat using a subsurface injection system, broadcast spreader, or helicopter.

Factors Influencing Weed Control

Decisions to treat aquatic vegetation are based on the plant's growth stage and re-evaluated at the time of treatment. The Aquatic Plant Manager (APM) determines whether vegetation is at nuisance levels and negatively impacting the lake's beneficial uses.

Based on the APM's assessment, a pest control recommendation is developed for any aquatic herbicide application. Applications are guided by:

- Continuous monitoring of the lake for aquatic vegetation growth.

- Scheduling control measures before vegetation reaches nuisance levels.
- Priority levels of areas based on potential impact to lake uses.

REPORTING:

Reporting and Recordkeeping for Aquatic Pesticide Use
All aquatic pesticide applications are carefully documented and reported to state agencies (ADEM in Alabama and EPD in Georgia). Reports are submitted annually or every two years and include:

1. Permittee Name;
2. NPDES Pesticide General Permit Number;
3. Responsible Person;
4. Treatment Summary;
5. Identification of Waters;
6. Use Pattern;
7. Weeds Treated;
8. Types and Amounts (in pounds) of Algaecides and Aquatic Herbicides Used at Each Application Event;
9. Applicator Name;
10. Was the Application Expressed in the PDMP;
11. Report of Adverse Incidents;
12. Description of Corrective Actions and Rational for the Action.

Data Storage: All data will be recorded on pesticide application forms and entered in a database on the Walter F. George network server.

BEST MANAGEMENT PRACTICES FOR AQUATIC PESTICIDE USE

To protect water quality and the environment while managing aquatic plants, a variety of safety practices are followed:

1. Careful Planning and Monitoring

- Non-chemical control methods are considered first whenever possible.
- Pre-treatment surveys identify where and when treatments are needed.
- Treatment plans are adjusted based on survey results, water conditions, and target plant species.

2. Safe and Effective Pesticide Use

- Only EPA-approved pesticides are used at recommended rates.
- Treatments may be applied to part of the waterbody or split over multiple applications to minimize impacts.
- The safest and most effective products are chosen for each situation by trained professionals.

3. Application Safety

- Certified applicators follow all storage, transport, spill prevention, and label instructions.
- Equipment is properly cleaned and maintained.
- Applications are not performed in high winds or other unsafe conditions.
- Only the amount of pesticide needed for the day's treatment is transported and used.

4. Compliance and Licensing

- All applicators and/or supervising staff are certified or licensed by either the states of Alabama and/or Georgia.
- Treatments comply with federal and state regulations, NPDES permits, and pesticide use permits.

5. Communication and Notification

- Nearby water users are notified in advance if treated water could affect irrigation or other uses.

6. Post-Treatment Monitoring

- Surveys are conducted after treatment to check effectiveness and look for any visible impacts on fish, plants, or the environment.

- Alternative methods are considered when conditions are not suitable for chemical treatments.

7. General Requirements

- All applications follow pesticide labels, state licensing rules, and water quality regulations.

- Monitoring, reporting, and safety measures are carried out as outlined in the Aquatic Pesticide Application Plan (APAP).

8. Summary of Pesticide Use Rules

- Applicators must be licensed by the Alabama or Georgia Department of Agriculture if required.

- All pesticide applications must follow label instructions and any state-issued use permits.

These practices ensure that aquatic pesticide use is done responsibly, safely, and effectively to protect both the lake and its surrounding environment.

EXAMINATION OF AQUATIC VEGETATION CONTROL ALTERNATIVES:

All available aquatic plant and algae management methods have been evaluated, with consideration given to the lake's beneficial uses and the areas most affected. These methods include cultural, biological, mechanical, and chemical approaches.

Aquatic plant and algae management can be grouped into four main categories:

1. **Watershed Management** – Reducing nutrient and pollutant runoff from surrounding land (Requires buy-in from various stakeholders).

2. **Biological Control** – Using fish or insects to naturally manage plant growth.

3. **Mechanical and Physical** – Removing plants through mechanical means or other physical methods.

