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**DRAFT COMPREHENSIVE CONSERVATION PLAN  
AND ENVIRONMENTAL ASSESSMENT**

*FOR*

**BIG BRANCH MARSH NATIONAL WILDLIFE REFUGE**

*ST. TAMMANY PARISH, LOUISIANA*

**U.S. Department of the Interior**  
**Fish and Wildlife Service**  
*Southeast Region*  
Atlanta, Georgia

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## SECTION A. DRAFT COMPREHENSIVE CONSERVATION PLAN

# *I. Background*

### INTRODUCTION

This Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) for Big Branch Marsh National Wildlife Refuge was prepared to guide management actions and to provide direction for the refuge. Fish and wildlife conservation will receive first priority in refuge management; wildlife-dependent recreation will be allowed and encouraged as long as it is compatible with, and does not detract from, the mission of the refuge or the purposes for which it was established.

This Draft CCP/EA has been prepared by a planning team composed of refuge staff with input from the Louisiana Department of Wildlife and Fisheries, other government agencies, non-governmental organizations, local citizens, and the public. This public involvement and the planning process itself are further described in Chapter III, Plan Development.

The Draft CCP/EA represents the proposed alternative of the Fish and Wildlife Service and is being put forward after considering two other alternatives, as described in Section B. After reviewing public scoping comments and management needs, the planning team developed these alternatives in an attempt to determine how to best meet the goals and objectives of the refuge. This Draft CCP/EA describes the proposed management alternative and its effects on the environment.

### PURPOSE OF AND NEED FOR THE PLAN

Under the provisions of the National Wildlife Refuge System Improvement Act of 1997, the Service is required to develop comprehensive conservation plans for all lands and waters of the National Wildlife Refuge System (Refuge System). These plans will guide management decisions and set forth strategies for achieving the purposes of each refuge unit. The National Environmental Policy Act (NEPA) ensures that the Service will assess the environmental impacts of any actions taken as a result of implementing this plan.

The purpose of the Draft CCP/EA is to identify the role the refuge will play in supporting the mission of the Refuge System and the Lower Mississippi River Valley Ecosystem (LMRE). The Draft CCP outlines issues, concerns, and opportunities expressed to the Service during a public scoping meeting, a series of workshops, and on comment sheets. It also provides a description of desired future conditions and proposes long-range guidance to accomplish the purposes, mission, and vision of the refuge. This guidance is presented in a listing of refuge goals, objectives, and strategies resulting from an analysis of possible management alternatives.

The Final CCP will serve as an operational guide for management of the refuge over the next fifteen years.

This plan will:

- Provide a clear statement of the desired future conditions when refuge purposes and goals are accomplished;

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- Provide refuge neighbors and visitors with a clear understanding of the reasons for management actions on the refuge;
  - Ensure management of the refuge reflects policies and goals of the Refuge System;
  - Ensure refuge management is consistent with Federal, State, and local plans;
  - Provide long-term continuity in refuge management; and
  - Provide a basis for operation, maintenance, and capital improvement budget requests.

Perhaps the greatest need of the Service involves communication with the public and the public's participation in carrying out the mission of the Refuge System. Many agencies, organizations, institutions, and businesses have developed relationships with the Service to advance the mission of national wildlife refuges.

## **DEPARTMENT OF THE INTERIOR**

The Service is a Federal bureau operated under the Department of the Interior (DOI), the Nation's principal conservation agency. The DOI is the principal landowner of most of the nation's public lands and cultural resources. Management responsibilities include fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, managing the Refuge System, and providing for the enjoyment of life through outdoor recreation.

The Service is the principal agency responsible for protecting threatened and endangered species, migratory birds, anadromous and interjurisdictional fish, and certain marine mammals. In addition, the Service administers a national network of lands and waters for the management and protection of these resources.

## **MISSION OF THE FISH AND WILDLIFE SERVICE**

The mission of the Service is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

The Service manages the Refuge System, the world's largest collection of lands set aside specifically for the protection of fish and wildlife populations and habitats. More than 540 national wildlife refuges covering more than 96 million acres provide important habitat for native plants and many species of insects, amphibians, reptiles, fish, birds, and mammals. These refuges also play a vital role in conserving the habitats of threatened and endangered species, as well as offering a wide variety of recreational opportunities. Many refuges have visitor centers, wildlife trails, and environmental education programs. Nationwide, more than 30 million visitors annually hunt, fish, observe and photograph wildlife, or participate in interpretive activities on national wildlife refuges.

## **MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM**

The mission of the National Wildlife Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997, is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

The National Wildlife Refuge System Improvement Act of 1997 established, for the first time, a clear legislative mission for wildlife conservation of the Refuge System. Actions were initiated in 1997 to

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comply with the direction of this new legislation, including an effort to complete comprehensive conservation plans for all refuges. These plans, which are completed with full public involvement, help guide management of refuges. Consistent with this Act, approved plans will serve as the guidelines for refuge management over the next 15 years. The Act provides that each refuge shall be managed to:

- Fulfill the mission of the National Wildlife Refuge System;
- Fulfill the individual purposes of each refuge;
- Consider the needs of wildlife first;
- Fulfill requirements of comprehensive conservation plans that are prepared for each unit of the Refuge System;
- Maintain the biological integrity, diversity, and environmental health of the Refuge System; and
- Recognize that wildlife-dependent recreation activities, including hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation, are legitimate and priority public uses; and allow refuge managers authority to determine compatible public uses.

## **LEGAL POLICY CONTEXT**

Administration of national wildlife refuges is guided by the mission and goals of the Refuge System, congressional legislation, Presidential executive orders, and international treaties. Policies for management options of refuges are further refined by administrative guidelines established by the Secretary of the Interior and by policy guidelines established by the Director of the Fish and Wildlife Service. Refer to Appendix C for a listing of relevant legal mandates.

Specific public use programs must be legally opened on lands within the Refuge System before the use is offered. All programs and uses must be evaluated based on mandates set forth in the National Wildlife Refuge System Improvement Act of 1997. Those mandates are to:

- Contribute to ecosystem goals, as well as to refuge purposes and goals;
- Conserve, manage, and restore fish, wildlife, and plant resources and their habitats;
- Monitor the trends of fish, wildlife, and plants;
- Manage and ensure appropriate visitor uses as those uses which benefit the conservation of fish and wildlife resources and contribute to the enjoyment of the public (these uses include hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation); and
- Ensure that visitor activities are compatible with refuge purposes.

## **RELATIONSHIP TO THE LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES**

A provision of the National Wildlife Refuge System Improvement Act of 1997, and subsequent agency policy, states that the Service shall ensure timely and effective cooperation and collaboration with other State fish and game agencies and Federal agencies during the course of acquiring and managing refuges. This cooperation is essential in providing the foundation for the protection and sustainability of fish and wildlife throughout the United States. Big Branch Marsh National Wildlife Refuge is located in a region which includes several other State and Federal conservation areas (Figure 1).

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In Louisiana, the Louisiana Department of Wildlife and Fisheries (LDWF) (<http://www.wlf.louisiana.gov>) is vested with conservation and management of wildlife in the State, including aquatic life, and is authorized to execute the laws enacted for the control and supervision of programs relating to the management, protection, conservation, and replenishment of wildlife, fish, and aquatic life, and the regulation of the shipping of wildlife, fish, furs, and skins. LDWF's mission is to manage, conserve, and promote wise utilization of Louisiana's renewable fish and wildlife resources and their supporting habitats through replenishment, protection, enhancement, research, development, and education for the social and economic benefit of current and future generations; to provide opportunities for knowledge of and use and enjoyment of these resources; and to promote a safe and healthy environment for the users of the resources. LDWF is divided into seven divisions for management of the State's resources: Enforcement, Fur and Refuge, Public Information, Inland Fisheries, Marine Fisheries, Management and Finance, and Wildlife.

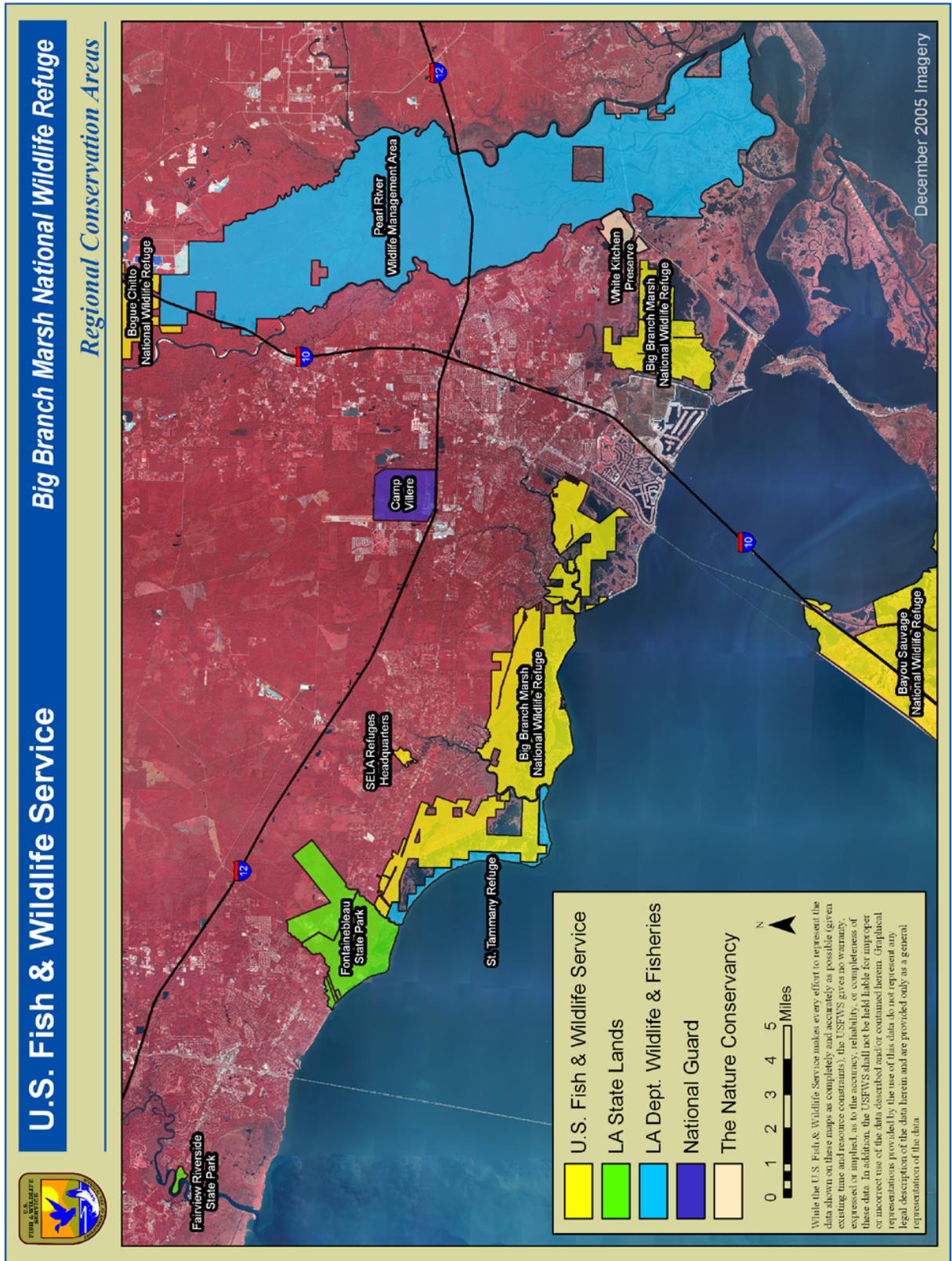
The participation of LDWF throughout this comprehensive conservation planning process has been valuable. Not only have LDWF personnel participated in biological and public use reviews, and workshops as part of the planning process, they are also active partners in annual hunt coordination, planning, and various wildlife and habitat surveys. A key part of the planning process is the integration of common objectives between the Service and LDWF.

## **LOWER MISSISSIPPI RIVER VALLEY ECOSYSTEM**

Big Branch Marsh National Wildlife Refuge lies within a physiographic region designated by the Service as the Lower Mississippi River Ecosystem (LMRE). The LMRE serves as the primary wintering habitat for mid-continent waterfowl populations, as well as breeding and migration habitat for migratory songbirds returning from Central and South America. Geographically, the refuge lies on the extreme southeastern boundary of the LMRE. Big Branch Marsh Refuge has opportunities to contribute to many of the goals and objectives of the LMRE. The following goals of the LMRE are applicable to the refuge:

- Conserve, enhance, protect, and monitor migratory bird populations and their habitats in the LMRE;
- Protect, restore, and manage the wetlands of the LMRE;
- Protect and/or restore imperiled habitats and viable populations of all threatened, endangered, and candidate species and species of concern in the LMRE;
- Protect, restore, and manage the fisheries and other aquatic resources historically associated with the wetlands and waters of the LMRE;
- Restore, manage, and protect national wildlife refuges and national fish hatcheries;
- Increase public awareness and support for LMRE resources and their management;
- Enforce natural resource laws; and
- Protect, restore, and enhance water and air quality throughout the LMRE.

Figure 1. Location of Big Branch Marsh National Wildlife Refuge in relation to regional conservation areas



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National wildlife refuges in the Lower Mississippi Valley serve as part of the last safety net to support biological diversity – the greatest challenge facing the Service. According to the LMRE Team, the greatest threats to biological diversity within the Lower Mississippi Valley include:

- The loss of sustainable communities, including the loss of 20 million acres of bottomland hardwood forest;
- The loss of connectivity between bottomland hardwood forest sites (e.g., forest fragmentation);
- The effects of agricultural and timber harvesting practices;
- The simplification of the remaining wildlife habitats within the ecosystem and gene pools;
- The effects of constructing navigation and water diversion projects; and
- The cumulative habitat effects of land and water resource development activities.

Priorities identified by the LMRE to which the refuge can contribute include:

- Continue to work with the Louisiana Coastal Wetlands Task Force, private landowners, and other entities to protect and restore coastal wetlands, consistent with the Coast 2050 Plan and associated project planning, evaluation, and implementation activities;
- Consider all grant opportunities available to the LMRE Team and partners and work to improve internal coordination of these programs to assure that the contributions to these programs are of maximum benefit to the resource;
- Support environmental education efforts underway by Service offices to enhance and expand knowledge, awareness, and appreciation of trust resources; and
- Control invasive/exotic species.

Conservation priorities for national wildlife refuges in the Lower Mississippi Valley focus on threatened and endangered species, trust species, and species of local concern. Biological objectives in the LMRE for species groups targeted in this Draft CCP reflect the Partners in Flight Bird Conservation Plan, North American Waterfowl Management Plan, Gulf Coast Joint Venture-Mississippi River Coastal Wetlands Initiative, North American Waterbird Conservation Plan, United States Shorebird Conservation Plan, and the North American Bird Conservation Initiative. The refuge is also contributing to the goals and objectives of the Recovery Plan for the Red-cockaded Woodpecker; Coastal Wetlands Planning, Protection, and Restoration Act; Coast 2050: Towards a Sustainable Coastal Louisiana Plan; Louisiana Coastal Area-Ecosystem Restoration Plan; Lake Pontchartrain Basin Foundation; New Directions 2025-St. Tammany Parish Conservation Plan; and the Lake Pontchartrain Estuary Conservation Planning Project.

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## *II. The Refuge*

### **INTRODUCTION AND HISTORY**

Big Branch Marsh National Wildlife Refuge is located along the north shore of Lake Pontchartrain between the communities of Mandeville and Slidell, St. Tammany Parish, Louisiana (Figure 2).

Boundaries of the approved acquisition are Cane Bayou on the west, Lake Pontchartrain to the south, Louisiana Highway 90 on the east, and an irregular boundary south of and generally paralleling Louisiana Highway 190.

Established in 1994, Big Branch Marsh National Wildlife Refuge is the 504<sup>th</sup> refuge under the National Wildlife Refuge System. Big Branch Marsh Refuge is one of eight refuges managed as part of the Southeast Louisiana National Wildlife Refuge Complex. Prior to establishing the refuge, area wetlands were threatened by urban expansion from the city of New Orleans. Several local organizations, including Northshore Coastal Watch, St. Tammany Sportsman's League, Coalition to Restore Coastal Louisiana, and the Lake Pontchartrain Basin Foundation, supported and initiated the establishment of the refuge (USFWS 2000). These organizations lobbied local senators and congressmen to save the wetland areas, which resulted in the establishment of the refuge.

Public interest in the project and governmental support lead to the Service authorizing the establishment of Big Branch Marsh Refuge on September 29, 1994, under the Emergency Wetlands Resources Act of 1986. The original acquisition boundary of the refuge included 12,000 acres of marshlands and forested wetlands between Cane Bayou on the west, Lake Pontchartrain on the south, and the Southern Railroad trestle on the east. The initial acquisition occurred on October 13, 1994, when The Conservation Fund, with funding from the Richard King Mellon Foundation, donated 3,660 acres of wetlands. Subsequently, the refuge acquisition boundary went through two expansion phases. The first expansion proposal, approved in December 1996, consisted of 10,000 acres, which included 3 expansion sites: Oak Harbor, a 2,931-acre tract; Fritchie Marsh, covering 6,500 acres; and a 500-acre tract along the east side of Lacombe Bayou. The second expansion proposal was approved in April 1998, and included 1,770 acres of wetlands, hardwood ridges, and pine flatwoods adjacent to existing refuge lands. These small tracts of land also included the current 110-acre site for the Southeast Louisiana Refuge Complex headquarters. Additional acquisitions were made possible by the North American Wetlands Conservation Act, Land and Water Conservation Act funds, and donations from The Conservation Fund. Currently, Big Branch Marsh Refuge is approximately 17,366 acres of fee title lands within the 24,000-acre acquisition boundary of marshlands and forested wetlands (Figure 3).

Additionally, the refuge manages, through a cooperative agreement with the LDWF, St. Tammany Wildlife Refuge, which is 1,300 acres of marsh adjacent to Big Branch Marsh Refuge.

Figure 2. The Location of Big Branch Marsh National Wildlife Refuge on the north shore of Lake Pontchartrain, St. Tammany Parish, Louisiana

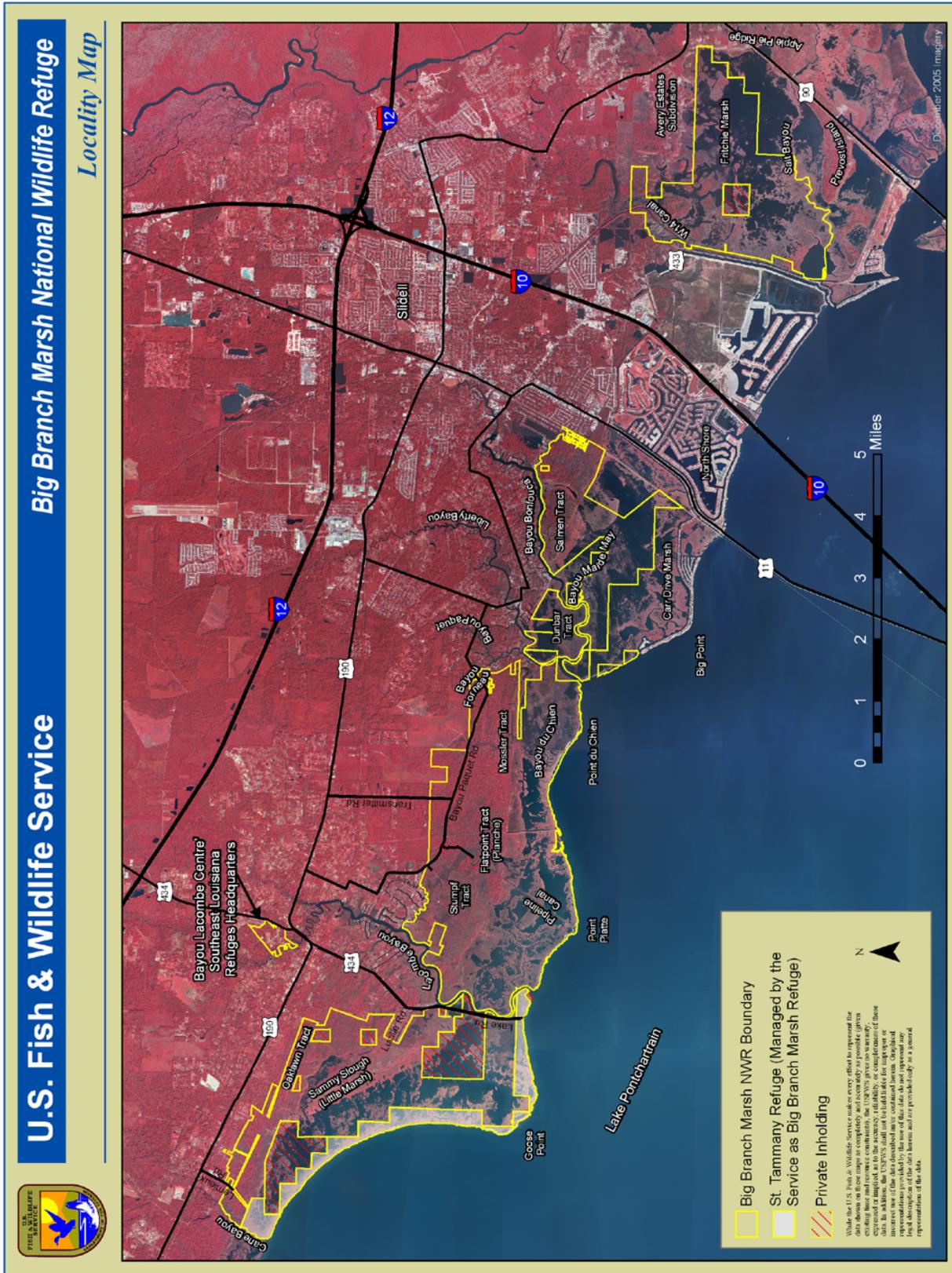
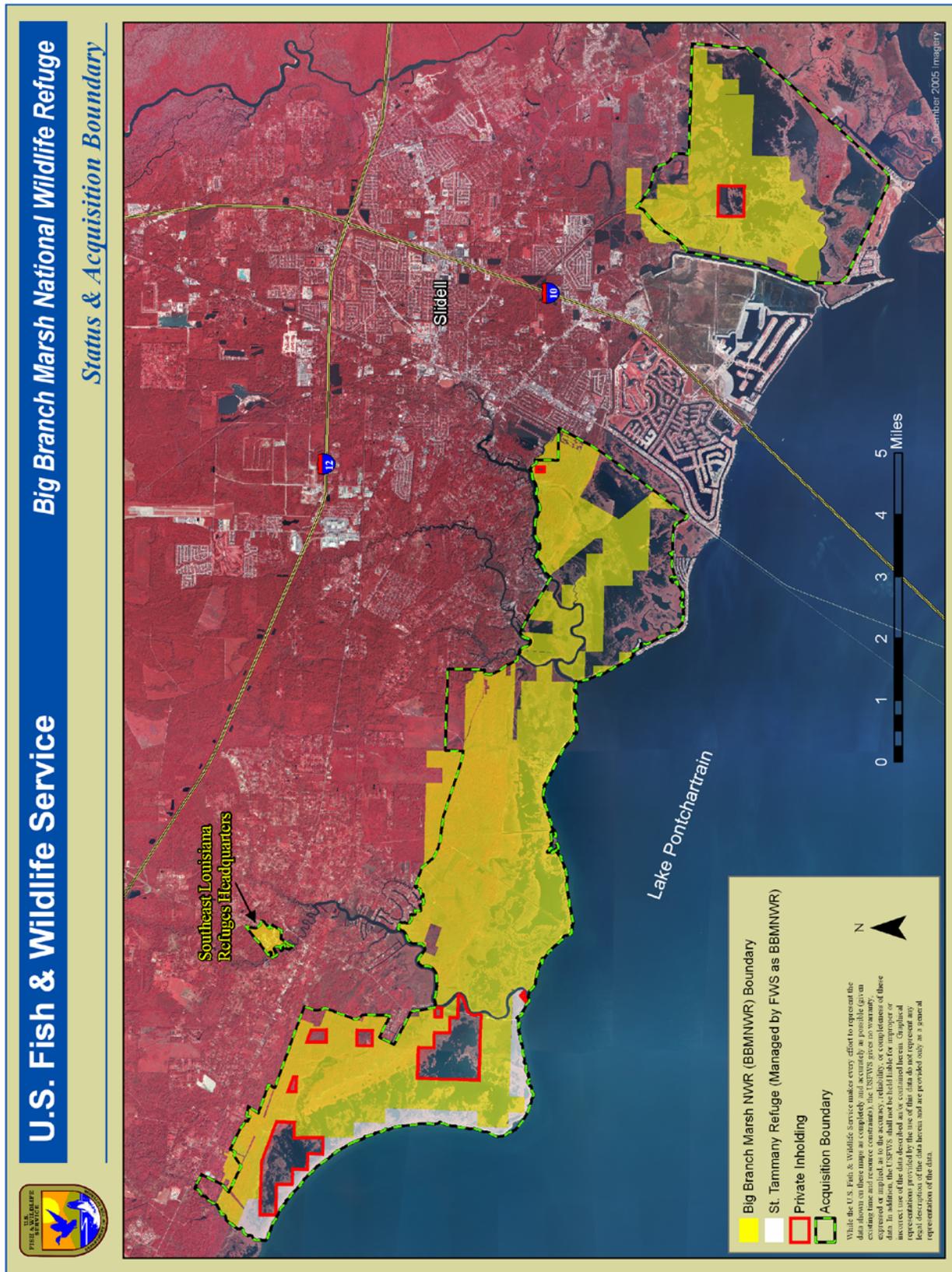


Figure 3. 2006 Current and acquisition boundaries of Big Branch Marsh National Wildlife Refuge



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## PURPOSES OF THE REFUGE

The purposes of the refuge were defined by the following authorities:

### **Emergency Wetlands Resources Act of 1986, 16 U.S.C. § 3901 (b):**

- 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.

### **North American Wetlands Conservation Act, 16 U.S.C. § 4401 2(b):**

- To protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in North America;
- To maintain current or improved distributions of migratory bird populations; and
- To sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries.

The refuge purposes were further defined in the 1994 Final Land Protection Plan and two subsequent Supplemental Environmental Assessments (1996, 1998) for expansion of Big Branch Marsh Refuge as the following management objectives:

- To provide habitat for natural diversity of wildlife associated with Big Branch Marsh;
- To provide wintering habitat for migratory waterfowl;
- To provide nesting habitat for wood ducks;
- To provide habitat for non-game migratory birds; and
- To provide opportunities for public outdoor recreation, such as hunting, fishing, hiking, bird watching, and environmental education and interpretation, whenever they are compatible with the purposes of the refuge.

## RESOURCE AND MANAGEMENT DESCRIPTIONS

### *REFUGE ADMINISTRATION AND MANAGEMENT*

Refuge administration refers to the operation and maintenance of refuge programs and facilities, including construction. Refuge personnel are not assigned solely to Big Branch Marsh Refuge, but support the eight refuges in the Southeast Louisiana Refuge Complex. Six positions share responsibility for Big Branch Marsh, Atchafalaya, and Bogue Chitto Refuges. The Complex staff consists of 27 permanent full-time employees (see staffing chart, Chapter V). The refuge also benefits from the help of interns and volunteers.

The major management activities on the refuge include forestry, fire, wetland restoration projects, law enforcement, wildlife monitoring, and red-cockaded woodpecker recovery. Other important programs are environmental education and providing public uses when they are compatible with refuge purposes.

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## *PHYSICAL ENVIRONMENT*

The climate in the area is humid and subtropical. The weather is dominated by the area's proximity to the Gulf of Mexico and daily weather patterns are influenced by Lake Pontchartrain. Average annual rainfall is approximately 63 inches. Summer months are characterized by afternoon thunderstorms, tropical storms, and the potential for hurricanes. Winters are mild with occasional nights in which the temperature drops below freezing.

Big Branch Marsh Refuge is located within the Pontchartrain Basin in St. Tammany Parish, Louisiana. Sediments forming the basin were deposited during the Pleistocene geologic epoch, approximately 1.5 million to 25 thousand years ago. At the end of the glacial period, a depositional land form, known as the Pleistocene prairie terrace, was formed. The sediments found in the prairie terrace are more consolidated and formed the forested longleaf, loblolly, and slash pine and mixed pine-hardwood areas. Sediments forming the basin consist of fine sands, silts, and silty clays in landforms, and largely sand in marine environments. One common component is that all sediments have high organic and water components.

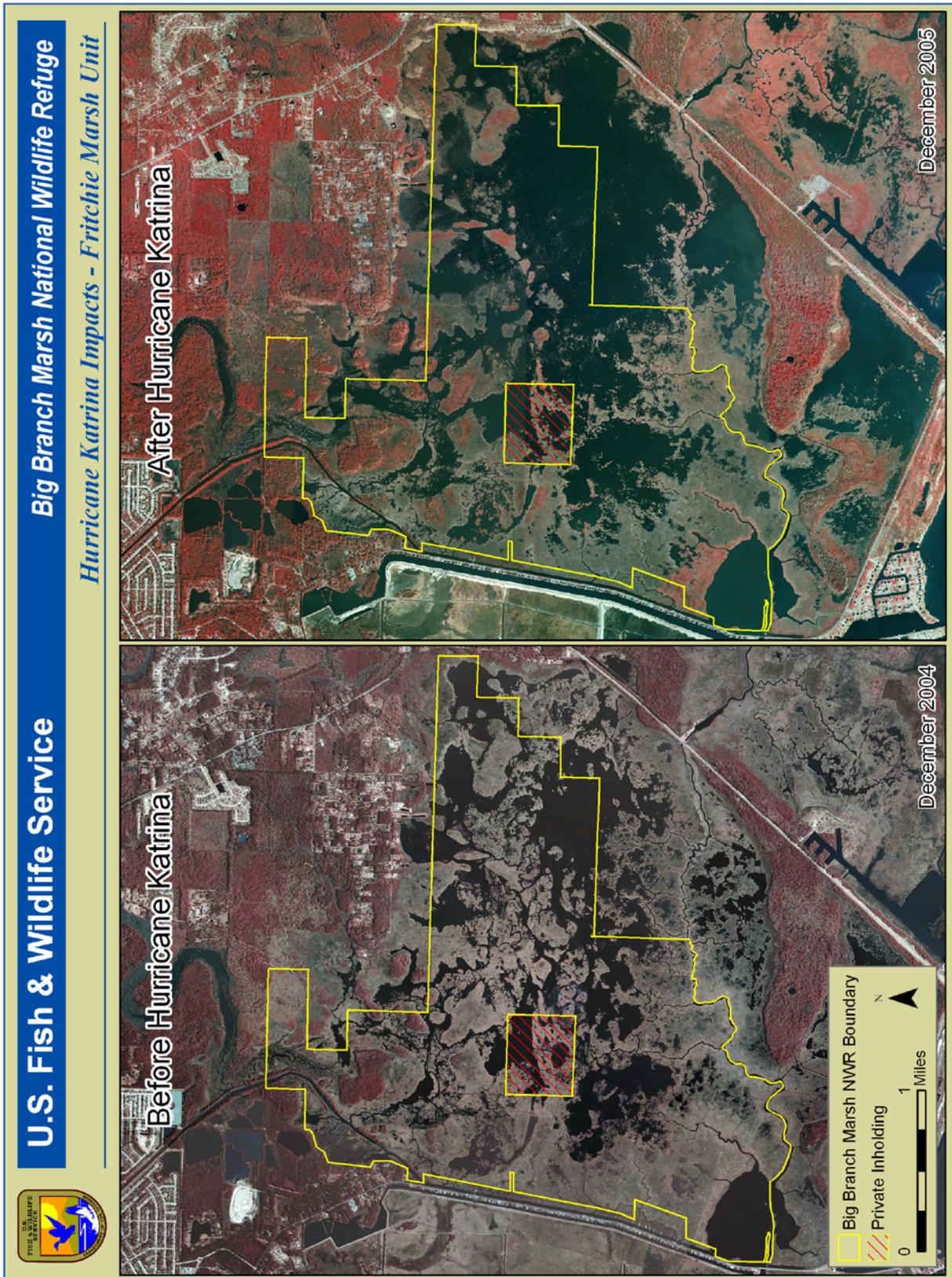
About 18,000 years ago, the sea level rose and flooded the area. Approximately 6,000 years ago, sea level rise slowed and a barrier beach system was created on the south shore forming the Pontchartrain embayment. Sediments deposited by the Mississippi River enclosed the embayment. Natural processes associated with deltaic development and abandonment eventually led to the development of Lakes Maurepas, Borgne, and Pontchartrain. Land subsidence, faulting, storm events, saltwater intrusions, erosion, and sea level rise have been natural occurrences throughout the history of the Pontchartrain Basin. Beginning about 300 years ago, European settlers began to exert an ever-increasing influence on the area. Development, river stabilization, levees, canals, roads, etc., have had an impact on the habitats and resources found in and around the refuge. These changes have been especially rapid within the last 100 years.

Urban development significantly changes hydrology. Natural landscapes allow water to slowly and gradually filter into the ground. However, surfaces associated with urban development are nonporous, causing water to accumulate above the surface and run off in large volumes. Areas that have not been susceptible to flooding are now experiencing increased volumes of faster moving water, which causes erosion.

Water quality is reduced as a result of urban development. A variety of pollutants is contained in urban runoff. Pollutants include toxic chemicals from automobiles; sediments from new construction; oil, grease, nutrients, and pesticides from garden, lawn, and road maintenance; bacteria from improperly managed sewage; and household debris.

In August 2005, Hurricane Katrina directly hit the area with the eye passing over the eastern sections of the refuge. The environment was drastically changed and will take years to recover; some areas were changed permanently. All forested areas were heavily damaged. Many trees were uprooted or broken. In some areas, tornadoes spawned by the hurricane left few trees standing where dense woods had existed. The storm surge and winds introduced salt water that was detrimental to freshwater vegetation. All refuge marshlands experienced some sediment and vegetation movement, resulting in increased shallow ponding. The Fritchie Marsh experienced the most marsh loss (Figure 4).

Figure 4. The impacts from Hurricane Katrina on the Fritchie Marsh Unit of Big Branch Marsh National Wildlife Refuge



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## BIOLOGICAL ENVIRONMENT

The refuge contains diverse habitat types, such as open waters of Lake Pontchartrain, marshes, ponds, bayous, submerged aquatic vegetation beds, prairie terrace, forested wetlands, and pine ridges within a relatively small area (Figure 5).

The refuge is comprised of approximately 18,600 acres of coastal marsh and pine forested wetlands. The coastal marsh consists of approximately 7,000 acres of vegetated marsh and 6,000 acres of open water. Marsh types vary from brackish to fresh depending on proximity to Lake Pontchartrain and are tidally influenced through numerous natural bayous and drainages and man-made canals. Dominant marsh vegetation includes wiregrass (*Spartina patens*), smooth cordgrass (*Spartina alterniflora*), and various rushes (*Juncaceae* sp.). Interior marsh ponds and bayous compose open water habitat within the marsh system.

The transition from marsh to forested wetlands is distinct within the refuge. Pinelands along much of the marsh edge are prone to shallow flooding and support an understory of wiregrass.

Typically, vegetation above the 5-foot contour line is characteristic of pine flatwoods and savannahs found in the northern portions of the refuge. The predominate pine species are slash (*Pinus elliottii*) and loblolly (*Pinus taeda*), with few pockets of longleaf pine (*Pinus palustris*). Within the approximately 5,000 acres of forested lands, habitats are predominately pine forest with hardwood hummocks and sumps scattered throughout. Hardwood forests and swamps are present along the major and minor drainages, which bisect the refuge. Hardwood areas are dominated by oaks (*Quercus* sp.), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), and green ash (*Fraxinus pennsylvanica*).

