



DEPARTMENT OF THE ARMY
CHARLESTON DISTRICT, CORPS OF ENGINEERS
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CHARLESTON, SOUTH CAROLINA 29403-5107

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)

POLK SWAMP CONTINUING AUTHORITIES PROGRAM (CAP) SECTION 206
AQUATIC ECOSYSTEM RESTORATION PROJECT

DORCHESTER COUNTY, SOUTH CAROLINA

August 2015

The National Environmental Policy Act (NEPA) requires the U.S. Army Corps of Engineers, Charleston District (the Corps) to evaluate the effect of proposed projects on both the environment and human health and welfare. This Finding of No Significant Impact (FONSI) summarizes the results of the Corps' evaluation and documents The Corps' conclusions.

Polk Swamp is about 38,000 acres in size and is located in coastal plain of Dorchester and Orangeburg Counties South Carolina. The project area is located west of the Town of St. George in Dorchester County, SC. The project area begins just south of Polk Swamp's intersection with Interstate 95 and follows Polk Swamp for approximately 5 miles to the swamp's intersection with US Highway 15 (Figure 1).

The Polk Swamp study is being conducted under Section 206, Aquatic Ecosystem Restoration, of the Water Resources Development Act (WRDA) of 1996 (P. L. 104-303), as amended. Section 206 authorizes the Corps of Engineers to initiate investigations and implement projects for aquatic ecosystem restoration with the objective of restoring degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition considering the ecosystem's natural integrity, productivity, stability, and biological diversity.

The goals of this study are to restore the natural hydro period of Polk Swamp, remove invasive vegetation and prevent reestablishment, and to restore the cypress-tupelo and bottomland hardwood forest that historically existed there. A number of conceptual plans were evaluated based on established criteria that considered engineering feasibility, cost effectiveness, environmental impacts, and socioeconomic benefits. Feasible conceptual plans were further refined into viable alternatives consisting of viable restoration measures as described below.

Alternative 5 (Proposed Project) consists of the measures below:

Measure 1: Removal of Blockages

This measure involves the physical removal of blockages within the historic channel throughout the project area. These blockages are primarily comprised of fallen timber, plant growth, choke points where debris has collected, and impoundments created by beaver. The removal of these blockages will allow for the restoration of hydrology, including flood and low water periods.

The removal process will include both mechanical and hand clearing. The mechanical removal will be performed using floating mechanized equipment (likely an amphibious track-hoe) to clear blockages within about a 21-foot wide path within the historic channel. Work would start at the downstream end of the project and work upstream. If additional blockages require removal after the initial pass through the project area that work will be performed working back downstream.

Components of the blockages consisting of inorganic material will be taken off site for upland use or disposal using a small barge. Expansion of the historic channel will be avoided to the extent practical to minimize the amount of material that is required to be transported out of the project area. Organic debris will be placed on higher ground adjacent to blockages to create topographic relief within the floodplain of Polk Swamp and promote the development of micro habitats and greater diversity within the restoration area. When feasible, large components of blockages consisting of trees and other organic material will be taken off site along with the inorganic material for upland use or disposal. In areas where significant impoundments exist, the blockages will be removed slowly to avoid large and sudden changes in water quality downstream of the work. Care will be taken to minimize the amount of debris that is allowed to leave the immediate area and screens will be placed in the channel downstream of the work to capture and collect debris that is released into the channel.

Measure 2: Initial Herbicide Application

While removing the blockages and subsequent standing water would help restore the hydrology of the swamp, it would not remove the emergent vegetation, particularly invasive cattails (*Typha.sp*). The cattails must be eradicated prior to the reestablishment of a bottomland hardwood community. This would be done in five phases: 1) broadcast aerial application of herbicides, 2) controlled burning, 3) post-burn selective application of herbicides to prevent the return of invasive emergent vegetation, 4) replanting native tree species, and 5) maintenance.

- 1) Initial Herbicide Application: The initial herbicide application would be applied to approximately 290 acres of project area that have been converted from bottomland hardwood forest to *Typha sp.* dominated marsh. Due to the size of the area and the difficulty of the terrain, application would be made by helicopter spraying. Through discussions with SCDNR Aquatic Invasive Species Staff the Corps has determined that the preferred herbicide to be used for the initial spraying is Habitat™ (or a similar herbicide) mixed with a glyphosate (or a similar herbicide). The application rate would be 15-20 gallons/acre. Below is a brief description of the herbicides to be used:

Habitat™ works by affecting enzymes only found in plants. It is absorbed through leaves, stems and roots and causes the plant to cease growing and exhaust its nutrient supply. Habitat is approved by the USEPA and has a history of effective herbicide use. This or a similar product would be applied in accordance with the agricultural pesticide standards. For product information please see: http://www.sepro.com/documents/Habitat_Label.pdf.