4. **Aquatic Algaecides and Herbicides** – Using EPA-approved chemicals to manage algae and invasive plants.

Watershed Management:
Managing the watershed—the land surrounding a lake or pond—is one of the most important ways to protect water quality. Proper watershed management helps reduce the amount of nutrients and pollutants that run off into the water. In natural areas, most rainfall soaks into the ground, while only a small portion runs off into lakes and rivers.

1. Runoff Impacts

- Non-point source pollution, which comes from many diffuse sources rather than a single pipe, is the biggest threat to water quality.
- Common pollutants in runoff include sediments, oil, antifreeze, pesticides, yard waste, and pet or waterfowl droppings.

2. Nutrient Effects

Excess nutrients from runoff can cause:

- Algae blooms
- Odor problems
- Low oxygen levels in the water
- Fish kills
- Reduced water clarity
- Overgrowth of aquatic plants in shallow areas
- Reduced recreational enjoyment, including boating, fishing, and overall aesthetics

Eutrophication: What It Is and Its Impacts

Eutrophication occurs when a waterbody becomes enriched with nutrients, which can lead to excessive plant and algae growth. This process can cause a variety of problems, including:

- Fish kills from low oxygen or harmful metals
- Taste and odor issues, increasing water treatment costs
- Floating algae mats and decaying plants
- Overgrowth of vegetation in shallow areas
- Release of metals and nutrients from sediments when oxygen is low
- Higher water temperatures
- Reduced water clarity
- Nuisance algae blooms
- Lower oxygen levels in deeper water

- Longer or earlier periods of low oxygen in the bottom layers of the lake

There are several ways to manage land use around a lake or pond to protect water quality:

1. Comprehensive Plans: Guide to long-term growth and development around the waterbody.

2. Stormwater and Surface Water Management: Use data, land-use planning, and design standards to control runoff and protect the watershed.

3. Rules for Waterbody Use: Regulate where, when, and how a waterbody can be used recreationally to reduce shoreline erosion, nutrient buildup, and overuse.

4. Other Administrative Tools: Programs to control shoreline erosion and sedimentation can also help.

Education is one of the most effective ways to prevent water quality problems and encourage responsible use of the watershed.

Non-structural alternatives: Non-structural approaches, such as planting buffer strips around lakes and ponds, help filter out sediments and reduce nutrient runoff. Other methods include using chemicals to reduce phosphorus or control algae, dredging accumulated sediments, and mechanically removing aquatic plants.

Structural alternatives: Stormwater detention basins and wetland treatment systems are designed to hold runoff, helping to reduce flooding downstream. They also allow pollutants to settle out before the water reaches lakes or rivers. Other structural approaches include diverting stormwater away from the lake and using in-lake aeration systems to increase oxygen levels in the water.

Watershed Management Plans: The Georgia Environmental Protection Division (GA EPD) has a Watershed Management Plan aimed at reducing the impacts of surrounding land on the watershed. Alabama does not currently have a similar plan for the Chattahoochee River Basin. While watershed management can help, it alone is usually not enough to fully prevent aquatic plant growth caused by excess nutrients.

Biological Control: There are only a few biological options for controlling aquatic weeds and algae in Walter F. George Lake. Some of the biological controls used include:

- **Triploid Grass Carp** (Ctenopharyngodon idella): These fish help control certain aquatic plants, such as hydrilla.
- **Alligatorweed Flea Beetle** (Agasicles hygrophila): This beetle feeds on alligatorweed leaves and stems. Its effects are usually not noticeable until late summer, and its origin in the lake is unknown.
- **Alligatorweed Stem Borer Moth** (Arcola malloi): The larvae tunnel inside

alligatorweed stems, damaging the plant.

- **Water Hyacinth Weevil** (Neochetina bruchi and Neochetina eichhorniae): These insects feed on water hyacinth, reducing its ability to grow back and allowing natural pathogens to attack the plant.
- **Hydrilla Fly** (Hydrellia pakistanae): This insect feeds on hydrilla, but populations are currently not high enough to provide effective control.