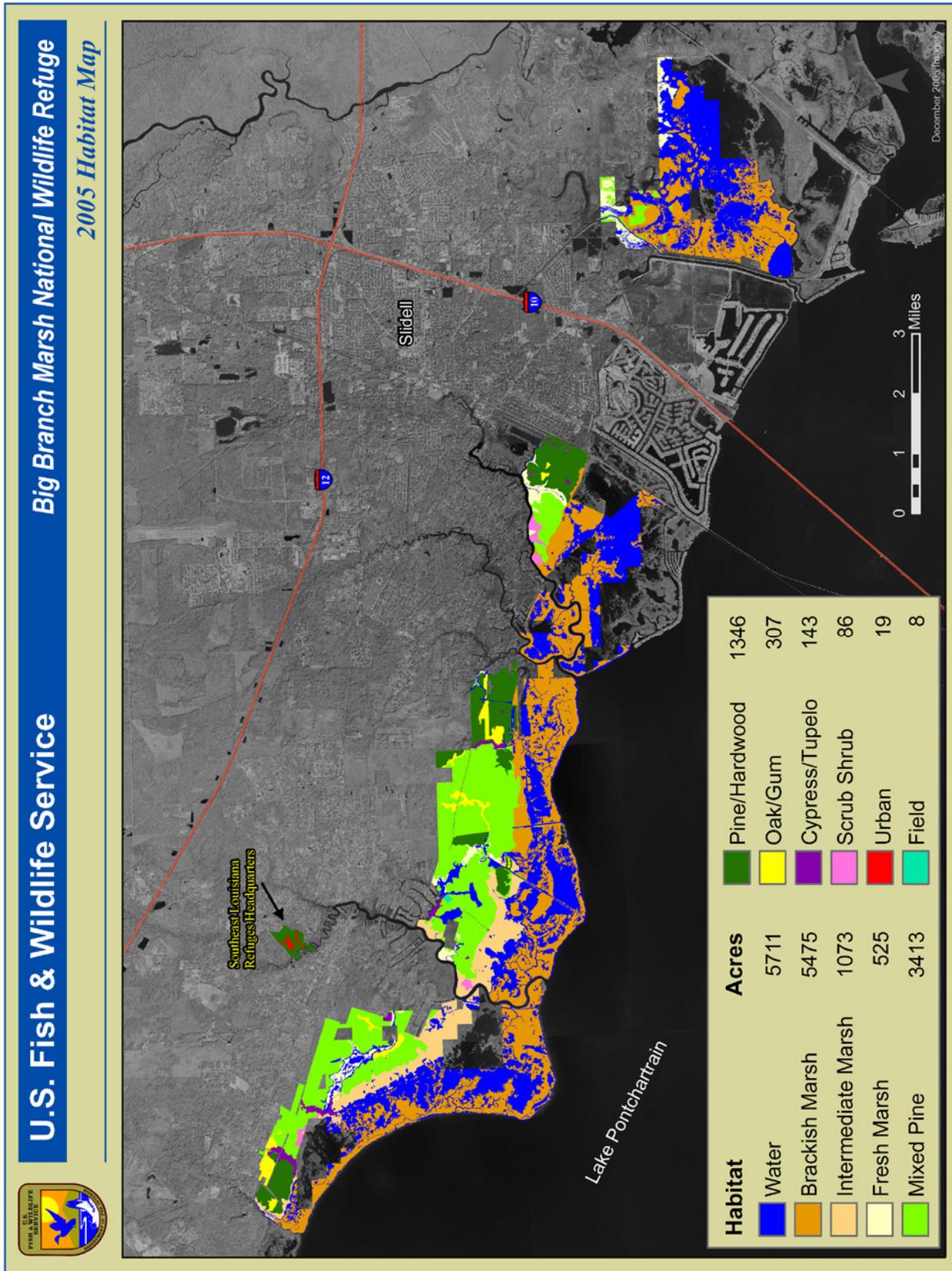
Diverse habitat types within Big Branch Marsh Refuge provide valuable habitat for numerous wildlife species. Refuge habitats attract 15 species of migratory waterfowl, 2 species of resident waterfowl, geese, shorebirds, wading birds, neotropical migratory birds, alligators, federally listed red-cockaded woodpeckers and bald eagles, mammals, and other wildlife. The refuge ponds, bayous, and the vegetated shoreline of Lake Pontchartrain provide spawning and nursery habitat for commercially important species of fish, crab, and shrimp. Recreationally important fishes, such as largemouth bass (*Micropterus salmoides*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), catfish (*Ictaluridae*), and sunfish (*Centrarchidae*), are also abundant within the waters of the refuge.

## SOCIOECONOMIC ENVIRONMENT

In St. Tammany Parish, wetlands and forested lands are being converted to subdivisions, shopping centers, and business complexes at a rapid rate. St. Tammany is the fifth largest parish in Louisiana in population, with the 2005 population estimated at 220,295, and has been the fastest growing parish since the 1970s. The influx of people looking for higher ground after Hurricane Katrina increased this fast-paced trend. The economy is primarily retail trade, health care, and professional, scientific, and technical services. Residents of the parish are employed in jobs ranging from agriculture to space technology. The median household income in 1999 was \$55,346. The population growth can be attributed to the parish's proximity to New Orleans, low business costs, good school system, labor availability, and a strong medical community.

The refuge, with an estimated 49,300 visitors in 2005, provides an important source of recreation in the parish. Most visitors are interested in wildlife observation, fishing, and hunting. Many people are also interested in environmental education and interpretive programs, and wildlife photography.

Figure 5. General habitat types on Big Branch Marsh National Wildlife Refuge



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## *CULTURAL ENVIRONMENT*

Indigenous Native Americans were present in the area dating back to 1800 B.C. The original inhabitants were nomadic hunters, which later gave way to more sedentary mound building cultures. Muskegon peoples were firmly established in the area, including the Bayougoula Tribe, which resided along the north shore of Lake Pontchartrain and survived on seafood harvested from the lakes, the Acolapissa Tribe, which lived along the Pearl River, the Houma Tribe, which was the most dominant tribe, and the Chitimacha Tribe. Tribes that migrated to or through St. Tammany Parish were the Biloxi, Kiasata, and Choctaw. No organized cultural resource surveys have taken place on the refuge. There are no known mounds, but several middens are located along waterways.

As European exploration occurred, the French were the first to claim the area, and the native tribes began to migrate west away from the intrusion. The French concluded that the land of St. Tammany Parish was too low, the water too brackish to drink, and mosquitoes were too bad to accommodate further settlement. By the 1700s, the forested north shore of Lake Pontchartrain was used to supply the emerging city of New Orleans with meat and naval stores of tar, pitch, turpentine, and resin. The first significant European settlement on the north shore occurred during the British occupation through land grants. Britain's claim to the area was transferred to Spain after its loss in the American Revolution, and Spain continued to offer land grants. American control was exerted in the early 1800s. St. Tammany Parish's history was greatly influenced by the abundant sources of water and the navigable waterways. After the Civil War, the economy flourished as New Orleanians traveled to the north shore for fresh air. A resort community built up as people flocked across Lake Pontchartrain to escape epidemics, such as yellow fever, and to sample the artesian water with legendary healing powers. Timber, bricks, porcelain, and glass became important trade items with the advent of the rail system. The north and south shores of Lake Pontchartrain were linked by bridges, causing thousands of New Orleanians to relocate to St. Tammany Parish and commute into the city.

A former Catholic seminary and high school in Lacombe now serve as the administrative headquarters of the Southeast Louisiana National Wildlife Refuge Complex. The headquarters site, referred to as Bayou Lacombe Centre, includes historic buildings and gardens and poses a unique opportunity for restoration.



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## *III. Plan Development*

### **OVERVIEW**

In preparation for developing this Draft CCP/EA, refuge staff conducted a biological review, a public use review, and an open house public meeting. A planning team was identified in November 2003. Workshops were held in December 2003, January 2004, and July 2004, to develop a vision statement, goals, objectives, alternatives, and strategies for future refuge management. Planning team members reviewed the results of internal and external scoping and used them, along with supporting goals, objectives, and strategies, to develop three different management alternatives for the refuge. The three alternatives were evaluated in an environmental assessment, with the proposed alternative forming the basis of this plan. This Draft CCP/EA is being released to the public for review and comment. The Service will consider all comments and suggestions before preparing a Final CCP, which will become the general plan for guiding management decisions and actions on the refuge for the next 15 years.

Refuge planning policy requires a Wilderness Review concurrent with the comprehensive conservation planning process. The Service inventoried refuge lands and found no areas that met the eligibility criteria for Wilderness, as defined by the Wilderness Act. Therefore, the suitability of refuge lands for wilderness designation is not analyzed further in this plan. The results of the wilderness inventory are included in Appendix H.

The Draft CCP/EA for Big Branch Marsh Refuge is being prepared in compliance with the provisions of the National Wildlife Refuge System Improvement Act of 1997. Plan preparation is in compliance with the National Environmental Policy Act of 1969, which requires the Service to actively seek public involvement in the preparation of environmental assessments and environmental impact statements. It also requires the Service to seriously consider all reasonable alternatives, including the “No-Action Alternative” (i.e., the status-quo alternative), as well as its proposed alternative. These alternatives are described in detail in Section B.

A mailing list of organizations and individuals was compiled to ensure that the refuge was contacting a wide array of “stakeholders,” including interested people; user groups, such as hunters, bird watchers, and anglers; and agencies representing tribes, the State of Louisiana, and local jurisdictions.

In November 2003, a planning team charter was drawn up to identify the mission, membership, roles, responsibilities, time frames, and operating procedures of the teams. Team members were identified as project leader Souheaver, deputy project leader Boyle, park ranger supervisor Fortier, forester Breaux, wildlife biologist Parker, and law enforcement officer Bly.

To begin the development of the Draft CCP/EA, the planning team identified a list of issues and concerns likely to be associated with the management of the refuge. These issues and concerns were expanded to include those ideas generated by citizens from the local community. Refuge staff, local civic groups, and Federal, State, and local agency representatives discussed additional issues and concerns during workshops held to develop a preliminary vision statement and alternatives. Together with refuge goals, key issues, and a range of management options, a basis was formed for the development and comparison of the management alternatives described in this document.

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## PLANNING PROCESS AND PUBLIC INVOLVEMENT

In October 2002, the planning process began with a biological review to assess the status of current biological information and programs on the refuge, to identify information gaps and needs, and to gather input on potential management goals and objectives. A diverse team, consisting of Service, university, State, and non-governmental personnel, was invited to attend and provide input. Issues discussed were marsh and forest management; aquatic systems; migratory birds; threatened and endangered species, including the red-cockaded woodpecker; non-game birds; mammals; reptiles and amphibians; insects; water quality; contaminants; urbanization; and land acquisition.

A visitor services review was conducted in February 2003 to provide guidance for managing the education and visitor services program and resulted in the development of short- to long-term recommendations for improving the quality of visitor experiences and understanding of the refuge. The review team was composed of staff and other professionals from the Service's Regional Office, other refuges, the State, and the local community. General recommendations were to develop a visitor services plan, strengthen the volunteer program, address the litter problem, and provide sufficient law enforcement.

Formal public involvement began with an open house held in November 2003 for the general public to give suggestions and comments regarding the future of the refuge. Announcements giving the location, date, and time for the scoping meeting appeared in local newspapers and were furnished to local residents. Approximately 57 people attended the open discussion of the comprehensive conservation planning process and future refuge management. After orienting attendees concerning the process, they could move freely among the following discussion areas: 1) public programs and visitor facilities; 2) wildlife and habitat management; and 3) refuge administration. Each area offered information and a chance to make written and oral statements (Appendix D). Also, comment cards were made available. Approximately 80 comments and questions were recorded. Input obtained from the scoping meeting was used in the development of the Draft CCP/EA. No major conflicts were declared in the comments received from the public.

Initial planning began in November 2003, with a meeting of planning team members. Early in the process of developing this Draft CCP/EA, the planning team identified issues and concerns that were likely to be associated with the conservation and management of Big Branch Marsh Refuge. These issues and concerns were based on the reviews and public scoping. A mailing list was initiated, which contained names of the public, landowners, State and Tribal agencies, non-profit organizations, local governments, and other interested stakeholders.

Dr. Onnie Byers, representing the Conservation Breeding Specialist Group of the Species Survival Commission of the World Conservation Union, was contracted to facilitate Planning Workshop I. The purpose of the workshop was to develop a vision for the refuge and goals for achieving the vision based on the purpose of the refuge. Thirty-one participants from various state, parish, city, and private agencies, volunteers, and neighboring landowners met December 9-11, 2003, and drafted a vision statement and goals.

The entire refuge complex staff met on January 14, 2004, for an abbreviated version of Planning Workshop I. The outcome was an improved vision statement. A second meeting, held February 5, 2004, was attended by the planning team and any interested staff, to edit and improve the goals for achieving the vision.

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Dr. Onnie Byers returned July 19-21, 2004, to facilitate Planning Workshop II, during which changes in the vision statement and goals were given, and alternatives for future management of the refuge and objectives for achieving the goals were identified. Many of the same participants for Planning Workshop I attended Workshop II.

In August 2004, the Service held a meeting with Shaw Environmental, Inc., to contract for assistance with the Draft CCP/EA preparation.

In November 2004, the planning team met to join similar aspects among the six identified alternatives, creating a more workable three-alternative document. The decision was made to have a separate section in each alternative about the Bayou Lacombe Centre, which is the administrative headquarters of the Southeast Louisiana Refuge Complex.

During winter 2005, team leaders' Souheaver and Boyle transferred and were replaced with project leader Litzenberger and deputy project leader Dixon. Also, team member Kris Bly transferred out of State. The remaining team worked on strategies for the alternatives, maps and pictures, writing and editing current management objectives and goals, and gathering pertinent information for the Draft CCP/EA.

The planning team met with the new members on May 12, 2005, to discuss previous progress and alternatives. The alternatives development for the environmental assessment was interrupted with the arrival of Hurricanes Katrina and Rita in the fall of 2005. The planning team was back on task in 2006, and formed the basis for development and comparison of management alternatives, selecting the proposed alternative and completing the Draft CCP/EA.

## **ISSUES**

A result of these reviews and scoping meetings was the development of a list of significant issues that needed to be addressed in the Draft CCP/EA. Alternatives for addressing these issues were developed, and the proposed alternative formed the basis for the objectives and strategies to achieve the goals developed by the planning team. This process ensures that the most significant issues are resolved or given priority over the life of the CCP. Below is a summary of these significant issues.

### **Wildlife Habitat**

- Management of threatened and endangered species is a priority.
- Monitor species of concern, targeted species, and species of Federal responsibility.

### **Habitat Conservation**

- Maintain and, where feasible, restore the diverse habitats native to the Lake Pontchartrain Basin.

### **Education and Visitor Services**

- Provide and improve existing programs for refuge visitors that are compatible with refuge purposes.
- Increase public outreach to emphasize resource stewardship.
- Provide formal environmental education programs.

### **Land Protection**

- Protect archaeological and historical sites on the refuge
- Purchase remaining land inholdings within acquisition boundary



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## *IV. Management Direction*

### **INTRODUCTION**

The Fish and Wildlife Service manages fish and wildlife habitats by considering the needs of all resources in decision-making. While the priority of the Fish and Wildlife Service and the Refuge System is the protection of Federal trust species (e.g., threatened and endangered species, migratory birds, anadromous fish, and marine mammals), the mission identifies responsibility for all fish, wildlife, and plant resources. A requirement of the National Wildlife Refuge System Improvement Act of 1997 is for the Service to maintain the ecological health, diversity, and integrity of refuges. On national wildlife refuges, wildlife conservation is the first management priority. Public uses are allowed if they are appropriate and compatible with wildlife and habitat conservation. The Service has identified six priority wildlife-dependent public uses. Hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation are emphasized in this plan.

Described below is the proposed comprehensive conservation plan for managing the refuge over the next 15 years. This proposed management direction contains the goals, objectives, and strategies that will be used to achieve the refuge vision.

Three alternatives for managing the refuge were considered:

A – No-Action (Current Management)

B – Resource-Focused Management

C – User-Focused Management

Each alternative is described in Section B. Based on the mission of the National Wildlife Refuge System, the purposes for which Big Branch Marsh Refuge was established, and the focus of the Lower Mississippi River Ecosystem priorities, the Service selected Alternative B (Resource-Focused Management) as the proposed management action.

Implementing the proposed alternative will result in a diversity of habitats for a variety of fish and wildlife species, enhance resident wildlife populations, restore wetlands, and provide opportunities for a variety of compatible wildlife-dependent recreation, education, and interpretive activities.

### **VISION**

The Big Branch Marsh National Wildlife Refuge, located along the north shore of Lake Pontchartrain, embraces significantly diverse species and habitats of local to international importance. The refuge conserves a significant remnant of the diversity of natural habitats within the rapidly urbanizing Lake Pontchartrain Basin. It encompasses open waters of Lake Pontchartrain, nearshore grass beds and estuarine marshes, bottomland hardwoods, pine flatwoods interspersed with hardwood hummocks, bayous, and cypress sloughs and swamps. These habitats provide for a wide array of wildlife species within an environmentally aware urban community.

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Viable, healthy populations of plants, fish and wildlife are maintained through habitat management activities that adapt to and mitigate the effects of external threats. The refuge serves as a model of land stewardship and restoration practices and promotes sound habitat management activities within and beyond refuge boundaries. It serves as a center for the development and application of progressive and innovative techniques and practices in wildlife and habitat management, biology, fire management, and habitat restoration. The refuge provides and supports opportunities for appropriate studies and research by universities and other agencies.

The refuge maintains, nurtures, and promotes the tradition of community involvement and ownership that led to its formation, and benefits from an expanding advocacy by refuge supporters and partners. The refuge is recognized as a focal point for environmental education and wildlife-dependent recreation, which fosters and creates a strong conservation ethic within the community. Cultural resources are protected and where appropriate, interpreted for the public.

As one of the last remaining undeveloped, contiguous tracts of wildlife habitat in the region, the refuge provides broad opportunities for public use. From waterfowl hunting in the refuge's marshes to birding and wildlife photography in the restored pine forests, experiencing the refuge's intense natural beauty replenishes the spirit.

## **GOALS, OBJECTIVES, AND STRATEGIES**

The goals, objectives, and strategies presented are the Service's response to the issues, concerns and needs expressed by the planning team, the refuge staff, partners, and the public. Chapter V, Plan Implementation, identifies the projects associated with the various strategies.

These goals, objectives, and strategies reflect the Service's commitment to achieve the mandates of the National Wildlife Refuge System Improvement Act of 1997, the mission of the National Wildlife Refuge System, and the purposes and vision of Big Branch Marsh National Wildlife Refuge. The Service intends to accomplish these goals, objectives, and strategies within the next 15 years.

**GOAL 1.** Identify, conserve, manage, and restore populations of native fish and wildlife species representative of the Lake Pontchartrain Basin, with emphasis on migratory birds and threatened and endangered species.

*Background:* The diversity and quality of habitats on Big Branch Marsh Refuge provide areas for feeding, roosting, nesting, and staging for numerous species. The refuge attracts 15 species of migratory waterfowl, 2 species of resident waterfowl, shorebirds, wading birds, neotropical migratory song birds, raptors, mammals, reptiles and amphibians, and numerous fisheries species. Threatened and endangered species using the refuge habitats are red-cockaded woodpecker, bald eagle, eastern brown pelican, and occasionally the West Indian manatee and Gulf sturgeon. Both freshwater and saltwater species are supported with the fishery varying with the seasons and accompanying shifts in salinity. The refuge wetlands are important spawning, nursery, and feeding grounds for many aquatic species, including crabs, shrimp, and fish.

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**Objective 1.1:** Manage and protect threatened and endangered species through implementation of recovery plans.

*Discussion:* The Service administers the Endangered Species Act, passed by Congress in 1973, to protect and recover species at risk and the ecosystems on which they depend. Once species are listed as threatened or endangered, the ultimate goal is to recover the population to a level so it does not need special protection. Recovery teams made up of experts on the species and its needs are designated. The teams develop and implement recovery plans that describe the steps needed to restore a species to ecological health. Occasionally, critical habitat is designated as part of the plan. Critical habitat identifies specific areas that are essential to the conservation of a listed species and that may require special management considerations or protection. Big Branch Marsh Refuge is within the Gulf Coast Prairies and Marshes Ecoregion of the Red-cockaded Woodpecker (RCW) Recovery Plan, second revision (U.S. Fish and Wildlife Service 2003). The small refuge population is the only one existing in this ecoregion and is not considered a recovery unit, but is designated as a significant support population for the recovery of the species. The refuge's role is to maintain the RCW's intrinsic value, conserve genetic resources, represent variations in habitats occupied by the species, and serve as immigrants for core, recoverable populations.

The Gulf sturgeon was listed as a threatened species in September 1991. The species decline was brought about by excessive harvest over 100 years ago. Populations could not recover because the commercial harvest continued into the 1980s, and also due to reduction in overall habitat. Waters of the refuge are within Unit 8 of the designated critical habitat for the Gulf sturgeon, which lists Lake Pontchartrain east of the Causeway Bridge. Research has shown that juveniles and subadults use Lake Pontchartrain as wintering habitat. Records in Lake Pontchartrain show concentrations near Bayou Lacombe and Goose Point (Federal Register Part II 50 CFR Part 17).

No other refuge lands or waters are listed specifically in other recovery plans, but bald eagles use the refuge for nesting and wintering, brown pelicans are commonly seen feeding and perching in the area, and West Indian manatees are occasionally sighted during summer months.

*Strategies:*

- Follow guidelines of the RCW Recovery Plan.

*Substrategies:*

- Annually conduct spring roost surveys to determine number of family groups.
  - Annually conduct nest surveys to determine success or failure.
  - Annually survey 10 percent of refuge lands for unknown cavity trees.
  - Annually add cavity inserts within clusters if needed to provide at least 4 usable cavities per cluster.
  - When 20 active clusters are attained on the refuge, provide banded young for translocation to other populations.
  - If possible, band adult population.
- Monitor bald eagle nests and conduct winter survey; coordinate information with LDWF.
  - Monitor sightings of manatees and coordinate with Ecological Services Office.
  - Conduct fish surveys to determine any use by Gulf sturgeon.

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**Objective 1.2:** Monitor species of concern, targeted species, and species of Federal responsibility in order to assess management goals.

*Discussion:* Although national wildlife refuges are established to provide for the habitat needs of species of Federal responsibility, such as migratory birds or threatened or endangered species, they are also responsible for all native species occurring on refuge lands. It is difficult to manage for every species without negatively affecting some, so it is necessary to determine which species are most representative of the habitat and monitor and manage or target those to determine the overall health of the ecosystem for other species.

*Strategies:*

- Within 5 years of plan approval, compile lists of species present on the refuge based on refuge lists, surveys, regional and national plans, etc.
- Within 7 years of plan approval, make available to the public lists of species of birds, fish, mammals, reptiles, and butterflies that occur on the refuge.
- Within 10 years of plan approval, prioritize species of concern and target species for refuge monitoring and management.
- Conduct annual aerial waterfowl surveys from October through February.
- Maintain wood duck box program.
- Conduct annual marsh bird surveys according to national protocol.

**Objective 1.3:** Management of fish and wildlife species at Bayou Lacombe Centre - Southeast Louisiana Refuge Complex Headquarters.

*Discussion:* The 110-acre headquarters site, Bayou Lacombe Centre, is a detached administrative unit of Big Branch Marsh Refuge. It was decided to include the headquarters site in the comprehensive conservation planning for Big Branch Marsh Refuge. The distinctive site has historical prominence in the community, having been the home of a Federal judge, a former Governor of Louisiana, the horticultural attraction "Bayou Gardens," and later the home of the Holy Redeemer Seminary before being acquired by the Service. No at-risk species of plants or wildlife are found on the site.

*Strategy:*

- No active management of fish or wildlife populations is planned for this area except small demonstration or environmental education projects.

**GOAL 2.** To restore, improve, and maintain a mosaic of forested and wetland habitats native to the Lake Pontchartrain Basin in order to ensure healthy and viable plant and animal communities, with an emphasis on threatened and endangered species.

*Background:* One of the most striking characteristics of the refuge is the diversity of habitats that occur in a relatively small area. The diverse plant communities provide a wide variety of habitats for many species of wildlife and fish. The key purpose of the refuge is to provide habitat for a natural diversity of wildlife associated with Big Branch marsh, with emphasis on wintering and nesting habitat for migratory and resident waterfowl, non-game migratory birds, and threatened and endangered species.

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**Objective 2.1:** Manage and maintain fresh, intermediate, and brackish marsh, slough, cypress brake, and other aquatic habitats for refuge resources.

*Discussion:* The shoreline of Lake Pontchartrain consists of sandy, narrow beaches with near-shore grass beds. The marshes of the refuge, most of which are tidally influenced, range from brackish to fresh, with salinities varying with season, wind direction, and rainfall. Across much of the refuge, the transition from marsh to forested wetlands is distinct and abrupt. The marshes are cut by bayous and other small drainages with open ponds scattered throughout. Maintaining the wetlands of Big Branch Marsh Refuge involves protection and management (restricted primarily to the use of prescribed fire) of existing wetland habitat.

*Strategies:*

- Maintain GIS database of available historic and current maps and satellite images.
- Within 3 years of plan approval, determine current refuge aquatic acreage by vegetation types.
- In conjunction with fire monitoring, sample vegetation by habitat to determine species and changes in species over time.
- Coordinate and provide study areas for research by partners and other agencies when the research is relevant to wetland management and assessment.
- Within one year of plan approval, establish salinity monitoring points.
- Within 15 years, evaluate marsh habitat types to determine changes in coverage, type, and vegetation.
- By 2017, in cooperation with fisheries biologists and aquatic systems specialists, establish a monitoring program to obtain baseline information and provide long-term tracking of aquatic habitats and faunal groups.
- Implement a prescribed fire and wildfire program.

*Substrategies:*

- Implement the 1997 and 2006 revised draft fire management plan with annual in-house reviews and updates.
- Annually burn  $\geq 1,000$  acres of unsubsidizing (high) marsh using a combination of dormant and growing season burning.
- Continue a fire monitoring plan measuring impacts of season of burning on marshes; by 2017 determine the effects of burning on marsh health and rate of subsidence.
- By 2017, develop burn rotation for desired results.
- Use fire to increase the availability and distribution of wildlife food plants, such as 2-square.
- Provide for wildfire protection through hazard fuel reduction and fighting wildfires.

**Objective 2.2:** Improve and restore aquatic habitats, with emphasis on marsh habitat.

*Discussion:* The prevalent wetland habitat on Big Branch Marsh Refuge is marsh. Marsh land in the refuge has been degraded by man's activities in combination with natural processes, such as subsidence, hurricanes, droughts, and floods. Restoration and enhancement of lost or degraded habitat is necessary if the marshes are to continue being productive, providing an essential environment for the species dependent upon it.

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*Strategies:*

- Within 5 years of plan approval, determine hydrologic system and fire history existing 100 years ago.
- Within 10 years of plan approval, decide best management practices under the current situation based on historic regimes and soil types given by USDA in 1990 soil surveys of St. Tammany Parish.

*Substrategies:*

- Investigate burning effects on vegetative communities, wildlife, subsidence/accretion rates, and determine optimal frequency and seasonality of burning.
- Throughout the life of the CCP, strive for mixture of shallow ponds with submerged aquatic vegetation and emergent marsh by increasing vegetated areas through grants, partners, Coastal Wetlands Planning, Protection, and Restoration Act, and any other available funding.
- Throughout the life of the CCP, research various marsh restoration techniques and materials including terracing, supplemental plantings, dedicated dredge material, and addition of hard and/or soft structures.
- Monitor the success of all restoration projects in order to determine the most economical and efficient techniques for specific sites and problems.
- Throughout the life of the CCP, fortify the lake rim with sediments, plantings, and other feasible techniques to reduce shoreline erosion and damage/loss of interior marshes using grants, partners, Restoration Act, and other available funding.
- Determine effects of pipeline canals on hydrology and salinity regime; consider plugging openings leading to Lake Pontchartrain.

**Objective 2.3:** Manage and maintain pine flatwood, savannah, and hardwood hummock habitats for refuge resources.

Discussion: The pinelands below the 5-foot contour are prone to shallow flooding and support an understory of wiregrass (*Spartina patens*). Vegetation above this contour is more characteristic of pine flatwood/savannah. Pine species present are predominantly slash and loblolly, with a few pockets of longleaf. Hardwood hammocks, sumps, and swamps are interspersed within the pineland. Scattered throughout the forests are ponds, drains, and bayous. Hurricanes, the most recent being Katrina, and other storms, floods, and droughts have frequently impacted the land with storm surges, salinity, and wind damage.

*Strategies:*

- Throughout the life of the CCP, implement an active forest management program to maintain healthy and diverse forest communities and ensure a healthy forest ecosystem by providing a natural diversity of plant species.

*Substrategies:*

- In conjunction with the fire monitoring program, determine vegetation present and changes over time.
- Within 5 years of plan approval, develop a forest management plan as part of Habitat Management Plan.

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- Refine and implement a prescribed fire and wildfire prevention program to maintain healthy, natural fire-dependent communities, while protecting refuge resources and neighboring urban interface from wildland fires.

*Substrategies:*

- Implement the 1997, revised 2006, Fire Management Plan, with annual in-house reviews and updates. Respond to wildfires within the fire management response zone with properly trained staff and equipment readiness. Monitor fire severity and condition class and respond according to approved step-down plans and procedures.
- Provide for wildland fire protection through hazard fuel reduction on the refuge while protecting the pine overstory and assist in reducing hazard fuel risks on neighboring lands. Continue on an annual basis to use prescribed fire on at least 2,000 acres, using a combination of dormant season and growing season burns
- By 2007, initiate a fire monitoring plan measuring impacts of burning frequency and seasonality.
- By 2019, determine optimal burn rotation.
- Maintain historical fire-dependent plant communities in the pine forest by reducing the height and abundance of midstory species.
- Maintain and promote broomsedge, bluestem grasses, and the availability and distribution of wildlife food plants, such as legumes and forbes, by prescribed fire,

**Objective 2.4:** Improve and restore pine flatwood and savannah habitats for refuge resources.

*Discussion:* Pine flatwoods and savannah, with some pockets of longleaf, historically existed on the refuge. The north shore was logged heavily to provide timber and other wood products to the New Orleans area. Regrowth after logging became dense with a heavy midstory because of fire suppression to protect urban development. Invasive species, such as Chinese tallow and cogon grass, were introduced by man's activities. A limited amount of acreage at higher elevations has been identified for conversion to pine savannah with longleaf reestablishment.

*Strategies:*

- Within 5 years of plan approval, determine hydrologic system and fire history existing 100 years ago.
- Within 10 years of plan approval, decide best management practices under the current situation based on historic regimes and soil types given by USDA in 1990 soil surveys of St. Tammany Parish.

*Substrategies:*

- Create open stand conditions with basal areas (BA) of 60-80, and native groundcover species by reducing woody understory and midstory vegetation following guidelines of the Red-cockaded Woodpecker Recovery Plan and using the red-cockaded woodpecker as an indicator species of a healthy southern pine ecosystem.
- Within 2 years of plan approval, identify longleaf pine and savannah restoration sites.
- Establish a 100-year timber rotation, moving current stands to an older-aged class.
- Restore uneven age forest management through use of prescribed fire and mechanical manipulation.
- Implement an aggressive control program to reduce invasive, exotic vegetation.

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**Objective 2.5:** Develop a habitat management plan that includes evaluating the effects of management actions on refuge habitats.

*Discussion:* The Refuge Improvement Act of 1997 states that the Secretary of the Interior shall monitor the status and trends of fish, wildlife, and plants in each refuge as part of administering the Refuge System. A habitat management plan is the instrument to plan biological monitoring. Another step-down plan for this purpose is the annual habitat work plan. Step-down plans provide more specific details than the CCP. The habitat management plan should provide the foundation to conserve and protect functional communities and be linked to international, national, regional, state and ecosystem goals and be consistent with other conservation plans, such as threatened and endangered species recovery plans and State conservation plans. Available biological information and ecological principles should be used to develop habitat goals, objectives, and strategies at the individual refuge level. Wildlife and habitat inventory and monitoring can provide a good evaluation of the effectiveness of management manipulations. Effectiveness of outcomes provides a basis for modification of actions or adaptive management. The annual habitat work plan reviews the previous year's habitat management activities, analyzes results, and provides recommendations for the next year.

*Strategies:*

- Annually evaluate all management practices for previous year and plan for next year.
- Determine survival of long leaf seedlings in planting sites within 2 years of planting; replant if necessary.
- Annually monitor effects of fuel moisture and associated fire intensity on vegetation.
- Annually monitor fire effects on vegetation by photo documentation.
- Annually determine if exotic species control is effective.
- By 2017 determine effects of equipment used in forest management on hydrology, and vegetation composition and arrangement.
- Throughout the life of the plan, monitor the effectiveness of new management actions.

**Objective 2.6:** Support partnerships to protect natural habitats of the Lake Pontchartrain Basin.

*Discussion:* During all of the planning phases of the Draft CCP/EA, the importance of partnerships kept coming up in discussions. At one time, cultivating partnerships was considered as one of the major goals, but it was decided by the planning team that we should treat creating partnerships as a tool. Using partnerships as a tool enabled us to use them under each goal as objectives and/or strategies. Because the health of the environment is important to all, using partnerships is a logical method to increase funding, to increase the number of people involved, and to increase the amount of work accomplished. Refuges are affected by the influences of land uses surrounding them; therefore, working with other organizations and individuals is necessary to protect resources from external impacts.

*Strategies:*

- Coordinate and participate with other government and private organizations to conserve lands outside of refuge boundaries by offering technical assistance.
- Partner with others to identify and support mitigation of external impacts to refuge trust resources.

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*Substrategy:*

- Attend meetings of partners and other agencies to identify, suggest, and support alternatives for managing off-refuge influences

**Objective 2.7:** Review public use programs, such as hunting, fishing, wildlife observation and photography, to determine impacts on refuge resources

*Discussion:* Big Branch Marsh Refuge was established because of interest from local and regional conservation organizations and individuals, and began with donated land. During planning workshops, no controversial issues emerged; people are pleased that the refuge exists and want the refuge land base to increase. In fact, local people were more concerned with overuse or how to balance public use with protection of natural resources. As population numbers continue to increase rapidly in the area, increases in public use on the refuge can be expected to rise also. Diligence in assuring that wildlife needs come first and that all public use is compatible with refuge purposes and is not negatively impacting the resources is required.

*Strategies:*

- Use special use permit program to authorize requested uses of the refuge other than those offered to the general public.
- On an annual basis, review hunting and fishing regulations.
- Within 8 years of plan approval, develop monitoring program to ascertain amount of public use; review every 5 years to ensure refuge resources are not being negatively impacted by over use by the public.

**Objective 2.8:** Manage habitat of Bayou Lacombe Centre - Southeast Louisiana Administrative Headquarters

*Discussion:* The 110-acre Complex headquarters site, Bayou Lacombe Centre, is a detached administrative unit of Big Branch Marsh Refuge located on the banks of Bayou Lacombe. The grounds are landscaped with native and non-native plants, many planted when a commercial attraction, "Bayou Gardens," existed on the grounds. Many varieties of camellias are still present. The overstory is predominantly mixed pine-hardwood that was exposed to the wrath of Hurricane Katrina, causing considerable loss of trees.

*Strategies:*

- Maintain grounds and landscaping for administrative buildings, with no large-scale, active habitat management.
- Create backyard habitat/wetland demonstration areas.
- Manage grounds as an urban public use area, including hiking trails, historical gardens, and buildings.

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**Goal 3.** Provide opportunities for environmental education, interpretation, and wildlife-dependent recreation in accordance with the National Wildlife Refuge System Improvement Act of 1997.

*Background:* Big Branch Marsh is in one of the most rapidly urbanizing areas of Louisiana and the Gulf coast. Demand for wildlife-based education and recreation, already high, is increasing with population gains and with the loss of other available and accessible natural areas. The provision of opportunities for outdoor recreation was recognized as a management purpose upon the establishment of the refuge. Facility and program development to date has provided a solid foundation for continuing these opportunities (Figure 6).

In the resource-based context of the proposed alternative, expanding the public use program is considered. The established visitor services requirements of the Refuge System provide a reference point and framework for the development of objectives for Goal 3.

**Objective 3.1:** Develop and implement a visitor services management plan.

*Discussion:* A visitor services plan is critical to the future of the refuge's visitor services program. This plan will communicate the goals, objectives, and strategies for the visitor services program and will outline resource needs. The plan will also demonstrate how the visitor services program is integrated with the natural and cultural resource management program, and how it will support visitor understanding and appreciation of the natural and cultural resource management program.

*Strategies:*

- Within one year of plan approval, complete recommended improvements to parking lots, kiosks, trailheads, boat launches, and piers as noted in Visitor Services Review.
- Designate visitor services staff to develop a completed visitor services plan by 2008

**Objective 3.2:** Provide opportunities for hunting and fishing on the refuge in a manner which minimizes conflicts between consumptive and non-consumptive user groups.

