

UNITED STATES FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ACTION STATEMENT

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and determined that the proposed Hunting Plan for Bond Swamp National Wildlife Refuge in Bibb and Twiggs Counties, Georgia:

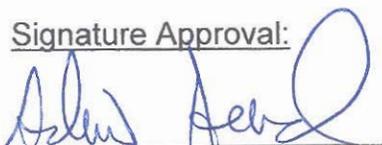
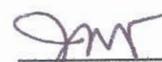
Check One:

- is a categorical exclusion as provided by 516 DM 2, Appendix 1 and 516 DM 6, Appendix 1, Section 1.4 A (4). No further NEPA documentation will therefore be made.
- is found not to have significant environmental effects as determined by the attached Environmental Assessment and Finding of No Significant Impact.
- is found to have significant effects and, therefore, further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an EIS.
- is not approved because of unacceptable environmental damage, or violation of Fish and Wildlife Service mandates, policy, regulations, or procedures.
- is an emergency action within the context of 40 CFR 1 506.1 1. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other Supporting Documents:

Endangered Species Act, Section 7 Consultation, March 2007
Compatibility Determination, March 2007

Signature Approval:

	<u>4/9/07</u>		<u>4/19/07</u>
(1) Originator	Date	(2) Regional Environmental Coordinator	Date
	<u>4/19/2007</u>		<u>4/24/07</u>
(3) Regional Chief, NWRS, Southeast Region	Date	(4) Regional Director, Southeast Region	Date

Sport Hunting
Decision Document Package
for
BOND SWAMP NWR

Contents

2. EA

Environmental Assessment

2007 Sport Hunt Plan

on

BOND SWAMP NATIONAL WILDLIFE REFUGE
Bibb and Twiggs Counties, Georgia

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March 2007

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Chapter 1 Purpose and Need for Action

A. Introduction

In response to a 2003 lawsuit filed by the Fund for Animals, the U.S. Fish and Wildlife Service will amend or rewrite environmental assessments that describe hunting programs at twenty-three national wildlife refuges located in the Southeast Region. The new environmental assessments will address the cumulative impacts of hunting at all refuges which were named in or otherwise affected by the lawsuit. This document addresses the hunting program at Bond Swamp National Wildlife Refuge in Georgia.

The mission of the National Wildlife Refuge System is “... to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resource and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Improvement Act of 1997). National wildlife refuges provide important habitat for native plants and many species of mammals, birds, fish, insects, amphibian, and reptiles. They also play a vital role in preserving endangered and threatened species. Refuges offer a wide variety of wildlife dependent recreational opportunities. Nationwide, about 25 million visitors annually hunt, fish, observe and photograph wildlife, or participate in educational and interpretive activities on refuges.

The federally legislated purposes for which Bond Swamp National Wildlife Refuge (NWR) was established are “...for the development, advancement, management, conservation, and protection of fish and wildlife resources...” and “...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude...” (Fish and Wildlife Act of 1956 (16 U.S.C. 742f(b)(1))); and for “...the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions...” (Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3901(b) 100 Stat. 3583)).

The National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd et seq.) provides authority for the Service to manage the Refuge and its wildlife populations. It emphasizes the importance of providing wildlife-dependent recreation opportunities on national wildlife refuges as long as they are compatible with the goal of the refuge. In addition it declares that compatible wildlife-dependent public uses are legitimate and appropriate uses of the Refuge System that are to receive priority consideration in planning and management. There are six wildlife-dependent public uses: hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation. It directs managers to increase recreational opportunities including hunting on National Wildlife Refuges when compatible with the purposes for which the Refuge was established and the mission of the National Wildlife Refuge System.

The purpose of this Environmental Assessment is to evaluate the whether it is appropriate to continue limited recreational hunting of white-tailed deer and feral hogs on Bond Swamp National Wildlife Refuge in accordance with Refuge-specific and State of Georgia regulations. The refuge has been open to this type of hunting since 1999 (Table 1 and 2). The hunting program would be managed similar to previous years. (see 2007 Sport Hunting Plan Bond Swamp NWR).

The proposed action is needed to implement the 2007 Sport Hunting Plan for Bond Swamp NWR which would provide the public with a high quality recreational experience and provide the refuge with a wildlife management tool to promote the biological integrity of the refuge.

A Conceptual Management Plan for the proposed expansion of the Refuge (FWS 1999) provided a general overview of how the lands would be managed until a Comprehensive Conservation Plan is completed. The Comprehensive Conservation Plan will address other opportunities for future management and public recreation.

B. Background

Bond Swamp National Wildlife Refuge is located along the Ocmulgee River in Bibb and Twiggs counties, Georgia, approximately 6 miles south of the city of Macon. The Refuge was established on October 16, 1989, to protect approximately 6,500 acres of wetlands and adjacent upland habitats on the Ocmulgee River floodplain. To date, approximately 6,276 acres have been acquired and 1,072 acres are under a management agreement with the State of Georgia to be managed as part of the Refuge. The Service has approved the proposal to expand the Refuge to a total of 18,000 acres (FWS 1999). The Environmental Assessment prepared for the Refuge expansion and land protection plan included extending the acquisition boundary, a Conceptual Management Plan, an Interim Compatibility Determination, and a Recreation Act Funding Analysis for the proposed recreational activities.

The objectives for Bond Swamp National Wildlife Refuge are: (1) To preserve and protect a diverse, threatened wetland ecosystem and its associated values; (2) To preserve, protect, reestablish, and manage for endangered and threatened species of wildlife; (3) To manage for migratory birds with emphasis on providing optimum habitat for wintering waterfowl and enhancing nesting and brood habitat for wood ducks; (4) To manage for native wildlife species and their associated habitats; (5) To provide opportunities for compatible public educational, interpretational, and recreational opportunities associated with wildlife and their habitats. The objectives set during the refuge expansion project also addressed recreation with the following objective: (6) to work in partnership with the local Ocmulgee Heritage Greenway to protect valuable natural resources and provide quality recreational opportunities.

Recreational activities in the area such as fishing and hunting have been under the primary control and jurisdiction of the Georgia Department of Natural Resources. The refuge was established in 1989 but remained closed to the public until 1999 when funding and staff became available. The refuge is open to limited hunting of white-tailed deer and feral hogs, fishing, wildlife observation through hiking, environmental education and interpretation.

White-tailed deer and feral hogs are the most common mammals observed on the refuge. The local area has a long standing tradition of hunting deer and feral hogs both previously on the current refuge and currently on the area identified for expansion. Limited deer and feral hog hunting can provide the public with compatible wildlife-oriented recreation through the use of a renewable resource. The proposed hunting program for the refuge will enhance public hunting opportunities in the local area.

This activity is a component of the Ocmulgee Heritage Greenway project. The proposed Greenway will create an integrated system of scenic, historic, and recreational resources along the Ocmulgee River for the enjoyment of the public. The Greenway Advisory committee has recommended that the large forested wetland tracts of the proposed refuge expansion comprise the conservation areas of the Greenway and provide wildlife-orientated activities.

C. Proposed Action

The proposed hunt program for Bond Swamp Refuge will provide for limited public hunting of white-tailed deer and feral hogs under refuge regulations. The Refuge hunting program objectives are to: (1) control the large feral hog population that is causing extensive damage to the refuge ecosystem and its flora and fauna; (2) control and maintain the white-tailed deer population at a level which is compatible with plant and animal communities; and (3) provide the public with compatible wildlife-oriented recreation through the use of renewable resources.

Hunting in this area is a traditional form of wildlife-dependent recreation. The refuge has a long history of being hunted before acquisition by the Service. The refuge was closed to hunting from establishment in 1989 to 1999 awaiting funding and staff. The feral hog population increased during this time. Feral hogs are a non-native species that compete with native wildlife for food and other resources. Some wildlife species that can be adversely impacted by feral hogs include black bears, neo-tropical birds, resident birds, small mammals, reptiles, and amphibians. It is the policy of the Service and the Department of Interior to eliminate non-native and feral animal species. The native white-tailed deer is one of the most common mammals seen on the refuge. Deer populations have the ability to increase beyond the habitats capability to sustain them, causing damage to the habitat and other wildlife. Both white-tailed deer and feral hogs have very high reproductive rates and their populations can increase rapidly. Public hunting is the most effective management tool available to keep white-tailed deer and feral hog populations compatible with refuge objectives.

D. Coordination and Consultation

The Service coordinated the development of the original proposal with the Georgia Department of Natural Resources (Georgia DNR), and the Advisory Committee for the Ocmulgee Heritage Greenway project in 1999 when the first environmental assessment and refuge hunt plan were developed. The partners involved in this Greenway project included the Service, the Trust for Public Land, Georgia DNR, the city of Macon, the Macon Water Authority, the Bibb County Board of Commissioners, and the National Park Service. All of these partners have signed a Memorandum of Understanding (MOU) to implement the Ocmulgee Heritage Greenway project. The Service also consulted with a variety of local conservation organizations, private landowners, and concerned citizens.

The Trust for Public Land worked with the Service and the Georgia DNR to receive over 2.5 million dollars for land acquisition. Lands purchased with North American Wetland Conservation Act funds were then donated by fee title to the Service. Lands purchased with the River Care 2000 funds were purchased by fee title for the State of Georgia, and designated as a Natural Heritage Preserve. These state-owned lands were turned over to the Service to manage as part of the refuge through a management agreement (July 2006). Public hunting will be considered on these new lands during the Comprehensive Conservation Planning (CCP) process that will incorporate public participation. The CCP planning process will be initiated through public scoping in 2007.

E. U.S. Fish and Wildlife Service Public Use Management Policy

The Secretary of Interior is authorized by the National Wildlife Refuge System Administration Act of 1966 and the Refuge Recreation Act of 1962 to permit hunting on any refuge within the Refuge System upon a determination that hunting is compatible with the major purposes for which such areas were established. In addition to a compatibility determination, the Refuge Recreation Act also requires the Secretary to determine that funds are available for the development, operation, and maintenance of the hunting program. The Service has long recognized that hunting is an integral part of a comprehensive wildlife management program and that significant positive benefits can be attributed to a well managed hunt. In addition, hunting is an acceptable, traditional form of wildlife-orientated recreation that can be and is sometimes used as a management tool to effectively manipulate wildlife population levels. (Refuge Manual)

The opening of National Wildlife Refuge areas to hunting will depend on the provisions of law applicable to the area, a determination that such activities will be compatible with the principals of sound wildlife management and refuge purposes, and will be in the public interest.

F. Public Participation

The public was notified of the proposed refuge hunt plan and this environmental assessment through public notices. News releases announcing its availability for comment were posted at two public entry points at Bond Swamp Refuge, the Piedmont Refuge visitor center, on the Bond Swamp Refuge web page, and sent to 97 newspapers on the refuge state-wide media list. Legal notices were placed in 3 local newspapers (The Macon Telegraph- March 3, 2007; The Jones County News- March 8, 2007; and The Monticello News- March 8, 2007). Announcements requesting public review were distributed from March 1 through March 3, 2007. The 30-day review period began March 5, 2007 and ended on April 5, 2007. Copies of this document were available upon request by hard copy, email, or could be viewed and downloaded from the refuge web page. Public comment could be made by hard copy, telephone, or email.