Glyphosate is one of the most common, widely used products for weed control and is commonly used in household and commercial weed control products. It is the active ingredient in Round Up™, Ranger Pro™, and Strike Out™. Glyphosates are absorbed in the leaves, travel to the roots, and prevent plants from gathering nutrients. Glyphosates break down and do not travel to be absorbed by other plants. Glyphosates have been long used for aquatic plant control. This or a similar product would be applied in accordance with agricultural pesticide standards. For product information please see: <http://npic.orst.edu/factsheets/glyphotech.html>.

- 2) Targeted Herbicide Application: Prior to and after the initial controlled burn, the area would be spot-treated with herbicides to prevent the reintroduction of invasive species (from either germinated seeds or outside sources) that would prevent the successful reestablishment of bottomland hardwood forests. The preferred herbicide to be used for the targeted herbicide application is Clearcast™ (or a similar herbicide) mixed with a glyphosate (or a similar herbicide). Application rate would be 15-20 gallons/acre with backpack spraying being the preferred method of application.

Clearcast™ herbicide is an aqueous formulation that may be applied either directly to water for the control/suppression of certain submerged aquatic vegetation, broadcasted, or used for targeted application on floating and emergent vegetation. Like Habitat™, it attacks plant enzymes and inhibits nutrient uptake, growth, and subsequent survival. It is approved by the USEPA and has a history of use for aquatic plant control.

- 3) Controlled Burning: While the herbicide application would be fatal to *Typha sp.* and other emergent aquatics, the cattails would still reside in the project area due to the fact that their root systems are well embedded and the plants would not be transported downstream, nor would they break down in any reasonable amount of time. The dead plant material must be removed, either by physical means or controlled burn. Conducting a controlled burn would be the most efficient means of removing the dead material and would have the benefit of releasing stored nutrients and carbon back into the system

- 4) Replanting: Replanting, to supplement natural regeneration, would include a mix of trees found in bottomland hardwood forests. Specific species mix will include: bald cypress, willow oak, and water oak.
- 5) Post Planting Maintenance: After the planting, at least 3 years of targeted spraying with Clearcast™ to prevent the reintroduction of emergent vegetation and allow the seedlings to grow. Seedlings would be monitored to ensure success. Diseased seedlings would be removed and replaced.

Alternative 4

Alternative 4 would be identical to the proposed project except that it would not include replanting. The blockages would be removed and the initial application of herbicides and controlled burn would be performed. The area would not be replanted.

Alternative 3

Alternative 3 would be identical to Alternative 4 except that it would not include controlled burning. The blockages would be removed and the application of herbicides would be performed. However, no controlled burning would occur.

Alternative 2

Alternative 2 would be identical to Alternative 3 except that it would not include maintenance herbicide application. The blockages would be removed and the initial application of herbicides would be performed. However, the area would not receive maintenance herbicide application.

Alternative 1

Alternative 1 would only remove the blockages. No herbicides would be applied and no controlled burning or replanting would occur. The existing vegetation would be left in place and area would be allowed to regenerate with whatever species naturally colonizes the area over time.

No Action Alternative

A basic alternative to any proposed plan of improvement is the "No Action" alternative. The No Action Alternative is the most probable future condition if no action is taken. The No Action Alternative will not remove the permanently impounded water, restore the climax palustrine forested ecosystem, or improve water quality throughout the watercourse. Although the area may eventually recover naturally, the area would remain only minimally productive for both fish and wildlife resources that are indigenous to this type of environment for the foreseeable future.

Alternative 5 was selected as the proposed project because it is the only alternative that meets all of the project objectives. None of the other alternatives considered addressed variables present in Polk Swamp that have been found, in several scientific studies, to have a strong negative impact on the restoration of cypress-tupelo swamps.

The Corps criteria for evaluating the effect of the proposed project included the following:

- Important Farmland – This project will not result in the unnecessary and irreversible conversion of farmland to nonagricultural uses
- Formally Classified Lands – no significant impacts to formally classified lands are expected as a result of implementing the proposed project.
- Wetlands– No practical non-wetland alternative exists. Material would be excavated to remove blockages from the channel but no net wetland fill will occur and the activities are considered self mitigating. The proposed project primarily involves the removal of accumulated organic debris. The removal of excavated inorganic debris, with the exception of incidental removal, is not anticipated. Any significant quantities of organic debris will be removed from the project area and stored outside of waters of the US. Anticipated quantities of fill material are minimal. Organic debris collected to open blockages will be selectively placed with the project area (but not within the channel) to create micro topography and habitat refuge for a variety of species. Over time, the organic material will break down.
- Floodplains - No practical non-floodplain alternative exists. The considered actions do not conflict with applicable state and local standards concerning floodplain protection. The considered action will improve the natural and beneficial values of the floodplain
- Water Quality – no significant effects on water quality are expected as result of construction or operation of the proposed project
- Cultural Resources – no effects on cultural resources are expected as a result of implementing the proposed project.
- Threatened and Endangered Species – no effects on threatened and endangered species are expected as a result of implementing the proposed project.
- Noise – a short term increase in noise is expected during construction; however, these impacts will be temporary. No additional effects are anticipated a result of implementing the proposed project.
- Air Quality – A short term decrease in air quality in the immediate vicinity of construction is expected as a result of implementing the proposed project; however, these impacts will be temporary and localized. No additional effects are anticipated a result of implementing the proposed project
- Environmental Justice – no adverse effects on minority and low-income populations are expected as a result of implementing the proposed project.