*Discussion:* Hunting and fishing have been identified as priority public uses of the National Wildlife Refuge System. Where appropriate and compatible, the best hunting and fishing opportunities possible will be made available to the public. Big Branch Marsh Refuge offers attractive, easily accessible current and potential opportunities for these two priority public use activities within the suburban landscape of St. Tammany Parish.

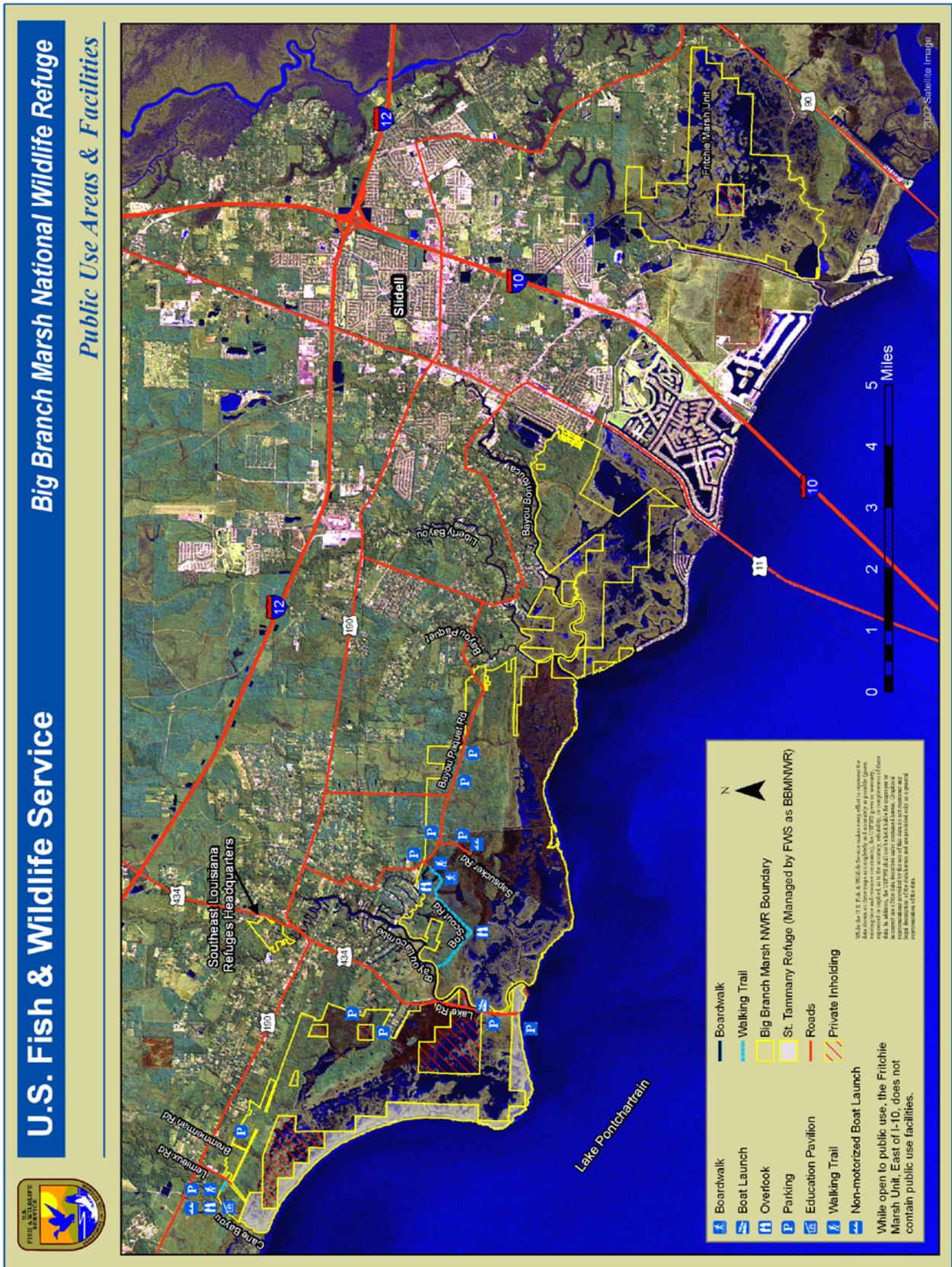
*Strategies:*

- Upon implementation of the plan, and, where appropriate, continue and/or improve current programs for quality hunting and fishing, seeking opportunities to increase capacity for these activities without adversely affecting wildlife populations.

*Substrategies:*

- Improve distribution (scatter) of hunter access and determine hunter spatial distribution.
- Consider additional fishing access facilities, such as trails and piers.
- Consider opportunities to increase the diversity of hunts where there are no negative resource impacts.

Figure 6. Public use areas and facilities on Big Branch Marsh National Wildlife Refuge.



- 
- Manage the number of hunts where appropriate as a means to achieve wildlife population goals.
  - Review hunting and fishing programs annually to determine impacts to refuge resources.
  - Provide adequate law enforcement to prevent negative resource impacts from hunt program.
  - Improve facilities to provide accessibility for persons of all abilities as opportunities and resources are available
- Consider zoning for time and usage in areas such as Boy Scout Road to minimize user-group conflicts.
  - On an annual basis, conduct a maintenance and safety review for all public use facilities relating to hunting and fishing.

**Objective 3.3:** Provide opportunities for wildlife observation and photography on the refuge.

*Discussion:* Wildlife observation and wildlife photography are two closely related priority wildlife-dependent recreational uses of the National Wildlife Refuge System. Programs and facilities, which enable visitors to view and photograph wildlife and their habitats, are essential parts of most national wildlife refuges. The diversity of habitats on Big Branch Marsh Refuge offers very good birding possibilities, including observing red-cockaded woodpeckers and bald eagles, along with waterfowl, shorebirds, and wading birds that frequent the wetland areas of the refuge.

*Strategies:*

Maintain existing wildlife observation and photography program on the refuge.

*Substrategies:*

- Continue offering occasional birding tours led by refuge staff and/or community volunteers and bird clubs.
  - Continue to offer tours through Great Northshore Bird Festival each April.
  - Continue to issue occasional special use permits for special-access photography on a case-by-case basis.
  - Maintain existing facilities at Boy Scout Road, Lemieux Road, and Bayou Lacombe Centre for wildlife observation and photography.
- Improve facilities to provide accessibility for persons of all abilities as opportunities and resources are available.
  - Review wildlife observation and photography programs annually.

*Substrategies:*

- Determine impacts to refuge resources and wildlife population goals.
- Identify opportunities to increase capacity without adversely affecting wildlife populations.
- Conduct a maintenance and safety review for all public use facilities relating to wildlife observation and photography.

- 
- Partner with area birding groups to lead refuge birding trips.
  - Consider establishment of viewing/photography blinds for self-guided birders where no negative resource impact would result.
  - Review suitability of existing roadways for possible implementation of a self-guiding auto tour route with printed brochure.
  - Explore partnerships with area and national conservation and/or wildlife organizations to help provide/increase wildlife observation and photography opportunities.

**Objective 3.4:** Increase public outreach to emphasize resource management practices.

*Discussion:* Big Branch Marsh Refuge has the potential to be a “living lab” where students and the general public can observe and learn about a variety of management practices, including fire management, marsh restoration, reforestation, and others. The benefits to the Service include increased support for these practices, especially where they might be perceived as affecting the public in negative ways, such as from smoke related to fire management. Successful strategies will involve communicating management messages to the public and structuring ways in which management practices can be observed first-hand.

*Strategies:*

- Print and distribute a quarterly Fish and Wildlife Service/Friends Group newsletter. Supply refuge brochures, maps, and quarterly events calendar to St. Tammany Parish Tourist and Convention Commission and State welcome centers.
- List guided activities schedules in local newspapers.
- Issue press releases to announce special events and changes to hunt seasons.
- Maintain and update refuge complex Internet website, as needed.
- Supply to the public a tear sheet, maps, bird list, and refuge complex brochure.
- Plan and offer seasonal public programs that highlight on-going habitat and wildlife work and studies on the refuge.
- Outreach to area schools and universities, inviting them to experience aspects of refuge management practices.
- Implement a speakers program for refuge staff to visit civic groups (e.g., Kiwanis) to communicate refuge management practices.
- Explore implementation of remote camera and Internet links that allow public to monitor refuge conditions and wildlife activities.

**Objective 3.5:** Provide formal environmental education programs that promote understanding, appreciation, and stewardship of refuge resources.

*Discussion:* An established array of environmental education activities offers students from St. Tammany and surrounding parishes first-hand experiences of the refuge through formal, curriculum-based programs delivered at Big Branch Marsh Refuge’s Lemieux Road educational site. Certain refuge management practices, especially the fire management program, are highlighted, but many others have the potential to become the focus of exciting hands-on learning for area students. Classroom visits that currently focus on endangered species and on animal adaptations also offer room for expansion and reemphasis so as to complement refuge management.

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*Strategies:*

- Maintain the existing slate of curriculum-based environmental education programming.
- Within 1-2 years of plan implementation and in consultation with biology and forestry/fire staff, assess and revise all environmental education opportunities to ensure that they complement and emphasize current refuge management practices and landscape-level ecological issues that affect the refuge.

*Substrategies:*

- Develop and implement evaluation instrument to assess effectiveness of environmental programs in delivering desired messages about refuge management.
  - As significant new management practices are implemented, explore their possibilities for complementary environmental education programming.
  - Ensure that all educational programming complements state curriculum standards and Grade Learning Expectations.
- Annually review programming and curriculum developments at state and parish levels.
  - Explore partnerships with local and national conservation organizations to provide environmental educational programs with a larger, landscape-level focus (i.e., Lake Pontchartrain Basin Foundation, National Audubon Society).

**Objective 3.6:** Provide interpretation that promotes understanding, appreciation, and stewardship of refuge resources.

*Discussion:* Successful interpretation of refuge resources involves making a connection with the visitor in a way that relates to the visitor's personal experience and that makes the resource "come alive." The traditional forms of interpretation, most of which have been implemented on Big Branch Marsh Refuge, include guided tours and walks, talks and presentations, and non-personal interpretive media, such as signs and visitor center exhibits. Retooling of these to more strongly emphasize refuge resource management practices and techniques is an achievable goal that would promote greater support and stewardship among visitors and the general public.

*Strategies:*

- Review non-personal interpretive media and modify, as needed, to ensure that they complement and accurately interpret resource issues and management actions.
- Explore development of an additional trail on the refuge to interpret refuge management, such as from Sapsucker launch (e.g., marsh management), or Sammy Slough area (e.g., fire ecology).
- Review personal interpretive programs and modify, as needed, to ensure that they complement and accurately interpret resource issues and management actions, and strengthen the resource management relevance where possible.

*Substrategies:*

- Consult with resource specialists on- and off-staff to revise programs as indicated by review process.
- Partner with other conservation organizations to enhance resource messages delivered in interpretive programs.

- 
- Seek opportunities to develop the existing chapel building at Bayou Lacombe Centre as a full-fledged visitor center for the refuge complex, as identified in existing conceptual studies of refuge facilities.

**Objective 3.7:** Promote the Fish and Wildlife Service and career opportunities with an emphasis on the Refuge System.

*Discussion:* Career outreach is a part of the overall outreach program at Big Branch Marsh Refuge, with regular staff visits to school career fairs and similar events throughout the area. Students are given an overview of Service and Refuge System occupations, educational requirements, and possible career paths. Student Career Employment Program (SCEP) and Student Temporary Employment Program (STEP) opportunities are also highlighted.

*Strategies:*

- Participate in the Youth Conservation Corps summer employment program.
- Look for opportunities to employ STEP students during the school year.
- Participate in Career Day fairs at area schools and universities to acquaint students with Service career possibilities.
- Participate in the SCEP program for part-time employment and eventual placement of college students into Service careers.
- Recruit full-time volunteer interns through the Student Conservation Association and other sources as a means of supplementing the refuge staff and developing the potential of students who may consider Service careers.

**Objective 3.8:** Manage the volunteer program to enhance all aspects of refuge management.

*Discussion:* The use of volunteers to supplement the work of paid staff is essential to completing the mission of the Refuge System and of Big Branch Marsh Refuge. Resident volunteers, such as student interns or retired recreational vehicle campers, have been invaluable in many arenas of refuge activity, from education to maintenance to clerical duties. Local volunteers also work in these areas. Expansion and improvement of the volunteer program needs especially to be emphasized in times of tight budgets and hiring constraints.

*Strategies:*

- Support a constructive partnership with The Friends of Louisiana Wildlife Refuges, Inc.
- Develop corps of volunteers on a project-specific basis.
- Host resident volunteers at recreational vehicle site and in interns at refuge housing.
- Establish a volunteer coordinator position.
- Recruit volunteers based on wildlife, habitat-related, and public use-related project needs, including on-going monitoring.
- Develop and update, as needed, volunteer position descriptions that can be publicized through Federal and local volunteer recruitment avenues (web sites, area offices).

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**Objective 3.9:** Expand learning opportunities at Bayou Lacombe Centre that emphasize resource management practices while maintaining incidental recreational use of the site.

*Discussion:* The Bayou Lacombe Centre parcel of Big Branch Marsh Refuge, which serves as the site of Southeast Louisiana Refuge Complex headquarters, has distinctive historical and natural qualities and attributes that make it a very non-typical part of this or any national wildlife refuge. Former owners include prominent political figures and a Catholic religious order, and about ¼ of the grounds have been managed in the past as a commercial garden attraction. Significant landscape and building resources offer unique opportunities for creative programming that can highlight and complement many aspects of refuge and wildlife management.

*Strategies:*

- Continue to produce Wild Things event for National Wildlife Refuge Week.
- Continue to offer occasional public programs, such as garden tours, Junior Refuge Manager Program, and educational programs, on a non-recurring basis.

*Substrategies:*

- Provide Junior Refuge Manager Program on a walk-up basis from headquarters.
  - Provide educational exhibits and interpretive presentations as part of Wild Things and other special events onsite.
  - Conduct occasional special tours of the grounds on request that focus on cultural and/or natural history topics.
  - Continue to hold public meetings as needed for CCP preparation or other special needs.
- Maintain pattern of incidental recreational use of the Centre.

*Substrategies:*

- Maintain current status of hunting and fishing programs at Bayou Lacombe Centre: no hunting permitted, fishing not promoted, and no facilities developed.
  - Conduct occasional canoeing tours for special events and groups.
  - Offer wildlife observation opportunities on the Bayou Gardens nature trail and at hummingbird garden.
- Continue to allow access to the grounds during normal business hours of 8 a.m. to 4 p.m., Monday through Friday, for general visitation; maintain locked entrance gate at other times.
  - If staffing levels permit, open temporary visitor center in chapel building; meanwhile, continue to provide public information (e.g., maps, brochures, and responses to visitor inquiries) through reception area at refuge complex headquarters.
  - Display interpretive exhibits at headquarters building.
  - Maintain Friends of Louisiana Wildlife Refuges bookstore operation in Complex headquarters, administered by both refuge staff and friends.
  - With professional input from landscape architects or other specialists, develop a holistic, strategic plan for optimum use of grounds and buildings at Centre as resources for public use and resource interpretation.

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- In partnership with Friends of Louisiana Wildlife Refuges, sponsor evening lecture series to emphasize resource management topics and issues.
  - Develop demonstration plots within Bayou Lacombe Centre that allow interpretation of important practices and issues.

*Substrategy:*

- Add environmental education program(s) that interpret the above.
- Seek opportunities to develop the existing chapel building at Bayou Lacombe Centre as a full-fledged visitor center for the refuge complex, as identified in existing conceptual studies of refuge facilities.

**GOAL 4.** Protect the natural and cultural resources of the refuge to ensure their integrity and to fulfill the mission of the National Wildlife Refuge System.

*Background:* Inherent in ensuring that future generations can enjoy the refuge is protection of its resources. Cultural resources include archaeological resources, historic and architectural properties, and areas or sites of tradition or religious significance to Native Americans (614 FW 1, Policy, Responsibilities and Definitions). No comprehensive survey of refuge cultural resources has been completed, but local archaeologists and refuge staff have knowledge of several Native American middens located along drainages. Enforcement of laws pertaining to wildlife and other natural resources is fundamental and necessary, especially in areas of high public use. Safety and protection of the people using the refuge is a priority. Also considered in this goal is protection of the resources by acquisition of land included in the acquisition boundary recognized in the initiating process of refuge establishment.

**Objective 4.1:** Protect known archaeological and historical sites on the refuge from illegal take or damage in compliance with the Archaeological Resources Protections Act, the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act.

*Discussion:* Although no thorough survey of the entire refuge has been accomplished, middens are known to exist on banks of bayous within the refuge. These are obviously places where nomadic groups camped as evidenced by mounds of clam shells left in the refuse piles. The slightly higher elevation of the middens often create habitat for live oak trees.

*Strategies:*

- Within 8 years of plan approval, inventory and map the refuge's known archaeological sites.
- Conduct law enforcement patrols at all known archaeological and historical sites on a regular basis to inspect for disturbance and illegal digging and/or looting.
- Within 10 years of plan approval, compile a comprehensive literature review of past archaeological, anthropological, and historical investigations within and near the refuge.
- Within 12 years of plan approval, develop and implement a plan to protect identified archaeological sites in consultation with the Service's Archaeologist, the State Historic Preservation Office, Native American tribes, and the professional archaeological community.

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**Objective 4.2:** Maintain marked refuge boundary and other identifying/directional signs.

*Discussion:* Big Branch Marsh Refuge is a relatively new refuge within the Refuge System, and is still being surveyed to determine refuge boundaries. In addition, active acquisition within the approved acquisition boundary is ongoing. Therefore, refuge boundary signing is of high priority. Because of frequent storm damage and vandalism, sign replacement is necessary. Direction and informational signs should be written in clear, concise language and placed in appropriate locations.

*Strategies:*

- Annually evaluate a minimum of 20 percent of refuge boundary. Delineate refuge boundaries with signs and paint, as needed.
- Within 7 years of plan approval, evaluate all refuge signage and replace/add signs, as needed

**Objective 4.3:** Provide for visitor safety, protect resources, and ensure the public's compliance with refuge regulations.

*Discussion:* Big Branch Marsh Refuge is located in a quickly developing urban area and has many visitors. Public uses are limited to those that are compatible with refuge purposes realizing that wildlife needs and requirements come first. Therefore, protection of wildlife resources and laws pertaining to wildlife are a priority of refuge law enforcement. Because of high visitor use, law enforcement personnel also deal with issues such as hunter safety, illegal drugs, vandalism, thefts, littering, and safety of visitors. Visitors should be able to enjoy a pleasurable experience with adequate and safe access. See Goal 3 pertaining to more specific visitor services.

*Strategies:*

- Within 2 years of plan approval, conduct a review of the refuge law enforcement program, including reviewing and improving the 2001 refuge law enforcement plan.
- Use the National Wildlife Refuge System Law Enforcement Deployment Model to evaluate and identify law enforcement staffing needs for present and future law enforcement positions.
- Identify and provide additional training and/or equipment to law enforcement officers that will enhance their abilities to recognize, apprehend, and prosecute violators and the various types of violations occurring on the refuge
- Begin a community policing program to liaison with refuge friends, partners, and staff. This effort will educate and inform different groups of the community as to what their role is regarding refuge law enforcement and how they can have an impact on protecting the natural resources of the refuge, as well as its visitors.
- Work cooperatively with local, State, and other Federal law enforcement agencies to enhance resource protection.
- Throughout the life of the plan, maintain and improve present primary road system; improve road surfaces.
- Consider improvements to secondary roads/trails for better access in protecting and managing activities.

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**Objective 4.4:** Acquire those lands identified in the approved acquisition boundary.

*Discussion:* The 1994 establishing documents of Big Branch Marsh Refuge contain an approved acquisition boundary, which was extended in two subsequent expansions. The current acquisition boundary includes approximately 24,000 acres. Currently, fee title lands are approximately 17,366 acres.

*Strategy:*

- As land within the acquisition boundary becomes available from willing sellers, prioritize by the land's ability to support trust resources, and seek funding to acquire land.

**Objective 4.5:** Determine if any of the refuge land should be nominated for inclusion as a Wilderness Area.

*Discussion:* The Wilderness Act of 1964 directs the Secretary of the Interior to review refuges and other natural areas for inclusion in the National Wilderness Preservation System, if certain criteria are met. Big Branch Marsh Refuge has not yet had a formal review for Wilderness designation.

*Strategy:*

- As part of this planning process, conduct a wilderness review (Section B, Appendix H).

**Objective 4.6:** Maintain more than \$3,000,000 worth of capitalized equipment for the Refuge Complex of eight refuges to be used in all aspects of refuge administration, including habitat, wildlife, public use, and protection projects and management.

*Discussion:* Since Big Branch Marsh Refuge is one of a complex of eight refuges, equipment is shared among the refuges instead of being assigned solely to one refuge. The equipment referred to here is not separate from the other refuges in the Complex. Project efficiency depends largely on age, condition, and maintenance of the equipment needed to get work projects accomplished.

*Strategies:*

- Maintain a current data base containing all capitalized equipment and a maintenance schedule.
- Replace or purchase additional equipment as needed in order to have well-maintained and working equipment for all force account work planned.



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## V. *Plan Implementation*

### **INTRODUCTION**

Refuge lands are managed as defined under the National Wildlife Refuge System Improvement Act of 1997. Congress has distinguished a clear legislative mission of wildlife conservation for all national wildlife refuges. National wildlife refuges, unlike other public lands, are specifically dedicated to the conservation of the Nation's fish and wildlife resources and wildlife-dependent recreational uses. Priority projects emphasize the protection and enhancement of fish and wildlife species first and foremost, but considerable emphasis is placed on balancing the needs and demands for wildlife-dependent recreation and environmental education.

To accomplish the purpose, vision, goals, and objectives contained in this Draft CCP/EA for Big Branch Marsh National Wildlife Refuge, this section identifies projects, funding and personnel needs, volunteers, partnerships opportunities, step-down management plans, a monitoring and adaptive management plan, and plan review and revision on over 18,000 acres of pine flatlands, savannahs, hardwood hummocks, and marshes.

This Draft CCP/EA focuses on the importance of funding the operations and maintenance needs of the refuge to ensure the refuge staff can achieve the goals and objectives identified and are crucial to fulfill the purpose for which the refuge was established. The refuge's role in protecting and providing habitat for endangered species, such as the endangered red-cockaded woodpecker, is important. Proposed priority public use programs will establish and expand opportunities for wildlife-dependent recreation, but not without specialized staff and resources for operations and maintenance.

### **PROPOSED PROJECTS**

Listed below are the proposed project summaries and their associated costs for fish and wildlife population management, habitat management, resource protection, visitor services, and refuge administration over the next 15 years. This proposed project list reflects the priority needs identified by the public, planning team, and refuge staff based upon available information. These projects were generated for the purpose of achieving the refuge's objectives and strategies. The primary linkages of these projects to those planning elements are identified in each summary.

#### *FISH AND WILDLIFE POPULATION MANAGEMENT*

The refuge attracts 17 species of waterfowl, of which the mottled duck and wood duck nest on the refuge. Shorebirds; wading birds; neotropical migratory songbirds; raptors, including osprey; mammals; reptiles and amphibians; and numerous fisheries exist on the refuge. The threatened or endangered red-cockaded woodpecker, bald eagle, eastern brown pelican, Gulf sturgeon, and, occasionally, West Indian manatee inhabit the refuge. The refuge marsh wetlands are spawning, nursery, and feeding grounds for many aquatic species.

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**Project 1 – Manage and protect threatened and endangered species through recovery plans.**

The areas on the refuge are the only Government-owned habitats for the red-cockaded woodpecker (RCW) within the Gulf Coast Prairies and Marshes Ecoregion. The refuge population is designated as a significant support population for the eventual recovery of the species. The refuge will play a role to maintain the RCW's intrinsic value and conserve genetic diversity for eventual immigration into core recoverable populations. Refuge staff will:

- Conduct annual spring roost surveys and nest surveys.
- Annually survey 10 percent of refuge pine lands to look for new RCW nests.
- Annually maintain at least 4 available cavities per active cluster and install inserts, if needed.
- Participate in the translocation program when refuge meets population goal of 20 active clusters.
- Protect cavity trees annually by raking a 10' circle of fuels to mineral soil.
- Monitor bald eagle nests identified by annual bald eagle surveys. Maintain proper distance of equipment and other disturbance of 750-1,500 feet from active nests.
- Monitor sightings of manatees and coordinate sightings with Ecological Services Office.
- Coordinate with LADWF fish surveys on occurrence of Gulf sturgeon on near refuge waters.

**Project 2 – Monitor species of concern, targeted species, and species of Federal responsibility.**

National wildlife refuges are mandated to manage for threatened and endangered species if they occur on the refuge. However, refuges are also responsible for management of all native species if the action does not negatively impact the threatened or endangered species. Refuge management is geared toward managing the ecosystem as a whole.

- An overall faunal species list will be compiled from surveys conducted by Fish and Wildlife Service biologists and other researchers. This list will be made available to the public through the refuge website. Within the list, refuge staff will prioritize species based on regional and state lists of species of concern, at risk/ target species identified by Partners in Flight, and other plans.
- Develop a wildlife inventory plan based on species selected as priority species.
- Annual waterfowl surveys will be conducted from October to February.
- Secretive marsh birds will be surveyed and monitored as species of concern. Adaptive refuge management actions will reflect data collected.

**Project 3 – Provide brood habitat and nest sites for wood ducks to support 250 hatching wood ducks each year.**

The wood duck population increase is a success story resulting from the introduction of the wood duck box nest program. Wood ducks are common residents in freshwater wooded ponds today. Wood ducks seek tree cavities within one mile of water. However, brood success is significantly higher when nests are next to water. Forested wetlands, scrub/shrub areas, tree-lined bayous, and hardwood hummocks are the preferred habitats of nesting wood ducks.

- The refuge will install and annually maintain 50 wood duck boxes in hardwood hummocks, as well as fingers of the bayous and drainages throughout the refuge. Wood duck habitat on the refuge is minimally confined to these areas and success has been a challenge in the past. If maintained and checked repeatedly, the wood duck may use the same boxes three or four times throughout the year. Maintenance costs of \$5,000 are needed annually to maintain this program.

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## HABITAT MANAGEMENT

The refuge provides a diversity of habitats for resident and migratory faunal species, including wetland, aquatic, forestland, and scrub/shrub habitats. The purposes for which the refuge was established include providing natural habitat for wintering and nesting waterfowl, non-game birds, and threatened and endangered species.

**Project 1** – Manage and maintain fire in dense marsh habitats to ensure healthy and viable plant and animal communities.

In order to provide adequate habitats with favorable conditions for waterfowl and other migratory birds and native terrestrial and aquatic species, marsh management capabilities shall include the use of fire management to encourage growth and development of plants used by wintering and nesting waterfowl and secretive marsh birds.

- Annually prescribe burn at least 1,000 acres of dense marsh to manipulate timing of desirable plant growth and development.

Through the use of fire, these areas will have increased diversity of vegetation and decreased vegetation density, improving wildlife habitat. This will increase mottled duck and wood duck nesting habitat and possibly improve grassland-dependent and secretive marsh bird species.

**Project 2** – Restore marsh in open pond areas over 5 acres in size, fortify the shoreline of the refuge to ensure healthy and viable plant and animal communities, and protect the integrity of the refuge habitats.

The reduction or attempted halt of marsh subsidence and marsh loss is considered critical through marsh creation projects and plantings for marsh stabilization.

- Develop grants through CWPPRA, and partnerships with the Lake Pontchartrain Basin Foundation, Nature Conservancy, and other organizations to restore marsh habitats in open water ponds to encourage less than 5-acre pond sizes and resulting increased emergent marsh.
- Develop terracing, Christmas tree structures, dedicated dredging projects, etc., to accomplish this objective.
- Once new lands are formed, plant desired marsh grass.

**Project 3** – Manage and maintain pine flatwood areas and savannahs for ecosystems, which support the endangered red-cockaded woodpecker on over 8,000 acres of mature and developing immature forest.

Pine savannahs and flatwoods provide a diverse habitat community, which in itself is under-represented based on historical presence.

- Develop a habitat management plan to provide open (Basal area 60-80 sq.ft./acre), mature (100-year-old), and healthy pine stands with minimal midstory or hardwoods (10 sq.ft/acre), while maintaining pockets of hardwoods in natural hammocks, sumps, or drainages.
- Develop a fire management plan to use prescribed fire to help maintain open pine flatwoods and savannahs with groundstory development of broom sedges, bluestems, toothache grass, etc., by treating over 2,000 acres annually. Within the fire management plan, a wildfire response plan will allow staff to immediately respond to wildfires within the one-mile response area to reduce the threat to refuge resources.

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**Project 4** – Restore over 300 acres of pine savannah to support the endangered red-cockaded woodpecker.

Pine savannahs existed in pockets throughout the refuge with occasional longleaf pine trees scattered throughout. Heavy logging in the early 20<sup>th</sup> century removed longleaf and landowners planted loblolly pine as a replacement. Areas along Boy Scout Road contain remnant old slash pine cat-facing created from the turpentine industry.

- Treat midstory species and overstory north of Paquet Road through mechanical control or intensive prescribed burning to maintain or create an open savannah pine area with up to 13 trees per acre of slash and longleaf. When new lands are acquired in the Fritchie marsh area, at least 240 acres will also be managed as a savannah.
- Savannah areas will be planted with longleaf pine on a 12-foot spacing to encourage historical species presence and will be monitored for survival. Determine survival of planted vegetation within one year of planting. The planting will be considered a success if 80 percent or more survival exists after one year. Otherwise determine if the planted species needs to be adjusted or abandoned.
- If savannah ground plants do not naturally develop within a few years of active savannah management, selective native plants will be planted.

**Project 5** – Implement an aggressive invasive species reduction program to remove exotic plant and animal species from the refuge.

Chinese tallow trees and cogon grass are heavy invaders of the forest, reducing native vegetation. Other exotic species are beginning to establish on the refuge. Some of these have caused damage to important wildlife habitats or species. When cogon grass burns, it burns intensively even when green, causing native plants to receive more intense fires, which results in changes in vegetation composition. Chinese tallow trees crowd out ground vegetation native to pine savannahs and flatwoods and provide undesirable midstory in RCW nesting areas, forcing the birds to abandon their nests. When present in large numbers, Chinese tallow trees also reduce the ability of fire to maintain an open forest with grassy understory by preventing fire.

Feral hogs destroy habitat by uprooting young trees and other native vegetation. Hogs continue to root out other areas on the refuge, including roads used by staff and the public. Nutria destroy habitat by uprooting native vegetation in the marsh, causing more marsh loss.

- Management efforts will emphasize the eradication or at least the management control of invasive non-native species. Costs associated with this project include funding for herbicides, spray equipment, trapping equipment, use of special use permits, and personnel to develop plans, perform the work, monitor the results, and develop contracts. Start-up costs and staffing needs are estimated at \$250,000-\$300,000 with recurring annual costs of \$20,000-\$25,000.
- Prescribed fire will be used to maintain invasive plants once under control with herbicides.
- Nuisance animal control programs will be utilized for nutria and hogs.

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**Project 6** – Develop monitoring programs for fire, forest management, marsh restoration, shoreline fortification, submerged aquatic plants, and the impact of public use activities on the refuge to ensure healthy and viable plant and animal communities and to protect the integrity of refuge habitats.

- Develop historic GIS maps of soils, habitats, and fire history.
- Establish salinity monitoring points and monitor monthly by taking readings, developing a spreadsheet database, and evaluating changes. Coordinate with marsh survivability plots and vegetation composition changes.
- Map vegetation types with the use of GPS and GIS to inventory special and unique areas of the refuge requiring special management or protection.
- Implement a fire, forest management, and marsh subsidence monitoring plan to monitor the effects of refuge habitat manipulations and the encouragement of wildlife plants, such as three-square in the marsh and grasses in the forest. These plans will encourage adaptive management, using the best possible information to make changes in management actions.

Operational funds should be dedicated for trained personnel performing basic wildlife inventories and monitoring. One biologist and one technician are needed to perform inventorying, monitoring, and managing restoration and management programs. Monitoring protocols and procedures will be established with results that are recognizable and achievable. Sampling schemes will use photo points and transects to monitor changes from management actions. These monitoring programs will employ the use of field computers, data collectors, and GIS technology for documentation. Fuel moistures will be monitored to match prescribed burning timing and intensity with desired results. After one year of herbicide treatment, staff will evaluate treatment procedures, timing, and materials and methods of treatment with success or failure.

#### *RESOURCE PROTECTION AND REFUGE ADMINISTRATION*

**Project 1** – Provide adequate law enforcement protection for refuge resources, Federal trust species, personnel, and the visiting public.

The refuge hosts approximately 49,000 visitors annually for hunting, fishing, and wildlife-dependent recreation. Visitation is expected to increase as public use activities are added or expanded. Visitation has increased dramatically as Hurricane Katrina has brought more residents into the parish. The refuge will conduct a refuge Law Enforcement Program Review and revise the Law Enforcement Plan. A full-time law enforcement position is needed to cooperate with State wildlife officers and the local sheriff and city officers to:

- Protect hunters and other visitors from vandalism, burglary, assault, and otherwise provide a safe experience while on the refuge.
- Enforce refuge regulations.
- Reduce drug trafficking.
- Reduce littering.
- Rescue lost hunters and aid visitors in need.
- Protect refuge infrastructure, equipment, and cultural and natural resources.
- Conduct patrols at all known archaeological and historical sites, looking for illegal digging or looting.

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**Project 2** – Conduct an archaeological survey.

- The staff will prevent management disturbance to known Native American middens on the refuge.
- Refuge staff will inventory and map archaeological sites and utilize an Unanticipated Discovery Site Mitigation Plan when new sites are accidentally discovered.
- Develop an archaeological survey in coordination with the regional archaeologist and the professional archaeological community.

**Project 3** – Maintain marked refuge boundary and other identifying and regulating signs.

- Conduct refuge boundary surveys on all new lands when acquired and post accordingly.
- All existing refuge boundaries will be inspected and reposted by annually inspecting and reposting 20 percent of the refuge boundary.
- Signs will be placed at all refuge entrance points along trails, water courses, and roads.

**Project 4** – Acquire lands identified within the approved acquisition boundary

- Acquire lands from willing sellers with the assistance of the Service's Realty Office.
- Prioritize land acquisitions by tract numbers or names to areas under the most threat to the natural resources.
- Determine if any acquired lands deserve inclusion in the Wilderness System through a wilderness review.

**Project 5** – Meet current and expanded ability to maintain infrastructure for public use and management capabilities of the refuge.

Since Big Branch Marsh Refuge is one of eight refuges in the Southeast Louisiana National Wildlife Refuge Complex, equipment and maintenance responsibilities are shared.

- Staff, equipment, office space, roads and trails, observation platforms, boat launches, parking areas, boardwalks, refuge facilities, equipment, and vehicles must be maintained regularly through a maintenance management system.

*VISITOR SERVICES*

The refuge is near a rapidly growing community. St. Tammany has consistently been the top growing parish in the State of Louisiana. The need for providing opportunities for outdoor recreation was identified within the purposes for which the refuge was established and expressed by the landowner of the first donation to the refuge.

**Project 1** – Maintain habitat on Bayou Lacombe Centre (Complex Headquarters) for public interpretation/demonstration and cultural history.

The 112-acre site used for the refuge headquarters has 100 years of history. The site is the administrative headquarters for a complex of eight refuges. Historically, the site began as a dairy farm, then gardens and home for Governor Leche, and lastly a Catholic high school and seminary before becoming headquarters to the Southeast Louisiana Refuge Complex. The buildings on the grounds have been and continue to be renovated for administrative use by the Service. When possible, the architectural design will be maintained for its historical significance and beauty.

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- Develop a landscape plan to identify areas with native and non-native vegetation for aesthetics and maintenance of the historical use of the area. Create demonstration management areas as backyard habitat or examples of refuge management. Use these areas and indoor classrooms for environmental education and Friends Group-sponsored lectures on refuge management and refuge resources. Restore a portion of the former gardens to retain historical beauty. Maintain hiking trails through the historical garden areas and through habitat demonstration areas. No active management for the purposes of wildlife population control or management will be performed unless threatened or endangered species are found. The site will be used for disaster response and will be shared among other Service resources when needed and are fiscally feasible. The site is also used as the fire center when detailed severity wildfire crews are dispatched. It is also used for sponsored events promoting wildlife and refuges, such as the annual Wild Things event. Resident housing will be available for interns, volunteers, and detailers.
  - A new grounds keeper/facilities manager position is needed to maintain facilities, trails, and demonstration areas.