Chapter 2 Alternatives Including the Proposed Action

In determining how to achieve the fish and wildlife habitat conservation goals and provide compatible public use activities on lands managed as Bond Swamp NWR, the Service considered and evaluated two alternatives. These alternatives are the (1) no action which closes the current hunting program and the (2) proposed action which implements the Refuge's 2007 Sport Hunting Management Plan

A. No Action Alternative: No Hunting

Under this alternative, no hunting would be allowed on the 7,348 acre refuge. The 5,455 acres currently open to hunting for white-tailed deer and feral hogs would be closed. There would be no change to other public use and wildlife management programs.

This is the "status quo" alternative as of 1999. Under this alternative, the Service would not allow any public hunting on lands managed by the Service as Bond Swamp National Wildlife Refuge. These lands would continue to be managed to protect the important wetland habitats and the native wildlife species associated with the Ocmulgee River floodplain. The Service would be required to maintain functioning wetlands and prevent destruction of this high quality habitat. Under Service and Department of Interior policy, the Service would be required to control and eliminate non-native species such as the feral hogs through other management tools.

Land managers have recognized the need to control some herbivore populations to ensure that these animals do not adversely impact the environment. White-tailed deer have the ability to overpopulate areas, which can result in heavy browsing on native forest communities and habitat destruction (Halls 1978, Hesselton and Hesselton 1982, Halls 1984, Bratton 1989). If left uncontrolled, white-tailed deer can become so numerous that they may adversely affect their habitat to the point of altering ecological diversity and succession

(Warren 1991). Research has documented that increasing deer populations can alter vegetation composition and diversity, threaten abundance of less common plant species, and alter unique habitats (Bratton 1979). In addition, research has documented that changes in vegetation attributed to increasing deer populations affect other wildlife species. Studies have documented declines in song bird species density and diversity and bird species richness and abundance where over-browsing of understory and shrub-layer vegetation occurred. (Boone and Dowell 1986, deCalesta 1994). Impacts of white-tailed deer populations on the environment have been well documented and accepted through research over a period of many years.

The Refuge is mandated to manage for native wildlife species and their associated habitats. The presence of feral and non-native species is inconsistent with this objective. Therefore, it is refuge policy to control or eliminate all non-native and feral animal species. The population of hogs is from a domestic stock and not the Eurasian type. While elimination of hogs may be futile, the refuge must try to control the population to reduce damage to the habitat. Habitat damage from feral hogs has been documented by refuge staff since the refuge was established in 1989.

Hogs leave large areas of disturbed earth where they have rooted or wallowed. They compete with native species of deer, bear, squirrels and turkey for mast foods such as acorns during the fall and winter. They can destroy eggs of ground-nesting gamebirds such as, wild turkey, bobwhite quail, American woodcock, as well as ground-nesting neotropical migrants such as, chuck-will's-widow, Kentucky warbler, Louisiana waterthrush, black-and-white warbler, and common yellowthroat. Hogs also destroy the leaf litter habitat of surface tunneling mammals such as, the Southeastern and short-tailed shrew. Wildflowers and pines can also be adversely affected, because the flowers and pine roots are favorite food items for hogs. Feral hogs can also carry and transmit diseases to other wildlife such as Pseudorabies, a viral disease, and Brucellosis, a bacterial infection.

This alternative of No Action would allow habitat destruction to continue at an increasing rate. Other management tools which are more time and man-power intensive and often have much higher costs associated with implementation would need to be implemented. Other tools, such as shooting by Service personnel, trapping, poisoning, etc, would have to be considered in a Refuge Animal Damage Plan. Use of other management tools alone would result in a negative public opinion from the strong hunting based contingency in the state. The refuge would require an increase in funds and personnel to effectively control feral hogs if public hunting is prohibited.

E. Proposed Action: Limited public hunting of white-tailed deer and feral hogs (Preferred Alternative)

Under this alternative, the Service would implement limited public hunting for white-tailed deer and feral hogs on 5,455 acres on Bond Swamp NWR under refuge regulations (Figure 1). This is the preferred alternative, as it would allow the Service to manage these lands for a

diversity of wildlife habitats and meet management objectives to promoted endangered species, migratory birds, and native wildlife populations while allowing the public to utilize a renewable resource. The hunt program objectives are: (1) to control, and in as much as possible eliminate, a large feral hog population that is causing extensive damage to the refuge ecosystem and its flora and fauna; (2) to control and maintain the white-tailed deer population at a level where it is compatible with plant and animal communities; and (3) to provide the public with compatible wildlife-oriented recreation through the use of a renewable resources.

The hunt program will be administered and managed by the staff of Piedmont National Wildlife Refuge, which is located 35 miles north of Bond Swamp Refuge. Until the Comprehensive Conservation Plan is developed, proposed public use will be managed in accordance with Piedmont NWR regulations. The Service's Southeast Regional Office in Atlanta, Georgia will provide technical assistance on such matters as engineering, public use planning, and migratory bird management. Piedmont NWR has an office and visitor center, maintenance shop, and storage facilities. The office is located 11 miles north of Gray in Jones County, Georgia. Piedmont Refuge has a staff of 12 full time employees. No full-time employees are stationed at Bond Swamp Refuge currently. A Refuge Operating Needs (RONS) project for initial start up costs including 1 full time position was partially funding in 1999. However, this one position has been identified to be abolished in the next two years by the US Fish and Wildlife Service's Southeast Region Work Force Plan. At that time all administration of Bond Swamp will be conducted by Piedmont Refuge staff.

The hunts will be limited in duration, location, and number of participants to ensure they are biologically sound and limit disturbance to other native wildlife species at critical times. The hunts will provide a high quality recreational experience and ensure safety for those that participate. Biological data will be collected and the hunt program reviewed annually to ensure the program is biologically sound and compatible with refuge objectives. The hunts will be scheduled so as not to conflict with the established Piedmont Refuge hunts to ensure availability of staff.

The local area has a long standing tradition of hunting deer and feral hogs both previously on the current refuge and currently on the area identified for expansion. Most of the surrounding area is privately owned and not available to the general public. Limited deer and feral hog hunting can provide the public with compatible wildlife-oriented recreation through the use of a renewable resource. The proposed hunting program for the refuge will enhance public hunting opportunities in the local area. Allowing the public to hunt on the refuge will result in a positive public opinion and will help build support for the Service and its natural resource conservation agenda. This activity will support a component of the Ocmulgee Heritage Greenway project and demonstrate the Service's commitment to the MOU signed by Greenway partners.

Hunting in this area is a traditional form of wildlife-dependant recreation. Hunting by the previous owners helped keep feral hog populations under control and provide annual pressure to the deer population. The refuge was closed to hunting from 1989 to 1999 awaiting

funding and staff. The feral hog and deer populations in the area increased until the flood of 1994 which dramatically reduced most wildlife populations in the floodplain. However by 1997 populations of deer and hogs had surpassed pre-flood conditions. Feral hogs are a non-native species that compete with native wildlife for food and other resources. Some of the wildlife on the refuge adversely impacted by feral hogs, include black bears, neotropical birds, resident birds, small mammals, reptiles, and amphibians.

It is the policy of the Fish and Wildlife Service and the Department of the Interior to eliminate non-native and feral animal species. While the actual elimination of hogs from the refuge is probably not possible, public hunting will be an important tool in controlling the population to reduce damage they cause to the ecosystem.

The native white-tailed deer is one of the most common mammals seen on the refuge. Deer populations have the ability to increase beyond the habitats capability to sustain them, causing damage to the habitat and other wildlife. Both white-tailed deer and feral hogs have high reproductive rates and their populations can increase rapidly. Public hunting is the most effective management tool available to keep white-tailed deer and feral hog populations compatible with refuge objectives.

The hog and deer hunting outlined in the 2007 Sport Hunting Plan for Bond Swamp Refuge will help the refuge meet both management and public use objectives. Refer to 2007 Sport Hunting Plan for Bond Swamp NWR and the 2007 Bond Swamp hunting and fishing regulations for specific information.

Chapter 3 Affected Environment

This section describes the environment that would be affected by the implementation of one of the alternatives. It is organized under the following impact topics which include the area's hydrology, natural vegetation, land use, fish and wildlife resources, socioeconomic and sociocultural conditions.

The refuge is located on the Fall Line separating two geophysical regions, the Piedmont and the Atlantic Coastal Plain. A rich diversity of habitat types and wildlife occurs along this interface area. The natural habitats range from mixed hardwood-pine ridges with exposed granite outcrops to tupelo gum swamps with abundant beaver flooding and oxbow lakes.

Located near the geographical center of Georgia the area is subjected to moderate climate conditions throughout the year. Severe rain storms occur occasionally during the summers. Snow occurs at some time during most winters, but the amounts are usually quite small. The average annual precipitation is 45 inches.

A. General

The Bond Swamp National Wildlife Refuge (NWR) was established on October 16, 1989. It

is located in Bibb and Twiggs counties in middle Georgia six miles south of the City of Macon. The refuge currently manages 7,348 acres along the Ocmulgee River. This includes 1,072 acres owned by the State of Georgia but managed by the Service as part of Bond Swamp Refuge (July 2006 Management Agreement). The Service has approved the proposal to expand the Refuge to a total of 18,000 acres (FWS 1999). The Environmental Assessment prepared for the Refuge expansion and land protection plan included extending the acquisition boundary, a Conceptual Management Plan, an Interim Compatibility Determination, and a Recreation Act Funding Analysis for the proposed recreational activities.

The objectives for Bond Swamp NWR are: (1) To preserve and protect a diverse, threatened wetland ecosystem and its associated values; (2) To preserve, protect, reestablish, and manage for endangered and threatened species of wildlife; (3) To manage for migratory birds with emphasis on providing optimum habitat for wintering waterfowl and enhancing nesting and brood habitat for wood ducks; (4) To manage for native wildlife species and their associated habitats; and (5) To provide opportunities for compatible public, educational, interpretational, and recreational opportunities associated with wildlife and their habitats. The objectives set during the refuge expansion project also addressed recreation with the following objective: to work in partnership with the local Ocmulgee Heritage Greenway to protect valuable natural resources and provide quality recreation opportunities.

B. Physical Description (Hydrology, Weather, and Soils)

Hydrology: A major drainage system flows into the wetland area forming much of the rich bottomland. The drainage system is part of the Alcovy/Ocmulgee corridor that flows through the Piedmont and Coastal Plain Provinces. These forested wetlands not only provide a haven for a rich diversity of fish and wildlife; they serve to enhance the quality of the area's water resources. These valuable areas act as a safety valve in detaining overflows during flood periods and as water storage basins during dry seasons. The water resources in these wetlands replenish both surface and ground water systems. Water passing through is filtered by a natural process. This filtration aids in the removal of organic and inorganic wastes, as well as silt and other sediments. Bond Swamp NWR is within the Upper Coastal Plain and is a part of the Altamaha River Ecosystem.