- Cumulative Impacts – no significant adverse cumulative impacts are expected as a result of implementing the proposed project. Construction of the proposed project would have a long term positive impact to the Polk Swamp Watershed.

The draft EA and FONSI were distributed in August 2015 for a 30 day comment and review period. The Final EA addresses comments received during this review period. No significant comments were received. Since the Corps' findings demonstrate that the project will not significantly adversely affect environmental resources or human health, the preparation of an Environmental Impact Statement is not warranted. The full Environmental Assessment can be downloaded from the internet at

<http://www.sac.usace.army.mil/Missions/CivilWorks/NEPADocuments.aspx>

Date _____

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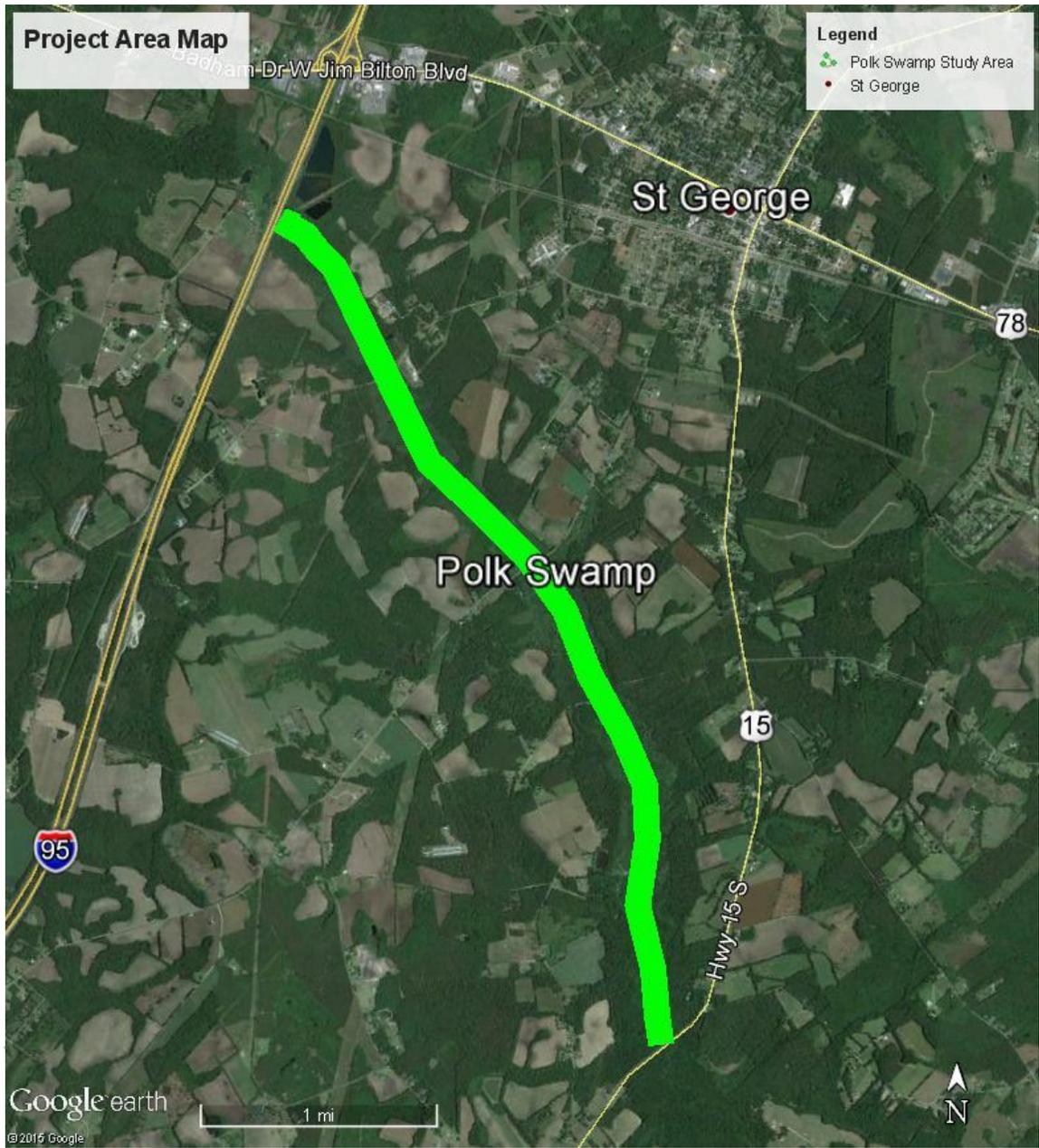


Figure 2: Project Area. General location of Polk Swamp Study Area highlighted bright green.