### **Project 2 – Improve visitor services and interpretation.**

Established in 1994, the refuge is relatively new and is still developing facilities and staff to best support visitor services and wildlife-dependent recreation. One of the first and primary duties is to develop a step-down visitor services plan with services that include wildlife-dependent recreation and education. Refuge staff will:

- Develop and implement a Visitor Services Plan.
- Obtain accurate visitor counts through car counters.
- Post visitor hours and maintain a staff contact present throughout those hours for contact with the visiting public.
- Staff will maintain and improve interpretive exhibits and provide interpretive talks.
- The Lemieux Road site will be used as the refuge outdoor classroom contact point with an interpretive trail, a shelter, and bathrooms.
- Volunteers and interns will be used to supplement the education programs and visitor contact centers.
- A new video will be made with the assistance of the Service's National Conservation Training Center, highlighting the refuge management programs, wildlife resources, and public use opportunities.
- Develop an auto wildlife trail through Lucille, Mildred, and Lake Road to highlight RCW's, marsh, and other refuge resources. The drive will have pull-offs and parking areas.
- Improve visitor contact stations, kiosks, trailheads, boat launches, parking areas, and maintain refuge entrance sign quality and appearance.

### **Project 3 – Improve and enhance hunting and fishing opportunities while minimizing conflicts between consumptive and non-consumptive users.**

Quality fishing opportunities may be promoted with initiatives. Fishing opportunities along Lake Road have been minimal and only opportunistic. The refuge staff will provide:

- Fishing piers and maintenance of the road/canal/bayou edge and the removal of debris along the bayou shore will facilitate more access opportunities, especially for handicapped anglers.

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- The pipeline canal has been a popular bass fishing spot. Maintain and improve pedestrian and non-motorized boat access at the pipeline canal.
  - The pond at the headquarters office will be managed and stocked for kids' fishing events.
  - Hunting improvements will be designed to accommodate increased demands and access, provide for a better spatial distribution of hunters, and offer opportunities for physically challenged hunters.
  - The refuge will maintain kiosks and boat ramps to facilitate hunting and fishing opportunities.
  - Acquire lands to provide boat launch opportunities in the Fritchie Marsh when available.
  - Inspect public use facilities annually for compliance with safety concerns and repair maintenance needs.

#### **Project 4 – Provide opportunities for wildlife observation and photography**

Wildlife observation and photography opportunities on the refuge are provided with diverse habitats for viewing red-cockaded woodpeckers, bald eagles, waterfowl, shorebirds, wading birds, and a variety of other fauna and flora.

- Consider zoning special areas for non-consumptive wildlife public use.
- Offer occasional birding tours led by refuge staff or volunteers.
- Provide photo blinds along Boy Scout Road and in Little Marsh.
- Maintain viewing platforms on the refuge and provide strategic locations for viewing platforms without disturbing wildlife.
- Maintain looping boardwalk and trail along Boy Scout Road with interpretive panels and benches.
- Develop a self guided auto tour with audio and/or printed brochure along Lucille Road, Bertha Road, and Lake Road, providing pull-off parking areas with interpretive panels and kiosks depicting refuge resources and management.

#### **Project 5 – Increase public outreach and environmental education to emphasize resource management practices.**

Fire management, marsh restoration, forest management, and other refuge habitat management programs can be a source of information for educating the public about refuge resources and management. Education on refuge management will be focused on first-hand observations where possible. Interpretation of refuge resources will promote understanding, appreciation, and stewardship of refuge resources.

- Revise and maintain an array of formal, curriculum-based environmental education programs for students in St. Tammany and surrounding parishes that, through first-hand experiences, promote understanding, appreciation, and stewardship of refuge resources and support for refuge management practices. Utilize Lemieux Road environmental education site as a hub of educational opportunities from the refuge, with regular use of the canoe launch, interpretive trail, observation platform, and pavilion for educational programs. Proper parking, electrical, and shelter facilities will be maintained for school group use.
- To complement on-site programming, provide relevant classroom educational programming with the same goals of promoting understanding and stewardship of refuge resources.
- Maintain liaison contacts with area school systems and curriculum coordinators to continuously upgrade refuge education programs in the classroom and on the refuge to match curriculum needs.

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- Distribute a quarterly Southeast Louisiana Refuges/Friends Group newsletter electronically or on paper, informing the public about refuge management plans, accomplishments, and issues.
  - Supply refuge brochures, including hunt brochures, bird lists, general brochures, and quarterly events calendars, to parish convention centers, state welcome centers, and other tourist hubs.
  - Provide schedules of planned programs to local newspapers and use volunteers, members of local bird groups, interns, and refuge staff for guiding along Boy Scout, Cane Bayou, Lacombe Bayou, and other identified refuge trails.
  - Provide guided tours and walks, talks, presentations, and non-personal interpretive media, such as signs and exhibits to emphasize refuge resources and management practices and techniques. Utilize birding clubs, interns, and refuge staff to provide guided programs in areas such as Boy Scout Road, Cane Bayou, Lacombe Bayou, and other identified refuge trails. Provide guided outings schedules to local newspapers.
  - Recruit full-time volunteer interns to supplement refuge staff in delivering school curriculum-based environmental education programs, refuge interpretive programs, and to assist refuge personnel in refuge management, while providing developmental experiences that allow students to explore future career opportunities with the Service.
  - Recruit volunteers and volunteer groups, such as recreational vehicle campers, to supplement and assist refuge staff, and to provide education, visitor services, maintenance, and clerical duties.
  - Maintain and develop agreements with the Friends of Louisiana Wildlife Refuges, Inc., to cooperate on projects and provide refuge support.
  - Support refuge volunteers of all types by providing refuge housing and recreational vehicle spaces at the headquarters site.
  - Issue press releases on important events on the refuge, including public events, refuge fire program activities, and changes to public use programs (e.g., hunting).
  - Update and maintain an interactive refuge web site with links to hunt brochures, bird lists, trail maps and guides, refuge maps, tear sheets, contacts for refuge assistance, signup for programs, etc.
  - Develop and deliver refuge education programs for adults through civic groups and to neighborhood groups surrounding the refuge.
  - Develop a monitoring plan with schools to evaluate educational program results and effectiveness relative to Grade Learning Expectations.
  - Develop existing chapel into a visitor center for the refuge complex, as well as for Big Branch Marsh Refuge, featuring information on visitor service opportunities on the refuges, audio-visual interpretive exhibits and displays, and environmental education resources for visiting school groups and teachers.
  - Visit school career fairs to promote Student Career Employment and Student Temporary Employment Programs and Youth Conservation Corps Programs to increase Fish and Wildlife Service's career awareness within the nearby community.

## **FUNDING AND PERSONNEL**

The current refuge complex staffing chart includes staff identified for Big Branch Marsh Refuge (Figure 7). The proposed staffing chart (Figure 8) will utilize identified staff to accomplish the proposed projects (Table 1).

**Figure 7. Current staffing chart for Big Branch Marsh National Wildlife Refuge and Southeast Louisiana Refuge Complex**

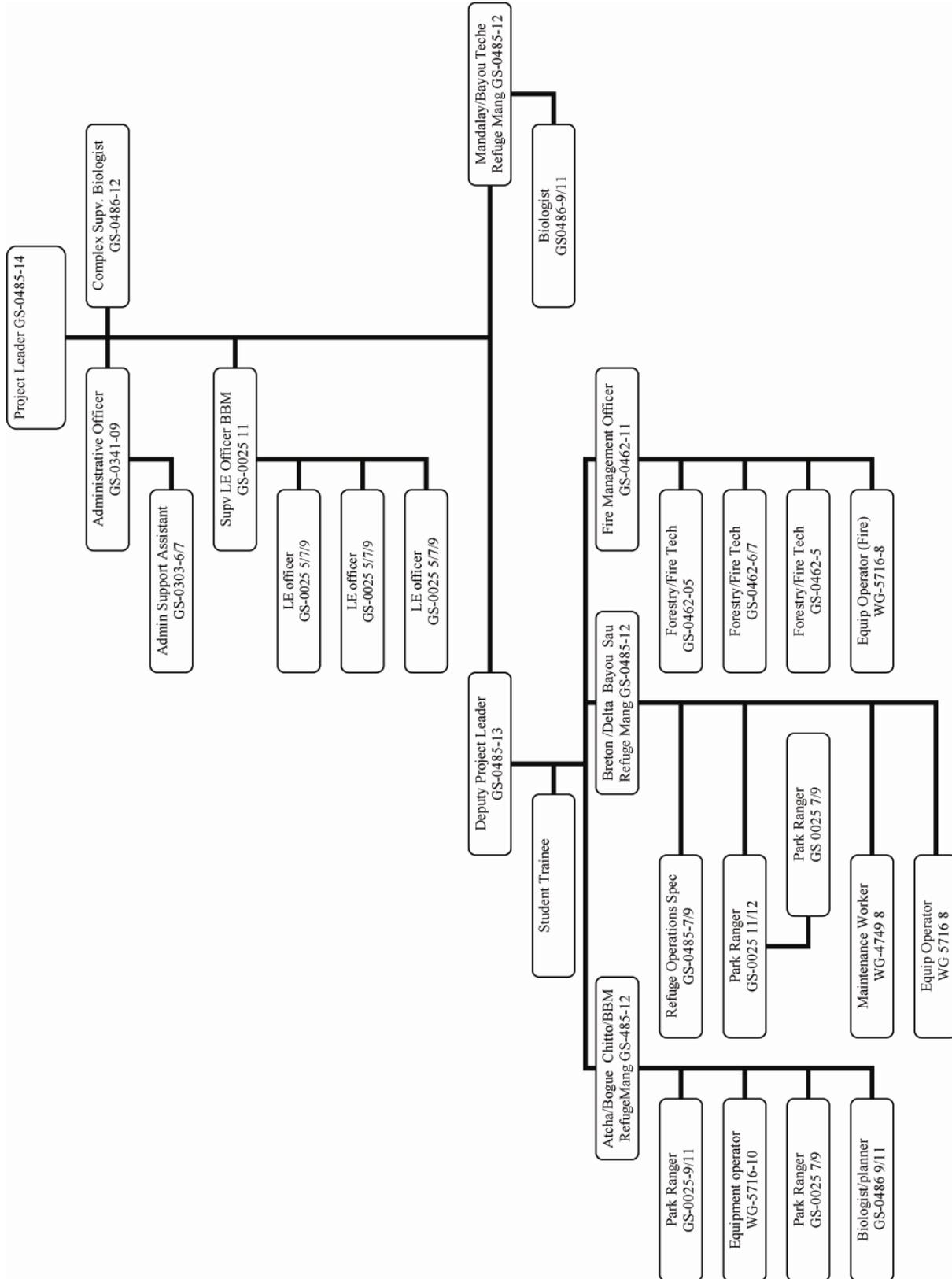
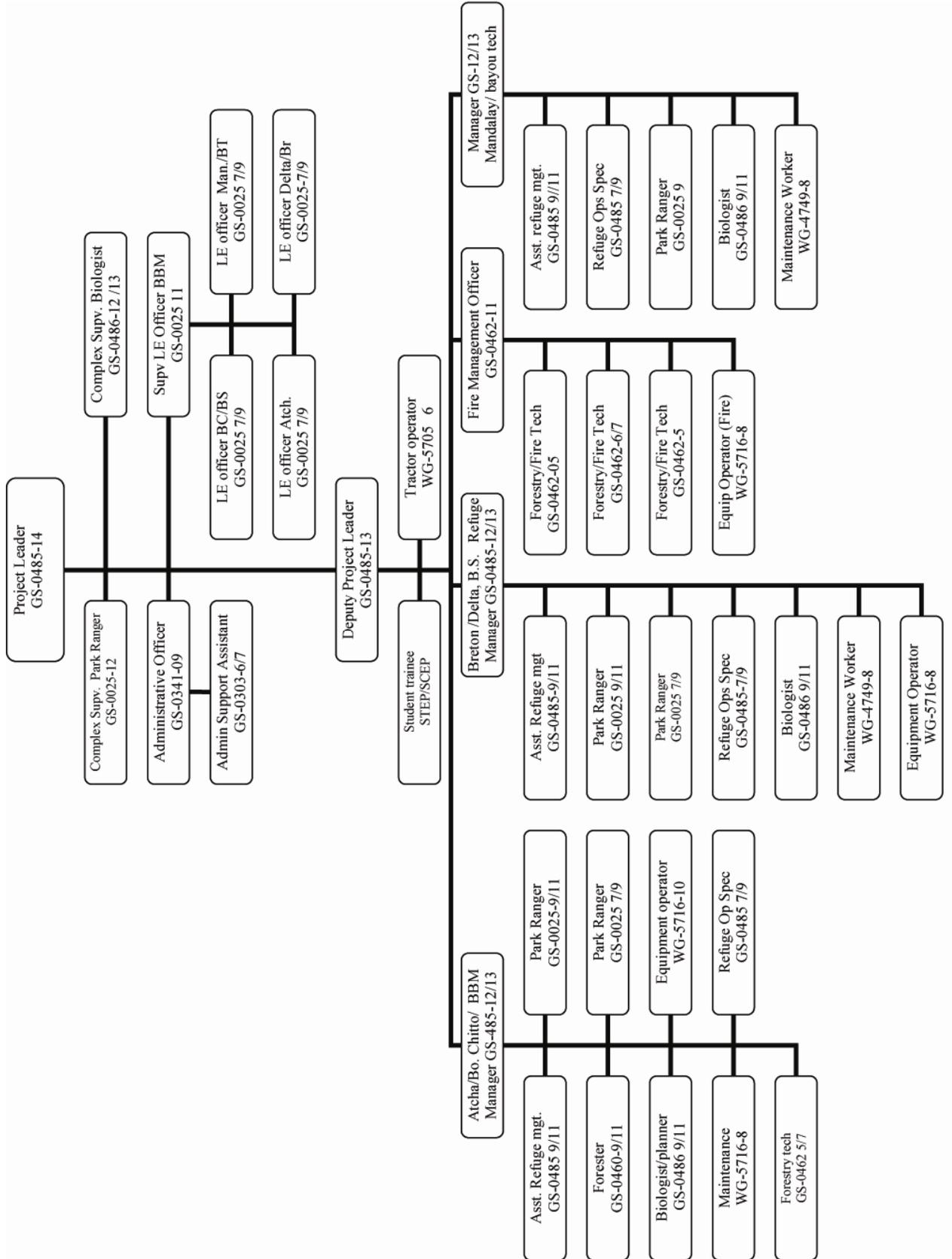


Figure 8. Proposed staffing chart for Big Branch Marsh National Wildlife Refuge



**Table 1. Summary of Projects**

<b>PROJECT NUMBER</b>	<b>PROJECT TITLE</b>	<b>FIRST YEAR COST</b>	<b>RECURRING ANNUAL COST</b>
Populations 1	Survey and monitor endangered species	75,000	75,000
Populations 2 & 3	Monitor and manage other trust resource populations	50,000	50,000
Habitat 1	Marsh prescribe fire	75,000	75,000
Habitat 2	Marsh restoration and protection	4 mill	75,000
Habitat 3 & 4	Manage pine flatwoods and savannah	75,000	75,000
Habitat 5	Invasive and nuisance species control	150,000	50,000
Habitat 6	Habitat mapping and monitoring through GIS	125,000	25,000
Protection 1	Provide adequate law enforcement	100,000	100,000
Protection 2	Archaeological survey	150,000	0
Protection 3	Boundary maintenance	10,000	10,000
Protection 4	Land acquisition	Unknown	Unknown
Protection 5	Maintain facilities and infrastructure	100,000	100,000
Visitor Services 1	Bayou Lacombe Centre (Headquarters)	1 mill	50,000
Visitor Services 2	Develop visitor services plan to include interpretation, recreation, and education	500,000	50,000
Visitor Services 3	Consumptive recreation opportunities	500,000	50,000
Visitor Services 4	Wildlife observation and photography	500,000	50,000
Visitor Services 5	Community outreach and education	200,000	200,000

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## PARTNERSHIP/VOLUNTEER OPPORTUNITIES

A key element of this Draft CCP/EA is to establish partnerships with local volunteers, landowners, private organizations, and State and Federal natural resource agencies. Partnerships are critically important to achieve refuge goals, leverage funds, minimize costs, reduce redundancy, and bridge relationships. In the immediate vicinity of the refuge, opportunities exist to establish and maintain partnerships with Louisiana Department of Wildlife and Fisheries in managing St. Tammany Refuge as a part of Big Branch Marsh Refuge; The Nature Conservancy to share resources in prescribed burning the refuge and neighboring similar habitats with similar goals for savannah and pine flatwood management; the Pontchartrain Basin Foundation to identify and minimize threats to natural native habitats within the Pontchartrain Basin; with St. Tammany Fire District No. 3 to coordinate fighting of wildfires and emergency rescue operations; and with St. Tammany Parish to implement the 2025 plan and to identify corridors and green space areas to manage with similar goals, as well as to coordinate the refuge public use with the Tammany Trace.

The refuge staff can work with neighboring private landowners through the Partners Program or through agreements for managing neighboring land to compliment the refuge management program. Continuing partnerships with The Conservation Fund and the National Fish and Wildlife Foundation for assistance or grants will identify lands to protect and conserve within the Lake Pontchartrain Basin.

## STEP-DOWN MANAGEMENT PLANS

A CCP is a strategic plan that guides the future direction of a refuge. A step-down management plan provides more specific guidance on activities, such as habitat, fire, and visitor services management. Step-down plans (Table 2) are developed in accordance with the National Environmental Policy Act, which requires the identification and evaluation of alternatives and public review and involvement prior to their implementation.

**Table 2. Big Branch Marsh National Wildlife Refuge step-down management plans related to the goals and objectives of the Draft CCP/EA**

Step-down Plans	Completion Date	Revision Date
Fire Management Plan	1996	2007
Hunting Plan	1996	2007
Sport Fishing Plan	1996	2015
Law Enforcement Plan	2001	2008
Aircraft Pre-Accident Plan	2003	2011
Aviation Plan	2004	2011
Safety Plan	2004	2017
Hurricane/Incident Plan	2006	Annual
Habitat Management Plan	2007	2022
Red-cockaded Woodpecker Management Plan	2010	2020

<b>Step-down Plans</b>	<b>Completion Date</b>	<b>Revision Date</b>
Aerial Hazard Plan	2011	2021
Visitor Services Plan	2012	2022
Integrated Pest Management Plan	2012	2022

## **MONITORING AND ADAPTIVE MANAGEMENT**

Adaptive management is a flexible approach to long-term management of biotic resources that is directed over time by the results of ongoing monitoring activities and other information. More specifically, adaptive management is a process by which projects are implemented within a framework of scientifically driven experiments to test the predictions and assumptions outlined within a plan.

To apply adaptive management, specific survey, inventory, and monitoring protocols will be adopted for the refuge. The habitat management strategies will be systematically evaluated to determine management effects on wildlife populations. This information will be used to refine approaches and determine how effectively the objectives are being accomplished. Evaluations will include ecosystem team and other appropriate partner participation. If monitoring and evaluation indicate undesirable effects for target and non-target species and/or communities, then alterations to the management projects will be made. Subsequently, the refuge's CCP will be revised. Specific monitoring and evaluation activities will be described in the step-down management plans.

## **PLAN REVIEW AND REVISION**

The CCP will be reviewed annually in development of the refuge's annual work plans and budget. It will also be reviewed to determine the need for revision. A revision will occur if and when conditions change or significant information becomes available, such as a change in ecological conditions or a major refuge expansion. The CCP will be augmented by detailed step-down management plans to address the completion of specific strategies in support of the refuge's goals and objectives. Revisions to the CCP and the step-down management plans will be subject to public review and NEPA compliance.

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## SECTION B. ENVIRONMENTAL ASSESSMENT

# *Chapter I. Background*

### INTRODUCTION

This Environmental Assessment (EA) for Big Branch Marsh National Wildlife Refuge has been prepared in compliance with the National Environmental Policy Act. The National Wildlife Refuge System Improvement Act requires the development of a comprehensive conservation plan (CCP) for each national wildlife refuge. The EA discusses the purpose and need for the CCP and provides an analysis of the environmental impacts that could be expected from each of the management proposals. Following a public review and comment period on the Draft CCP/EA, a final decision will be made by the Fish and Wildlife Service that will guide refuge management actions and decisions over the next 15 years, provide understanding about the refuge and management activities, and incorporate information and suggestions from the public and refuge partners.

The Fish and Wildlife Service is the Nation's primary conservation agency concerned with the protection and long-term management of wildlife resources. The Service administers the National Wildlife Refuge System, a system of more than 540 national wildlife refuges embracing over 95 million acres, much of which is primarily managed for the enhancement of migratory bird populations and federally listed threatened and endangered fish, wildlife, and plants.

### PURPOSE AND NEED FOR ACTION

The Fish and Wildlife Service proposes to implement a CCP to guide the management of Big Branch Marsh National Wildlife Refuge in St. Tammany Parish, Louisiana, over the next fifteen years.

The purpose of this EA is to analyze and evaluate the environmental effects of implementing a proposed management framework for the refuge. Formal consultation for this EA did not occur. However, the planning effort and the refuge staff's ongoing dialogue with various State and Federal jurisdictions, interest groups, and private citizens have provided important elements in the synthesis of the proposed goals, objectives, and strategies found in the Draft CCP. Implementation of the Final CCP will necessitate further coordination and cooperation with these entities.

The proposed action is to implement Alternative B, Resource-Focused Management, as described in Section A, Chapter IV.

### DECISION FRAMEWORK

Based on this EA, the Fish and Wildlife Service will select an alternative to implement the CCP for Big Branch Marsh National Wildlife Refuge. The CCP will include a Finding of No Significant Impact (FONSI), which is a statement explaining why the selected alternative will not have a significant effect on the quality of the human environment. This determination is based on an evaluation of the Service and Refuge System missions, the purpose(s) for which the refuge was established, and other legal mandates. Assuming no significant impact is found, implementation of the CCP will begin and will be monitored annually and revised when necessary.

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## **PLANNING STUDY AREA**

Big Branch Marsh Refuge is located along the north shore of Lake Pontchartrain between the communities of Mandeville and Slidell in St. Tammany Parish, Louisiana. Boundaries of the approved acquisition area are Cane Bayou on the west, Lake Pontchartrain on the south, Louisiana Highway 90 on the east, and an irregular boundary south of and generally paralleling Louisiana Highway 190. Big Branch Marsh Refuge is one of eight refuges managed as part of the Southeast Louisiana National Wildlife Refuge Complex.

Currently, Big Branch Marsh Refuge is approximately 17,366 acres of fee title lands within the 24,000-acre acquisition boundary of marshlands and forested wetlands. Additionally, the refuge manages, through a cooperative agreement with the Louisiana Department of Wildlife and Fisheries (LDWF), St. Tammany Wildlife Refuge, which is 1,300 acres of marsh adjacent to Big Branch Marsh Refuge.

This EA will identify management on refuge lands, as well as those lands proposed for acquisition by the Service.

## **AUTHORITY, LEGAL COMPLIANCE, AND COMPATIBILITY**

The Service developed this Draft CCP/EA in compliance with the National Wildlife Refuge System Improvement Act of 1997 and Part 602 (National Wildlife Refuge System Planning) of the Fish and Wildlife Service Manual. The actions described within this Draft CCP/EA also meet the requirements of the National Environmental Policy Act of 1969. The refuge staff achieved compliance with this Act through the involvement of the public and the incorporation of this EA in the Draft CCP, with a description of the alternatives considered and an analysis of the environmental consequences of the alternatives (Chapters III and IV in this section). When fully implemented, the CCP will strive to achieve the vision and purposes of Big Branch Marsh National Wildlife Refuge.

The CCP's overriding consideration is to carry out the purposes for which the refuge was established. The laws that established the refuge and provided the funds for acquisition state the purposes. Fish and wildlife management is the first priority in refuge management, and the Service allows and encourages public use (wildlife-dependent recreation) as long as it is compatible with, or does not detract from, the refuge's mission and purposes.

### *COMPATIBILITY*

The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, states that national wildlife refuges must be protected from incompatible or harmful human activities to ensure that Americans can enjoy Refuge System lands and waters. Before activities or uses are allowed on a national wildlife refuge, the uses must be found to be compatible. A compatible use "...will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge." In addition, "wildlife-dependent recreational uses may be authorized on a refuge when they are compatible and not inconsistent with public safety."

An interim compatibility determination is a document that assesses the compatibility of an activity during the period of time the Service first acquires a parcel of land to the time a formal, long-term management plan for that parcel is prepared and adopted. The Service has completed an interim compatibility determination for the six priority general public uses of the Refuge System, as listed in the National Wildlife Refuge System Improvement Act of 1997. These uses are hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

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## **PUBLIC INVOLVEMENT AND THE PLANNING PROCESS**

In accordance with Service guidelines and National Environmental Policy Act recommendations, public involvement has been a crucial factor throughout the development of the Draft CCP/EA for Big Branch Marsh National Wildlife Refuge. This Draft CCP/EA has been written with input and assistance from interested citizens, conservation organizations, and employees of local and State agencies. The participation of these stakeholders has been of great value in setting the management direction for Big Branch Marsh Refuge. The Service, as a whole, and the refuge staff, in particular, are very grateful to each one who has contributed time, expertise, and ideas to the planning process. The staff remains impressed by the passion and commitment of so many individuals for the lands and waters administered by the refuge.

In October 2002, the planning process began with a biological review to assess the status of current biological information and programs on the refuge, identify information gaps and needs, and gather input on potential management goals and objectives. A public use review was conducted in February 2003 to provide guidance for managing the education and visitor services program and resulted in the development of short- to long-term recommendations to improve the quality of visitor experiences and understanding of the refuge. Formal public involvement began with an open house, held in November 2003, for the general public to offer suggestions and comments regarding the future of the refuge. Approximately 57 people attended the open discussion, with more than 80 comments and questions recorded. Initial planning began in November 2003 with a meeting of planning team members. Early in the process of developing this Draft CCP/EA, the planning team identified a list of issues and concerns that were likely to be associated with the conservation and management of Big Branch Marsh Refuge, based on the reviews and public scoping. A mailing list containing the names of various members of the public, landowners, State and Tribal governments, non-profit organizations, local governments, and other interested stakeholders was initiated.

A series of workshops were held during 2003 and 2004 to draft a vision statement, goals, and alternatives. In August 2004, the Service held a meeting with Shaw Environmental, Inc., to contract for assistance with Draft CCP/EA preparation. The planning process was interrupted during 2005 by the transfer of several key team members and the arrival of Hurricanes Katrina and Rita. Under new leadership, the planning team got back on track during 2006 to form the basis for development and comparison of management alternatives, selecting the proposed alternative, and completing the Draft CCP/EA.

A wide range of issues, concerns, and opportunities were identified and addressed during the planning process. Many issues that are very important to the public often fall outside the scope of this planning process. In some instances, the Service cannot resolve issues some people have communicated to us. We have considered all issues identified by the public throughout our planning process, and have developed plans that attempt to balance the competing opinions regarding important issues.

A complete summary of these issues and concerns is provided in Section C, Appendix D.



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## *Chapter II. Affected Environment*

For a description of the affected environment, see Section A, Chapter II.



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# Chapter III. Description of Alternatives

## FORMULATION OF ALTERNATIVES

Alternatives are different approaches or combinations of management objectives and strategies designed to achieve the refuge's purpose and vision, and the goals identified in the Draft CCP/EA; the priorities and goals of the Lower Mississippi Valley Ecosystem Team; the goals of the Refuge System; and the mission of the Fish and Wildlife Service. Alternatives are formulated to address the significant issues, concerns, and problems identified by the Service and the public during public scoping.

The three alternatives identified and evaluated represent different approaches to provide permanent protection, restoration, and management of the refuge's fish, wildlife, plants, habitats, and other resources, as well as compatible wildlife-dependent recreation. Refuge staff assessed the biological conditions and analyzed the external relationships affecting the refuge. This information contributed to the development of refuge goals and, in turn, helped to formulate the alternatives. As a result, each alternative presents different sets of objectives for reaching refuge goals. Each alternative was evaluated based on how much progress it would make and how it would address the identified issues related to fish and wildlife populations, habitat management, resource protection and conservation, visitor services, and refuge administration. A summary of the three alternatives is provided in Table 3.

## DESCRIPTION OF ALTERNATIVES

Serving as a basis for each alternative, goals and sets of objectives were developed to help achieve the refuge's purpose and the mission of the Refuge System. Objectives are desired conditions or outcomes that are grouped into sets and, for this planning effort, consolidated into three alternatives. These alternatives represent different management approaches for managing the refuge over a 15-year time frame, while still meeting the refuge purposes and goals. The alternatives are summarized below. A comparison of each alternative follows the general description.

*ALTERNATIVE A: (CURRENT MANAGEMENT – NO-ACTION)*

*ALTERNATIVE B: (RESOURCE-FOCUSED MANAGEMENT)*

*ALTERNATIVE C: (USER-FOCUSED MANAGEMENT)*

### *ALTERNATIVE A: CURRENT MANAGEMENT (NO-ACTION)*

This is the "status quo" alternative. Under this alternative, no new actions would be taken to improve or enhance the refuge's current habitat, wildlife, and public use management programs. The existing programs would be continued with no changes. Species of Federal responsibility, such as threatened and endangered species and migratory birds, would continue to be monitored at present levels. Additional species monitoring would occur as opportunistic events when contacts outside the refuge staff offer support. Current programs of wildland fire and forest management would be maintained with no improvements or adaptations. No progressive wetland restoration projects would be implemented. All public use programs of fishing, hunting, wildlife observation and photography, and environmental education and interpretation would continue at present levels and with current facilities, but no programs or facilities would be updated or expanded.

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Acquisition of lands into the refuge would occur when funding is appropriated and willing sellers offer land that is quality waterfowl habitat. Staff would consist of a manager, 2 park rangers, a biologist, a law enforcement officer, and a wage grade employee actively supporting Big Branch Marsh, Bogue Chitto, and Atchafalaya Refuges, along with supplementary support from the remainder of the Southeast Louisiana Refuge Complex staff when needed. The refuge headquarters would serve only as administrative offices, with no enhancement of the grounds for public use and interpretation.

In general, under Alternative A, management and administrative decisions and actions would occur when triggered by demands and sources outside the refuge, with little deliberation and planning being accomplished ahead of time.

#### *ALTERNATIVE B: RESOURCE-FOCUSED MANAGEMENT (PROPOSED ALTERNATIVE)*

Alternative B, the Service's proposed alternative, would emphasize management of the natural resources of Big Branch Marsh Refuge based on maintaining and improving wetland habitats, monitoring targeted flora and fauna representative of the Pontchartrain Basin, and providing quality public use programs and wildlife-dependent recreational activities. All species occurring on the refuge would be considered and certain targeted species would be managed for and monitored in addition to species of Federal responsibility. These species would be chosen based on being indicators of the health of important habitat or species of concern. Information gaps in knowledge of refuge aquatic species would be addressed.

Current forestry and fire programs would adapt to changing conditions and as management practices are assessed. Habitat changes would be documented using GIS mapping and vegetation monitoring. Wetland loss would be documented and whenever possible, restored. Public use programs would be improved by offering more facilities and hiking trails, wildlife observation areas, and an auto-tour route. Public use facilities would undergo annual reviews for maintenance needs and safety concerns. Overall public use would be monitored to determine if any negative impacts are occurring to refuge resources from overuse. Education programs would be reviewed and improved to complement current refuge management. Archaeological resources would be surveyed.

Land acquisitions within the approved acquisition boundary would be based on importance of the habitat for target management species. The refuge headquarters would not only house administrative offices, but offer interpretation of refuge wildlife, habitats, and demonstrate habitat improvements for individual landowners. The headquarters area would be developed as an urban public use area with trails; buildings presently not being used and landscaping would be refurbished for visitor and community outreach.

In general, under Alternative B, management decisions and actions would support wildlife species and habitat occurring on the refuge based on well-planned strategies and sound judgment. Quality wildlife-dependent recreational uses and environmental education and interpretation programs would be offered to support and explain the natural resources of the refuge.

#### *ALTERNATIVE C: USER-FOCUSED MANAGEMENT*

Alternative C emphasizes managing the natural resources of Big Branch Marsh Refuge for maximized public use activities, including wildlife-dependent recreational activities. The majority of staff time and efforts would support the public use activities of hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Federal trust species and archaeological resources would be monitored as mandated, but other species targeted for management would depend on which ones the public is interested in utilizing.

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All refuge management programs for conservation of wildlife and habitat, such as monitoring, surveying, forestry, and wildland fire, would support species and resources of importance for public use. Emphasis would be placed more on interpreting and demonstrating these programs than actual implementation. Providing access with roads, trails, parking areas, and by dredging for boat access would be maximized, as well as providing public use facilities throughout the refuge.

Land acquisitions within the approved acquisition boundary would be based on importance of the habitat for public use. The refuge headquarters area would provide administrative offices, a visitor center with surrounding historical gardens, and would be developed for the public use activities of hiking, fishing, birding, photography, and canoeing.

In general, under Alternative C, the focus of refuge management would be on expanding public use activities to the fullest extent possible, while conducting only mandated resource protection, such as conservation of threatened and endangered species, migratory birds, and archaeological resources.

### **ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS**

The alternatives' development process under NEPA and the Refuge Improvement Act is designed to allow consideration of the widest possible range of issues and potential management approaches. During the alternatives' development process, many different solutions were considered. The following alternative components were considered but not selected for detailed study in this Draft CCP/EA for the reasons described below.

In addition to the three alternatives seriously considered, two additional alternatives were discussed:

Alternative D – Custodial Management

Alternative E – Maximize Resource Management with Minimum Public Use

These alternatives were eliminated from further consideration early in the planning process.

Alternative D was not seriously considered. Custodial management would end any biological, habitat, and public use management occurring on the refuge. No new staff would be hired and existing partnerships would be dissolved. This alternative was eliminated because it would not provide basic protection of refuge resources.

In Alternative E, all staffing and funding would support resource management. While this alternative would benefit wildlife and habitat management, the refuge would not be able to provide wildlife compatible recreational opportunities as required by the Refuge Improvement Act (1997). Staff would be unable to maintain existing public use facilities and minimum public use standards could not be met. The alternative was eliminated from further consideration because it is incompatible with the Refuge Improvement Act.

**Table 3. Comparison of alternatives by management issues for Big Branch Marsh National Wildlife Refuge**

**Goal 1. Identify, conserve, manage, and restore populations of native fish and wildlife species representative of the Lake Pontchartrain Basin, with emphasis on migratory birds and threatened and endangered species.**

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Threatened and Endangered Species</b>	Manage and protect through implementation of recovery plans.	Manage and protect through implementation of recovery plans.	Manage and protect through implementation of recovery plans.
	Follow guidelines of RCW Recovery Plan.	Follow guidelines of RCW Recovery Plan.	Follow guidelines of RCW Recovery Plan.
	Monitor bald eagle nests and conduct winter survey; coordinate information with LDWF.	Monitor bald eagle nests and conduct winter survey; coordinate information with LDWF.	Monitor bald eagle nests and conduct winter survey; coordinate information with LDWF.
	Monitor sightings of manatees and coordinate with Ecological Services Office, if necessary.	Monitor sightings of manatees and coordinate with Ecological Services Office, if necessary.	Monitor sightings of manatees and coordinate with Ecological Services Office, if necessary.
		Conduct fish surveys to determine any use by Gulf sturgeon.	
<b>Targeted Species</b>	Monitor species of Federal responsibility in order to assess management goals.	Monitor species of concern, targeted species, and species of Federal responsibility in order to assess management goals.	Monitor targeted species and species of Federal responsibility in order to inform the public of their status.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Targeted Species (continued)</b>		Within 3 years of plan approval, compile lists of species present on the refuge based on refuge lists, surveys, regional and national plans, etc.	Within 3 years of plan approval, compile lists of species present on the refuge based on refuge lists, surveys, regional and national plans, etc.
		Within 5 years make available to the public lists of species of birds, fish, mammals, reptiles, and butterflies that occur on the refuge.	Within 5 years make available to the public lists of species of birds, fish, mammals, reptiles, and butterflies that occur on the refuge.
		Within 5 years of plan approval, prioritize species of concern and target species for refuge monitoring and/or management within migratory birds, mammals, reptiles and amphibians, and insects.	
	Conduct annual aerial waterfowl surveys from October through February.	Conduct annual aerial waterfowl surveys from October through February.	Monitor trends in species of public interest and use (i.e., birds, fish, deer, small game, butterflies); make available to the public.
	Maintain wood duck box program.	Maintain wood duck box program.	Use wood duck boxes for interpretation and maintain them through volunteer program.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
Targeted Species (continued)	Conduct alligator surveys.	Conduct alligator surveys.	
		Conduct annual marsh bird surveys according to national protocol.	
	Participate in Christmas bird count.	Participate in Christmas bird count.	Participate in Christmas bird count.
Fish and Wildlife Species at Bayou Lacombe Centre-Southeast Louisiana Refuge Complex Headquarters	No active wildlife or fish management.	No active wildlife or fish management; but offer interpretation of wildlife and fish occurring in the Lake Pontchartrain Basin area.	No active management at the population level; but offer interpretation of wildlife and fish occurring in the Lake Pontchartrain Basin area.
		Create blue bird trail.	Create blue bird trail.
			Create and stock fishing ponds.