Weather: The area experiences all four seasons. Summers typically consist of long spells of warm and humid weather. Average afternoon high temperatures are in the upper 80s to around 90° f. Readings of 90° or higher can be expected on 30 to 60 days. Overnight lows usually range from the middle 60s to lower 70s. Temperatures during winter months are more variable. Stretches of mild weather can alternate with cold spells. Winter high temperatures average in the 50s. Lows average in the 30s. Lows of 32° or lower can be expected on 50 to 70 days. Spring and autumn seasons are characterized by daily and annual variability. The average dates of first freeze in the autumn range from late October to mid-November. The average dates of last freeze in the spring range from mid-March to early April.

A measurable amount of rain falls on about 120 days each year, producing amounts averaging between 40 and 50 inches. The average annual total snowfall is one to two inches. Usually this snowfall occurs on just one or two days. The driest month is October and the wettest month is March. Thunderstorms are common in the spring and summer months. On a typical year, thunder will be heard on 50 to 60 days.

Climatological normals for the years 1971-2000 from the National Weather Service station at the Macon, GA Airport (KMCN).

Month	N O R M A L				
	High (°F)	Low (°F)	Mean (°F)	Rainfall (inches)	Snowfall (inches)
Jan	56.6	34.5	45.5	5.00	T
Feb	61.0	37.1	49.0	4.72	T
Mar	68.5	43.8	56.2	4.90	T
Apr	75.9	49.5	62.7	3.14	0.0
May	83.4	58.6	71.0	2.98	0.0
Jun	89.5	66.6	78.0	3.54	0.0
Jul	91.8	70.5	81.1	4.32	0.0
Aug	90.5	69.5	80.0	3.79	0.0
Sep	85.4	63.7	74.5	3.26	0.0
Oct	76.8	51.1	63.9	2.37	0.0
Nov	67.8	42.5	55.1	3.22	0.0
Dec	59.2	36.3	47.8	3.93	T

Yearly Normals				
High (°F)	Low (°F)	Mean (°F)	Total Rainfall	Total Snowfall
75.5	52.0	63.7	45.17	T

Soils:

AgB – Ailey loamy sand, 2 to 6 percent slopes

This well-drained, very gently sloping or gently sloping soil is on ridgetops and hillsides and Sand Hills uplands. Slopes are smooth and convex. This soil has medium potential for slash (site index 70*) and longleaf pine (site index 60). A short seasonal limitation on equipment generally used in forestry is a concern to forest management on this soil.

CK – Chewacla association

This association consists of nearly level, somewhat poorly drained soils that formed in alluvium. These soils are in broad areas on flood plains in a regular, repeating pattern. They are between the moderately well drained to well drained Congree soils near stream channels and the very poorly drained Hydraquents in depressions or low areas at the base of foothills.

Most areas of soils in this association are suited to hardwoods. They have high potential for loblolly pine, American sycamore, yellow-poplar and green ash:

Species	Site Index
Loblolly pine	96

Yellow-poplar	104
American sycamore	90
Sweetgum	97
Water oak	86
Eastern cottonwood	100
Green ash	97
Southern red oak	90

Wetness and flooding are the main limitations to forest management, but they can be overcome by using equipment during drier seasons.

Co – Congree silt loam

This nearly level, well drained or moderately well drained soil is on flood plains commonly adjacent to large streams. The probability of frequent, brief flooding during winter and early spring is high. This soil has high potential for loblolly pine, slash pine, yellow-poplar, American sycamore and sweetgum:

Species	Site Index
Sweetgum	100
Yellow-poplar	107
Cherrybark oak	107
Loblolly pine	90
Eastern cottonwood	107
American sycamore	89
Black walnut	100
Scarlet oak	100
Willow oak	95

There are no significant limitations for woodland use and management on this soil.

CwB – Cowarts sandy loam, 2 to 5 percent slopes

This well drained, very gently sloping soil is on ridgetops on Sand Hills uplands. Slopes are smooth and convex. This soil has medium potential for loblolly pine (site index 86), slash pine (site index 86) and longleaf pine (site index 70). It has no significant limitations for woodland use and management.

FsB – Fuquay loamy sand, 1 to 5 percent slopes

This well drained, nearly level or very gently sloping soil is on ridgetops and hillsides on Sand Hills uplands. Slopes are mostly smooth and convex. This soil has medium potential for loblolly pine (site index 83), slash pine (site index 83) and longleaf pine (site index 67). A short seasonal limitation on equipment generally used in forestry is a concern to forest management on this soil.

HZ – Hydraquents

These very poorly drained, nearly level soils are in low areas at the base of foothills and in depressions on flood plains of the Ocmulgee River and some of its tributaries. Hydraquents are frequently flooded for very long periods throughout the year. They are mainly wooded with water tupelo, sweetbay, and a few swamp maple and green ash. Also many water-

tolerant shrubs and aquatic plants are present. Active forest management is very difficult on this soil due to wetness and flooding,

LaC – Lakeland sand, 2 to 8 percent slopes

This excessively drained, very gently sloping or gently sloping soil is on ridgetops and hillsides on Sand Hills uplands. This soil has low potential for loblolly pine (site index 75), slash pine (site index 75) and longleaf pine (site index 60). A short seasonal limitation on equipment generally used in forestry is a concern to forest management on this soil.

NhA – Norfolk sandy loam, 0 to 2 percent slopes

This well drained, nearly level soil is on broad ridgetops on Coastal Plain uplands. This soil has high potential for loblolly pine and slash pine (site index 86 for both), and moderate potential for longleaf pine (site index 68). There are no significant limitations for woodland use and management on this soil.

OcB – Orangeburg sandy loam, 0 to 2 percent slopes

This well drained, nearly level soil is on broad ridgetops on Coastal Plain uplands. This soil has high potential for loblolly pine and slash pine (site index 86 for both), and moderate potential for longleaf pine (site index 70). There are no significant limitations for woodland use and management on this soil.

VeC – Vacluse sandy clay loam, 4 to 8 percent slopes

This well drained, gently sloping soil is on ridgetops and hillsides on Sand Hills uplands. Slopes are mostly smooth and convex. This soil has medium potential for loblolly pine (site index 70). There are no significant limitations for woodland use and management on this soil.

** Site index was calculated at age 30 for eastern cottonwood, age 35 for American sycamore and age 50 for all other species*

C. Vegetation

General: The refuge consists primarily of forested wetlands along the Ocmulgee River in central Georgia. They are an excellent example of an intact and functioning floodplain. These floodplain habitats include bottomland hardwoods, swamp forests, and scattered stands of mixed hardwoods and pine ridges. Interspersed throughout the area are creeks, tributaries, beaver swamps, and oxbow lakes. Dominant overstory species include tupelo gum, black gum, red maple, sweet gum, swamp chestnut oak, ash, hickory, sycamore, water oak, willow oak and overcup oak. Common understory species include honeysuckle, trumpet creeper, muscadine, rattan vine, poison ivy and river cane.

A Geographic Information System map of the forested wetlands in Georgia prepared by the Georgia DNR's Heritage Trust Office, shows that the forested wetland ecosystem within the Greenway project is one of the largest (approximately 30,000 acres) remaining in the state of Georgia in 1999.

Current Forest Conditions: Approximately three quarters of the current refuge area is forested wetlands. They consist of bottomland hardwoods, swamp forests and scattered stands of mixed hardwoods and pines. Dominant overstory species on sites more prone to flooding include tupelo, overcup oak and sycamore; sites less prone to flooding include species such as red maple, sweet gum, swamp chestnut oak, ash, hickory, black gum, water oak and willow oak, with scattered loblolly pine. Common understory species include honeysuckle, trumpet creeper, muscadine, rattan vine, poison ivy and cane. Exotics such as privet, Chinaberry and Chinese tallow are present, especially in openings. Because of periodic flooding, fires occur infrequently except during extremely dry years. During extended droughts wildland fires of high intensity are possible and can cause considerable damage to the stand.

All of these mixed hardwood forests have been “selectively” logged, i.e. highgraded. The area west of the Ocmulgee River appears to have been cut more recently, as indicated by the undeveloped midstory and understory as well as the overstory species size and composition. The area between the river and Cochran Short Route appears older, with more developed vertical structure and larger diameter overstory trees.

The other one quarter of the refuge is the loblolly pine-hardwood forest cover type, with a small acreage of longleaf pine. Historically fire was a common disturbance in pine forest. The pines tend to convert to hardwoods (oak-hickory-gum) in the absence of fire. A lower intensity fire can maintain the pine forest, but under more severe environmental conditions a fire could cause serious stand damage. As with the mixed hardwood forest, the pine-hardwood forest has been highgraded.

Historic Forest Conditions: Many biologists, knowing that most wildlife species are favored by early stages of forest succession, assume today’s managed forests have more wildlife than those first encountered here by Europeans. However, even a superficial review of historical literature indicates the pre-European forest supported abundant wildlife. Early travelers obviously were awed by the abundance and variety of wildlife and, although some early writers are known to have exaggerated, there are so many similar reports that they cannot be dismissed. Of course there was much more habitat then, and this partly accounts for the large numbers and great diversity of wildlife. But it is clear that densities of deer, wild turkeys, and other species were very high in some areas. Given this, it is instructive for the manager to examine pre-colonial forest conditions that supported such an abundance of wildlife.

D. Wildlife Resources

The rich and varied habitats found on the refuge provide for a diversity of wildlife species. Endangered species that can occur in the area include the short-nose sturgeon and wood stork. Bibb and Twiggs counties are near the reported northern geographic range of the wood stork. The refuge contains forested wetland habitat of the type used as foraging habitat by wood storks. Wood storks have been reported in the area occasionally. Refer to Appendix for Endangered Species identified in the area of the refuge.

One threatened species in the area is the southern bald eagle. An active bald eagle nest is located on the refuge and a number of eaglets have fledged from this site over the past 10 years. The shallow flooded swamps, with their abundant fish and waterfowl, provide ideal food and habitat for the nesting migratory and wintering eagles, which are regularly seen in the area.

Waterfowl make extensive use of the wetlands during their migration and wintering periods. Principal species include the mallard, wood duck, black duck, blue-winged teal, and ring-necked duck. The area contains one of the most significant concentrations of wintering waterfowl in the Middle Georgia region. The area contains outstanding wood duck habitat and is a haven for many species of marsh and water birds. Isolated beaver ponds may serve as rookery sites and loafing grounds for water birds. Two known nesting rookeries were used by herons, egrets, ibis, and anhingas prior to refuge establishment. They are not currently used probably because of forest succession that has occurred over the last 15 years.