Physical:

Aeration & Water Quality Alteration: Aeration has been used for decades to circulate water and increase dissolved oxygen in lakes and ponds. In lakes where the bottom layers of water have little or no oxygen during the summer, properly designed aeration systems help reduce nutrient buildup by supporting beneficial bacteria that break down nutrients in the water and sediments.

Aeration has been effective in controlling algae growth in small lakes and reservoirs. Systems can include fountains, bottom-diffuser bubblers, or units that add oxygen to deeper water layers. However, aeration is generally not used in large reservoirs, where it is less effective.

For example, Walter F. George Lake receives water from several large creeks as well as the Chattahoochee River, so even during droughts, oxygen levels upstream of the dam remain healthy.

Shading/Light Attenuation: One method used to help control algae is reducing the amount of sunlight that reaches the water. This can be done by adding specially formulated organic dyes to lakes or ponds. These dyes, typically a blend of blue and yellow, limit certain wavelengths of sunlight that algae and underwater plants need to grow.
By reducing available sunlight, the dyes slow photosynthesis and help limit algae growth. This approach is most effective in water that is at least two feet deep. Dye treatments are generally not suitable for large reservoir systems because the dye disperses too quickly to be effective and may also reduce sunlight needed by beneficial native plants.

Sediment Removal: Dredging is generally not used solely to control aquatic plants. Instead, it is typically performed to restore water bodies affected by sediment buildup, excess nutrients, shallow depths, or contaminated materials. While very shallow areas often experience increased plant and algae growth, dredging alone does not provide a long-term solution for vegetation management.

The U.S. Army Corps of Engineers (USACE) is authorized to dredge only specific areas, such as navigation channels, small boat channels, and operational areas. Dredging in these locations would not eliminate floating vegetation and would only temporarily reduce plant growth in the dredged areas. In addition, dredging is costly, as it requires heavy equipment and designated areas to dispose of removed material.

Shoreline permit holders may be eligible to dredge limited amounts of sediment, in accordance with the Shoreline Management Plan.

Mechanical:

Mechanical control is an approved option for managing aquatic plants. This method uses equipment to physically remove vegetation from the water and is especially effective for floating and emergent plants. Removing underwater (submerged) vegetation through mechanical means is generally more costly, provides shorter-lasting results, and may unintentionally spread plant fragments.

In certain situations, the U.S. Army Corps of Engineers (USACE) may use mechanical control methods on a case-by-case basis. Shoreline permit holders who wish to use mechanical equipment may apply for an Aquatic Plant Treatment permit* through USACE.

*This permit does not authorize the permit holder to dredge silt and sediment

INTEGRATED AQUATIC VEGETATION CONTROL RECOMMENDATIONS:

Our management strategy focuses on setting clear treatment thresholds, regularly monitoring aquatic vegetation, and acting when those thresholds are exceeded using Best Management Practices. Control methods for invasive and nuisance aquatic plants are based on survey results, with planned treatment schedules outlined in the APAP. An integrated approach—combining watershed management, targeted herbicide treatments, mechanical control, biological control, and the establishment of native plants—will continue to be used to manage excessive vegetation growth before it interferes with the lake's beneficial uses.

SHORELINE PERMIT HOLDERS:

The U.S. Army Corps of Engineers (USACE) is not authorized to treat aquatic plants around private docks. However, docks may still benefit from herbicide treatments conducted in adjacent areas due to natural dispersal.

Shoreline permit holders may apply for permits to conduct mechanical removal or herbicide treatments on USACE lands and waters. All herbicide applications must be performed by a certified aquatic pesticide applicator.

Permit applications are available through the Aquatic Plant Manager at brent.e.mortimer@usace.army.mil

APAP UPDATES:

This APAP will be updated as General Permit conditions change, as new algaecides or aquatic herbicides are added to the aquatic vegetation management program, or as new control technologies are developed and become available.

END OF APAP