**Goal 2. To restore, improve, and maintain a mosaic of forested and wetland habitats native to the Lake Pontchartrain Basin in order to ensure healthy and viable plant and animal communities, with an emphasis on threatened and endangered species.**

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Aquatic Habitat Management</b>	Manage and maintain fresh, intermediate, and brackish marsh; slough, cypress brake, and other aquatic habitats for refuge resources.	Manage and maintain fresh, intermediate, and brackish marsh; slough, cypress brake, and other aquatic habitats for refuge resources.	Manage and maintain existing wetland habitat to support priority public uses, consisting of hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.
	Maintain GIS database of maps and satellite images for refuge staff use.	Maintain GIS database of available historic and current maps and satellite images for refuge staff use.	Maintain GIS database of available historic and current maps and satellite images for use of refuge staff and make available to the public.
	Map wetlands using large scale databases such as GAP and ground truthing.	Within 1 year of plan approval, determine current refuge aquatic acreage by vegetation types based on the National Vegetation Classification System using GIS and GPS technology and ground truthing.	Within 2 years of plan approval, refuge staff determines acreages or areas necessary to provide for each of the priority public uses with least amount of potential conflicts among uses.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Aquatic Habitat Management (continued)</b>	Monitor fire effects on marsh vegetation with photo documentation.	Monitor fire effects on marsh vegetation with photo documentation; as part of fire fuels modeling, determine species and relative abundance of vegetation with surveys conducted within a vegetation type every 10 years.	
	Implement a prescribed fire and wildfire program.	Implement a prescribed fire and wildfire program.	Use prescribed fire to provide access for public use.
			Provide access by keeping current trails and canals open and deep enough for travel from Lake Pontchartrain boat launches.
	Refuge staff to coordinate and provide study areas for research by partners and other agencies when the research is relevant to wetland management and assessment.	Refuge staff to coordinate and provide study areas for research by partners and other agencies when the research is relevant to wetland management and assessment.	
		Within 1 year of plan approval, establish salinity and water level monitoring points, some associated with vegetation surveys, and take readings once monthly.	

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
Aquatic Habitat Management (continued)		Evaluate marsh habitat types every 10 years to determine changes in coverage, type, and vegetation.	
		In cooperation with fisheries biologists and aquatic systems specialists, establish a monitoring program to obtain baseline information and provide long-term tracking of aquatic habitats and faunal groups.	
Aquatic Habitat Restoration	Improve and restore aquatic habitats, with emphasis on marsh habitat, for refuge resources.	Improve and restore aquatic habitats, with emphasis on marsh habitat, for refuge resources.	Improve and restore aquatic habitats to support public use activities.
	Using partners, refuge staff, and volunteers, experiment with restoration techniques in the most vulnerable areas of marsh/lake interface.	Within 6 years of plan approval, refuge staff determines historic hydrologic system/structure and fire regime existing before substantial European settlement.	Within 5 years of plan approval, determine if additional public access is needed.
		After determining pre-settlement systems/regimes, and within 8 years of plan approval, decide best management practices under current situation.	If more access is needed, within 10 years of plan approval, develop and contract construction of additional trails through the marsh for public access using available funds.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Aquatic Habitat Restoration (continued)</b>	Refuge staff to provide technical and logistical assistance on marsh restoration projects to partners and other resource agencies.	Refuge staff to provide technical and logistical assistance on marsh restoration projects to partners and other resource agencies.	Consider marsh and lake shoreline restoration if opportunities for public use are diminished.
		Determine effects of pipeline canals on hydrology and salinity regime; consider plugging openings leading to Lake Pontchartrain.	Maximize and facilitate fishing opportunities by not plugging existing canals or openings.
<b>Pine Flatwood, Savannah, and Hardwood Hummock Habitat Management</b>	Manage and maintain pine flatwood, savannah, and hardwood hummock habitats for refuge resources.	Manage and maintain pine flatwood, savannah, and hardwood hummock habitats for refuge resources.	Manage and maintain pine flatwood habitat to support public use activities.
	Use forest management activities to control disease, insects, and invasive/exotic species.	Implement an active forest management program to restore and maintain healthy and diverse forest communities, and ensure a healthy forest ecosystem by providing a natural diversity of plant species fulfilling the vision and purposes of the refuge.	Within 2 years of plan approval, refuge staff determines acreages or areas necessary to provide for each of the priority public uses of the Refuge System with least amount of potential conflicts among uses.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Pine Flatwood, Savannah, and Hardwood Hummock Habitat Management (continued)</b>	Refine and implement a prescribed fire and wildfire prevention program to maintain healthy, natural fire-dependent communities in the pine forest ecosystem for benefits to wildlife, emphasizing threatened and endangered species, while protecting refuge resources and neighboring urban interface from wildland fires.	Refine and implement a prescribed fire and wildfire prevention program to maintain healthy, natural fire-dependent communities in the pine forest ecosystem for benefits to wildlife, emphasizing threatened and endangered species, while protecting refuge resources and neighboring urban interface from wildland fires.	Respond to wildfires to protect human resources and facilities; interpret prescribed burning.
			Using contract labor, staff, and/or volunteers, provide access through the habitat with rustic trails, pedestrian bridges, parking, etc.
			Within 5 years of plan approval, determine and begin creation of demonstration tracts to educate the public about historic conditions.  Evaluate effects of maximized public uses on refuge habitat.
<b>Pine Flatwood Habitat Restoration</b>	Improve and restore pine flatwood habitat for refuge resources.	Improve and restore pine flatwood habitat for refuge resources.	Improve and restore pine flatwood habitat to support public use activities.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Pine Flatwood Habitat Restoration (continued)</b>		Within 2 years of plan approval, determine historic ecological communities and systems occurring before substantial European settlement.	Within 2 years of plan approval, determine historic ecological communities and systems occurring before substantial European settlement.
	Restore longleaf pine and savannah to appropriate sites indicated by elevation, soil type, and existing vegetation.	Within 2 years of plan approval, determine best management practices in current situation.	Within 12 years of plan approval, determine and begin creation of demonstration tracts to educate the public about historic conditions.
			Within 10 years of plan approval, improve access by adding trails if needed.
	Remove mid-story vegetation in and near RCW cluster sites.	Remove mid-story vegetation in and near RCW cluster sites.	Use interested volunteers to remove mid-story vegetation in and near RCW cluster sites.
	Provide for wildfire reduction on the refuge while protecting the pine overstory, and assist in reducing hazard fuel risks on neighboring lands.	Provide for wildfire reduction on the refuge while protecting the pine overstory, and assist in reducing hazard fuel risks on neighboring lands.	Provide for wildfire reduction on the refuge while protecting the pine overstory, and assist in reducing hazard fuel risks on neighboring lands.
	On an annual basis, prescribe burn at least 2,000 acres to restore fire-dependent communities.	On an annual basis, prescribe burn at least 2,000 acres to restore fire-dependent communities.	Interpret prescribed burning.
	Monitor fire effects in pine flatwoods and savannahs with photo documentation.	Monitor fire effects in pine flatwoods and savannahs with photo documentation.	

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Habitat Management Plan</b>	Complete annual Habitat Management Plan.	Develop a Habitat Management Plan that includes evaluating the effects of management actions on refuge habitats.	Develop a Habitat Management Plan for demonstration habitat sites.
	Evaluate all management practices for previous year and plan for next year.	Evaluate all management practices for previous year and plan for next year.	Five years after the completion of demonstration sites and every 5 years thereafter, evaluate demonstration sites' authenticity to historic conditions.
	Determine survival of longleaf seedlings in planting sites.	Determine survival of longleaf seedlings in planting sites.	
	Monitor effects of fuel moisture and associated fire intensity on vegetation.	Monitor effects of fuel moisture and associated fire intensity on vegetation.	
	Monitor fire effects on vegetation by photo documentation.	Monitor fire effects on vegetation by photo documentation.	
	Determine if exotic species control is effective.	Determine if exotic species control is effective.	Determine if exotic species control is effective.
		Within 3 years of plan approval, monitor effects of equipment used in forest management on hydrology, and vegetation composition and arrangement.	

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Habitat Management Plan (continued)</b>		Monitor the effectiveness of new management actions throughout the life of the new plan.	
<b>Land Acquisition</b>	Acquire those lands identified in the approved acquisition boundary and seek expansion opportunities.	Acquire those lands identified in the approved acquisition boundary and seek expansion opportunities.	Acquire those lands identified in the approved acquisition boundary and seek expansion opportunities.
	As land becomes available from willing sellers, prioritize purchases by land's quality as waterfowl habitat.	As land becomes available from willing sellers, prioritize by land's ability to support trust resources.	As land becomes available from willing sellers, prioritize by land's ability to support public use.
<b>Natural Habitat Protection through Partnerships</b>	Support partnerships to protect natural habitats of the Lake Pontchartrain Basin.	Support partnerships to protect natural habitats of the Lake Pontchartrain Basin.	Support partnerships to protect natural habitats of the Lake Pontchartrain Basin.
	Coordinate and participate with other government and private organizations to conserve lands outside of the refuge boundaries by offering technical assistance.	Coordinate and participate with other government and private organizations to conserve lands outside of the refuge boundaries by offering technical assistance.	Coordinate and participate with other government and private organizations to provide public use areas within the remaining natural habitats.
		Partner with others to identify and support mitigation of external impacts to refuge trust resources.	

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Program Review</b>	Informally review public use programs, such as hunting, fishing, wildlife observation and wildlife photography, to estimate impacts on refuge resources.	Monitor and review public use programs, such as hunting, fishing, wildlife observation and wildlife photography, to determine impacts on refuge resources.	Within 2 years of CCP approval, develop a plan to solicit public input regarding individual refuge experiences.
	Use special use permit program to authorize requested uses of the refuge other than those already open to the general public.	Use special use permit program to authorize requested uses of the refuge other than those already open to the general public.	Use special use permit program to authorize requested uses of the refuge other than those already open to the general public.
		Within 15 years of CCP approval, develop monitoring program to ascertain amount of public use; review every 5 years to ensure that refuge resources are not being negatively impacted by over-use by the public.	Within 5 years, and every 5 years afterward, review public use program to ensure maximum uses are provided, but not so expanded as to diminish quality individual experiences, or the resources the experiences are dependent upon.
	Annually review hunting and fishing regulations.	Annually review hunting and fishing regulations.	Annually review hunting and fishing regulations.
<b>Habitat of Bayou Lacombe Centre</b>	Maintain grounds for administrative buildings with no large-scale habitat management.	Maintain grounds for administrative buildings with no large-scale habitat management.	Design and create small demonstration sites for informational and interpretive purposes that depict natural habitats found elsewhere on Big Branch Marsh Refuge.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Habitat of Bayou Lacombe Centre (continued)</b>		Create backyard habitat/wetland demonstration areas.	Create backyard habitat/wetland demonstration areas.
		Manage grounds as developed public use areas, including hiking trails, historical gardens planted by previous owners, and historical buildings.	Manage grounds as developed public use areas, including hiking trails, canoeing, historical gardens planted by previous owners, historical buildings, and stocked ponds for public fishing.

**Goal 3. Provide opportunities for environmental education, interpretation, and wildlife-dependent recreation in accordance with the National Wildlife Refuge System Act of 1997.**

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Visitor Services</b>	Develop and implement a Visitor Services Management Plan.	Develop and implement a Visitor Services Management Plan.	Develop and implement a Visitor Services Management Plan.
	Within 1 year of plan approval, complete recommended improvements to parking lots, kiosks, trailheads, boat launches, and piers, as noted in Visitor Services Review.	Within 1 year of plan approval, complete recommended improvements to parking lots, kiosks, trailheads, boat launches, and piers, as noted in Visitor Services Review.	Within 1 year of plan approval complete recommended improvements to parking lots, kiosks, trailheads, boat launches, and piers, as noted in Visitor Services Review.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Consumptive Visitor Uses: Hunting and Fishing</b>	Provide opportunities for hunting and fishing on the refuge in a manner which minimizes conflicts between consumptive and non-consumptive user groups.	Provide opportunities for hunting and fishing on the refuge in a manner which minimizes conflicts between consumptive and non-consumptive user groups.	Provide opportunities for hunting and fishing on the refuge in a manner which minimizes conflicts between consumptive and non-consumptive user groups.
	Continue to administer existing hunting programs for waterfowl, small game, deer (archery), and upland birds.	Upon implementation of the plan and, where appropriate, continue and/or improve current programs for quality hunting and fishing, seeking opportunities to increase capacity for these activities without adversely affecting wildlife populations.	Upon implementation of the plan, maximize opportunities for participation in hunting, with the aim of a 50 percent increase in overall participation levels by 2009, and actively seek opportunities to improve and increase participation in fishing.
	Continue to participate in annual hunt coordination meetings with LDWF to establish seasons and other hunting guidance.	Continue to participate in annual hunt coordination meetings with LDWF to establish seasons and other hunting guidance.	Continue to participate in annual hunt coordination meetings with LDWF to establish seasons and other hunting guidance.
		Provide law enforcement adequate to prevent negative resource impacts from hunt program.	Augment law enforcement coverage as needed to address increased hunter numbers and to gather more hunter satisfaction feedback.
		Consider opportunities to increase the diversity of hunts where there is no negative resource impact.	Increase the diversity of hunts.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Consumptive Visitor Uses: Hunting and Fishing (continued)</b>		As public use facilities used by hunters and fishers are upgraded, modify to meet current accessibility standards.	Within 2 years of plan approval, upgrade all public use facilities used by hunters and anglers where possible so that they provide access for persons of all abilities; consider adding a special hunt for disabled hunters and accessible fishing piers.
	Maintain boat launches at Lake Road, non-motorized launch at Sapsucker Road, and canoe launch at Lemeiux Road.	Maintain boat launches at Lake Road, non-motorized launch at Sapsucker Road, and canoe launch at Lemeiux Road.	Maintain boat launches at Lake Road, non-motorized launch at Sapsucker Road, and canoe launch at Lemeiux Road. Actively explore ways to increase access at Salmen tract area and Fritchie Marsh.
		Consider zoning for time and usage in areas such as Boy Scout Road to minimize user-group conflicts.	Consider zoning for time and usage in areas such as Boy Scout Road to minimize user-group conflicts.
		On an annual basis, conduct a maintenance and safety review for all public use facilities used by hunters and fishers.	On an annual basis, conduct a maintenance and safety review for all public use facilities used by hunters and fishers.
<b>Wildlife Observation and Photography</b>	Maintain existing wildlife observation and photography programs on the refuge.	Review wildlife observation and photography programs annually.	Upon implementation of the plan, maximize opportunities for participation in wildlife observation and photography to increase participation levels by 50 percent.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Wildlife Observation and Photography (continued)</b>	Maintain existing facilities for wildlife observation and photography.	Consider establishment of viewing/photography blinds for self-guided birders where no negative resource impact would result. Within 2 years of plan approval, and using existing public roadways, implement a self-guiding auto tour route with printed brochure.	Within 2 years of plan approval, implement a self-guiding auto tour route with printed brochure and conduct feasibility study for implementation of concession-operated boat and/or canoe tours, and solicit bids if feasible. Construct additional trails and boardwalks for wildlife observation and photography to increase overall mileage by 100 percent, in areas such as Salmen tract, Sammy Slough, and Fritchie Marsh.
		Partner with area birding groups to lead 6 birding trips/year.	Partner with area birding groups to lead monthly birding trips.
	Improve facilities to provide accessibility for persons of all abilities as opportunities and funds are available.	Improve facilities to provide accessibility for persons of all abilities as opportunities and funds are available.	Within 2 years of plan approval, upgrade all public use facilities so that they provide access for persons of all abilities.
		Within 5 years of plan approval, implement partnerships with 3 conservation and/or wildlife organizations to help provide/increase wildlife observation and photography opportunities.	Within 5 years of plan approval, implement partnerships with 5 conservation and/or wildlife organizations to help provide/increase wildlife observation and photography opportunities.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Wildlife Observation and Photography (continued)</b>		Annually conduct a maintenance and safety review of all public use facilities relating to wildlife observation and photography.	Annually conduct a maintenance and safety review of all public use facilities relating to wildlife observation and photography.
<b>Public Outreach</b>	Continue to conduct public outreach through existing channels.	Increase public outreach to emphasize resource management practices.	Increase public outreach to promote opportunities for all priority public use activities on the refuge.
	Supply refuge brochures, maps, and quarterly events calendar to St. Tammany Parish Tourist and Convention Commission and State welcome centers.	Supply refuge brochures, maps, and quarterly events calendar to St. Tammany Parish Tourist and Convention Commission and State welcome centers.	Supply refuge brochures, maps, and quarterly events calendar to St. Tammany Parish Tourist and Convention Commission and State welcome centers.
	List guided activities schedules in local newspapers.	List guided activities schedules in local newspapers.	List guided activities schedules in local newspapers.
	Issue press releases for special events and to announce changes to hunt seasons.	Issue press releases for special events and to announce changes to hunt seasons.	Issue press releases for special events and to announce changes to hunt seasons.
	Maintain and update Southeast Louisiana Refuges website and pages as needed.	Maintain and update Southeast Louisiana Refuges website and pages as needed.	Maintain and update Southeast Louisiana Refuges website and pages as needed.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Public Outreach (continued)</b>	Maintain tear sheet map, bird list, and Southeast Louisiana Refuges brochure as means of presenting general information on the refuge.	Maintain tear sheet, maps, bird list, and Southeast Louisiana Refuges brochure as means of presenting general information on the refuge.	Maintain tear sheet, maps, bird list, and Southeast Louisiana Refuges brochure as means of presenting general information on the refuge.
		Plan at least 3 outreach opportunities per year that complement and highlight on-going habitat and wildlife work and studies on the refuge.	Conduct quarterly outreach/open house events on the refuge.
		Develop outreach opportunities for area schools and universities to experience aspects of refuge management practices.	Develop outreach opportunities for area schools and universities to experience recreational, interpretive, and educational opportunities available on the refuge.
	Conduct annual Wild Things festival during National Wildlife Refuge Week.	Conduct annual Wild Things festival during National Wildlife Refuge Week.	Conduct annual Wild Things festival during National Wildlife Refuge Week.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
Public Outreach (continued)		Implement a speakers program for refuge staff to visit civic groups (e.g., Kiwanis) to communicate refuge management practices.	Expand outreach to civic groups, seniors and Elderhostel organizations, developing programs for these audiences. Broaden outreach to tourists in Greater New Orleans area: ecotourism market, Jazz Fest visitors, conventions, and hotels to encourage refuge visitation.
			By 2008, develop and implement remote camera and Internet links that allow public to monitor refuge conditions and wildlife activities.
			Expand outreach to target under-served populations in the inner city.
			Expand outreach and programming for scout troops; provide merit badge programming on refuge.  By 2010, develop, as an outreach tool, a professionally produced video that communicates the refuge story and presents recreational opportunities.

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Public Outreach (continued)</b>			With the Friends of Louisiana Wildlife Refuges, develop an on-going program of speakers, educational seminars, and how-to sessions to be held at Bayou Lacombe Centre that promotes public use of the refuge.
<b>Environmental Education</b>	Provide formal environmental education programs that promote understanding, appreciation, and stewardship of refuge resources.	Provide formal environmental education programs that promote understanding, appreciation, and stewardship of refuge resources.	Provide formal environmental education programs that promote understanding, appreciation, and stewardship of refuge resources.
	Continue existing focus and array of environmental education programs that address forest management, RCW management, biological population studies, and fire management (e.g., Refugology, Friendly Flames, The Water Way, Creature Features, Endangered Species, and Junior Refuge Manager program).	Within 1-2 years of plan implementation and in consultation with biology and forestry/fire staff, assess and revise all environmental education opportunities to ensure that they complement and emphasize current refuge management practices and landscape-level ecological issues that affect the refuge.	Expand scope of environmental education programming to address a broader range of both on- and off-refuge and community environmental issues.
	Ensure that all educational programming complements State curriculum standards and Grade Learning Expectations (GLE's).	Ensure that all educational programming complements State curriculum standards and Grade Learning Expectations (GLE's).	Ensure that all educational programming complements State curriculum standards and Grade Learning Expectations (GLE's).

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Environmental Education (continued)</b>		By 2007, partner with at least 3 conservation organizations in provision of environmental educational programs that are part of a larger, landscape-level focus.	Expand capacity to deliver programs through additional hires, volunteer use, and partnerships.
	Continue to informally monitor relevance and effectiveness of environmental education and interpretive programming in furthering refuge management goals.	Continue to informally monitor relevance and effectiveness of environmental education and interpretive programming in furthering refuge management goals.	Implement comprehensive environmental education program evaluation and teacher satisfaction surveys and revise programs accordingly.
			Develop environmental education programs that target adult learners, such as senior groups, Elderhostel.
			Offer Junior Refuge Manager program on a walk-up basis during normal business hours and on Saturdays when possible.
<b>Interpretive Programs</b>	Provide interpretation that promotes understanding, appreciation, and stewardship of refuge resources.	Provide interpretation that promotes understanding, appreciation, and stewardship of refuge resources.	Provide interpretation that promotes understanding, appreciation, and stewardship of refuge resources.
	Maintain current non-personal interpretive media.	Review non-personal interpretive media and modify as needed to ensure that they complement and accurately interpret resource issues and management actions.	Enhance and augment non-personal interpretive media at all visitor use sites on the refuge.

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Interpretive Programs (continued)</b>	Maintain current array of personal interpretive programs for general public.	Maintain current array of personal interpretive programs for general public and evaluate and modify as needed for relevance to major resource management issues.	Within 2-3 years of plan implementation, develop and deliver expanded array of public interpretive programs about refuge resources and community environmental issues.
		By 2008, develop an additional trail on the refuge to interpret refuge management, such as from Sapsucker launch (marsh management), or Sammy Slough area (fire ecology).	Establish new interpretive trails in all feasible locations to maximize visitor participation.
	Seek opportunities to develop the existing chapel building at Bayou Lacombe Centre as a full-fledged visitor center for the refuge complex, as identified in existing conceptual studies of refuge facilities.	Seek opportunities to develop the existing chapel building at Bayou Lacombe Centre as a full-fledged visitor center for the refuge complex by 2010, as identified in existing conceptual studies of refuge facilities.	By 2008, begin operation of a new visitor center complete with state-of-the-art exhibits that interpret refuge resources, and with extensive environmental education resources.
<b>Career Opportunities</b>	Promote the Fish and Wildlife Service and career opportunities with an emphasis on the Refuge System.	Promote the Fish and Wildlife Service and career opportunities with an emphasis on the Refuge System.	Promote the Fish and Wildlife Service and career opportunities with an emphasis on the Refuge System.

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Career Opportunities (continued)</b>	Participate in the Youth Conservation Corps summer employment program.	Participate in the Youth Conservation Corps summer employment program.	Participate in the Youth Conservation Corps summer employment program.
	Look for opportunities to employ STEP students during the school year.	Look for opportunities to employ STEP students during the school year.	Look for opportunities to employ STEP students during the school year.
	Participate in Career Day fairs at area schools and universities to acquaint students with Service career possibilities.	Participate in Career Day fairs at area schools and universities to acquaint students with Service career possibilities.	Participate in Career Day fairs at area schools and universities to acquaint students with Service career possibilities.
	Participate in the SCEP program for part-time employment and eventual placement of college students into Service careers.	Participate in the SCEP program for part-time employment and eventual placement of college students into Service careers.	Participate in the SCEP program for part-time employment and eventual placement of college students into Service careers.
	Recruit full-time volunteer interns through the Student Conservation Association and other sources as a means of supplementing the refuge staff and developing the potential of students who may consider Service careers.	Recruit full-time volunteer interns through the Student Conservation Association and other sources as a means of supplementing the refuge staff and developing the potential of students who may consider Service careers.	Recruit full-time volunteer interns through the Student Conservation Association and other sources as a means of supplementing the refuge staff and developing the potential of students who may consider Service careers.
			Designate a staff member with specialized expertise and training to serve as career liaison to area schools and universities.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Career Opportunities (continued)</b>			Develop portable careers display for use at off-site fairs and events.
			Actively seek opportunities for outreach to area schools on careers. Participate in at least 10 career outreach events annually.
<b>Volunteer Programs</b>	Manage the volunteer program to enhance all aspects of refuge management.	Establish a full-time volunteer coordinator to manage the volunteer program and enhance all aspects of refuge management.	Establish a full-time volunteer coordinator to manage the volunteer program and enhance visitor services on the refuge.
	Support a constructive partnership with The Friends of Louisiana Wildlife Refuges, Inc.	Support a constructive partnership with The Friends of Louisiana Wildlife Refuges, Inc.	Support a constructive partnership with The Friends of Louisiana Wildlife Refuges, Inc.
	Develop corps of volunteers on a project-specific basis.	Develop corps of volunteers on a project-specific basis.	Develop corps of volunteers on a project-specific basis.
	Host resident volunteers at recreational vehicle site and in refuge housing (interns).	Host resident volunteers at recreational vehicle site and in refuge housing (interns).	Host resident volunteers at recreational vehicle site and in refuge housing (interns).
		Recruit volunteers based on wildlife and habitat-related project needs, including on-going monitoring.	Recruit volunteers based on visitor services program needs, including on-going educational programs and visitor information staffing.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Management and Programs at Bayou Lacombe Center</b>	Continue use of Bayou Lacombe Centre for a limited number and variety of special events, non-recurring public programs, and incidental recreational use.	Expand learning opportunities at Bayou Lacombe Centre that emphasize resource management practices.	Expand learning opportunities at Bayou Lacombe Centre that emphasize refuge resource management practices and community environmental education issues.
		Develop strategic plan for optimum use of grounds and buildings at Centre as resources for resource interpretation.	Develop strategic plan for optimum use of grounds and buildings at Centre as resources for public recreational use and resource interpretation.
	Continue to produce Wild Things event for National Wildlife Refuge Week.	Continue to produce Wild Things event for National Wildlife Refuge Week.	Continue to produce Wild Things event for National Wildlife Refuge Week.
	Continue to offer occasional public programs, such as garden tours, Junior Refuge Manager programs, and educational programs on a non-recurring basis.	Continue to offer occasional public programs, such as garden tours, Junior Refuge Manager programs, and educational programs on a non-recurring basis.	Continue to offer occasional public programs, such as garden tours, Junior Refuge Manager programs, and educational programs on a non-recurring basis. By 2008, develop environmental education programs conducted at Centre to serve all age groups with curriculum-based environmental education programming.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Management and Programs at Bayou Lacombe Center (continued)</b>	Continue to allow access to the grounds during normal business hours of 8 am – 4 pm M-F for general visitation; maintain locked entrance gate at other times.	Continue to allow access to the grounds during normal business hours of 8 am – 4 pm M-F for general visitation; maintain locked entrance gate at other times.	Develop staffing plan to maintain 7-day public access to the Centre grounds, trails, and facilities.
	Offer contact and visitor information function in present administrative building.	If staffing levels permit, open temporary visitor center in former chapel building; meanwhile continue to provide public information (e.g., maps, brochures, and responding to visitor inquiries) through reception area at Complex headquarters. By 2010, begin operation of a new visitor center in former chapel building with state-of-the-art exhibits that interpret refuge resources and which include an expanded Friends of Louisiana Wildlife Refuges bookstore.	By 2008, begin operation of a new visitor center to provide public information (e.g., maps, brochures, and responding to visitor inquiries), state-of-the-art exhibits that interpret refuge resources, and an expanded Friends of Louisiana Wildlife Refuges bookstore.
	Continue development and installation of interpretive exhibit package for headquarters building, currently underway through Southern Custom Exhibits.	Continue development and installation of interpretive exhibit package for headquarters building, currently underway through Southern Custom Exhibits.	Continue development and installation of interpretive exhibit package for headquarters building, currently underway through Southern Custom Exhibits.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Management and Programs at Bayou Lacombe Center (continued)</b>	Maintain Friends of Louisiana Wildlife Refuges bookstore operation in Complex headquarters, administered by both refuge staff and Friends.	Maintain Friends of Louisiana Wildlife Refuges bookstore operation in Complex headquarters, administered by both refuge staff and Friends.	Maintain Friends of Louisiana Wildlife Refuges bookstore operation in Complex headquarters, administered by both refuge staff and Friends. Relocate to new visitor center when completed.
		In partnership with Friends of Louisiana Wildlife Refuges, sponsor evening lecture series to emphasize resource management topics and issues.	In partnership with Friends of Louisiana Wildlife Refuges, sponsor evening lecture series to emphasize public recreational opportunities, as well as resource management topics and issues.
		Develop demonstration plots and management zones within Bayou Lacombe Centre that allow interpretation of important practices and issues.	Develop demonstration plots and management zones within Bayou Lacombe Centre that allow interpretation of important practices and issues.
			Offer regular canoeing opportunities on Bayou Lacombe from the Centre in tandem with development of new visitor center in chapel building.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Management and Programs at Bayou Lacombe Center (continued)</b>			Develop “multi-purpose” building in current cafeteria to serve as a meeting facility for a wide array of environmental and conservation related causes and organizations, as well as for a broad scope of programming – become a “hub” of environmental learning and activism in the area.

**Goal 4. Protect the natural and cultural resources of the refuge to ensure their integrity and to fulfill the mission of the National Wildlife Refuge System.**

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Archaeological and Historical Site Protection</b>	Protect known archaeological and historical sites on the refuge from illegal take or damage in compliance with the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act.	Protect known archaeological and historical sites on the refuge from illegal take or damage in compliance with the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act.	Protect known archaeological and historical sites on the refuge from illegal take or damage in compliance with the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Archaeological and Historical Site Protection (continued)</b>		Within 2 years of plan approval, inventory and map the refuge's known archaeological sites.	Within 2 years of plan approval, inventory and map the refuge's known archaeological sites.
	Law enforcement responds to reports of damage and/or take at archaeological sites and occasionally checks sites during routine patrols.	Conduct law enforcement patrols at all known archaeological and historical sites on a regular basis to inspect for disturbance and illegal digging and/or looting.	Conduct law enforcement patrols at all known archaeological and historical sites on a regular basis to inspect for disturbance and illegal digging and/or looting.
		Within 5 years of plan approval, compile a comprehensive literature review of past archaeological, anthropological, and historical investigations within and near the refuge. Produce an annotated bibliography to document the area's history.	Within 5 years of plan approval, compile a comprehensive literature review of past archaeological, anthropological, and historical investigations within and near the refuge. Produce an annotated bibliography to document the area's history.
		Within 10 years of plan approval, develop and implement a plan to protect identified archaeological sites in consultation with the Service's Archaeologist, the State Historic Preservation Office, Native American tribes and the professional archaeological community.	Within 10 years of plan approval, develop and implement a plan to protect identified archaeological sites in consultation with the Service's Archaeologist, the State Historic Preservation Office, Native American tribes and the professional archaeological community.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Archaeological and Historical Site Protection (continued)</b>			Provide access and interpretation of archaeological and historical sites to the public by offering guided programs.
<b>Refuge Boundary &amp; Directional Signs</b>	Maintain marked refuge boundary and other identifying/directional signs.	Maintain marked refuge boundary and other identifying/directional signs.	Maintain marked refuge boundary and other identifying/directional signs.
	Post boundary as new land is acquired, especially before hunt seasons open.	Annually evaluate a minimum of 10 miles of refuge boundary. Delineate refuge boundaries with signs and paint, as needed.	Annually evaluate a minimum of 10 miles of refuge boundary. Delineate refuge boundaries with signs and paint, as needed.
	Maintain existing identifying/directional signs.	Within 5 years of plan approval, evaluate all refuge signage and replace/add signs as needed.	Within 5 years of plan approval, evaluate all refuge signage and replace/add signs as needed.
<b>Regulations &amp; Visitor Safety</b>	Provide for visitor safety, protect resources, and ensure the public's compliance with refuge regulations.	Provide for visitor safety, protect resources, and ensure the public's compliance with refuge regulations.	Provide for visitor safety, protect resources, and ensure the public's compliance with refuge regulations.
	Developed a Refuge Law Enforcement Plan (2001).	Conduct a review of the Refuge Law Enforcement program.	Conduct a review of the Refuge Law Enforcement program.
		Review and improve the Refuge Law Enforcement Plan.	Review and improve the Refuge Law Enforcement Plan.

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Regulations &amp; Visitor Safety (continued)</b>	Work cooperatively with local, State, and other Federal law enforcement agencies to enhance resource protection.	Work cooperatively with local, State, and other Federal law enforcement agencies to enhance resource protection.	Work cooperatively with local, State, and other Federal law enforcement agencies to enhance resource protection.
	Maintain present road system and access points for the public and staff.	Throughout the life of the plan, maintain and improve present road system and improve surfaces.	Throughout the life of the plan, maintain and improve present road system; create more trails and possibilities for public access.
		Consider improvements to secondary roads/trails for better access for protection and management activities.	
<b>Wilderness Area Consideration</b>	Determine if any of the refuge land should be nominated for inclusion as a Wilderness Area.	Determine if any of the refuge land should be nominated for inclusion as a Wilderness Area.	Determine if any of the refuge land should be nominated for inclusion as a Wilderness Area.
	Considered when refuge first proposed, but not formally reviewed.	As part of this planning process, conduct a wilderness review.	As part of this planning process, conduct a wilderness review.
<b>Equipment Maintenance</b>	Maintain existing equipment used in refuge management.	Maintain more than \$3,000,000 worth of capitalized equipment used in all aspects of refuge management, including habitat, wildlife, public use and protection.	Maintain more than \$3,000,000 worth of capitalized equipment used in all aspects of refuge management, including habitat, wildlife, public use and protection.

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# *Chapter IV. Environmental Consequences*

## **OVERVIEW**

This section analyzes and discusses the potential environmental effects or consequences that can be reasonably expected by the implementation of each of the three alternatives described in Chapter III of this EA. For each alternative, the expected outcomes are portrayed throughout the 15-year life of the CCP.

## **EFFECTS COMMON TO ALL ALTERNATIVES**

A few potential effects will be the same under each alternative and are summarized under six categories: public health and safety, environmental justice, climate change, regulatory effects, cultural resources, and refuge revenue-sharing.

### *PUBLIC HEALTH AND SAFETY*

None of the three alternatives would have a significant effect on public health and safety. All three alternatives involve potential safety problems from accidents occurring during recreational use of the refuge, but no more than the public encounters anywhere else. Potential effects of smoke from wildland fires will be mitigated using the same methods under the three alternatives.

### *ENVIRONMENTAL JUSTICE*

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed by President 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 with access to public information and opportunities for participation in matters relating to human health or the environment.

None of the management alternatives described in this EA will disproportionately place any adverse environmental, economic, social, or health impacts on minority and low-income populations. Implementation of any action alternative that includes public use and environmental education is anticipated to provide a benefit to the residents residing in the surrounding communities.

### *CLIMATE CHANGE*

The U.S. Department of the Interior issued an order in January 2001 requiring Federal agencies under its direction that have land management responsibilities to consider potential climate change impacts as part of long-range planning endeavors.

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The land is a tremendous force in carbon sequestration. Terrestrial biomes of all sorts—grasslands, forests, wetlands, tundra, perpetual ice, and desert—are effective both in preventing carbon emissions and in acting as a biological “scrubber” of atmospheric carbon monoxide. The conclusions of the Department of Energy’s report noted that ecosystem protection is important to carbon sequestration and may reduce or prevent the loss of carbon currently stored in the terrestrial biosphere.

Conserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. All three alternatives proposed in this Draft CCP/EA would conserve and restore land and water. This, in turn, would contribute positively to efforts to mitigate human-induced global climate changes.