The floodplain forests of the refuge are extremely important for populations of neotropical migratory birds and other species of special concern. Species of special concern which utilize these valuable floodplain forests for nesting and migration include the Swainson's warbler, prothonotary warbler, yellow-billed cuckoo, Acadian flycatcher, and wood thrush. Other species include woodpeckers, doves, kingfishers, hummingbirds, goatsuckers, swifts, galliformes, and raptors. Many of the birds that use this habitat, especially neotropical migrants, require large forested areas for nesting and have experienced downward population trends due primarily to habitat fragmentation. The refuge and identified expansion area form one of the largest remaining blocks of forested wetlands in Georgia, and their preservation is critical to these important species. Research conducted on the refuge in 2001-2003 suggests that the Refuge provides critical nesting habitat for Swainson's warbler, a species of high conservation concern

Numerous mammalian species also inhabit the refuge. White-tailed deer, rabbits, beaver, mink, muskrat, squirrels, and other small mammals are common. The refuge also supports one of three black bear populations between the Appalachian Mountains and the Okefenokee Swamp in Georgia. Current research conducted on the middle Georgia bear population suggests there are more bears in the area than originally thought. Preliminary results from the multi-year study by the University of Georgia and the Georgia Department of Natural Resources estimates 1.0 bear per square mile on the refuge and 1.6 bears per square mile on the State Wildlife Management areas south of the refuge. This would equate to about 12 bears actively using the refuge habitat.

The areas combination of warm climate and moist conditions provides ideal habitat for a variety of reptilian and amphibian species. The most notable member of this group is the American alligator, which is found in small numbers and is at its northernmost range in the state.

E. Fishery Resources

The refuge and expansion area contains two creeks, Stone Creek and Tobesofkee Creek, as well as the Ocmulgee River. All three waterways are classified as fishing streams. Stone Creek flows through the existing refuge on the east side of the river, while Tobesofkee Creek flows through the expansion area on the west side of the river and will be added to the refuge this year. The dynamic nature of the flooding regime between the Ocmulgee River and the associated wetland habitats along its flood plain provides a constant and renewable fishery. This fishery supports a diversity of warmwater species, including largemouth bass, black crappie, white crappie, spotted bass, redear sunfish, bluegill sunfish, channel catfish and white catfish. Anadromous fish that use the Ocmulgee River throughout the area include the striped bass and the endangered shortnose sturgeon.

F. Cultural Resources

The body of federal historic preservation laws has grown dramatically since the enactment of the Antiquities Act of 1906. Several themes recur in these laws, their promulgating regulations, and more recent Executive Orders. They include: 1) each agency is to systematically inventory the historic properties on their holdings and to scientifically assess each property's eligibility for the National Register of Historic Places; 2) federal agencies are to consider the impacts to cultural resources during the agencies' management activities and seek to avoid or mitigate adverse impacts; 3) the protection of cultural resources from looting and vandalism are to be accomplished through a mix of informed management, law enforcement efforts, and public education; and 4) the increasing role of consultation with groups, such as Native American tribes, in addressing how a project or management activity may impact specific archaeological sites and landscapes deemed important to those groups. The U.S. Fish and Wildlife Service, like other federal agencies, are legally mandated to inventory, assess, and protect cultural resources located on those lands that the agency owns, manages, or controls. The Service's cultural resource policy is delineated in 614 FW 1-5 and 126 FW 1-3. In the FWS Southeast Region, the cultural resource review and compliance process is initiated by contacting the Regional Historic Preservation Officer/Regional Archaeologist (RHPO/RA). The RHPO/RA will determine whether the proposed undertaking has the potential to impact cultural resources, identify the "area of potential effect," determine the appropriate level of scientific investigation necessary to ensure legal compliance, and initiates consultation with the pertinent State Historic Preservation Office (SHPO) and federally recognized Tribes.

Bond Swamp National Wildlife Refuge forms the southern boundary of the Ocmulgee Old Fields, a National Register-eligible traditional cultural property (TCP) associated with the Muscogee Creek Nation. The TCP's boundaries were defined in Tribal Resolutions 95-10 and 97-09, which were enacted by the Muscogee Creek Tribal Council in December 1995 and April 1997. The Creeks believe the Ocmulgee Old Fields are the birthplace of the historic Muscogee Confederacy. Their tribal history and oral traditions are augmented by the area's rich archaeological and historic record, which supports their belief. The Service

requests comments and input from the Muscogee Creek Nation and Tribal towns as required. The Nation has not voiced any opposition to the proposed public use activities.

G. Socio-Economic and Socio-cultural Conditions

The area surrounding the refuge offers a blend of urban and rural environments. Located six miles from Macon and within reasonable commuting distance of Warner Robins Air Force Base, the area provides an ideal setting for those requiring an urban work environment and desiring rural residential amenities. The economic base is stable throughout the area and is undergoing a period of growth in Macon, Bibb County, and the surrounding areas.

According to the Georgia County Economic Impact of Expenditures by tourists, which was prepared for the Georgia Department of Industry, Trade and Tourism, Bibb County had an estimated \$271.66 million in tourist expenditures in 1996. Twiggs County had an estimated \$5.41 million in tourist expenditures in 1996. Houston County had an estimated \$156.36 million in tourist expenditures in 1996. All three counties, Bibb, Twiggs, and Houston, showed an increase in expenditures from 1995 (9.3%, 15.7%, and 10.6% respectively).

Hunting is a traditional form of outdoor recreation for many people in Middle Georgia and for some households, hunting participation provides food at a much cheaper cost. A big game license is required for hunting white-tailed deer and hog hunters must possess a hunting license. There is no limit or season for hunting hogs on private land in Georgia. On state lands hogs may be taken during any hunting season as long as the hunter meets license and weapon requirements for that season. Deer hunting was open for 115 days in Twiggs and surrounding counties in the 2005-06 season. The number of licensed resident big game hunters in 2005-06 was 185,710. Total number of big game hunters in 2005-06 was 238,383. (*GADNR, personal comm.*).

Chapter 4 Environmental Consequences

This chapter describes the foreseeable environmental consequences of implementing the alternatives in Chapter 2. When detailed information is available, a scientific and analytic comparison between alternatives and their anticipated consequences is presented, which is described as “impacts” or “effects.” When detailed information is not available, those comparisons are based on the professional judgment and experience of refuge staff and Service and State biologists

A Effects Common to all Alternatives

Environmental Justice: Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” was signed by

President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities access to public information and participation in matters relating to human health or the environment. This assessment has not identified any adverse or beneficial effects for either alternative unique to minority or low-income populations in the affected area. Neither alternative will disproportionately place any adverse environmental, economic, social, nor health impacts on minority or low-income populations.

Public Health and Safety: Each alternative would have similar effects or minimal to negligible effects on human health and safety.

Refuge Physical Environment: Impacts of each alternative on the refuge physical environment would have similar minimal to negligible effects. Some disturbance to surface soils, topography, and vegetation would occur in areas selected for hunting; however effects would be minimal. Hunting would benefit vegetation as it is used to keep many resident wildlife populations in balance with the habitat's carrying capacity. The refuge would also control access to minimize habitat degradation.

Impacts to the natural hydrology would have negligible effects. The refuge expects impacts to air and water quality to be minimal and only due to refuge visitors' automobile emissions and run-off from road and trail sides. The effect of these refuge-related activities on overall air and water quality in the region are anticipated to be relatively negligible. Existing State water quality criteria and use classifications are adequate to achieve desired on-refuge conditions; thus, implementation of the proposed action would not impact adjacent landowners or users beyond the constraints already implemented under existing State standards and laws.

Impacts associated with solitude are expected to be minimal given time and space zone management techniques, such as seasonal access and area closures, used to avoid conflicts among user groups.

Cultural Resources: Under each alternative, hunting, regardless of method or species targeted, is a consumptive activity that does not pose any threat to historic properties on and/or near the Refuge.

Facilities: Maintenance or improvement of existing facilities (i.e. parking areas, roads, trails, and boat ramps) will cause minimal short term impacts to localized soils and waters and may cause some wildlife disturbances and damage to vegetation. These facilities are

also used by general visitors and would the additional effect from hunting is expected to be minimal.

B. Summary of Effects from Alternative 1: No Action (close hunting)

Under this alternative, the refuge would not allow public hunting on lands managed by the Service as Bond Swamp National Wildlife Refuge. Feral hog and white-tailed deer populations would continue to increase, since both species have high reproductive rates and little pressure from natural predators. Alligators, bobcat, and fox may take some animals especially fawns and piglets. However there is no effective predation present to keep up with the high reproductive rate. Female hogs can have several litters per year having 4 to 12 piglets per litter. White-tailed deer have a 99% conception rate and can produce multiple fawns each year. Habitat destruction would occur and would adversely affect other native wildlife species if these populations were left uncontrolled.

Feral hogs are considered a threat to the biological integrity of the refuge because they are an extremely invasive, non-native species. By rooting and wallowing, feral hogs destroy wildlife habitat. Damage includes erosion along waterways and wetlands and the loss of native plants. Feral hogs are non-native species that eat practically anything including plants, nuts, berries, roots, salamanders, and snakes. They root up plants and the soil searching for food destroying both plants and animals in the process. A few hogs can disturb large areas of dirt by making large wallows. Feral hogs compete with native wildlife for acorns, berries, and other food. They also destroy the habitat by altering the vegetation communities. Feral hogs adversely affect native wildlife species such as black bear, wild turkey, neotropical songbirds, waterfowl, small mammals, reptiles, and amphibians. By policy the Service must take aggressive action to control the feral hog population and minimize damage to the fragile wetland habitat. Public hunting is the most economical and effective tool that land managers have to control feral hog populations. Although additional measures conducted under a Refuge Animal Damage Plan may be necessary to protect sensitive areas.

The white-tailed deer is a native species that also can adversely impact the habitat. Deer can be found throughout the refuge and the surrounding area. Deer have a high reproductive potential and no effective predation. Research has documented the ability of deer to overpopulate areas, resulting in heavy browsing on native forest communities and habitat destruction (Halls 1978, Hesselton and Hesselton 1982, Halls 1984, Bratton 1989). If left uncontrolled, white-tailed deer can adversely affect their habitat to the point of altering ecological diversity and succession (Warren 1991). Research has documented that increasing deer populations can alter vegetation composition and diversity, threaten abundance of less common plant species, and alter unique habitats (Bratton 1979). In addition, research has documented that changes in vegetation attributed to increasing deer populations affect other wildlife species. Studies have documented declines in song bird species density and diversity and bird species richness and abundance where overbrowsing of understory and shrub-layer vegetation occurred. (Boone and Dowell 1986, deCalesta 1994). Impacts of white-tailed deer

populations on the environment have been well documented and accepted through research over a period of many years.

These two herbivore populations can increase to the point of destroying plants, altering plant communities, altering wildlife population's dependant on plants and in the process altering ecological succession and diversity. Some action must be taken by the Service to meet Service and Refuge objectives to promote healthy ecosystems.

Although hunters would not be traversing across the 5,455 acres currently open to hunting, which could cause damage to individual plants by trampling vegetation, non-consumptive users would still be able to walk throughout the area.

Additional mortality of individual hunted animals would not occur under this alternative. Disturbance by hunters to hunted wildlife would not occur; however, other public uses that cause disturbance, such as wildlife observation and photography, would still be permitted.

Deer and feral hog populations could increase above the habitat's carrying capacity on the refuge if there is no hunting. Hunting pressure from surrounding private lands would also cause more deer and feral hogs to stay on the refuge. The likelihood of diseases, such as bluetongue and EHD in deer would increase as would vehicle-deer collisions. Feral hogs can harbor several infectious diseases, some of which can be fatal to wildlife and domestic livestock. Additionally feral hogs compete directly for food with deer, bears, turkeys, squirrels and many other birds and mammals.