### *REGULATORY EFFECTS*

As indicated in Appendix C, Relevant Legal Mandates and Executive Orders, the Service must comply with a number of Federal laws, administrative orders, and policies in the development and implementation of its management actions and programs. Among these mandates are the Endangered Species Act of 1973, the Migratory Bird Treaty Act of 1918, and compliance with Executive Orders 11990 (Protection of Wetlands) and 11988 (Floodplain Management). The implementation of any of the three alternatives described in this Draft CCP/EA would not lead to a violation of these or other mandates. All management activities that could affect the refuge’s natural resources, including subsurface mineral reservations, utility lines and easements, soils, water and air, and historical and archaeological resources would be managed to comply with all laws and regulations. In particular, any existing and future oil and gas exploration, extraction, and transport operations on the refuge would be managed identically under each of the alternatives. Thus, the impacts would be the same.

### *CULTURAL RESOURCES*

The Fish and Wildlife Service is required by statute to protect and preserve archaeological resources on Federal lands. Under all three alternatives, historic and archeological sites would be protected under Federal ownership and jurisdiction as defined in the National Historic Preservation Act, the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the implementing regulations authored by the Advisory Council on Historic Preservation, the Department of the Interior, and the National Park Service.

### *REFUGE REVENUE-SHARING*

Annual refuge revenue-sharing payments to St. Tammany Parish would continue at similar rates under each alternative. If lands are acquired and added to the refuge, the payments would increase accordingly.

### **SUMMARY OF EFFECTS BY ALTERNATIVE**

The following section describes the environmental consequences of adopting each refuge management alternative. Table 2 summarizes and addresses the likely outcomes for the specific issues, and is organized by broad issue categories.

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### *ALTERNATIVE A (NO-ACTION)*

The No-Action Alternative would maintain the status quo and was developed using anticipated conditions in the area of Big Branch Marsh National Wildlife Refuge over the next 15 years. It assumes that current conservation management and land protection programs and activities by the Service, Federal, State, and local agencies, and private organizations would continue to follow past trends. This alternative, included for the purpose of comparison to baseline conditions, is not considered to be the most effective management strategy for achieving the vision and goals of the refuge.

Wildlife population monitoring/surveys would be limited to current, primarily mandated species being monitored without the benefit of additionally focusing on species of concern and species chosen as indicators of a healthy ecosystem. Restoration efforts would continue as small, experimental projects that are easily destroyed by tropical storms and hurricanes instead of larger projects that show longer lasting benefits. Public use programs would not change or increase with demand and would not be adapted based on the effects on refuge resources. Forestry and fire management programs would not be evaluated for efficiency and effectiveness.

Under Alternative A, negative impacts to soils, water, air, and other physical parameters would be mitigated to some extent, but not as much as could be by taking advantage of adaptive management. The biological environment would remain protected, but certain systems could suffer if not systematically monitored using focused species as indicators. Management under Alternative A would not adversely impact socioeconomic values of the area, but the refuge would not achieve its potential for providing needed educational and wildlife-dependent recreational activities.

### *ALTERNATIVE B (RESOURCE-FOCUSED MANAGEMENT) (PROPOSED ALTERNATIVE)*

Implementing Alternative B is considered to be the most effective management action for meeting the purposes of Big Branch Marsh National Wildlife Refuge. Monitoring and surveying would be conducted systematically after assessing which species should be targeted based on their population status and ability to indicate health of important habitat. Restoration efforts, wetland habitat management, the fire program, and forest management would reflect best management practices determined after examination of historical regimes, soil types and elevation, and the current hydrological system. Management actions would be monitored for effectiveness and adapted to changing conditions, knowledge, and technology. A Habitat Management Plan would be developed to plan future habitat projects and evaluate previous actions.

Public use programs would be updated to support and teach reasons behind refuge management actions, and to provide quality experiences to refuge visitors. The refuge headquarters would be developed to provide more visitor services. In an increasingly developing region, a balanced program of wildlife-dependent recreational activities and protection of wildlife resources would be strived for under this alternative.

This alternative would add 15 new positions to current staffing for the entire Complex in order to continue to protect refuge resources and provide visitor services, and to attain goals for facilities and equipment maintenance. No adverse effects to soils, water, air and other physical parameters are expected under this alternative. The biological environment would improve as adaptive and best management practices are utilized. Socioeconomic values should also increase as the refuge offers an oasis of undeveloped, green space as a draw for the area's ecotourism trade and local residents searching for natural landscapes and environments.

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## *ALTERNATIVE C (USER-FOCUSED MANAGEMENT)*

Alternative C emphasizes managing the refuge for wildlife-dependent recreational uses. While this alternative fulfills some aspects of the Refuge Improvement Act of 1997, it falls short of fulfilling the entire Act, the mission of the Refuge System, the purposes of the refuge, and the goals of the Lower Mississippi River Valley Ecosystem and other conservation plans. Mandated species, such as those listed as threatened and endangered, would continue to be monitored, but by focusing on species of interest only to the public, the status of other important species could be overlooked. Under Alternative C, any negative impacts to soil, water, air, and other physical parameters would be observed only when highly visible effects manifested because monitoring would not be based on indicator species or species of concern. Habitat restoration efforts would be accomplished to satisfy public use demands so would not occur using as efficient and timely methods as if planned using an ecosystem approach.

On the other hand, if the majority of staff time and funds support a state-of-the-art public use program, then wildlife-dependent recreation, and environmental education and interpretation could be more successful than in the other alternatives. Refuge resources would be protected from over-use so that quality public use experiences would not be reduced. The socioeconomic value of the refuge to the surrounding area would be the highest of the three alternatives.

## **UNAVOIDABLE IMPACTS AND MITIGATION MEASURES**

Under Alternative A, the no-action alternative, there are numerous unavoidable impacts, including inadequate monitoring and protection of aquatic and archaeological resources, inadequate monitoring of indicator species, and a public use program that is not responsive to increasing demands. Over time, if these issues are not addressed, they will continue to impact refuge resources.

Under Alternative C, the user-focused alternative, unavoidable impacts would include inadequate monitoring and protection of aquatic resources, indicator and species of concern, ineffective habitat restoration, and unaddressed environmental issues. Over time, if these issues are not dealt with, refuge resources would deteriorate.

Alternative B, the proposed alternative, also has some unavoidable impacts. These impacts are expected to be minor and/or short-term in duration. However, the refuge would attempt to minimize these impacts whenever possible. The following sections describe the measures the refuge would employ to mitigate and minimize the potential impacts that would result from implementation of the proposed alternative.

### *WATER QUALITY FROM SOIL DISTURBANCE AND USE OF HERBICIDES*

Soil disturbance and siltation due to water management activities, road maintenance, and the construction of additional facilities are expected to be minor and of short duration. To further reduce potential impacts, the refuge would use best management practices to minimize the erosion and disturbance of soils.

Foot traffic on new and extended foot trails is expected to have a negligible impact on soil erosion. To minimize the impacts from public use, the refuge would include informational signs that request trail users to remain on the trails, in order to avoid causing potential erosion problems.

Long-term herbicide use for exotic plant control could result in a slight decrease in water quality in areas prone to exotic plant infestation. Through the proper application of herbicides, however, this is expected to have a minor impact on the environment, with the benefit of reducing or eliminating exotic plant infestations. Use of insecticides for mosquito control would follow strict guidelines to lessen effects on non-target species.

**Table 4. Summary of environmental effects by alternative, Big Branch Marsh National Wildlife Refuge**

**Goal 1. Identify, conserve, manage, and restore populations of native fish and wildlife species representative of the Lake Pontchartrain Basin, with emphasis on migratory birds and threatened and endangered species.**

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Threatened and Endangered Species</b>	<p>Management of threatened and endangered species would remain at current levels; may have adverse impacts as a result of inadequate monitoring of wildlife and public use impacts to wildlife.</p> <p><b>Decreasing quality</b></p>	<p>Management of threatened and endangered species would increase in scope to include Gulf Sturgeon, and monitoring effects of management actions would increase.</p> <p><b>Increasing quality</b></p>	<p>Management of threatened and endangered species would remain at current levels; may have adverse impacts as a result of inadequate monitoring of wildlife.</p> <p><b>Decreasing quality</b></p>
<b>Targeted Species</b>	<p>Management of targeted species would remain at current levels; may have adverse impacts as a result of inadequate monitoring of wildlife and public use impacts to wildlife.</p> <p><b>Decreasing quality</b></p>	<p>Management of targeted species would expand to include lists of species present, making those lists available to the public, and prioritizing species of concern and target species for management and monitoring.</p> <p><b>Increasing quality</b></p>	<p>Management of targeted species would include lists of species present, making those lists available to the public, and monitoring of trends in species of public interest and use; may have adverse impacts as a result of inadequate monitoring of wildlife.</p> <p><b>Decreasing quality</b></p>

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Fish and Wildlife Species at Bayou Lacombe Center-Southeast Louisiana Refuges Headquarters</b>	Inactive management of fish and wildlife would continue.  <b>Stable, no adverse impacts</b>	Continued inactive management of fish and wildlife at the population level, include interpretation of wildlife and fish occurring in the Lake Pontchartrain Basin, and addition of blue bird trail.  <b>Stable, increasing public use quality</b>	Continued inactive management of fish and wildlife at the population level, include interpretation of wildlife and fish occurring in the Lake Pontchartrain Basin, and addition of blue bird trail and stocked fishing ponds.  <b>Increasing public use quality</b>

**Goal 2. To restore, improve, and maintain a mosaic of forested and wetland habitats native to the Lake Pontchartrain Basin in order to ensure healthy and viable plant and animal communities, with an emphasis on threatened and endangered species.**

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Aquatic Habitat Management</b>	Management and maintenance would continue as is.  <b>Slightly increasing quality</b>	Current management and maintenance would continue with an increase in focused monitoring and surveys, classification of vegetation, and determining of fire effects and best burning regime.  <b>Increasing quality</b>	Management and maintenance would shift to focus on the priority public uses identified in the Refuge Improvement Act.  <b>Increasing public use quality Decreasing habitat quality</b>

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Aquatic Habitat Restoration</b>	Beneficial improvements to aquatic habitats would be implemented.  <b>Slightly increasing quality</b>	Beneficial improvements to aquatic habitats would be implemented, with the addition of research-based improvements in management practices.  <b>Increasing quality</b>	Beneficial improvements to aquatic habitats would be implemented, as long as public use activities would not be impacted.  <b>Increasing public use quality; Decreasing habitat quality</b>
<b>Pine Flatwood, Savannah, and Hardwood Hummock Habitat Management</b>	Habitats continue to be maintained and managed for refuge resources with current forest management activities and prescribed and wildfire program  <b>Slightly increasing quality</b>	Habitats continue to be maintained and managed for refuge resources with an adaptive forest management program and a refined prescribed and wildfire program  <b>Increasing quality</b>	Habitats will be maintained and managed to support public use activities and to avoid adverse impacts to public use needs  <b>Increasing public use quality Decreasing habitat quality</b>
<b>Pine Flatwood Habitat Restoration</b>	Restoration of habitat by planting and other small projects with wildland fire program; prescribed burn application, monitoring, and removal of mid-story vegetation in RCW cluster sites.  <b>Increasing quality</b>	Restoration of habitat to historic conditions for refuge resources where possible with the addition of a best management practices determination.  <b>Increasing quality</b>	Restoration of habitat avoiding adverse public use impacts, the creation of demonstration historic tracts, and improvement of access.  <b>Increasing public use quality; Slightly increasing habitat quality</b>

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Habitat Management Plan</b>	Continue annual Habitat Management Plan.  <b>Slightly increasing quality</b>	Continue annual Habitat Management Plan that also includes evaluating effects of management actions on refuge habitats, and increased monitoring.  <b>Increasing quality</b>	Develop a Habitat Management Plan for demonstration habitat sites.  <b>Decreasing quality</b>
<b>Land Acquisition</b>	Acquire new lands and seek expansion opportunities, focusing on habitat quality for waterfowl.  <b>Slightly increasing quality</b>	Acquire new lands and seek expansion opportunities, focusing on habitat quality and its ability to support trust resources.  <b>Increasing quality</b>	Acquire new lands and seek expansion opportunities, focusing on public use ability of land.  <b>Slightly increasing quality</b>
<b>Natural Habitat Protection through Partnerships</b>	Protect natural habitats of the Lake Pontchartrain Basin by supporting partnerships and conserving lands outside of the refuge boundaries.  <b>Slightly increasing quality</b>	Protect natural habitats of the Lake Pontchartrain Basin by supporting partnerships and conserving lands outside of the refuge boundaries, as well as identifying and mitigating external impacts to refuge trust resources.  <b>Increasing quality</b>	Protect natural habitats of the Lake Pontchartrain Basin by supporting partnerships and providing public use areas within remaining natural habitats.  <b>Slightly increasing quality</b>

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Program Review</b>	Review programs to determine public use impacts, use special use permit program, and annually review regulations on hunting and fishing.  <b>Slightly increasing quality</b>	Review programs to determine public use impacts, use special use permit program, and annually review regulations on hunting and fishing, as well as employ a monitoring program to ascertain amount of public use.  <b>Increasing quality</b>	Obtain public input regarding refuge experiences; review public use program every 5 years.  <b>Increasing public use quality Slightly decreasing habitat quality</b>
<b>Habitat of Bayou Lacombe Center</b>	Maintain grounds with no active habitat management.  <b>Decreasing quality</b>	Maintain grounds with no active habitat management, create demonstration areas, and manage grounds as developed public use area.  <b>Increasing quality</b>	Create demonstration areas and manage grounds as developed public use areas, with emphasis on historic garden aspects.  <b>Increasing quality</b>

**Goal 3. Provide opportunities for environmental education, interpretation, and wildlife-dependent recreation in accordance with the National Wildlife Refuge System Act of 1997.**

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Visitor Services</b>	Develop and implement a Visitor Services Management Plan.  <b>Increasing quality</b>	Develop and implement a Visitor Services Management Plan.  <b>Increasing quality</b>	Develop and implement a Visitor Services Management Plan.  <b>Increasing quality</b>

Issues	Alternative A Current Management (No-Action Alternative)	Alternative B Resource-Focused Management (Proposed Alternative)	Alternative C User-Focused Management
<b>Consumptive/non-consumptive user group conflict</b>	Minimize conflict between consumptive and non-consumptive user groups.  <b>Stable, no adverse impacts</b>	Minimize conflict between consumptive and non-consumptive user groups, relating to program and facility improvement.  <b>Increasing quality</b>	Minimize conflict between consumptive and non-consumptive user groups, relating to facility and usage improvement  <b>Slightly increasing quality</b>
<b>Wildlife Observation and Photography</b>	Provide opportunities for wildlife observation and photography by improving facilities.  <b>Slightly increasing quality</b>	Provide opportunities for wildlife observation and photography by improving facilities, conducting program reviews, establishing partnerships, and improving maintenance.  <b>Increasing quality</b>	Provide opportunities for wildlife observation and photography by improving facilities and increasing participation.  <b>Slightly increasing quality</b>
<b>Public Outreach</b>	Continue existing public outreach.  <b>Stable, no adverse impacts</b>	Increase public outreach, with emphasis on resource management.  <b>Increasing quality</b>	Increase public outreach by promoting opportunities for the priority public uses identified in the Refuge Improvement Act.  <b>Increasing quality</b>
<b>Environmental Education</b>	Continue existing environmental education programs.  <b>Stable, no adverse impacts</b>	Revise and expand existing environmental education programs.  <b>Increasing quality</b>	Revise and expand existing environmental education programs.  <b>Increasing quality</b>

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Interpretive Programs</b>	Maintain current personal and non-personal interpretive programs; develop visitor center at Bayou Lacombe Center.  <b>Slightly increasing quality</b>	Revise non-personal and personal interpretive media, add trail to interpret refuge management, and develop visitor center at Bayou Lacombe Center.  <b>Increasing quality</b>	Revise non-personal and personal interpretive media, add trail to interpret refuge management, and develop visitor center at Bayou Lacombe Center.  <b>Increasing quality</b>
<b>Career Opportunities</b>	Promote career opportunities; increase participation in programs.  <b>Slightly increasing quality</b>	Promote career opportunities; increase participation in programs.  <b>Slightly increasing quality</b>	Promote career opportunities; increase participation in programs; and conduct additional outreach.  <b>Increasing quality</b>
<b>Volunteer Programs</b>	Enhance refuge management.  <b>Increasing quality</b>	Enhance refuge management.  <b>Increasing quality</b>	Enhance visitor services  <b>Increasing quality</b>
<b>Programs at Bayou Lacombe Center</b>	Continue present use.  <b>Stable, no adverse impacts</b>	Expand use to emphasize resource management practices.  <b>Slightly increasing quality</b>	Expand use to emphasize resource management practices and community environmental issues.  <b>Increasing quality</b>

**Goal 4. Protect the natural and cultural resources of the refuge to ensure their integrity and to fulfill the mission of the National Wildlife Refuge System.**

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Archaeological and Historical Site Protection</b>	Continue to protect archaeological and historical sites as is done currently.  <b>Slightly decreasing quality</b>	Expand protection and knowledge of archaeological and historical sites.  <b>Increasing quality</b>	Expand protection and knowledge of archaeological and historical sites.  <b>Increasing quality</b>
<b>Refuge Boundary and Directional Signs</b>	Maintain boundaries and signs at current level.  <b>Stable, no adverse impacts</b>	Evaluate and increase signage on as-needed basis.  <b>Increasing quality</b>	Evaluate and increase signage on as-needed basis.  <b>Increasing quality</b>
<b>Regulations and Visitor Safety</b>	Provide for visitor safety by following the Refuge Law Enforcement Plan, working with other agencies, and maintaining roads and access points.  <b>Stable, no adverse impacts</b>	Provide for visitor safety by reviewing and improving the Refuge Law Enforcement Plan, working with other agencies, and improving road systems, surfaces, and trails.  <b>Increasing quality</b>	Provide for visitor safety by reviewing and improving the Refuge Law Enforcement Plan, working with other agencies, and improving road systems, surfaces, and trails.  <b>Increasing quality</b>
<b>Wilderness Area Consideration</b>	Determine if any refuge land should be nominated for inclusion as a Wilderness Area, with no formal review being conducted.  <b>Stable, no adverse impacts</b>	Determine if any refuge land should be nominated for inclusion as a Wilderness Area by conducting a wilderness review.  <b>Increasing quality</b>	Determine if any refuge land should be nominated for inclusion as a Wilderness Area by conducting a wilderness review.  <b>Increasing quality</b>

<b>Issues</b>	<b>Alternative A Current Management (No-Action Alternative)</b>	<b>Alternative B Resource-Focused Management (Proposed Alternative)</b>	<b>Alternative C User-Focused Management</b>
<b>Equipment Maintenance</b>	Maintain equipment used in refuge management at current levels.  <b>Stable, no adverse impacts</b>	Maintain capitalized equipment used in all aspects of refuge management.  <b>Increasing quality</b>	Maintain capitalized equipment used in all aspects of refuge management.  <b>Increasing quality</b>

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## *WILDLIFE DISTURBANCE*

Disturbance to wildlife is an unavoidable consequence of any public use program, regardless of the activity involved. While some activities, such as wildlife observation, may be less disturbing than others, all of the public use activities proposed under the proposed alternative would be planned to avoid unacceptable levels of impact.

The known and anticipated levels of disturbance from the proposed alternative are not considered to be significant. Nevertheless, the refuge would manage public use activities to reduce impacts. Providing access for fishing opportunities allows the use of a renewable natural resource without adversely impacting other resources. Hunting would also be managed with restrictions that ensure minimal impact on other resources. General wildlife observation may result in minimal disturbance to wildlife. If the refuge determines that impacts from the expected additional visitor uses are above the levels that are anticipated, those uses would be discontinued, restricted, or rerouted to other less sensitive areas.

## *VEGETATION DISTURBANCE*

Negative impacts could result from the creation, extension, and maintenance of trails that require the clearing of vegetation along their length. This is expected to be a minor short-term impact.

Increased visitor use may increase the potential for the introduction of new exotic species into areas when visitors do not comply with boating regulations at the boat ramps and other access points, or with requests to stay on trails. The refuge would minimize this impact by enforcing the regulations for access to the refuge's water bodies, and by installing informational signs that request users to stay on the trails.

## *USER GROUP CONFLICTS*

As public use increases, unanticipated conflicts between different user groups could occur. If this should happen, the refuge would adjust its programs, as needed, to eliminate or minimize any public use issues. The refuge would use methods that have proven to be effective in reducing or eliminating public use conflicts. These methods include establishing separate use areas, different use periods, and limits on the numbers of users, in order to provide safe, quality, appropriate, and compatible wildlife-dependent recreational opportunities.

## *EFFECTS ON ADJACENT LANDOWNERS*

Implementation of the proposed alternative is not expected to negatively affect the owners of private lands adjacent to the refuge. Positive impacts that would be expected include higher property values, less intrusion of invasive exotic plants, and increased opportunities for viewing more diverse wildlife.

However, some negative impacts that may occur include a higher frequency of trespass onto adjacent private lands, and noise associated with increased traffic. To minimize these potential impacts, the refuge will provide informational signs that clearly mark refuge boundaries; maintain the refuge's existing parking facilities; use law enforcement; and provide increased educational efforts at the visitor center. Smoke from both prescribed fires and wildfires could cause temporary discomfort and visibility; the fire program will employ methods to mitigate problems caused by smoke whenever possible and forewarn neighbors of serious or deteriorating conditions.

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## *LAND OWNERSHIP AND SITE DEVELOPMENT*

Land acquisition efforts by the Service could lead to changes in land use and recreational use patterns. However, most of the non-Service-owned lands within the refuge's approved acquisition boundary are currently undeveloped. If these lands are acquired as additions to the refuge, they would be maintained in a natural state, managed for native wildlife populations, and opened to wildlife-compatible public uses, where feasible.

Potential development of the refuge's buildings, trails, and other improvements could lead to minor short-term negative impacts on plants, soils, and some wildlife species. All construction activities would comply with the requirements of Section 404 of the Clean Water Act; the National Historic Preservation Act; Executive Order 11988, Floodplain Management; and other applicable regulatory requirements.

### **CUMULATIVE IMPACTS**

A cumulative impact is defined as an impact on the natural or human environment, which results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7).

Cumulative impacts are the overall, net effects on a resource that arise from multiple actions. Impacts can "accumulate" spatially, when different actions affect different areas of the same resource. They can also accumulate over the course of time, from actions in the past, the present, and the future. Occasionally, different actions counterbalance one another, partially canceling out each other's effect on a resource. But more typically, multiple effects add up, with each additional action contributing an incremental impact on the resource. In addition, sometimes the overall effect is greater than merely the sum of the individual effects, such as when one more reduction in a population crosses a threshold of reproductive sustainability, and threatens to extinguish the population.

A thorough analysis of impacts always considers their cumulative aspects, because actions do not take place in a vacuum: there are virtually always some other actions that have affected that resource in some way in the past, or are affecting it in the present, or will affect it in the reasonably foreseeable future. So any assessment of a specific action's effects must in fact be made with consideration of what else has happened to that resource, what else is happening, or what else will likely happen to it.

The refuge is not aware of any past, present, or future planned actions that would result in a significant cumulative impact when added to the refuge's proposed actions, as outlined in the proposed alternative.

### **DIRECT AND INDIRECT EFFECTS OR IMPACTS**

Direct effects are caused by an action and occur at the same time as the action. Indirect effects are caused by an action but are manifested later in time or further removed in distance, but still reasonably foreseeable.

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The actions proposed for implementation under the proposed alternative include wildlife and population management, resource protection, public use and facility development, and administrative programs. These actions would result in both direct and indirect effects. Facility development, for example, would most likely lead to increased public use, a direct effect; and it, in turn, would lead to indirect effects, such as increased littering, noise, and vehicular traffic.

Other indirect effects that may result from implementing the proposed alternative include minor impacts from siltation due to the disturbance of the observation soils and vegetation while expanding or creating new trails, constructing new facilities, and providing greater visitor access.

### **SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY**

The habitat protection and management actions proposed under the proposed alternative are dedicated to maintaining the long-term productivity of refuge habitats. The benefits of this plan for long-term productivity far outweigh any impacts from short-term actions, such as wetland restoration. While these activities would cause short-term negative impacts, the improved environment would produce long-term benefits for the refuge's entire ecosystem.

The key to protecting and ensuring the refuge's long-term productivity is to find the threshold where public uses do not degrade or interfere with the refuge's natural resources. The plans proposed under the proposed alternative have been carefully conceived to achieve that threshold. Therefore, implementing the proposed alternative would lead to long-term benefits for wildlife protection and land conservation that far outweigh any short-term impacts.

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# Chapter V. Consultation and Coordination

## OVERVIEW

Several teams and advisory groups were involved in the planning process with representation from the Service, Louisiana Department of Wildlife and Fisheries, The Nature Conservancy, and others as listed below.

Biological Review - October 21-25, 2002

A team of 25 biologists, ecologists, managers, and foresters from the Service (including key refuge staff), Louisiana Department of Wildlife and Fisheries, The Nature Conservancy, and universities conducted a review of the wildlife and habitat management programs on the refuge from October 21-25, 2002. The primary focus of this effort was to examine the refuge's biological program to identify needs and to provide guidance to the refuge for the preparation of the Draft CCP/EA. Attendees included:

*Barbara Boyle*, former Deputy Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Danny Breaux*, Refuge Manager, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Randy Browning*, Invasive Species Coordinator, Ecological Services, USFWS, Jackson, MS  
*Dave Brownlie*, Regional Fire Ecologist, USFWS, Tallahassee, FL  
*Jeff Boundy*, Herpetologist, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA  
*Dr. Robert Chabreck*, Professor, Louisiana State University, Baton Rouge, LA  
*Scott Durham*, Biologist, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA  
*Buddy Goatcher*, Oil Spill Coordinator, Ecological Services, USFWS, Lafayette, LA  
*Sammy Gray*, former Fire Control Officer, Southeast Louisiana Refuge Complex, Lacombe, LA  
*James Harris*, Supervisory Biologist, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Dr. Craig Hood*, Professor, Loyola University, New Orleans, LA  
*Greg Linscombe*, Fur and Refuge Division, Louisiana Department of Wildlife and Fisheries, New Iberia, LA  
*Phil McCarty*, University of New Orleans, New Orleans, LA  
*Ken McLaughlin*, Regional Fire Ecologist, USFWS, Tallahassee, FL  
*Randy Myers*, Biologist, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA  
*Kelby Ouchley*, Refuge Manager, North Louisiana Refuge Complex, Farmerville, LA  
*Charlotte Parker*, Biologist, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Howard Rogillio*, Fisheries Biologist, Louisiana Department of Wildlife and Fisheries, Lacombe, LA  
*Latimore Smith*, Plant Ecologist, Nature Conservancy, Covington, LA  
*Elizabeth Souheaver*, former Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Pat Stinson*, former Wildlife Management Biologist, USFWS, Jackson, MS  
*Bob Strader*, Supervisory Wildlife Management Biologist, USFWS, Jackson, MS  
*Bill Vermillion*, Biologist, Ecological Service, USFWS, Lafayette, LA  
*Nancy Walters*, former Biologist, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Dr. Dawn Wesson*, Professor, Tulane School of Public Health and Tropical Medicine, New Orleans, LA

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A public use review advisory team met in February 2003, to provide guidance for managing the education and visitor services program. Attendees included:

*Diane Barth*, Park Ranger, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Liz Bellantoni*, former CCP Coordinator, USFWS, Washington, D.C.  
*Kris Bly*, former Law Enforcement Officer, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Mike Boley*, former Assistant Director, Audubon Nature Center, New Orleans, LA  
*Diane Borden-Billiot*, Park Ranger, Southwest Louisiana Refuge Complex, Hackberry, LA  
*Barbara Boyle*, former Deputy Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Charlie Case*, Park Ranger, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Cheryl Fisher*, Educator, Louisiana Department of Wildlife and Fisheries, Lacombe, LA  
*Byron Fortier*, Supervisory Park Ranger, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Kevin Godsea*, Lead Park Ranger, J.N. "Ding" Darling National Wildlife Refuge, Sanibel, FL  
*James Harris*, Supervisory Biologist, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Michele Hubert*, Friends of Southeast Louisiana Refuges, Lacombe, LA  
*Doug Hunt*, Park Ranger, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Deborah Jerome*, Public Use Specialist, Southeast Regional Office, USFWS, Atlanta, GA  
*Tanya Leader*, Visitor Services Manager, St. Tammany Parish Tourist and Convention Commission, Covington, LA  
*Joe Madere*, Friends of Southeast Louisiana Refuges, Lacombe, LA  
*Elizabeth Souheaver*, former Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Garry Tucker*, Chief of Visitor Services and Outreach, Southeast Regional Office, USFWS, Atlanta, GA

A workshop was held December 9-11, 2003, to develop a draft vision statement and goals for the refuge to be included in the Draft CCP/EA. The workshop was facilitated by Dr. Onnie Byers and Moriya Rufer of Conservation Breeding Specialist Group, a part of The World Conservation Union. Interested stakeholders were invited to participate. Attendees included:

*Byron Almquist*, Canoe and Trail Adventures, Metairie, LA  
*Jimmy Anthony*, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA  
*Joe Benard*, Retired Teacher, Lacombe, LA  
*Lyndon Bijou*, former Refuge Operations Specialist, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Kris Bly*, former Law Enforcement Officer, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Denise Bonck*, former Planner, City of Slidell Planning Department, Slidell, LA  
*Roger Boykin*, Regional Fire Management Coordinator, Southeast Regional Office, USFWS, Atlanta, GA  
*Barbara Boyle*, former Deputy Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Danny Breaux*, Refuge Manager, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Larry Burch*, Geologist, Mandeville, LA  
*Curt Burnette*, former Managing Director, Audubon Nature Center, New Orleans, LA  
*Byron Fortier*, Supervisory Park Ranger, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Cliff and Connie Glockner*, Lacombe, LA  
*Richard Hale*, Northshore Bird Club, Slidell, LA  
*Michele Hubert*, Friends of Southeast Louisiana Refuges, Lacombe, LA  
*Amy LeGaux*, former Education Curator, Audubon Nature Center, New Orleans, LA  
*Jill Mastrototaro*, Environmental Coordinator, Lake Pontchartrain Basin Foundation, Metairie, LA  
*Nelwyn McInnis*, Northshore Program Manager, Nature Conservancy, Covington, LA  
*Paul Orr*, Louisiana Department of Agriculture and Forestry, Baton Rouge, LA  
*Chuck Palmisano*, Director of St. Tammany Parish Mosquito Abatement District, Slidell, LA  
*Charlotte Parker*, Biologist, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Howard Poitevint*, former Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Conrad Porbes*, Pirates Harbor Civic Association, Slidell, LA

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*Kenny Ribbeck*, Biologist, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA  
*Elizabeth Souheaver*, former Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Shelley Stiaes*, Refuge Operations Specialist, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Dennis Tauzin*, Volunteer, Lacombe, LA  
*Bill Vermillion*, Biologist, Ecological Services, USFWS, Lafayette, LA

On January 14, 2004, the entire staff of Southeast Louisiana Refuge Complex met in a mini-workshop to discuss the vision statement and refine it from the previous workshop. Any interested staff was invited to attend a second planning meeting on February 10, 2004, to discuss and review the draft goals.

A second workshop was held July 19-21, 2004, to build on the previous workshop and identify alternatives for future management of Big Branch Marsh National Wildlife Refuge. In addition, objectives were developed for reaching the goals. Some of the participants had attended the first workshop. Dr. Onnie Byers and Moriya Rufer of Conservation Breeding Specialist Group, part of The World Conservation Union, again served as facilitators. Attendees included:

*Bob Baker*, Lacombe, LA  
*Todd Baker*, Louisiana Department of Wildlife and Fisheries, LaPlace, LA  
*Kris Bly*, former Law Enforcement Officer, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Barbara Boyle*, former Deputy Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Danny Breaux*, Refuge Manager, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Larry Burch*, Geologist, Mandeville, LA  
*J.C. Ciolino*, Bayou Lacombe Chamber of Commerce, Lacombe, LA  
*Byron Fortier*, Supervisory Park Ranger, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Amy LeGaux*, former Education Curator, Audubon Nature Center, New Orleans, LA  
*Judy McClendon*, Natural Resource Planner, USFWS, Central Arkansas Refuge Complex, Augusta, AR  
*Nelwyn McInnis*, Northshore Program Manager, Nature Conservancy, Covington, LA  
*Randy Myers*, Biologist, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA  
*Chuck Palmisano*, Director of St. Tammany Parish Mosquito Abatement District, Slidell, LA  
*Christy Paulsell*, St. Tammany Parish School Board, Slidell, LA  
*Charlotte Parker*, Biologist, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Mike Perot*, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA  
*Martha Segura*, former Biologist, Ecological Services, USFWS, Lafayette, LA  
*Elizabeth Souheaver*, former Project Leader, Southeast Louisiana Refuge Complex, Lacombe, LA  
*Bob Strader*, Supervisory Wildlife Management Biologist, USFWS, Jackson, MS  
*Troy Turner*, Forester, Louisiana Office of Forestry, Baton Rouge, LA

Shaw Environmental and Infrastructure, Inc., Baton Rouge, LA, was contracted in August 2004, to assist with Draft CCP/EA development.

The Comprehensive Conservation Plan Team (a.k.a. Planning Team) was comprised of the following staff and former staff:

Ken Litzenberger, Project Leader  
Pon Dixson, Deputy Project Leader  
Charlotte Parker, Team Leader and Natural Resource Planner/Biologist  
Danny Breaux, Refuge Manager  
Byron Fortier, Supervisory Park Ranger  
Elizabeth Souheaver, former Project Leader  
Barbara Boyle, former Deputy Project Leader and former Team Leader  
Kris Bly, former Law Enforcement Officer

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## **CORE PLANNING TEAM MEMBERS**

The core planning team consisted of refuge staff from the Southeast Louisiana National Wildlife Refuge Complex. This team was the primary decision-making team for the Draft CCP/EA. The group was tasked with defining and refining the vision; identifying, reviewing, and filtering the issues; defining goals; developing objectives and strategies; developing feasible alternatives, and outlining a realistic plan for the future. The entire staff of the complex was invited to provide input several times during the process. The core team members included:

- Ken Litzenberger, Project Leader, South Louisiana Refuge Complex
- Pon Dixon, Deputy Project Leader, South Louisiana Refuge Complex
- Charlotte Parker, Natural Resource Planner, South Louisiana Refuge Complex
- Daniel Breaux, Manager of Big Branch Marsh, Bogue Chitto, and Atchafalaya Refuges, South Louisiana Refuge Complex
- Byron Fortier, Supervisory Park Ranger, Southeast Louisiana Refuge Complex

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SECTION C. APPENDICES

## *Appendix A. Glossary*

<b>Adaptive Management</b>	Refers to a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plans. Analysis of results helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.
<b>Alluvial</b>	Sediment transported and deposited in a delta or riverbed by flowing water.
<b>Alternative</b>	1) A reasonable way to fix the identified problem or satisfy the stated need (40 CFR 1500.2); 2) Alternatives are different sets of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the Refuge System mission, and resolving issues (Service Manual 602 FW 1.6B).
<b>Anadromous</b>	Migratory fishes that spend most of their lives in the sea and migrate to fresh water to breed.
<b>Approved Acquisition Boundary</b>	A project boundary which the Director of the Fish and Wildlife Service approves upon completion of a detailed planning and environmental compliance process.
<b>Biological Diversity</b>	The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (USFWS Manual 052 FW 1. 12B). The System's focus is on indigenous species, biotic communities, and ecological processes. Also referred to as Biodiversity.
<b>Brackish Marsh</b>	An area of soft, wet, low-lying land characterized by grassy vegetation and water containing some salt, but less than seawater; is located in a salinity zone between intermediate and salt marsh
<b>Carrying Capacity</b>	The maximum population of a species able to be supported by a habitat or area.
<b>Categorical Exclusion (CE,CX, CATEX, CATX)</b>	A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4).

<b>CFR</b>	Code of Federal Regulations.
<b>Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA)</b>	Passed in 1990 by Congress, this act funds wetland enhancement projects to conserve and restore Louisiana's coastal landscape. The act is also called the "Breaux Act."
<b>Comprehensive Conservation Plan (CCP)</b>	A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates (Service Manual 602 FW 1.6 E).
<b>Compatible Use</b>	A use of a refuge that, in the sound professional judgment of the refuge manager, will not materially interfere with, or detract from, the fulfillment of the mission or the purposes of the refuge.
<b>Concern</b>	See Issue.
<b>Cover Type</b>	The present vegetation of an area.
<b>Cultural Resource Inventory</b>	A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. Inventories may involve various levels, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, or sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register follows the criteria found in 36 CFR 60.4 (Service Manual 614 FW 1.7).
<b>Cultural Resource Overview</b>	A comprehensive document prepared for a field office that discusses, among other things, its prehistory and cultural history, the nature and extent of known cultural resources, previous research, management objectives, resource management conflicts or issues, and a general statement on how program objectives should be met and conflicts resolved. An overview should reference or incorporate information from a field office's background or literature search described in Section VIII of the Cultural Resource Management Handbook (Service Manual 614 FW 1.7).
<b>Cultural Resources</b>	The remains of sites, structures, or objects used by people in the past.