Under this alternative, feral hog populations would increase dramatically. Non-native hogs are predators of small mammals and deer fawns as well as ground-nesting birds such as turkeys. Increased disturbance to non-hunted wildlife would not occur; however, other refuge users would still be permitted to access this land, which might cause disturbance to wildlife.

Because other current public use levels on the refuge would remain the same, there would be no change in disturbance to threatened and endangered species. Zoning of sensitive areas will be applicable to all uses not just hunters.

C. Summary of Effects from Alternative 2: Limited public hunting of white-tailed deer and feral hogs (Preferred Alternative maintain current program)

Under this alternative, the Service would continue limited public hunting of white-tailed deer and feral hogs on lands managed as Bond Swamp National Wildlife Refuge under the proposed 2007 Bond Swamp NWR sport hunt plan. The Service's current policy is to expand and enhance opportunities for high quality hunting and fishing on national wildlife refuges (Babbitt, 1995; National Wildlife Refuge Improvement Act 1997). Hunting is considered to be compatible with the refuge purpose and meets one of the refuge objectives, to provide for compatible wildlife-dependent recreation (Attached Compatibility Determination). Allowing hunting follows current Service policy to expand and enhance

opportunities for high quality fishing and hunting on refuges. Allowing hunting also helps to maintain and build support for the Service and other wildlife conservation efforts. There has been substantial historical use of these wetland areas for hunting. Based on the available information, there is no indication of adverse biological impacts associate with these activities.

Allowing well managed hunting of white-tailed deer and feral hogs is consistent with refuge objectives and follows current Service policy. The 2007 Refuge sport hunt plan is conservatively based and designed to meet management needs. The primary purpose of allowing public hunting of white-tailed deer and feral hogs is to control herbivore populations in balance with their habitat and other wildlife species. Secondly the proposed hunt program will provide quality public recreation through the harvesting of a renewable natural resource. It will also be allowed and managed on the refuge to assure biological sound use of a renewable resource. The hunt program will help the refuge manage the deer and feral hog populations to prevent habitat destruction and negative impacts on other wildlife species. Public hunts will be conducted to ensure biological soundness and compatibility with refuge objectives

The biological integrity of the refuge would be protected under this alternative, and the refuge purpose of conserving wetlands for wildlife would be achieved. The hunting of hogs and deer would positively impact wildlife habitat by promoting plant health and diversity, reducing hog wallowing which destroys vegetation and compacts soils, and increasing tree seedling survival.

Impacts to vegetation should be minor and is not expected to change from the previous eight years. Although individual plants or in some cases pathways may be trampled past experience has shown no long term damage has occurred. Refuge-regulations will not permit public access in ecologically sensitive areas (ie. No access within 700 feet of an active bald eagle nest). Vehicles would be confined to existing roads and parking lots.

Additional mortality of individual hunted animals would occur under this alternative, estimated by the refuge to be a maximum of 40 deer and 250 feral hogs. Hunting causes some disturbance to not only the species being hunted but other game species as well. However, time and space zoning established by refuge regulations would minimize incidental disturbance.

Hunting of deer and hog would help maintain their populations at or below carrying-capacity. The likelihood of starvation and diseases, such as bluetongue and EHD in deer would be decreased as would deer-vehicle collisions. Reduction of the hog population would decrease risk of transmitting fatal diseases by hogs to other wildlife species. Fewer hogs would decrease competition for food with native wildlife, such as deer, bear, turkey, and squirrel.

Disturbance to non-hunted wildlife would increase slightly. However, significant disturbance would be unlikely for the following reasons. Small mammals, including bats, are inactive during winter when most of the hunting season occurs. These species are also nocturnal. Both of these qualities make hunter interactions with small mammals very rare.

Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during most of the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Invertebrates are also not active during cold weather and would have few interactions with hunters during the hunting season. Refuge regulations further mitigate possible disturbance by hunters to non-hunted wildlife. Vehicles are restricted to roads and the harassment or taking of any wildlife other than the game species legal for the season is not permitted. Disturbance to the daily wintering activities, such as feeding and resting, of birds might occur, but would be transitory as hunters traverse habitat. Disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users.

Any potential effect on threatened and endangered species on the refuge such as the bald eagle and wood stork can be mitigated through zoning of time and space. An Intra-Service Section 7 Evaluation associated with this assessment was conducted, and it was determined that the proposed action is not likely to adversely affect these species.

Additional damage to roads and foot trails due to hunter use during wet weather periods may occur. The current refuge hunt program on 5,455 acres for the past eight years has shown these impacts to be minimal. There would be some costs associated with a hunting program in the form of road, parking, and foot trail maintenance, instructional sign needs, and law enforcement. These costs should be minimal relative to total refuge operations and maintenance costs and would not diminish resources dedicated to other refuge management programs.

As public use levels expand across time, unanticipated conflicts between user groups may occur. Experience has proven that time and space zoning (e.g., establishment of separate use areas, use periods, and restrictions on the number of users) is an effective tool in eliminating conflicts between user groups. Conflicts between hunters and non-consumptive users might occur but would be mitigated by time (non-hunting season) and space zoning. The refuge would focus non-consumptive use (mainly birdwatching and other wildlife viewing) in the spring and summer when hunting is closed.

The public would be allowed to harvest a renewable resource, and the refuge would be promoting a wildlife-oriented recreational opportunity that is compatible with the purpose for which the refuge was established. The public would have an increased awareness of Bond Swamp NWR and the National Wildlife Refuge System and public demand for more hunting would be met. The public would also have the opportunity to harvest a renewable resource in a traditional manner, which is culturally important to the local community. This alternative would also allow the public to enjoy hunting at no or little cost in a region where private land is leased for hunting, often costing a person \$500-\$2000/year for membership. This alternative would allow families the opportunity to experience a wildlife-dependant recreation, instill an appreciation for and understanding of wildlife, the natural world and the environment and promote a land ethic and environmental awareness.

D. Cumulative Impacts Analysis

Anticipated Direct and Indirect Impacts of Proposed Action on Wildlife Species.

White-tailed Deer: Deer hunting does not have regional population impacts due to restricted home ranges. The average home range of deer in Georgia was reported as 59 hectares or 146 acres (Marshall and Whittington 1969). Bucks may expand their range during the rut as noted in Georgia from 92.3 to 244 hectares (228 to 603 acres). (Kammermeyer and Marchinton 1976) In various studies across the southeast home ranges can vary based on habitat and population variables but general do not exceed 200 hectares. Therefore, only local impacts occur. The Georgia Department of Natural Resources, Wildlife Division (GADNR) recorded deer harvest rates on two state wildlife management areas (WMA) near the refuge. An average of 150-200 deer and 10+ feral hogs are harvested during a one week managed hunt. In 2006 1,761 hunters harvested 183 deer on Ocmulgee WMA and 1,335 hunters harvested 163 deer on Oakywoods WMA. There is no season on hogs but hunters may harvest hogs during all types of hunts on the WMA. Average weights and antler development of deer are good and have remained stable. (GADNR personal comm. 2007)

Warner Robins Air Force Base (WRAFB) has 8,500 acres just south of Bond Swamp Refuge on the west side of the Ocmulgee River. WRAFB issues 100-150 permits annually to military, civilian, and contract base personnel) for white-tailed deer and feral hog hunting. Annual harvest averages 60-70 deer and 250-300 feral hogs. Hunt seasons follow state deer hunting regulations and seasons. Feral hog hunting may be extended for up to 9 months depending on the extent of hog damage identified in a given year. The base also conducts a volunteer hog trapping program and currently has 12 contracts open. The objectives of the WRAFB hunt program are to bring an invasive species (feral hogs) under control and deer hunting contributes to recreation, habitat management, and airfield safety. (WRAFB personal comm. 2007)

Deer herd health has been assessed based on the eight years of hunt data collect on the refuge. Overall health appears good. Year of poor mast crops body weights may drop as identified in published literature. No disease outbreaks for EHD have been noted on the refuge since hunting began in 1999.

Harvest and survey data from the GADNR confirm that decades of deer hunting on surrounding private lands and the WMA (based on the longer state season) have not had a local cumulative effect on the deer population. GADNR estimate 318,808 deer were harvested throughout the state in 2005-06. The average annual statewide harvest since 1996 is 414,000 (+/- 54,000) deer. The refuge estimates an additional maximum 50 deer would be harvested under the proposed action, representing only 0.01% of the long-term average state harvest. Continued hunting on 5,455 acres of refuge lands for a limited deer season (less than 30 days) should not have cumulative impacts on the deer herd. The state wide deer season in Twiggs County in 2005-06 hunting season was 115 days. (GADNR personal comm. 2007)

Feral Hogs: Feral hogs are an extremely invasive, introduced, non-native species and are not considered a game species by the State of Georgia. No bag limits are established for feral hogs. Feral hogs may be hunting year round on private lands and state lands allow hunting of hogs during any open hunt season. Hunting of feral hogs provides the refuge with another management tool in reducing the population of this detrimental species, and at the same time, is widely enjoyed by hunters. Cumulative effects to an exotic, invasive species should not be of concern because the refuge would like to extirpate this species on refuge lands. Hunting of hogs is not considered detrimental to the biological integrity of the refuge, is not likely to create conflict with other public uses and is within the wildlife dependant public uses to be given priority consideration. Since feral hogs are exotic, they are a priority species for refuge management only in terms of their negative impacts on refuge biota and need for eradication. They are a popular game species though, and the public interest would best be served by allowing this activity on the refuge. However, even with hunting, feral hogs are likely to always be present because they are prolific breeders.

Non-hunted wildlife: Non-hunted wildlife would include non-hunted migratory birds such as waterfowl, songbirds, wading birds, raptors, and woodpeckers; small mammals such as voles, moles, mice, shrews, and bats; reptiles and amphibians such as snakes, skinks, turtles, lizards, salamanders, frogs and toads; and invertebrates such as butterflies, moths, other insects and spiders. Except for migratory birds and some species of migratory bats, butterflies and moths, these species have very limited home ranges and hunting could not affect their populations regionally; thus, only local effects will be discussed.

Disturbance to non-hunted migratory birds could have regional, local, and flyway effects. Regional and flyway effects would not be applicable to species that do not migrate such as most woodpeckers, and some songbirds including cardinals, titmice, wrens, chickadees, etc. The cumulative effects of disturbance to non-hunted migratory birds under the proposed action are expected to be negligible for the following reasons. Hunting season does not coincide with the nesting season. Long-term future impacts that could occur if reproduction was reduced by hunting are not relevant for this reason. Disturbance to the daily wintering activities, such as feeding and resting, of birds might occur. Disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users.

The cumulative effects of disturbance to non-hunted migratory birds under the proposed action are expected to be negligible for the following reasons. Small mammals, including bats, are inactive during winter when most of the hunting season occurs. These species are also nocturnal. Both of these qualities make hunter interactions with small mammals very rare. Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during most of the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in the early fall are few and should not have cumulative effects on reptile and amphibian populations. Invertebrates are also not active during cold weather and would have few interactions with hunters during the hunting season. During the vast majority of the hunting season, hunter density is low. Refuge regulations further mitigate possible disturbance by hunters to non-hunted wildlife. Vehicles are restricted to roads and

the harassment or taking of any wildlife other than the game species legal for the season is not permitted.