<b>Designated Wilderness Area</b>	An area designated by Congress to be managed as part of the National Wilderness Preservation System (Draft Service Manual 610 FW 1.5).
<b>Disturbance</b>	Significant alteration of habitat structure or composition. May be natural (e.g., fire) or human-caused events (e.g., aircraft overflight).
<b>Ecosystem</b>	A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.
<b>Ecosystem Management</b>	Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and basic ecosystem processes are perpetuated indefinitely.
<b>Ecotourism</b>	Visits to an area that maintains and conserves natural resources as a basis for promoting its economic growth and development.
<b>Emergent Marsh</b>	Wetlands dominated by erect, rooted, herbaceous plants.
<b>Endangered Species (Federal)</b>	A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.
<b>Endangered Species (State)</b>	A plant or animal species in danger of becoming extinct or extirpated in the state within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.
<b>Environmental Assessment (EA)</b>	A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an Environmental Impact Statement or Finding of No Significant Impact (40 CFR 1508.9).
<b>Environmental Impact Statement (EIS)</b>	A detailed written statement required by Section 102(2)(C) of the National Environmental Policy Act, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).
<b>Estuary</b>	The wide lower course of a river into which the tides flow. The area where the tide meets a river current.

<b>Federal Trust Species</b>	All species where the Federal Government has primary jurisdiction, including federally threatened or endangered species migratory birds, anadromous fish, and certain marine mammals.
<b>Finding of No Significant Impact (FONSI)</b>	A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a Federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).
<b>Fire Regime</b>	The characteristic frequency, seasonality, intensity, and spatial distribution of fires within a given ecoregion or habitat.
<b>Flatwoods</b>	A wooded plant community characterized by poorly drained and seasonally saturated soils occurring on broad, flat terrain with irregular depressions and very slight rises and low ridges.
<b>Goal</b>	Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (Service Manual 620 FW 1.6J).
<b>Habitat</b>	Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.
<b>Habitat Restoration</b>	Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy ecosystems.
<b>Habitat Type</b>	See Vegetation Type.
<b>Improvement Act</b>	The National Wildlife Refuge System Improvement Act of 1997.
<b>Indicator Species</b>	A species of plant or animal that is assumed to be sensitive to habitat changes and represents the needs of a larger group or suite of species.
<b>Informed Consent</b>	The grudging willingness of opponents to “to along” with a course of action that they actually oppose (Bleiker).
<b>Intermediate Marsh</b>	Marshes of low salinity with typical vegetation, consisting of wiregrass, deer pea, bulltongue, wild millet, bullwhip and sawgrass; is located in a salinity zone between fresh and brackish marsh.
<b>Issue</b>	Any unsettled matter that requires a management decision, e.g., an initiative, opportunity, resource management problem, threat to the resources of the unit, conflict in uses, public concern, or other presence of an undesirable resource condition (Service Manual 602 FW 1.6K).

<b>Management Alternative</b>	See Alternative.
<b>Management Concern</b>	See Issue.
<b>Management Opportunity</b>	See Issue.
<b>Migration</b>	The seasonal movement from one area to another and back.
<b>Mission Statement</b>	Succinct statement of the unit's purpose and reason for being.
<b>Monitoring</b>	The process of collecting information to track changes of selected parameters over time.
<b>National Environmental Policy Act of 1969 (NEPA)</b>	Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision-making (40 CFR 1500).
<b>National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57)</b>	Under the Refuge Improvement Act, the Fish and Wildlife Service is required to develop 15-year comprehensive conservation plans for all national wildlife refuges outside Alaska. The Act also describes the six public uses given priority status within the Refuge System (i.e., hunting, fishing, wildlife observation, photography, and environmental education and interpretation).
<b>National Wildlife Refuge System Mission</b>	The mission is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.
<b>National Wildlife Refuge System</b>	Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction; all lands, waters, and interests therein administered by the Secretary as wildlife refuges; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges; games ranges; wildlife management areas; or waterfowl production areas.
<b>National Wildlife Refuge</b>	A designated area of land, water, or an interest in land or water within the Refuge System.

<b>Native Species</b>	Species that normally live and thrive in a particular ecosystem.
<b>Notice of Intent (NOI)</b>	A notice that an environmental impact statement will be prepared and considered (40 CFR 1508.22). Published in the Federal Register.
<b>Noxious Weed</b>	A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insect or disease; or non-native, new, or not common to the United States. According to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or had adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.
<b>Objective</b>	A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring refuge accomplishments, and evaluating the success of strategies. They are attainable, time-specific, and measurable (Service Manual 602 FW 1.6N).
<b>Plant Association</b>	A classification of plant communities based on the similarity in dominants of all layers of vascular species in a climax community.
<b>Plant Community</b>	An assemblage of plant species unique in its composition; occurs in particular locations under particular influences; is a reflection or integration of the environmental influences on the site, such as soils, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community.
<b>Preferred Alternative</b>	This is the alternative determined [by the decision-maker] to best achieve the refuge purpose, vision, and goals; contributes to the Refuge System mission; addresses the significant issues; and is consistent with principles of sound fish and wildlife management.
<b>Prescribed Fire</b>	The application of fire under certain conditions and within set parameters such as wind speed and direction, fuel moisture, and relative humidity to achieve identified land use objectives.
<b>Priority Species</b>	Fish and wildlife species that the Washington Department of Fish and Wildlife believe require protective measures and/or management guidelines to ensure their perpetuation. Priority species include the following: (1) State-listed and candidate species; (2) species or groups of animals susceptible to significant population declines within a specific area or statewide by virtue of their inclination to aggregate (e.g., seabird colonies); and (3) species of recreation, commercial, and/or tribal importance.

<b>Public Involvement Plan</b>	Broad long-term guidance for involving the public in the comprehensive planning process.
<b>Public Involvement</b>	A process that offers impacted and interested individuals and organizations an opportunity to become informed about, and to express their opinions on, Service actions and policies. In the process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.
<b>Public</b>	Individuals, organizations, and groups; officials of Federal, State, and local government agencies; Indian tribes; and foreign nations. It may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in service issues and those who do or do not realize that Service decisions may affect them.
<b>Purposes of the Refuge</b>	“The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge sub-unit.” For refuges that encompass congressionally designated wilderness, the purposes of the Wilderness Act are additional purposes of the refuge (Service Manual 602 FW 106 S).
<b>Recommended Wilderness</b>	Areas studied and found suitable for wilderness designation by both the Director and Secretary, and recommended for designation by the President to Congress. These areas await only legislative action by Congress in order to become part of the Wilderness System. Such areas are also referred to as “pending in Congress” (Draft Service Manual 610 FW 1.5).
<b>Record of Decision (ROD)</b>	A concise public record of decision prepared by the Federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).
<b>Refuge Goal</b>	See Goal.
<b>Refuge Purposes</b>	See Purposes of the Refuge
<b>Songbirds</b> (Also Passerines)	A category of birds that is medium to small, perching birds. Most are territorial singers and migratory.

<b>Step-down Management Plan</b>	A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting CCP goals and objectives (Service Manual 602 FW 1.6 U).
<b>Strategy</b>	A specific action, tool, technique, or combination of actions, tools, and techniques used to meet unit objectives (Service Manual 602 FW 1.6 U).
<b>Study Area</b>	The area reviewed in detail for wildlife, habitat, and public use potential. For purposes of this CCP/EA, the study area includes the lands within the currently approved refuge boundary and potential refuge expansion areas.
<b>Threatened Species (Federal)</b>	Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
<b>Threatened Species (State)</b>	A plant or animal species likely to become endangered in the state within the near future if factors contributing to population decline or habitat degradation or loss continue.
<b>Tiering</b>	The coverage of general matters in broader environmental impact statements with subsequent narrower statements of environmental analysis, incorporating by reference, the general discussions and concentrating on specific issues (40 CFR 1508.28).
<b>U.S. Fish and Wildlife Service Mission</b>	The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.
<b>Unit Objective</b>	See Objective.
<b>Vegetation Type, Habitat Type, Forest Cover Type</b>	A land classification system based upon the concept of distinct plant associations.
<b>Vision Statement</b>	A concise statement of what the planning unit should be, or what we hope to do, based primarily upon the Refuge System mission and specific refuge purposes and other mandates. We will tie the vision statement for the refuge to the mission of the Refuge System; the purpose(s) of the refuge; the maintenance or restoration of the ecological integrity of each refuge and the Refuge System; and other mandates (Service Manual 602 FW 1.6 Z).

<b>Wilderness Study Areas</b>	<p>Lands and waters identified through inventory as meeting the definition of wilderness and undergoing evaluation for recommendation for inclusion in the Wilderness System. A study area must meet the following criteria:</p> <ul style="list-style-type: none"> <li>▪ Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;</li> <li>▪ Has outstanding opportunities for solitude or a primitive and unconfined type of recreation; and</li> <li>▪ Has at least 5,000 contiguous roadless acres or is sufficient in size as to make practicable its preservation and use in an unimpaired condition (Draft Service Manual 610 FW 1.5).</li> </ul>
<b>Wilderness</b>	See Designated Wilderness.
<b>Wildfire</b>	A free-burning fire requiring a suppression response; all land-based fire other than prescribed fire (Service Manual 621 FW 1.7).
<b>Wildland Fire</b>	Every wildland fire is either a wildfire or a prescribed fire (Service Manual 621 FW 1.3)

## ACRONYMS AND ABBREVIATIONS

BCC - Birds of Conservation Concern  
 BRT - Biological Review Team  
 CCP - Comprehensive Conservation Plan  
 CFR - Code of Federal Regulations  
 EA - Environmental Assessment  
 EIS - Environmental Impact Statement  
 EPA - U.S. Environmental Protection Agency  
 ESA - Endangered Species Act  
 FR - Federal Register  
 FTE - full-time equivalent  
 FY - Fiscal Year  
 GIS - Global Information System  
 NEPA - National Environmental Policy Act  
 NRHP - National Register of Historic Places  
 NWR - National Wildlife Refuge  
 NWRS - National Wildlife Refuge System  
 RM - Refuge Manual  
 ROD - Record of Decision  
 RONS - Refuge Operating Needs System  
 USC - United States Code



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## *Appendix C. Relevant Legal Mandates and Executive Orders*

STATUE	DESCRIPTION
Administrative Procedures Act (1946)	Outlines administrative procedures to be followed by Federal agencies with respect to identification of information to be made public; publication of material in the Federal Register; maintenance of records; attendance and notification requirements for specific meetings and hearings; issuance of licenses; and review of agency actions.
American Antiquities Act of 1906	Provides penalties for unauthorized collection, excavation, or destruction of historic or prehistoric ruins, monuments or objects of antiquity on lands owned or controlled by the United States. The Act authorizes the President to designate as national monuments objects or areas of historic or scientific interest on lands owned or controlled by the United States.
American Indian Religious Freedom Act of 1978	Protects the inherent right of Native Americans to believe, express, and exercise their traditional religions, including access to important sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.
Americans With Disabilities Act of 1990	Intended to prevent discrimination of and make American Society more accessible to people with disabilities. The Act requires reasonable accommodations to be made in employment, public services, public accommodations, and telecommunications for persons with disabilities.
Anadromous Fish Conservation Act of 1965, as amended	Authorizes the Secretary of the Interior and Commerce to enter into cooperative agreements with States and other non-Federal interest for conservation, development, and enhancement of anadromous fish and contribute up to 50 percent as the Federal share of the cost of carrying out such agreements. Reclamation construction programs for water resource projects needed solely for such fish are also authorized.
Archaeological Resources Protection Act of 1979, as amended.	Strengthens and expands the protective provisions of the Antiquities Act of 1906 regarding archaeological resources. It also revised the permitting process for archaeological research.
Architectural Barriers Act of 1968	Requires that buildings and facilities designed, constructed, or altered with Federal funds, or leased by a Federal agency, comply with standards for physical accessibility.
Bald and Golden Eagle Protection Act of 1940, as amended	Prohibits the possession, sale, or transport of any bald or golden eagle, alive or dead, or part, nest, or egg except as permitted by the Secretary of the Interior for scientific or exhibition purposes, or for the religious purposes of Native Americans.

STATUE	DESCRIPTION
Bankhead-Jones Farm Tenant Act of 1937	Directs the Secretary of Agriculture to develop a program of land conservation and utilization in order to correct maladjustments in land use and thus assist in such things as control of soil erosion, reforestation, preservation of natural resources, and protection of fish and wildlife. Some early refuges and hatcheries were established under authority of this Act.
Cave Resources Protection Act of 1988	Established requirements for the management and protection of caves and their resources on Federal lands, including allowing the land managing agencies to withhold the location of caves from the public, and requiring permits for any removal or collecting activities in caves on Federal lands.
Clean Air Act of 1970	Regulates air emissions from area, stationary, and mobile sources. This Act and its amendments charge Federal land managers with direct responsibility to protect the "air quality and related values" of land under their control. These values include fish and wildlife and their habitats.
Clean Water Act of 1974, as amended	This Act and its amendments have as its objective the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters. Section 401 of the Act requires that federally permitted activities comply with the Clean Water Act standards, state water quality laws, and any other appropriate state laws. Section 404 charges the U.S. Army Corps of Engineers with regulating discharge of dredge or fill materials into waters of the United States, including wetlands.
Coastal Barrier Resources Act of 1982 (CBRA)	Identifies undeveloped coastal barriers along the Atlantic and Gulf coasts and included them in the John H. Chafee Coastal Barrier Resources System (CBRS). The objectives of the Act are to minimize loss of human life, reduce wasteful Federal expenditures, and minimize the damage to natural resources by restricting most Federal expenditures that encourage development within the CBRS.
Coastal Barrier Improvement Act of 1990	Reauthorized the CBRA, expanded the CBRS to include undeveloped coastal barriers along the Great Lakes and in the Caribbean, and established "Otherwise Protected Areas (OPAs)." The Service is responsible for maintaining official maps, consulting with Federal agencies that propose spending Federal funds within the CBRS and OPAs, and making recommendations to Congress about proposed boundary revisions.
Coastal Wetlands Planning, Protection, and Restoration (1990)	Authorizes the Director of the Fish and Wildlife Service to participate in the development of a Louisiana coastal wetlands restoration program, participate in the development and oversight of a coastal wetlands conservation program, and lead in the implementation and administration of a national coastal wetlands grant program.

STATUE	DESCRIPTION
Coastal Zone Management Act of 1972, as amended	Established a voluntary national program within the Department of Commerce to encourage coastal States to develop and implement coastal zone management plans and requires that “any Federal activity within or outside of the coastal zone that affects any land or water use or natural resource of the coastal zone” shall be “consistent to the maximum extent practicable with the enforceable policies” of a State’s coastal zone management plan. The law includes an Enhancement Grants Program for protecting, restoring, or enhancing existing coastal wetlands or creating new coastal wetlands. It also established the National Estuarine Reserve Research System, guidelines for estuarine research, and financial assistance for land acquisition.
Emergency Wetlands Resources Act of 1986	This Act authorized the purchase of wetlands from Land and Water Conservation Fund moneys, removing a prior prohibition on such acquisitions. The Act requires the Secretary to establish a National Wetlands Priority Conservation Plan, required the States to include wetlands in their Comprehensive Outdoor Recreation Plans, and transfers to the Migratory Bird Conservation Fund amounts equal to import duties on arms and ammunition. It also established entrance fees at national wildlife refuges.
Endangered Species Act of 1973, as amended	Provides for the conservation of threatened and endangered species of fish, wildlife, and plants by Federal action and by encouraging the establishment of state programs. It provides for the determination and listing of threatened and endangered species and the designation of critical habitats. Section 7 requires refuge managers to perform internal consultation before initiating projects that affect or may affect endangered species.
Environmental Education Act of 1990	This Act established the Office of Environmental Education within the Environmental Protection Agency to develop and administer a Federal environmental education program in consultation with other Federal natural resource management agencies, including the Fish and Wildlife Service.
Estuary Protection Act of 1968	Authorized the Secretary of the Interior, in cooperation with other Federal agencies and the States, to study and inventory estuaries of the United States, including land and water of the Great Lakes, and to determine whether such areas should be acquired for protection. The Secretary is also required to encourage State and local governments to consider the importance of estuaries in their planning activities relating to Federal natural resource grants. In approving any state grants for acquisition of estuaries, the Secretary is required to establish conditions to ensure the permanent protection of estuaries.

STATUE	DESCRIPTION
Estuaries and Clean Waters Act of 2000	This law creates a Federal interagency council that includes the Director of the Fish and Wildlife Service, the Secretary of the Army for Civil Works, the Secretary of Agriculture, the Administrator of the Environmental Protection Agency, and the Administrator for the National Oceanic and Atmospheric Administration. The Council is charged with developing a national estuary habitat restoration strategy and providing grants to entities to restore and protect estuary habitat to promote the strategy.
Food Security Act of 1985, as amended (Farm Bill)	The Act contains several provisions that contribute to wetland conservation. The Swampbuster provisions state that farmers who convert wetlands for the purpose of planting after enactment of the law are ineligible for most farmer program subsidies. It also established the Wetland Reserve Program to restore and protect wetlands through easements and restoration of the functions and values of wetlands on such easement areas.
Farmland Protection Policy Act of 1981, as amended	The purpose of this law is to minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. Federal programs include construction projects and the management of Federal lands.
Federal Advisory Committee Act (1972), as amended	Governs the establishment of and procedures for committees that provide advice to the Federal Government. Advisory committees may be established only if they will serve a necessary, non-duplicative function. Committees must be strictly advisory unless otherwise specified and meetings must be open to the public.
Federal Coal Leasing Amendment Act of 1976	Provided that nothing in the Mining Act, the Mineral Leasing Act, or the Mineral Leasing Act for Acquired Lands authorized mining coal on refuges.
Federal-Aid Highways Act of 1968	Established requirements for approval of Federal highways through wildlife refuges and other designated areas to conserve the natural beauty of such areas. The Secretary of Transportation is directed to consult with the Secretary of the Interior and other Federal agencies before approving any program or project requiring the use of land under their jurisdiction.
Federal Noxious Weed Act of 1990, as amended	The Secretary of Agriculture was given the authority to designate plants as noxious weeds and to cooperate with other Federal, State, and local agencies; farmers associations; and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds. The Act requires each Federal land-managing agency, including the Fish and Wildlife Service, to designate an office or person to coordinate a program to control such plants on the agency's land and implement cooperative agreements with the States, including integrated management systems to control undesirable plants.

STATUE	DESCRIPTION
Fish and Wildlife Act of 1956	Establishes a comprehensive national fish, shellfish, and wildlife resources policy with emphasis on the commercial fishing industry, but also includes the inherent right of every citizen and resident to fish for pleasure, enjoyment, and betterment, and to maintain and increase public opportunities for recreational use of fish and wildlife resources. Among other things, it authorizes the Secretary of the Interior to take such steps as may be required for the development, advancement, management, conservation, and protection of fish and wildlife resources including, but not limited to, research, development of existing facilities, and acquisition by purchase or exchange of land and water or interests therein.
Fish and Wildlife Conservation Act of 1980, as amended	Requires the Service to monitor non-gamebird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.
Fish and Wildlife Coordination Act of 1958	Promotes equal consideration and coordination of wildlife conservation with other water resource development programs by requiring consultation with the Fish and Wildlife Service and the State fish and wildlife agencies where the “waters of a stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted...or otherwise controlled or modified” by any agency under Federal permit or license.
Improvement Act of 1978	This Act was passed to improve the administration of fish and wildlife programs and amends several earlier laws, including the Refuge Recreation Act, the National Wildlife Refuge Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out volunteer programs.
Fish and Wildlife Programs Improvement and National Wildlife Refuge System Centennial Act of 2000	Recognizes the vital importance of the Refuge System and the fact that it celebrated its centennial anniversary in the year 2003. Established the National Wildlife Refuge System Centennial Commission to prepare a plan to commemorate the 100th anniversary of the Refuge System, coordinate activities to celebrate that event, and host a conference on the National Wildlife Refuge System. The commission is also responsible for developing a long-term plan to meet the priority operations; maintenance and construction needs for the Refuge System, and improve public use programs and facilities.
Fishery (Magnuson) Conservation and Management Act of 1976	Established Regional Fishery Management Councils comprised of Federal and State officials, including the Fish and Wildlife Service. It provides for regulation of foreign fishing and vessel fishing permits.

STATUE	DESCRIPTION
Freedom of Information Act, 1966	Requires all Federal agencies to make available to the public for inspection and copying administrative staff manuals and staff instructions, official, published and unpublished policy statements, final orders deciding case adjudication, and other documents. Special exemptions have been reserved for nine categories of privileged material. The Act requires the party seeking the information to pay reasonable search and duplication costs.
Geothermal Steam Act of 1970, as amended	Authorizes and governs the lease of geothermal steam and related resources on public lands. Section 15c of the Act prohibits issuing geothermal leases on virtually all Service-administrative lands.
Lacey Act of 1900, as amended	Designed to help states protect their native game animals and to safeguard U.S. crop production from harmful foreign species, this Act prohibits interstate and international transport and commerce of fish, wildlife, or plants taken in violation of domestic or foreign laws. It regulates the introduction to America of foreign species into new locations.
Land and Water Conservation Fund Act of 1948	This Act provides funding through receipts from the sale of surplus federal land, appropriations from oil and gas receipts from the outer continental shelf, and other sources for land acquisition under several authorities. Appropriations from the fund may be used for matching grants to states for outdoor recreation projects and for land acquisition by various Federal agencies including the Fish and Wildlife Service.
Marine Mammal Protection Act of 1972, as amended	The 1972 Marine Mammal Protection Act established a Federal responsibility to conserve marine mammals with management vested in the Department of Interior for sea otter, walrus, polar bear, dugong, and manatee. The Department of Commerce is responsible for cetaceans and pinnipeds, other than the walrus. With certain specified exceptions, the Act establishes a moratorium on the taking and importation of marine mammals, as well as products taken from them.
Migratory Bird Conservation Act of 1929	Established a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds. The role of the Commission was expanded by the North American Wetland Conservation Act to include approving wetlands acquisition, restoration, and enhancement proposals recommended by the North American Wetlands Conservation Council.
Migratory Bird Hunting and Conservation Stamp Act of 1934	Also commonly referred to as the Duck Stamp Act, requires waterfowl hunters 16 years of age or older to possess a valid Federal hunting stamp. Receipts from the sale of the stamp are deposited into the Migratory Bird Conservation Fund for the acquisition of migratory bird refuges.

STATUE	DESCRIPTION
Migratory Bird Treaty Act of 1918, as amended	This Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Except as allowed by special regulations, this Act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, barter, export, or import any migratory bird, part, nest, egg, or product.
Mineral Leasing Act for Acquired Lands (1947), as amended	Authorizes and governs mineral leasing on acquired public lands.
Minerals Leasing Act of 1920, as amended	Authorizes and governs leasing of public lands for development of deposits of coal, oil, gas, and other hydrocarbons; sulphur; phosphate; potassium; and sodium. Section 185 of this title contains provisions relating to granting rights-of-ways over Federal lands for pipelines.
Mining Act of 1872, as amended	Authorizes and governs prospecting and mining for the so-called “hardrock” minerals (such as gold and silver) on public lands.
National and Community Service Act of 1990	Authorizes several programs to engage citizens of the U.S. in full-and/or part-time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Among other things, this law establishes the American Conservation and Youth Service Corps to engage young adults in approved human and natural resource projects, which will benefit the public or are carried out on Federal or Native American lands.
National Environmental Policy Act of 1969	Requires analysis, public comment, and reporting for environmental impacts of Federal actions. It stipulates the factors to be considered in environmental impact statements, and requires that Federal agencies employ an interdisciplinary approach in related decision-making and develop means to ensure that unqualified environmental values are given appropriate consideration, along with economic and technical considerations.
National Historic Preservation Act of 1966, as amended	It establishes a National Register of Historic Places and a program of matching grants for preservation of significant historical features. Federal agencies are directed to take into account the effects of their actions on items or sites listed or eligible for listing in the National Register.
National Trails System Act (1968), as amended	Established the National Trails System to protect the recreational, scenic and historic values of some important trails. National Recreation Trails may be established by the Secretaries of Interior or Agriculture on land wholly or partly within their jurisdiction, with the consent of the involved State(s), and other land managing agencies, if any. National Scenic and National Historic Trails may only be designated by an Act of Congress. Several National Trails cross units of the National Wildlife Refuge System.

STATUE	DESCRIPTION
National Wildlife Refuge System Administration Act of 1966	Prior to 1966, there was no single Federal Law that governed the administration of the various wildlife refuges that had been established. This Act defines the National Wildlife Refuge System and authorizes the Secretary of the Interior to permit any use of an area provided such use is compatible with the major purposes(s) for which the area was established.
National Wildlife Refuge System Improvement Act of 1997	This Act amends the National Wildlife Refuge System Administration Act of 1966. This Act defines the mission of the National Wildlife Refuge System, establishes the legitimacy and appropriateness of six priority "wildlife-dependent" public uses, establishes a formal process for determining "compatible uses" of Refuge System lands, identifies the Secretary of the Interior as responsible for managing and protecting the Refuge System, and requires the development of a comprehensive conservation plan for all refuges.
Native American Graves Protection and Repatriation Act of 1990	Requires Federal agencies and museums to inventory, determine ownership of, and repatriate certain cultural items and human remains under their control or possession. The Act also addresses the repatriation of cultural items inadvertently discovered by construction activities on lands managed by the agency.
Neotropical Migratory Bird Conservation Act of 2000	Establishes a matching grants program to fund projects that promote the conservation of neotropical migratory birds in the United States, Latin America, and the Caribbean.
North American Wetlands Conservation Act of 1989	Provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on wetlands between Canada, U.S., and Mexico. The North American Wetlands Conservation Council was created to recommend projects to be funded under the Act to the Migratory Bird Conservation Commission. Available funds may be expended for up to 50 percent of the United States share cost of wetlands conservation projects in Canada, Mexico, or the United States (or 100 percent of the cost of projects on Federal lands).
Partnerships for Wildlife Act of 1992	Establishes a Wildlife Conservation and Appreciation Fund to receive appropriated funds and donations from the National Fish and Wildlife Foundation and other private sources to assist the State fish and game agencies in carrying out their responsibilities for conservation of non-game species. The funding formula is no more than 1/3 Federal funds, at least 1/3 Foundation funds, and at least 1/3 State funds

STATUE	DESCRIPTION
Refuge Recreation Act of 1962, as amended	This Act authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the area's primary purposes. It authorizes construction and maintenance of recreational facilities and the acquisition of land for incidental fish and wildlife-dependent recreational development or protection of natural resources. It also authorizes the charging of fees for public uses.
Refuge Revenue Sharing Act of 1935, as amended	Provided for payments to counties in lieu of taxes from areas administered by the Fish and Wildlife Service. Counties are required to pass payments along to other units of local government within the county, which suffer losses in tax revenues due to the establishment of Service areas.
Rehabilitation Act of 1973	Requires nondiscrimination in the employment practices of Federal agencies of the executive branch and contractors. It also requires all federally assisted programs, services, and activities to be available to people with disabilities.
Rivers and Harbors Appropriations Act of 1899, as amended	Requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States. The Fish and Wildlife Coordination Act provides authority for the Service to review and comment on the effects on fish and wildlife activities proposed to be undertaken or permitted by the Corps of Engineers. Service concerns include contaminated sediments associated with dredge or fill projects in navigable waters.
Sikes Act (1960), as amended	Provides for the cooperation by the Departments of Interior and Defense with State agencies in planning, development, and maintenance of fish and wildlife resources and outdoor recreation facilities on military reservations throughout the U.S. It requires the Secretary of each military department to use trained professionals to manage the wildlife and fishery resources under his jurisdiction, and requires that Federal and State fish and wildlife agencies be given priority in management of fish and wildlife activities on military reservations.
Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948	This Act provides that upon determination by the Administrator of the General Services Administration, real property no longer needed by a Federal agency can be transferred, without reimbursement, to the Secretary of the Interior if the land has particular value for migratory birds, or to a State agency for other wildlife conservation purposes.
Transportation Equity Act for the 21st Century (1998)	Established the Refuge Roads Program, requires transportation planning that includes public involvement, and provides funding for approved public use roads and trails and associated parking lots, comfort stations, and bicycle/pedestrian facilities.

STATUE	DESCRIPTION
Uniform Relocation and Assistance and Real Property Acquisition Policies Act (1970), as amended	Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The Act requires that any purchase offer be no less than the fair market value of the property.
Water Resources Planning Act of 1965	Established Water Resources Council to be composed of Cabinet representatives, including the Secretary of the Interior. The Council reviews river basin plans with respect to agricultural, urban, energy, industrial, recreational and fish and wildlife needs. The Act also established a grant program to assist States in participating in the development of related comprehensive water and land use plans.
Wild and Scenic Rivers Act of 1968, as amended	This Act selects certain rivers of the nation possessing remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values; preserves them in a free-flowing condition; and protects their local environments.
Wilderness Act of 1964, as amended	The Wilderness Act of 1964 directs the Secretary of the Interior to review every roadless area of 5,000 acres or more and every roadless island regardless of size within the National Wildlife Refuge System, and to recommend suitability of each such area. The Act permits certain activities within designated Wilderness Areas that do not alter natural processes. Wilderness values are preserved through a “minimum tool” management approach, which requires refuge managers to use the least intrusive methods, equipment, and facilities necessary for administering the areas.
Youth Conservation Corps Act of 1970	Established a permanent Youth Conservation Corps (YCC) program within the Departments of Interior and Agriculture. Within the Service, YCC participants perform many tasks on refuges, fish hatcheries, and research stations.

EXECUTIVE ORDERS	DESCRIPTIONS
EO 11593, Protection and Enhancement of the Cultural Environment (1971)	States that if the Service proposes any development activities that may affect the archaeological or historic sites, the Service will consult with Federal and State Historic Preservation Officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.
EO 11644, Use of Off-road Vehicles on Public Land (1972)	Established policies and procedures to ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.
EO 11988, Floodplain Management (1977)	The purpose of this order is to prevent Federal agencies from contributing to the “adverse impacts associated with occupancy and modification of floodplains” and the “direct or indirect support of floodplain development.” In the course of fulfilling their respective authorities, Federal agencies “shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.
EO 11989 (1977), Amends Section 2 of EO 11644	Directs agencies to close areas negatively impacted by off-road vehicles.
EO 11990, Protection of Wetlands (1977)	Federal agencies are directed to provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.
EO 12372, Intergovernmental Review of Federal Programs (1982)	Seeks to foster intergovernmental partnerships by requiring Federal agencies to use the State process to determine and address concerns of State and local elected officials with proposed Federal assistance and development programs.
EO 12898, Environmental Justice (1994)	Requires Federal agencies to identify and address disproportionately high and adverse effects of its programs, policies, and activities on minority and low-income populations.
EO 12906, Coordinating Geographical Data Acquisition and Access (1994), Amended by EO 13286 (2003).	Recommended that the executive branch develop, in cooperation with State, local, and tribal governments, and the private sector, a coordinated National Spatial Data Infrastructure to support public and private sector applications of geospatial data. Of particular importance to comprehensive conservation planning is the National Vegetation Classification System (NVCS), which is the adopted standard for vegetation mapping. Using NVCT facilitates the compilation of regional and national summaries, which, in turn, can provide an ecosystem context for individual refuges.

EXECUTIVE ORDERS	DESCRIPTIONS
EO 12962, Recreational Fisheries (1995)	Federal agencies are directed to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities in cooperation with States and Tribes.
EO 12996, Management and General Public Use of the National Wildlife Refuge System (1996)	The mission of the National Wildlife System is stated with guiding principles to help ensure the long-term enjoyment of the Refuge System for present and future generations. The order directs the Secretary of the Interior to recognize compatible wildlife-dependent recreation activities, involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation, as priority general public uses of the Refuge System.
EO 13007, Native American Religious Practices (1996)	Provides for access to, and ceremonial use of, Indian sacred sites on Federal lands by Indian religious practitioners, and direction to avoid adversely affecting the physical integrity of such sites.
EO 13061, Federal Support of Community Efforts Along American Heritage Rivers (1997)	Established the American Heritage Rivers initiative for the purpose of natural resource and environmental protection, economic revitalization, and historic and cultural preservation. The Act directs Federal agencies to preserve, protect, and restore rivers and their associated resources important to our history, culture, and natural heritage.
EO 13084, Consultation and Coordination With Indian Tribal Governments (2000)	Provides a mechanism for establishing regular and meaningful consultation and collaboration with Tribal officials in the development of Federal policies that have Tribal implications.
EO 13112, Invasive Species (1999)	Federal agencies are directed to prevent the introduction of invasive species, detect, and respond rapidly to and control populations of such species in a cost effective and environmentally sound manner, accurately monitor invasive species, provide for restoration of native species and habitat conditions, conduct research to prevent introductions and to control invasive species, and promote public education on invasive species and the means to address them. This executive order replaces and rescinds EO 11987, Exotic Organisms (1977).
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (2001)	Instructs Federal agencies to conserve migratory birds by several means, including the incorporation of strategies and recommendations found in Partners in Flight Bird Conservation plans, the North American Waterfowl Plan, the North American Waterbird Conservation Plan, and the United States Shorebird Conservation Plan, into agency management plans and guidance documents.

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# Appendix D. Public Involvement

## SUMMARY OF PUBLIC SCOPING COMMENTS

Public scoping was initiated in November 2003, with an open-house meeting at refuge headquarters in Lacombe, Louisiana, where participants were able to register their concerns to ensure that they would be considered in developing the Draft CCP/EA. The meeting was well attended with approximately 57 people present. A notice of intent was also published in the Federal Register announcing the planning process, giving contact information, and soliciting comments. The following comments were made during the public scoping phase of this plan:

### Public Programs and Visitor Facilities Section

- 1) Perform education/outreach to public about trash dumping and parking in proper areas.
- 2) Provide email contacts for law enforcement personnel; perhaps on web page (similar to #15 – Refuge Administration).
- 3) Provide photo blinds on refuge.
- 4) Provide a means for mobility-impaired to access areas such as Boy Scout Road.
- 5) Get our new phone number out to other agencies, such as LDWF.
- 6) Problem with illegal motorized access at parking areas (Paquet Road, etc.)
  - improve public parking areas.
- 7) Empower citizens/refuge neighbors to aid in law enforcement
  - provide radios?
- 8) Improve gate at Lemeiux Road environmental education site; apparently people have pulled post up and driven in illegally.
- 9) Complete boat launch at Lake Road; look into possible partnerships to complete (state, parish, DU, etc.)
- 10) There is problem with illegal dumping at Lemieux Road - provide law enforcement contact numbers to residents.
- 11) What to do about remote trash piles (far into the woods), such as cars, appliances, etc.? Is there a plan?
- 12) Provide more bank-fishing opportunities for those without boats.
- 13) Why do we have so few law enforcement officers?
- 14) Provide more overlooks for wildlife viewing.
- 15) Dog laws are inconsistent. Why can hunters have dogs off leash but dog walkers can't?
- 16) Establish designated areas for dogs off leash.
- 17) Can we remove fallen oak at end of Boy Scout Road at Bayou Lacombe?
- 18) More restroom facilities needed: Boy Scout Road, canoe launch, and Lemieux Road.
- 19) Establish self-clearing check stations for deer hunters.
- 20) Create trail along lake shore west of Lake Road (would have to bridge canal somehow).
- 21) Improve and mark existing rough trail to brick kiln (Boy Scout Road).
- 22) Provide trail access to gum pond off Boy Scout Road.
- 23) What can we do about burnt house at end of Lake Road?
- 24) Provide platform for resting/wildlife viewing in marsh accessible from non-motorized launch.
- 25) Maintain hunting on Big Branch (don't eliminate as public use).
- 26) Develop visitor resources at headquarters site (gardens, etc.)
- 27) We aren't responsive enough to public inquiries (law enforcement).
- 28) There is a problem with nighttime illegal use and access (kids partying etc., at Boy Scout Road).