Although ingestion of lead-shot by non-hunted wildlife could be a cumulative impact, it is not relevant to Bond Swamp NWR because the use of small pellet lead shot that could be ingested would not be permitted on the refuge for deer and feral hog hunting. Legal hunting weapons include center-fire rifles, shotguns with slugs, muzzle loader and archery equipment. Buckshot is prohibited.

Some species of bats, butterflies and moths are migratory. Cumulative effects to these species at the “flyway” level should be negligible. These species are in torpor or have completely passed through Georgia by during the gun hunting season. Some hunting occurs during September and October when these species are migrating; however, hunter interaction would be commensurate with that of non-consumptive users.

Endangered and threatened species: Endangered and threatened species that utilize the refuge are bald eagle, wood stork, and short nose sturgeon. A Section 7 Evaluation was conducted in association with this assessment for opening hunting on Bond Swamp NWR. It was determined that the proposed alternative would not likely adversely affect these endangered species.

Bald eagles have an active nest site in the swamp habitat of the refuge. Occasionally other wintering eagles may be in the area. A 700 foot buffer around the eagle nest is closed to all public access year-round. No noticeable adverse effects have been observed. The nest has been successful most years. The eagle built at the current nest site after a storm down blew large portions of their previous nest which was located on a bluff near houses.

Wood storks have been observed occasionally in the area around the refuge. The refuge is located at the north edge of their foraging range. Most of Georgia’s wood storks nest along the coast and near the mouth of the Altamaha River. The birds seen in the Macon area are probably on foraging excursions from those coastal nesting areas. Wood storks have not been observed in the area during hunting season.

Short nose sturgeons have been documented in the Ocmulgee River. It is considered a rare occurrence to find these fish this far up the Ocmulgee River. Hunting of upland game would have no adverse effect on this river dwelling species.

Refer to the Section 7 Evaluation for the 2007 Sport Hunting on Bond Swamp NWR for more information.

Anticipated Direct and Indirect Impacts of Proposed Action on Refuge Programs, Facilities, and Cultural Resources.

Wildlife-Dependant Recreation: As public use levels expand across time, unanticipated conflicts between user groups may occur. The Refuge’s visitor use programs would be adjusted as needed to eliminate or minimize each problem and provide quality wildlife-

dependent recreational opportunities. Experience has proven that time and space zoning (e.g., establishment of separate use areas, use periods, and restrictions on the number of users) is an effective tool in eliminating conflicts between user groups.

The level of recreation use and ground-based disturbance from visitors would be largely concentrated at hiking trails and parking areas. This, combined with the hunter access, could have a negative effect on nesting bird populations. However, the hunting season is during the fall and winter and not during most birds' nesting period. It is unlikely that bald eagles would establish nests near developed facilities. The nest site is closed to all public access year-round.

The opportunities for hunting under the proposed action have occurred for the past eight years and historically prior to refuge establishment. High deer numbers are recognized as a problem causing habitat damage and vehicle collisions. Hunting would be used to keep the deer herd and other resident wildlife in balance with the habitat's carrying capacity, resulting in long-term positive impacts on wildlife habitat.

The refuge would control access under this alternative to minimize wildlife disturbance and habitat degradation, while allowing current compatible wildlife-dependent recreation to continue.

Refuge facilities: The Service defines facilities as: "Real property that serves a particular function(s) such as buildings, roads, utilities, water control structures, raceways, etc." Under the proposed action those facilities most utilized by hunters are: roads, parking lots, foot trails and a boat launch site. Maintenance or improvement of existing facilities (i.e. parking areas, roads, trails, and boat ramps) will cause minimal short term impacts to localized soils and waters and may cause some wildlife disturbances and damage to vegetation. The facility maintenance and improvement activities described are periodically conducted to accommodate daily refuge management operations and general public uses such as wildlife observation and photography. These activities will be conducted at times (seasonal and/or daily) to cause the least amount of disturbance to wildlife. Siltation barriers will be used to minimize soil erosion, and all disturbed sites will be restored to as natural a condition as possible. During times when roads are impassible due to flood events or other natural causes those roads, parking lots, trails and boat ramps impacted by the event will be closed to vehicular use.

Cultural Resources: Hunting, regardless of method or species targeted, is a consumptive activity that does not pose any threat to historic properties on and/or near the Refuge. In fact, hunting meets only one of the two criteria used to identify an "undertaking" that triggers a federal agency's need to comply with Section 106 of the National Historic Preservation Act. These criteria, which are delineated in 36 CFR Part 800, state:

- 1- an undertaking is any project, activity, or program that can alter the character or use of an archaeological or historic site located within the "area of potential effect;"
and

2- the project, activity, or program must also be either funded, sponsored, performed, licenses, or have received assistance from the agency.

Consultation with the pertinent State Historic Preservation Office and federally recognized Tribes are, therefore, not required.

Anticipated Impacts of Proposed Hunt on Refuge Environment and Community: The refuge expects no sizeable adverse impacts of the proposed action on the refuge environment which consists of soils, vegetation, air quality, water quality and solitude. Some disturbance to surface soils and vegetation would occur in areas selected for hunting; however impacts would be minimal. Hunting would benefit vegetation as it is used to keep many resident wildlife populations in balance with the habitat's carrying capacity. The refuge would also control access to minimize habitat degradation.

The refuge expects impacts to air and water quality to be minimal and only due to refuge visitors' automobile emissions and run-off on road and trail sides. The effect of these refuge-related activities, as well as other management activities, on overall air and water quality in the region are anticipated to be relatively negligible, compared to the contributions of industrial centers, power plants, and non-refuge vehicle traffic. Existing State water quality criteria and use classifications are adequate to achieve desired on-refuge conditions; thus, implementation of the proposed action would not impact adjacent landowners or users beyond the constraints already implemented under existing State standards and laws.

Impacts associated with solitude are expected to be minimal given time and space zone management techniques, such as seasonal access and area closures, used to avoid conflicts among user groups.

The refuge would work closely with State, Federal, and private partners to minimize impacts to adjacent lands and its associated natural resources; however, no indirect or direct impacts are anticipated. The continuation of hunting on the refuge would result in a net gain of public hunting opportunities positively impacting the general public, nearby residents, and refuge visitors. The refuge expects increased visitation and tourism to bring additional revenues to local communities but not a significant increase in overall revenue in any area.

Other Past, Present, Proposed, and Reasonably Foreseeable Hunts and Anticipated Impacts: Cumulative effects on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative effects may result from individually minor actions, they may, viewed as a whole, become substantial over time. The proposed hunt plan has been designed so as to be sustainable through time given relatively stable conditions. Changes in refuge conditions, such as sizeable increases in refuge acreage or public use, are likely to change the anticipated impacts of the current plan and would trigger a new hunt planning and assessment process.

The implementation of any of the proposed actions described in this assessment includes actions relating to the refuge hunt program (see 2007 Sport Hunting Plan for Bond Swamp NWR). These actions would have both direct and indirect effects (e.g., new site inclusion would result in increased public use, thus increasing vehicular traffic, disturbance, etc); however, the cumulative effects of these actions are not expected to be substantial.

The past refuge hunting program has been very similar to the proposed action in season lengths, species hunted, and bag limits. Changes to the hunt program in the past eight years have been made to open hunting and increase harvest opportunities within the refuge. Any action to increase hunting opportunities on the refuge will be addressed through the Comprehensive Conservation Planning process that will involve full public input and coordination with state, federal, and tribal governments.

Anticipated Impacts if Individual Hunts are Allowed to Accumulate: National Wildlife Refuges, including Bond Swamp NWR, conduct hunting programs within the framework of State and Federal regulations. Bond Swamp NWR is at least as restrictive as the State of Georgia and in many cases more restrictive. By maintaining hunting regulations that are as, or more, restrictive than the State, individual refuges ensure that they are maintaining seasons which are supportive of management on a more regional basis. The proposed hunt plan has been reviewed and is supported by the Georgia Department of Natural Resources. Additionally, refuges coordinate with GADNR bi-annually to maintain regulations and programs that are consistent with the State management program.

Chapter 5 Consultation and Coordination with Others

The Georgia Department of Natural Resources (GADNR) concurs and fully supports the regulated consumptive public use of the natural resources associated with the Bond Swamp NWR (Refer to Letter of Concurrence). The Fish and Wildlife Service also provided an in depth review by the Regional Office personnel and staff biologists. Numerous contacts were made throughout the area of the refuge soliciting comments, views, and ideas into the development of the accompanying hunting plan.

Appendix 1 Literature References

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Appendix 2 Response to Public Comments

The Service solicited public comment for the 2007 Bond Swamp NWR Sport Hunt Plan and associated Environmental Assessment. The 30-day review period began March 5, 2007 and ended on April 5, 2007. News releases announcing its availability for comment were posted at two public entry points at Bond Swamp Refuge, the Piedmont Refuge visitor center, on the Bond Swamp Refuge web page, and sent to 97 newspapers on the refuge state-wide media list. Legal notices were placed in 3 local newspapers (The Macon Telegraph- March 3, 2007; The Jones County News- March 8, 2007; and The Monticello News- March 8, 2007). Announcements requesting public review were distributed from March 1 through March 3, 2007. Copies of this document were available upon request by hard copy, email, or could be viewed and downloaded from the refuge web page. Public comment could be made by hard copy, telephone, or email.

We received 622 comments on the Bond Swamp Sport Hunt Plan and draft Environmental Assessment. 618 of these comments were in support of the Service's preferred Alternative in the draft EA which would open hunting on 5,455 acres of Bond Swamp NWR. One comment did not support hunting and is addressed below. One comment did not address the draft EA or hunt plan and is not responded to here. And 2 comments (supporting the Proposed Action) were received after the deadline and were not considered in this analysis. A summary of the comments received is provided below.

Of the 618 comments that support the Service's Preferred Alternative, many added the following opinion to support their choice. These opinions are summarized in the following categories:

- 521 comments stated that hunting was an important traditional use of the land, part of their American heritage, and/ or provided important family-orientated recreation.
- 498 comments stated that hunting generates revenue to support other non-consumptive uses on refuges and the local economy. And sportsmen's tax dollars support the use of refuges by all Americans.
- 84 comments stated that hunting is an important management tool and cited wildlife population, invasive species and habitat damage control as objectives.
- 31 comments stated that public hunting land provided an affordable alternative to hunting private land which is becoming more expensive and difficult to find.
- 12 comments stated that it was their constitutional right to hunt and fish.

8 comments requested the refuge consider additional or an expansion of hunting opportunities including small game, turkey and waterfowl hunting, expansion of feral hog

hunts, expansion of acres open to hunting, adding a hunt for disabled sportsmen, and allowing ATVs for retrieval of game only. As stated in the Sport Hunt Plan and the Environmental Assessment new opportunities could not be considered at this time as directed from the pending FFA law suite. The refuge will consider additional opportunities during the upcoming comprehensive conservation plan process that will include significant public involvement.

Safari Club International and Safari Club International Foundation provided a letter supporting the Service's Preferred Alternative. In addition they requested the Service consider enhancing the cumulative analysis of the impact of hunting opportunities by (1) more prominently featuring the refuge's role in the State of Georgia's wildlife management program and (2) explain how refuge hunting programs considered collectively conserves the cumulative health of the habitat of the entire flyway. The two recommendations are so noted but not responded to here.

We received one letter from the Humane Society of the United States that contained comments related to hunting on the National Wildlife Refuge System as a whole and containing elements related to litigation filed in 2003 by the Fund for Animals against the Service. These comments were not specific to this draft EA and are noted but not responded to here.

APPENDIX 3. MAPS OF BOND SWAMP NWR

Figure 1. Map of Bond Swamp NWR depicting refuge boundary and areas designated as open or closed to hunting.

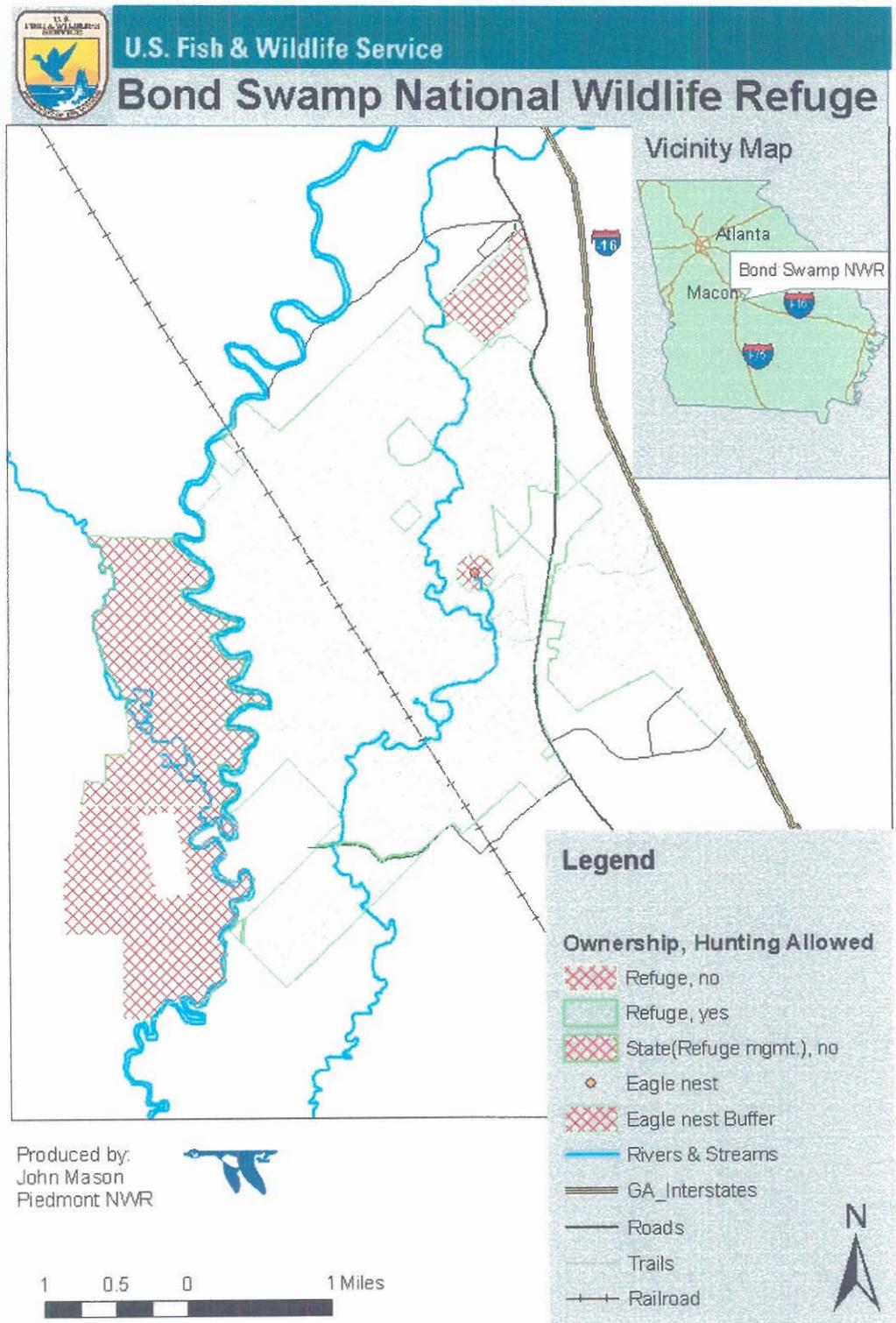


Figure 2. Acquisition boundary of Bond Swamp National Wildlife Refuge

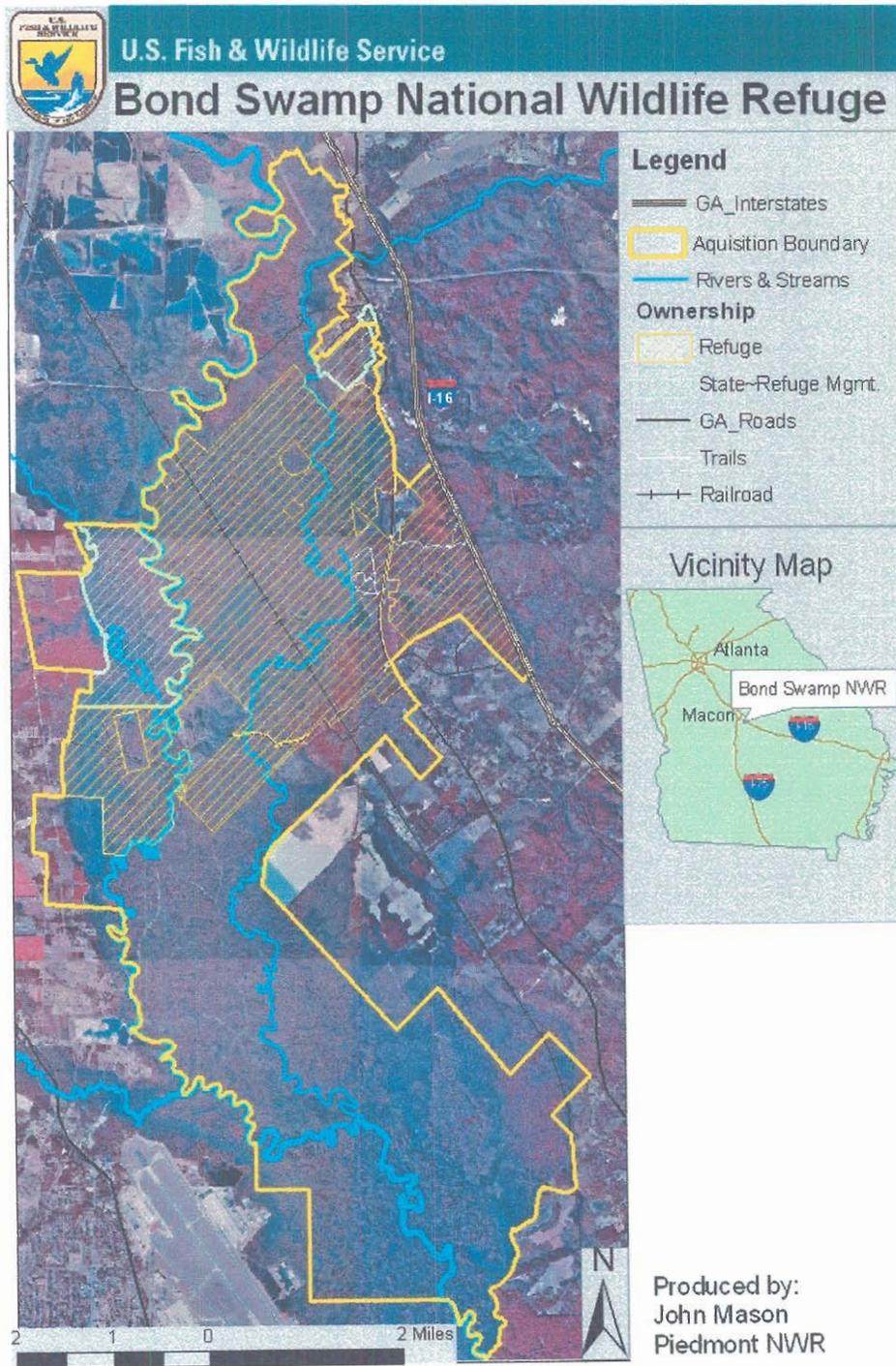
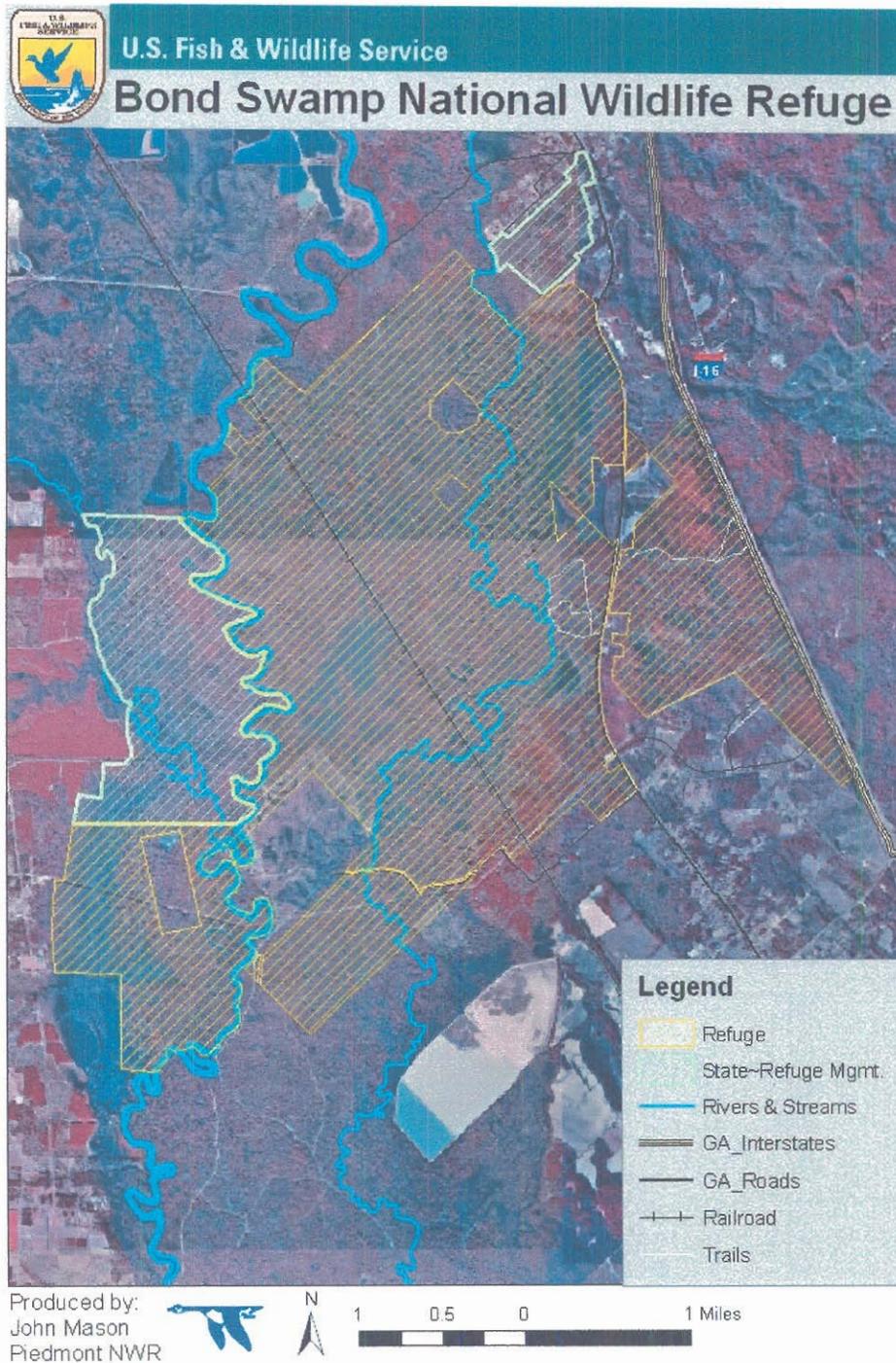


Figure 3. Current management boundary of Bond Swamp National Wildlife Refuge.



APPENDIX 4a: Bond Swamp National Wildlife Refuge deer and feral hog hunt history 1999 – 2007

YEAR	ARCHERY		DECEMBER DEER / HOG		JANUARY HOG ONLY		FEBRUARY HOG ONLY		TOTAL # DAYS ^a	TOTAL # HUNTERS SIGNED IN ^{b,c}	TOTAL DEER HARVESTED	TOTAL HOGS HARVESTED
	DEER	HOG	DEER	HOG	DEER	HOG	DEER	HOG				
1999-2000			20	33	3		17		9 (0)	130	20	53
2000-2001	8	11	11	14	23		10		9 (4)	330	19	58
2001-2002	8	4	11	9	11		26		15 (6)	295	19	50
2002-2003	9	22	13	35	48		18		15 (6)	359	22	123
2003-2004	3	17	28	13	11		8		22 (13)	357	31	49
2004-2005	6	20	11	23	39		12		22 (13)	353	17	94
2005-2006	4	8	11	6	23		10		32 (23)	427	15	47
2006-2007	3	15	11	21	47		24		30(21)	424	14	107

^a Total days () = # archery days in total

^b Quota for gun hunts increased in the 2001-2002 season: December deer/hog hunt = 75 to 100
Hog hunts = 75 to 150

^c Quota for gun hunts increased in the 2005-2006 season: December deer/hog hunt=remained at 100
Hog hunts =150 to 200

APPENDIX 4b: Bond Swamp National Wildlife Refuge hunter participation 1999 – 2007

YEAR	ARCHERY		DECEMBER DEER / HOG		JANUARY HOG ONLY		FEBRUARY HOG ONLY		TOTAL # DAYS ^a	TOTAL # HUNTERS SIGNED IN ^{bc}	TOTAL DEER HARVESTED	TOTAL HOGS HARVESTED
	# sign-in	# paid	# sign-in	# paid	# sign-in	# paid	# sign-in	# sign-in				
1999-2000		65	61	47	24	34	45	9 (0)	130	20	53	
2000-2001	215	56	51	X	34	X	30	9 (4)	330	19	58	
2001-2002	122	73	61	81	58	79	54	15 (6)	295	19	50	
2002-2003	157	77	50	112	87	87	65	15 (6)	359	22	123	
2003-2004	184	82	65	100	74	105	65	22 (13)	357	31	49	
2004-2005	217	68	55	107	81	99	74	22 (13)	353	17	94	
2005-2006	143	77	55	161	129	145	100	32 (23)	427	15	47	
2006-2007	143	84	60	152	110	150	111	32 (23)	424	14	107	

^a Total days () = # archery days in total

^b Quota for gun hunts increased in the 2001-2002 season: December deer/hog hunt = 75 to 100
Hog hunts = 75 to 150

^c Quota for gun hunts increased in the 2005-2006 season: December deer/hog hunt = remained at 100
Hog hunts = 150 to 200

X Total 150 hunters paid 2000-2001 - 56 paid for deer/hog and remaining 94 paid for 2 hog hunts.

APPENDIX 5: Threatened and Endangered Species in Bibb and Twiggs Counties (F = federal, S = state)

PLANTS

Species	Common Name	Endangered	Threatened	Candidate	Rare	Unusual
<i>Sarracenia flava</i>	Golden trumpets					S
<i>Sarracenia oreophila</i>	Green pitcherplant	F & S				
<i>Sarracenia rubra</i>	Sweet pitcherplant	S				
<i>Scutellaria ocmulgee</i>	Ocmulgee skullcap		S		F	
<i>Silene polypetala</i>	Fringed campion	F & S				
<i>Trillium reliquum</i>	Relict trillium	F & S				

Patrick, T.S., J.R. Allison & G.A. Krakow. 1995. Protected plants of Georgia. Georgia Department of Natural Resources, Wildlife Resources Division, Georgia Natural Heritage Program.

ANIMALS

Species	Common Name	Endangered	Threatened	Candidate	Rare	Unusual
<i>Haliaeetus leucocephalus</i>	Bald eagle	S	F			
<i>Clemmys guttata</i>	Spotted turtle					S
<i>Gopherus polyphemus</i>	Gopher tortoise		S			
<i>Cyprinella xaenura</i>	Altamaha shiner	S				
<i>Etheostoma parvipinne</i>	Goldstripe darter					S

Ozier, J.C., J.L. Bohannon & J.L. Anderson. 1999. Protected animals of Georgia. Georgia Department of Natural Resources, Wildlife Resources Division, Nongame Wildlife – Natural Heritage Section, Nongame-Endangered Wildlife Program.

Sport Hunting

Decision Document Package

for

BOND SWAMP NWR

Contents

3. FONSI

FINDING OF NO SIGNIFICANT IMPACT

2007 Sport Hunting Plan for Bond Swamp National Wildlife Refuge

The U.S. Fish and Wildlife Service proposes to maintain white-tailed deer and feral hog hunting on 5,455 acres of Bond Swamp NWR. Hunting activities will be permitted, but administratively limited to those areas specified in the refuge-specific regulations. All or parts of the refuge may be closed to hunting at any time if necessary for public safety, to provide wildlife sanctuary, or for other reasons. Alternatives considered included: proposed action and no action.

The Service has analyzed the following alternatives to the proposal in an Environmental Assessment (copy attached):

No action alternative - Under this alternative, hunting would not be allowed on the 7,348 acre refuge. The 5,455 acres currently open to hunting for white-tailed deer and feral hogs would be closed. There would be no change to current public use and wildlife management programs.

Proposed action- Under this alternative, white-tailed deer and feral hog hunting would be allowed to continue on 5,455 acres of Bond Swamp NWR under refuge specific regulations.

The preferred alternative was selected over the other alternatives because:

1. The preferred alternative would allow the refuge to manage wildlife populations, allow the public to harvest a renewable resource, promote a wildlife-oriented recreational opportunity, increase awareness of Bond Swamp NWR and the National Wildlife Refuge System, and meet public demand.
2. The preferred alternative is compatible with general Service policy regarding the establishment of hunting on National Wildlife Refuges.
3. The preferred alternative is compatible with the purpose for which Bond Swamp NWR was established.
4. This proposal does not initiate widespread controversy or litigation.
5. There are no conflicts with local, state, regional, or federal plans or policies.

Implementation of the agency's decision would be expected to result in the following environmental, social, and economic effects:

1. The refuge could better manage wildlife populations.
2. This would allow the public to harvest a renewable resource.
3. The public would have increased opportunity for wildlife-oriented recreation.
4. Local businesses would benefit from hunters visiting outside the Macon area.
5. The Service will be perceived as a good steward of the land by managing wildlife

habitat, controlling invasive species and continuing traditional uses of land in Middle Georgia.

Measures to mitigate and/or minimize adverse effects have been incorporated into the proposal. These measures include:

1. The refuge will be open to public use during daylight hours only.
2. Vehicle use will be limited to open maintained roads.
3. Some areas of the refuge may be zoned or restricted to season of use while other areas may be closed to all public use.
4. No gasoline boat motors will be allowed, except in the Ocmulgee River.
5. No public camping will be allowed.
6. Hunting seasons will be limited rather than the entire state season.
7. The refuge law enforcement program and closely regulated hunting season will ensure hunt regulation compliance and will protect refuge resources.

The proposal is not expected to have any significant adverse effects on wetlands and flood plains, pursuant to Executive Orders 11990 and 11988 because this area has historically had a high use of recreational hunting with no detrimental long-term effect on wetlands.

The proposal has been thoroughly coordinated with all interested and/or affected parties. Parties contacted include:

- § U.S. Fish and Wildlife Service, Division of Ecological Services, Athens, GA
- § Georgia Department of Natural Resources, Wildlife Resources Division

Copies of the Environmental Assessment are available by writing:

Bond Swamp National Wildlife Refuge
718 Juliette Road
Round Oak, GA 31038

Therefore, it is my determination that the proposal does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of section 102(2)(c) of the National Environment Policy Act of 1969 (as amended). As such, an environmental impact statement is not required. This determination is based on the following factors (40 CFR 1508.27):

(for each factor list the page numbers of the EA where the factor was discussed.)

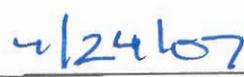
1. **Both beneficial and adverse effects have been considered and this action will not have a significant effect on the human environment (EA, page 18-23)**

2. The actions will not have a significant effect on public health and safety (EA, page 19).
3. The project will not significantly effect any unique characteristics of the geographic area such as proximity to historical or cultural resources, wild and scenic rivers, or ecologically critical areas (EA, page 19, 26, 27).
4. The effects on the quality of the human environment are not likely to be highly controversial (EA, page 18).
5. The actions do not involve highly uncertain, unique, or unknown environmental risks to the human environment (EA, page 19).
6. The actions will not establish a precedent for future actions with significant effects nor does it represent a decision in principle about a future consideration (EA, pages 28).
7. There will be no cumulative significant impacts on the environment. Cumulative impacts have been analyzed with consideration of other similar activities on adjacent lands, in past action, and in foreseeable future actions (EA, pages 24-29).
8. The actions will not significantly affect any site listed in, or eligible for listing in, the National Register of Historic Places, nor will they cause loss or destruction of significant scientific, cultural, or historic resources (EA, pages 17, 19, 28).
9. The actions are not likely to adversely affect endangered or threatened species, or their habitats (Intra-Service Section 7 Biological Evaluation Form attached to EA).
10. The actions will not lead to a violation of federal, state, or local laws imposed for the protection of the environment (EA, pages 29).

References: Environmental Assessment of 2007 Sport Hunt Plan for Bond Swamp NWR, Hunting Plan, Compatibility Determination, Letters of Concurrence, Refuge-specific Regulations, Intra-Service Section 7 Evaluation



Regional Director



Date