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- 29) Provide better boundary marking on a permanent basis.
  - 30) Increase staff to address needs (litter, maintenance, etc).
  - 31) Require international bow-hunting course for refuge users.
  - 33) Label unique habitat areas with interpretive signs.
  - 34) Need self clearing check stations for deer hunting.
  - 35) Special hunts for invasive species (e.g., hogs) to reduce competition with native wildlife.
  - 36) Extend Boy Scout Road boardwalk to bayou for a canoe launch.

### **Wildlife and Habitat Management**

- 1) How/when to do prescribed fire burning (dormant vs. growing season).
- 2) Concern regarding burning during nesting season.
- 3) Concern regarding construction of fire breaks – what is their relevance? Are they necessary?
- 4) What is the burning schedule/cycle – 2- to 3-year cycles.
- 5) Threats to grassland bird habitat from mowing activities.
- 6) What is the forest management plan of the oaks off Boy Scout Road?
- 7) Perform management for Bachman’s sparrow and other species of concern.
- 8) Study the affect of feral hogs on the different habitats.
- 9) Mosquito control treatment – how far into interior of refuge is treated with Nalad?
- 10) Study the effect of mosquito spraying on bees.
- 11) Increase budget for research opportunities.
- 12) Perform invasive species eradication – Chinese tallow and cogon grass.
- 13) Continue wetland restoration projects, such as Christmas trees, Coir logs, marsh plantings.
- 14) Conduct fisheries surveys.
- 15) Perform fish stocking and partnering with fish hatchery.
- 16) What is the status of Wildlife Urban Interface education programs (EX SCAFEC)?
- 17) Conduct surveys for wildlife inventory (deer, hogs, etc).
- 18) Assess water quality of bayous.
- 19) Provide good quality water when population around refuge expands.
- 20) Accomplish habitat improvements with intensive methods, such as food plots and water level manipulation.
- 21) Make information available where certain species occur.
- 22) Consider location and concentration of endangered species in prioritizing land acquisition.
- 23) Create a balance between public use and wildlife protection.
- 24) Keep trails “rustic.”
- 25) Recommend alligator trapping.
- 26) Improve marsh management by incorporating burning of the marsh. Suggest burn window of September 15 – November 15 to get best water and wind (early fronts) conditions.
- 27) Nutria trapping is not necessary because population is not large.

### **Refuge Administration**

- 1) Interest in the land acquisition process and future development plans.
  - Is there a budget? Where does it come from? Is it recurring? Donations? Can you ask potential buyers or is there an agent involved?
- 2) Maintenance issues.
  - How to maintain refuge without sufficient budget.
  - What is the status of Lake Road boat launch – need to improve.
- 3) How to improve litter abatement? Interest in beautification and access for families to enjoy these areas.
- 4) End of Lake Road – beautification and develop a pier.

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- 5) Want to increase local involvement. Improve advertisement/solicitation of volunteers
  - 6) Develop a program to train people how to go back to their community and teach land stewardship or wetland conservation or habitats or...
  - 7) Develop partnerships with St. Tammany Tourist Commission, Nature Conservancy, Lacombe Chamber of Commerce, etc., to improve visibility and community awareness.
  - 8) Develop regular clean-up days on the refuge or develop litter abatement program.
  - 9) Improve notification of volunteer opportunities.
  - 10) Develop a strategy to prioritize land acquisition opportunities.
  - 11) Establish a goal – Example: Set an acquisition goal of 100 percent during the planning process.
  - 12) Coordinate/partner with other conservation agencies adjacent to the refuge.
  - 13) Add display in visitor center of historical/archaeological components of the refuge.
  - 14) Perform contaminant studies/testing of Bayou Lacombe spoil dredging.
  - 15) Enhance web site to include refuge specific contacts to facilitate greater flow of information (staff directory).
  - 16) Develop partnership with educational institutions and conservation organizations to reach rural visitors.
  - 17) Hire more biologists/ecologists.
  - 18) Acquire adjacent lands off Carr Drive.

In addition, two workshops were held during the planning process to develop a vision statement, goals, and alternatives. Interested people, such as adjacent landowners, representatives from groups interested in the refuge, civic groups, local government, educators, and other conservation agencies, were invited. These stakeholders were instrumental in discussing issues and developing many of the ideas in this plan; their names are listed in Appendix K as contributors.



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# Appendix E. Appropriate Use Determinations

## Big Branch Marsh National Wildlife Refuge Appropriate Use Determinations

An appropriate use determination is the initial decision process a refuge manager follows when first considering whether or not to allow a proposed use on a refuge. The refuge manager must find a use is appropriate before undertaking a compatibility review of the use. This process clarifies and expands on the compatibility determination process, by describing when refuge managers should deny a proposed use without determining compatibility. If we find a proposed use is not appropriate, we will not allow the use and will not prepare a compatibility determination.

Except for the uses noted below, the refuge manager must decide if a new or existing use is an appropriate refuge use. If an existing use is not appropriate, the refuge manager will eliminate or modify the use as expeditiously as practicable. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility. Uses that have been administratively determined to be appropriate are:

- Six wildlife-dependent recreational uses - As defined by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act), the six wildlife-dependent recreational uses (hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation) are determined to be appropriate. However, the refuge manager must still determine if these uses are compatible.
- Take of fish and wildlife under State regulations - States have regulations concerning take of wildlife that includes hunting, fishing, and trapping. We consider take of wildlife under such regulations appropriate. However, the refuge manager must determine if the activity is compatible before allowing it on a refuge.

### Statutory Authorities for this policy:

**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-668ee (Administration Act).** This law provides the authority for establishing policies and regulations governing refuge uses, including the authority to prohibit certain harmful activities. The Administration Act does not authorize any particular use, but rather authorizes the Secretary of the Interior to allow uses only when they are compatible and “under such regulations as he may prescribe.” This law specifically identifies certain public uses that, when compatible, are legitimate and appropriate uses within the Refuge System. The law states “. . . it is the policy of the United States that . . . compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System . . . compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in refuge planning and management; and . . . when the Secretary determines that a proposed wildlife-dependent recreational use is a compatible use within a refuge, that activity should be facilitated . . . the Secretary shall . . . ensure that priority general public uses of the System receive enhanced consideration over other general public uses in planning and management within the System . . .” The law also states “[i]n administering the System, the Secretary is authorized to take the following actions: . . . [i]ssue regulations to carry out this Act.” This policy implements the standards set in the Administration Act by providing enhanced consideration of priority general public uses and ensuring other public uses do not interfere with our ability to provide quality, wildlife-dependent recreational uses.

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**Refuge Recreation Act of 1962, 16 U.S.C. 460k (Recreation Act).** This law authorizes the Secretary of the Interior to “. . . administer such areas [of the System] or parts thereof for public recreation when in his judgment public recreation can be an appropriate incidental or secondary use.” While the Recreation Act authorizes us to allow public recreation in areas of the Refuge System when the use is an “appropriate incidental or secondary use,” the Improvement Act provides the Refuge System mission and includes specific directives and a clear hierarchy of public uses on the Refuge System.

**Other Statutes that Establish Refuges, including the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) (16 U.S.C. 410hh - 410hh-5, 460 mm - 460mm-4, 539-539e, and 3101 - 3233; 43 U.S.C. 1631 et seq.).**

**Executive Orders.** We must comply with Executive Order (E.O.) 11644 when allowing use of off-highway vehicles on refuges. This order requires that we: designate areas as open or closed to off-highway vehicles in order to protect refuge resources, promote safety, and minimize conflict among the various refuge users; monitor the effects of these uses once they are allowed; and amend or rescind any area designation as necessary based on the information gathered. Furthermore, E.O. 11989 requires us to close areas to off-highway vehicles when we determine that the use causes or will cause considerable adverse effects on the soil, vegetation, wildlife, habitat, or cultural or historic resources. Statutes, such as ANILCA, take precedence over executive orders.

**Definitions:**

Appropriate Use:

A proposed or existing use on a refuge that meets at least one of the following four conditions is considered an appropriate use.

- 1) The use is a wildlife-dependent recreational use as identified in the Improvement Act.
- 2) The use contributes to fulfilling the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Improvement Act was signed into law.
- 3) The use involves the take of fish and wildlife under State regulations.
- 4) The use has been found to be appropriate as specified in Section 1.11.

Native American: American Indians in the conterminous United States and Alaska Natives (including Aleuts, Eskimos, and Indians) who are members of federally recognized tribes.

Priority General Public Use: A compatible wildlife-dependent recreational use of a refuge involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

Quality: The criteria used to determine a quality recreational experience include:

- Promotes safety of participants, other visitors, and facilities.
- Promotes compliance with applicable laws and regulations and responsible behavior.
- Minimizes or eliminates conflicts with fish and wildlife population or habitat goals or objectives in a plan approved after 1997.
- Minimizes or eliminates conflicts with other compatible wildlife-dependent recreation.
- Minimizes conflicts with neighboring landowners.
- Promotes accessibility and availability to a broad spectrum of the American people.
- Promotes resource stewardship and conservation.

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- Promotes public understanding and increases public appreciation of America's natural resources and our role in managing and protecting these resources.
  - Provides reliable/reasonable opportunities to experience wildlife.
  - Uses facilities that are accessible and blend into the natural setting.
  - Uses visitor satisfaction to help define and evaluate programs.

*Wildlife-Dependent Recreational Use*: A use of a refuge, defined in the Improvement Act, involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

The following pages address Findings of Appropriateness of a Refuge Use for camping, off-road vehicles, bicycling, horseback riding, forest management, trapping (nutria), and mosquito control. Camping, off-road vehicles, and horseback riding were found not to be appropriate uses on Big Branch Marsh National Wildlife Refuge and were not analyzed for compatibility; bicycling on designated trails, forest management, trapping (nutria), and mosquito control were found to be appropriate on the refuge.

## FINDING OF APPROPRIATENESS OF A REFUGE USE

Name: Big Branch Marsh National Wildlife Refuge

Use: Camping

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		X
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		X
(g) Is the use manageable within available budget and staff?		X
(h) Will this be manageable in the future within existing resources?		X
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?		X
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		X

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies.      **Yes** \_\_\_ **No** X

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**   x                        **Appropriate** \_\_\_\_\_

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence, if the use is a new use. If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence. If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## FINDING OF APPROPRIATENESS OF A REFUGE USE

Name: Big Branch Marsh National Wildlife Refuge

Use: Off-Road Vehicles

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		X
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		X
(g) Is the use manageable within available budget and staff?		X
(h) Will this be manageable in the future within existing resources?		X
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?		X
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		X

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies.      **Yes** \_\_\_ **No** X

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**   x                        **Appropriate** \_\_\_\_\_

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence, if the use is a new use. If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence. If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## FINDING OF APPROPRIATENESS OF A REFUGE USE

Name: Big Branch Marsh National Wildlife Refuge

Use: Horseback riding

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		X
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		X
(g) Is the use manageable within available budget and staff?		X
(h) Will this be manageable in the future within existing resources?		X
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?		X
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		X

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies.      **Yes** \_\_\_ **No** X

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**   x                        **Appropriate** \_\_\_\_\_

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence, if the use is a new use. If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence. If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## FINDING OF APPROPRIATENESS OF A REFUGE USE

Name: Big Branch Marsh National Wildlife Refuge

Use: Bicycling

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		X
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		X
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies.      **Yes** \_\_\_ **No** X

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate** \_\_\_                      **Appropriate** \_\_\_x

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence, if the use is a new use.  
 If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.  
 If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## FINDING OF APPROPRIATENESS OF A REFUGE USE

Name: Big Branch Marsh National Wildlife Refuge

Use: Forest Management

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies.      **Yes** \_\_\_ **No** X

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate** \_\_\_      **Appropriate** \_\_\_X

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence, if the use is a new use. If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence. If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## FINDING OF APPROPRIATENESS OF A REFUGE USE

Name: Big Branch Marsh National Wildlife Refuge

Use: Trapping (nutria)

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies.      **Yes** \_\_\_ **No** X

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate** \_\_\_                      **Appropriate**   X  

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence, if the use is a new use. If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence. If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## FINDING OF APPROPRIATENESS OF A REFUGE USE

Name: Big Branch Marsh National Wildlife Refuge

Use: Mosquito control

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies.      **Yes** \_\_\_ **No** X

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate** \_\_\_      **Appropriate**   X  

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence, if the use is a new use. If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence. If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

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# Appendix F. Compatibility Determinations

## Big Branch Marsh National Wildlife Refuge

**Uses:** The following uses were considered for compatibility determination:

- 1) Wildlife observation/photography
- 2) Recreational fishing of freshwater and saltwater fish in accordance with State of Louisiana regulations
- 3) Recreational hunting of migratory birds, big-game, small game, upland game, and feral hogs in accordance with State of Louisiana regulations
- 4) Environmental education and interpretation activities, such as canoe trips, nature camps, boardwalks, nature trails, etc.
- 5) Forest management
- 6) Trapping
- 7) Bicycling
- 8) Mosquito management

A description and the anticipated biological impacts for each use are addressed separately in this Compatibility Determination.

**Refuge Name:** Big Branch Marsh National Wildlife Refuge

**Date Established:** September 29, 1994

**Establishing and Acquisition Authorities:** Emergency Wetlands Resources Act of 1986, 16 U.S.C. §3901 (b); North American Wetlands Conservation Act, 16 U.S.C. §4401 2(b)

**Refuge Purpose:** The purpose of the refuge as defined by the Emergency Wetlands Resources Act of 1986, 16 U.S.C. §3901 (b) is “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.”

The purpose of the refuge as defined by the North American Conservation Act, 16 U.S.C. §4401 2(b) is “To protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory bird and other fish and wildlife in North America; to maintain current or improved distributions of migratory bird populations; and, to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries.”

The refuge purposes were further defined in the 1994 Final Land Protection Plan and two subsequent Supplemental Environmental Assessments (1996, 1998) for expansion of Big Branch Marsh National Wildlife Refuge as the following: to provide habitat for natural diversity of wildlife associated with Big Branch marsh; to provide wintering habitat for migratory birds; to provide nesting habitat for wood ducks; to provide habitat for non-game migratory birds; and, to provide opportunities for public outdoor recreation, such as hunting, fishing, hiking, bird watching, and environmental education and interpretation, whenever they are compatible with the purposes of the refuge.

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## **National Wildlife Refuge System Mission:**

The mission of the Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997, is:

*... to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.*

## **Other Applicable Laws, Regulations, and Policies:**

Antiquities Act of 1906 (34 Stat. 225)  
Migratory Bird Treaty Act of 1918 (15 U.S.C. 703-711; 40 Stat. 755)  
Migratory Bird Conservation Act of 1929 (16 U.S.C. 715r; 45 Stat. 1222)  
Migratory Bird Hunting Stamp Act of 1934 (16 U.S.C. 718-178h; 48 Stat. 451)  
Criminal Code Provisions of 1940 (18 U.S.C. 41)  
Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; 54 Stat. 250)  
Refuge Trespass Act of June 25, 1948 (18 U.S.C. 41; 62 Stat. 686)  
Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat. 1119)  
Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4; 76 Stat. 653)  
Wilderness Act (16 U.S.C. 1131; 78 Stat. 890)  
Land and Water Conservation Fund Act of 1965  
National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.; 80 Stat. 915)  
National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd, 668ee; 80 Stat. 927)  
National Environmental Policy Act of 1969, NEPA (42 U.S.C. 4321, et seq; 83 Stat. 852)  
Use of Off-Road Vehicles on Public Lands (Executive Order 11644, as amended by Executive Order 10989)  
Endangered Species Act of 1973 (16 U.S.C. 1531 et seq; 87 Stat. 884)  
Refuge Revenue Sharing Act of 1935, as amended in 1978 (16 U.S.C. 715s; 92 Stat. 1319)  
National Wildlife Refuge Regulations for the Most Recent Fiscal Year (50 CFR Subchapter C; 43 CFR 3101.3-3)  
Emergency Wetlands Resources Act of 1986 (S.B. 740)  
North American Wetlands Conservation Act of 1990  
Food Security Act (Farm Bill) of 1990 as amended (HR 2100)  
The Property Clause of the U.S. Constitution Article IV 3, Clause 2  
The Commerce Clause of the U.S. Constitution Article 1, Section 8  
The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57, USC668dd)  
Executive Order 12996: Management and General Public Use of the National Wildlife Refuge System, March 25, 1996  
Title 50, Code of Federal Regulations, Parts 25-33  
Archaeological Resources Protection Act of 1979  
Native American Graves Protection and Repatriation Act of 1990

Compatibility determinations for each description listed are considered separately. Although, for brevity, the preceding sections from “Uses” through “Other Applicable Laws, Regulations and Policies” are only written once within the CCP, they are part of each descriptive use and become part of that compatibility determination if considered outside of the CCP.

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**(1) Description of Use:** Wildlife observation/photography

Wildlife observation and photography have been identified in the National Wildlife Refuge System Improvement Act of 1997 as priority wildlife-dependent recreational uses provided they are compatible with the purpose for which the refuge was established.

Wildlife photography, including other image-capturing activities, such as videography, has occurred on the refuge. There are no blinds or platforms on the refuge specifically for photography and none are proposed at this time. However, opportunities exist for photography on the refuge. Commercial photography or videography, if allowed, would require a special use permit by the refuge and would include specific restrictions. Often, the public offers copies of exceptional pictures for refuge use in publications and reports.

The general public could participate in wildlife observation and photography year-round from sunrise to sunset on the refuge. Wildlife observation and photography could be accomplished while driving or walking on refuge roads open to public vehicular traffic. Also, these public uses could be accomplished by walking trails or by boating.

**Availability of Resources:** The refuge would normally incur no expense except administrative costs for issuance of a Special Use Permit in the case of commercial photography or videography, and staff time to conduct compliance checks.

**Anticipated Impacts of the Use:** Activities associated with wildlife observation and both commercial and personal photography have shown no measurable environmental impacts to the refuge, its habitats, or wildlife species. The use can cause temporary minor disturbance to wildlife. However, use is expected to remain at levels causing only random, limited, and temporary disturbance. Any malicious or unreasonable harassment of wildlife would be grounds for the manager to restrict the uses.

Photography can increase visitors' knowledge and appreciation of fish and wildlife and their habitats on the refuge, and lead to greater understanding of the refuge system's public stewardship mission. Quality photographs taken on refuge lands and provided to refuge staff can enhance the refuge's outreach and public use programs.

**Public Review and Comment:** This compatibility determination is provided for public review and comment during the Draft Comprehensive Conservation Plan comment period.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

- All wildlife observation and photography activities would be conducted with the refuge's primary objectives, habitat management requirements, and goals as the guiding principles.
- Modes and times of uses would be limited to legal means and times according to refuge regulations on access available to the general public.

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- All commercial photographers must have a special use permit (SUP) that specifies access stipulations to prevent excessive disturbance to wildlife, damage to habitat, or conflicts with other public uses or management activities. The SUP would stipulate that imagery produced on refuge lands be made available to the refuge for use in outreach, interpretation, internal documents, or other suitable uses.
  - The commercial photography use must demonstrate a means to extend public appreciation and understanding of wildlife, natural habitats, enhance education, appreciation and/or understating of the Refuge System, or further outreach and education goals of the refuge.
  - Commercial products must include appropriate credits to the refuge and to the Fish and Wildlife Service.

**Justification:** Wildlife observation and photography are priority public uses on National Wildlife Refuge System lands as identified in the Refuge Improvement Act of 1997. By facilitating these uses on the refuge, we will increase visitors' knowledge and appreciation of fish, wildlife, and their habitats which will lead to increased public stewardship. Increased stewardship supports and complements the refuge's purposes and the mission of the National Wildlife Refuge System.

**Mandatory 15-year Re-evaluation Date:** \_\_\_\_\_

**(2) Description of Use:** Recreational Fishing

Fishing was a traditional recreational use of the land and waters prior to their inclusion in the National Wildlife Refuge System and continues to be a popular recreational pursuit. Fishing is a wildlife-dependent recreational pursuit and has been identified in the National Wildlife Refuge System Improvement Act of 1997 as a priority public use provided it is compatible with the purpose for which the refuge was established. This use was emphasized in the 1994 Final Land Protection Plan and two subsequent Supplemental Environmental Assessments (1996, 1998) by being stated as a management objective of Big Branch Marsh National Wildlife Refuge.

Fishing is permitted year-round in all refuge waters subject to regulations established by the Louisiana Department of Wildlife and Fisheries and the general regulations governing fishing on national wildlife refuges set forth in the Code of Federal Regulations and the refuge fishing permit. Fishing is permitted to provide fishable waters to the public and to utilize a sustainable natural resource.

**Availability of Resources:** Funding for the fishing program is borne by annual operation and maintenance funds. Costs include permit printing, administration, maintenance of boat ramps and docks, and monitoring the activity.

**Anticipated Impacts of the Use:** Minor, short-term impacts to the environment from recreational fishing include litter and the possible contamination of refuge waters from oil and gas leaking from boat motors. Because the fish population is a sustainable natural resource and local fish habitat is vast, no long-term impacts are expected.

**Public Review and Comment:** This compatibility determination is provided for public review and comment during the Draft Comprehensive Conservation Plan comment period.

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**Determination (check one below):**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

- All sport fishing activities, including permitted methods of take, limits, species and open/closed seasons, would be consistent with applicable State and refuge regulations. Enforcement efforts would be conducted by Fish and Wildlife Service refuge law enforcement officers and agents from the Louisiana Department of Wildlife and Fisheries.
- Commercial fishing, limb lines, trotlines, slat traps, nets, gar sets and jug fishing are prohibited.
- Sport fishing, crawfishing, and crabbing are permitted only during daylight hours except on Lake Road where use is permitted 24 hours a day.

**Justification:** The 1997 National Wildlife Refuge System Improvement Act identified fishing as one of the priority public uses on national wildlife refuges, where compatible with refuge purposes. This use is legitimate and appropriate, and is dependent upon healthy fish populations. Offering recreational fishing in compliance with refuge goals, is a management objective for Big Branch Marsh National Wildlife Refuge, and furthers the goals and missions of the National Wildlife Refuge System.

**Mandatory 15-year Re-evaluation Date:** \_\_\_\_\_

**(3) Description of Use:** Recreational Hunting

Recreational hunting, a wildlife-dependent activity, has been identified in the National Wildlife Refuge System Improvement Act of 1997 as a priority public use, provided it is compatible with the purpose for which the refuge was established. This use was emphasized in the 1994 Final Land Protection Plan and two subsequent Supplemental Environmental Assessments (1996, 1998) by being stated as a management objective of Big Branch Marsh National Wildlife Refuge.

Recreational hunting of white-tailed deer with bow and arrow, migratory game birds, small game, and upland game is allowed on the refuge. Hunters are also allowed to take feral hogs with bow and arrow during archery deer season. While hunting is the biggest public use on the refuge, hunting pressure is not heavy at this time. In fact, a lottery waterfowl hunt in force for several years was discontinued because it was no longer needed to regulate the number of hunters.

All hunts fall within the framework of Louisiana's open seasons and follow State regulations. Refuge-specific regulations are reviewed annually and incorporated into the refuge hunting permit. Hunters are required to possess refuge permits while hunting on the refuge. The entire refuge is open to hunting with the exception of areas posted with "No Hunting Zone" signs or so designated in the hunting permit. Currently, the Southeast Louisiana Refuge Complex headquarters (Lacombe Centre) and the Lemieux Road environmental education site are closed to hunting.

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Waterfowl (ducks and geese) and coots may be hunted during the State season on Wednesday, Thursday, Saturday, and Sunday until noon. Squirrels and rabbits may be hunted during the State season using only shotguns with non-toxic shot and dogs may be used only after the close of the State gun deer season. Woodcock, snipe, and quail may be hunted during the State season using non-toxic shot and recognized breeds of setters or retrievers. Gallinules and rails may be hunted during the State season with non-toxic shot. White-tailed deer harvest is limited to an archery season following the State season and regulations. No commercial hunting activities, including guiding or participating in a guided hunt, are permitted. Harvest information is gathered by a voluntary self-check form contained in the hunting permit.

**Availability of Resources:** Funding for the hunt program is supported by annual operation and maintenance funds. Costs include permit printing, administration, monitoring the activity, and maintaining access points with safe parking areas.

**Anticipated Impacts of the Use:** While managed hunting opportunities result in both short- and long-term impacts to individual animals, effects at the population level are usually negligible. Small game animal populations are capable of sustaining harvest because of their short reproduction cycles. Hunting regulations for both endemic and migratory game species are based on specific state-wide and nation-wide harvest objectives. Migratory bird regulations are established at the Federal level each year following a series of meetings involving both State and Federal biologists. Harvest guidelines are based on population survey and habitat condition data. Refuge hunting programs are always within these regulations. As currently proposed, the known and anticipated levels of disturbance of allowing hunting are considered minimal and well within the tolerance level of known wildlife species and populations present on the refuge. All hunting activities would be conducted with the constraints of sound biological principles and refuge-specific regulations established to restrict illegal or questionable activities. Monitoring activities through wildlife inventories and assessments of public use levels and activities would be utilized, and public use programs would be adjusted as needed to limit disturbance. Implementation of an effective law enforcement program and development of site-specific refuge regulations that are reviewed annually should minimize most incidental take problems.

**Public Review and Comment:** This compatibility determination is provided for public review and comment during the Draft Comprehensive Conservation Plan comment period.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

- Hunting seasons and bag limits are established annually as agreed upon during the annual hunt coordination meeting with Louisiana Department of Wildlife and Fisheries personnel.
- All hunters are required to possess a signed refuge hunting permit while participating in refuge hunts. State hunting regulations apply unless otherwise listed in the permit.
- Non-toxic shot must be used.

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**Justification:** The 1997 National Wildlife Refuge System Improvement Act identified hunting as one of the priority public uses on national wildlife refuges, where compatible with refuge purposes. This use is legitimate and appropriate, and is dependent upon healthy wildlife populations. Offering recreational hunting is in compliance with refuge goals, is a management objective for Big Branch Marsh National Wildlife Refuge, and furthers the goals and missions of the National Wildlife Refuge System.

**Mandatory 15-year Re-evaluation Date:** \_\_\_\_\_

**(4) Description of Use:** Environmental Education and Interpretation

Environmental education and interpretation have been identified in the National Wildlife Refuge System Improvement Act of 1997 as priority public uses, provided they are compatible with the purpose for which the refuge was established. Environmental education and interpretation consist of public outreach and onsite activities conducted by refuge staff, volunteers, teachers, Friends Group members, conservation partners, university professors, and others. Most activities occur during daylight hours with exceptions for night events such as owl and bat viewing, and tours using light from a full moon. Activities include educational programs and teacher workshops carried out on nature trails, canoe trips, and at refuge observation towers, refuge areas of interest, and other areas suitable for teaching environmental science. Interpretation occurs when information is explained for the public by refuge staff or others using exhibits, displays, signs, kiosks, facilities, and brochures. Refuge facilities and lands may be used as outdoor classrooms by groups of students with a teacher and a formalized plan of environmental study, by members of organizations, or by other members of the public with approval of the refuge manager.

Environmental education and interpretation activities can occur throughout the year and are conducted with the refuge's primary goals, objectives, and habitat management requirements as the guiding principles. Activities conducted under these restrictions allow the refuge to accomplish its management goals and also provide for the safety of visitors.

Environmental education and interpretation are utilized to encourage understanding in citizens of all ages to develop land ethics, foster public support, increase visibility of the Refuge System, and improve the public's knowledge of the Service.

**Availability of Resources:** Funding for these activities is with annual operation and maintenance funds. Existing facilities exist at Lemieux Road, Boy Scout Road, and the Lacombe Centre.

**Anticipated Impacts of the Use:** Minimal impacts are expected, such as temporary disturbance to wildlife species and possibly some trampling of vegetation in the immediate vicinity of the activity. Most activities would take place on existing roads, trails, and facilities with no additional disturbance. Environmental education and interpretation activities are not expected to indirectly or cumulatively negatively impact refuge resources.

**Public Review and Comment:** This compatibility determination is provided for public review and comment during the Draft Comprehensive Conservation Plan comment period.

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**Determination (check one below):**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

- Adequate precautions would be taken to ensure that permanent facilities are sited an adequate distance from sensitive wildlife areas.
- Evaluations of sites and programs would be conducted periodically to assess if objectives are being met and that natural resources are not being degraded.

**Justification:** The 1997 National Wildlife Refuge System Improvement Act identified environmental education and interpretation as priority public uses on national wildlife refuges, where compatible with refuge purposes. Offering environmental education and interpretation is in compliance with refuge goals, is a management objective for Big Branch Marsh National Wildlife Refuge, and furthers the goals and missions of the National Wildlife Refuge System. Environmental education and interpretation encourage understanding of ecological and biological principles and refuge-specific issues, and develop support for refuges.

**Mandatory 15-year Re-evaluation Date:** \_\_\_\_\_

**(5) Description of Use:** Forest Management

According to the Draft Habitat Management Plan, the forest management objectives for the refuge are to: (1) use forest management actions to reduce the tree stocking and competition within the pine stands and promote increased stand diversity and structure; (2) create a mosaic of forest structure through the use of appropriate silvicultural methods of thinning, shelterwood, and/or group selection harvesting; (3) provide quality habitat and forage for native wildlife species in the pine stands by reducing tree densities to allow more sunlight onto the forest floor and stimulate the rejuvenation of annual plants and grasses; (4) prepare pine stands for a shift to controlled burning during the growing season by opening the forest canopy; (5) plant longleaf pine on sites that have historically supported the longleaf pine; (6) compile information on the refuge hardwood forests, such as species, age, size, condition, and soil moisture; and (7) promote a refuge landscape more reminiscent of the historic forest complex by facilitating the regeneration of mixed pine/hardwood forests on the higher elevations and cypress/hardwood forests on the lower elevations.

Silvicultural decisions designed to meet wildlife habitat objectives would be accomplished. The refuge would promote a diverse, vigorous stand of timber to benefit trust species, such as threatened and endangered species and migratory birds. Forest management activities may occur on all forested acreage on the refuge. This use is being proposed by the refuge as a management tool, designed to improve habitat conditions on the refuge for trust species. Activities would be conducted under proper climatic conditions, using refuge personnel, permitted individuals, or local contractors who would bid on the timber products to be harvested when commercial and merchantable products are involved.

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**Availability of Resources:** Funding for these activities would be through annual operation and maintenance funds and would consist predominantly of administration, monitoring, and understory clearing. Equipment and maintenance costs associated with commercial activities would be carried out by the contractor.

**Anticipated Impacts of the Use:** Forest management operations can cause adverse impacts on habitat values and water quality if not carefully controlled and supervised. Restrictions and conditions, such as only operating in dry conditions, creating buffers along waterways, and minimizing damage to residual trees, must be placed on operations to minimize adverse effects from equipment. Minor, short-term impacts from using equipment, such as disturbance to wildlife and trampling of understory vegetation, are expected to occur. In the long-term, forest conditions after management treatments would be more beneficial to wildlife by restoring the functions and values necessary to meet their needs.

**Public Review and Comment:** This compatibility determination is provided for public review and comment during the Draft Comprehensive Conservation Plan comment period.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:** Forest management operations may be conducted throughout the year, but only according to the guidelines detailed in a Habitat Management Plan or the special conditions section of the special use permit.

**Justification:** The forest management actions, proposed in the comprehensive conservation plan, are in accordance with Service guidelines for the protection, management, and enhancement of habitats for wildlife populations on refuges. The Habitat Management Plan, a step-down plan, details how forest management actions promote the enhancement of habitats for threatened or endangered species, migratory birds, and resident wildlife species; promote habitat restoration; protect cultural resources; and provide opportunities for public recreation and environmental education. This use furthers the goals and missions of the National Wildlife Refuge System and Big Branch National Wildlife Refuge.

**Mandatory 10-year Re-evaluation Date:** \_\_\_\_\_

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**(6) Description of Use:** Trapping

Trapping is employed to prevent or reduce habitat damage and targets nutria, an exotic species native to South America, which was imported for fur farms in the early 1900s. When the fur farming industry collapsed after World War II, many were released or were not recaptured after escaping. The descendants established themselves in the marshes and have adapted well to the semi-aquatic environment. Since nutria are almost exclusively vegetarians, and can eat 2.5 to 3.5 pounds of food daily, they can be very detrimental to marsh vegetation. Their burrows can also damage levees and banks. They are in direct competition with the native muskrat for habitat and resources. Trapping nutria would be allowed under special use permits that designate locations and methods for their removal. Trappers are encouraged to participate in the Coastwide Nutria Control Program, which is administered by the Louisiana Department of Wildlife and Fisheries.

**Availability of Resources:** Funding for these activities would be with annual operation and maintenance funds and consists of administration. Equipment and maintenance costs associated with trapping activities would be carried out by the trapper.

**Anticipated Impacts of the Use:** The special use permit system allows the refuge manager to specifically regulate locations and methods for nutria removal. Areas would be well marked and traps would not be set in areas with high use by visitors. Disturbance to non-target wildlife would be occasional, temporary, and isolated to small geographic areas. Positive impacts would be the control of an exotic species and less damage to refuge resources.

**Public Review and Comment:** This compatibility determination is provided for public review and comment during the Draft Comprehensive Conservation Plan comment period.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

- Trapping would be conducted in compliance with a special use permit.
- Trapping would not be allowed in high-use public areas.
- Take of non-target animals would be minimized by trap set and locations.
- A trapping report would be required of the individual named in the special use permit.
- All traps must be well marked and checked daily.

**Justification:** Trapping is a valuable management tool that is used to prevent and reduce damage to refuge habitat by nutria. With the above stipulations, little to no adverse effects to other refuge programs or wildlife species would occur. This use is in compliance with the comprehensive conservation plan and furthers the goals and missions of the National Wildlife Refuge System and the refuge.

**Mandatory 10-year Re-evaluation Date:** \_\_\_\_\_

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**(7) Description of Use:** Bicycling

Bicycling is not a priority public use designated by the Refuge Improvement Act of 1997; however, it can occur on the refuge provided it is compatible with the purpose for which the refuge was established. Requests to ride bicycles on refuge roads not open to public vehicular traffic have been made. These requests have been made associated with wildlife-dependent recreational uses, such as hunting, photography, and bird observation. The only areas available for bike riding are Boy Scout Road and the unimproved road on the pipeline canal to the east of Boy Scout Road. Firebreaks are not considered unimproved roads or trails for bike riding. Any public desiring longer biking trails can be referred to the nearby Tammany Trace.

**Availability of Resources:** Funding for this program would be from annual operation and maintenance funds, but little to no cost is associated with this activity. No special equipment, facilities, or improvements are necessary to support the use.

**Anticipated Impacts of the Use:** Since only non-motorized bicycles would be allowed on two dirt and gravel refuge trails, little disturbance to wildlife and habitat would occur. As long as bike riders are courteous, no conflict should occur between hikers, who can also access these trails.

**Public Review and Comment:** This compatibility determination is provided for public review and comment during the Draft Comprehensive Conservation Plan comment period.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

- Bicycling is only allowed on Boy Scout Road and the pipeline canal trail east of Boy Scout Road during daylight hours.

**Justification:** At the present level, few bicyclists use Boy Scout Road and the pipeline trail east of Boy Scout Road for hunting, photography, and wildlife observation. Bicycling is not detrimental to the environment if only allowed on these two dirt and gravel trails that are closed to motorized vehicles, and requires no added expenses to regulate. This use is in compliance with the comprehensive conservation plan and furthers the goals and missions of the National Wildlife Refuge System and Big Branch National Wildlife Refuge.

**Mandatory 10-year Re-evaluation Date:** \_\_\_\_\_

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## **(8) Description of Use:** Mosquito Monitoring and Control Operations

St. Tammany Parish Mosquito Abatement District No. 2 (District), Slidell, Louisiana, proposes the use of biological larvicides and chemical adulticides for the abatement and/or control of mosquito populations with Big Branch Marsh National Wildlife Refuge.

The refuge encompasses a variety of habitats along the north shore of Lake Pontchartrain, which contain potential mosquito breeding sites. The marsh and forested wetland areas of the refuge are considered by the District to be significant in both the potential production of mosquitoes and control of mosquito populations before they spread to adjacent urban areas. The species of mosquitoes found within the refuge include several species known or suspected to be important biological vectors of arthropod borne diseases, specifically St. Louis encephalitis (SLE), eastern equine encephalitis (EEE), West Nile virus (West Nile), and LaCrosse encephalitis (LE). Dengue fever, another mosquito transmitted disease, also poses a potential health threat. SLE, EEE, West Nile, and LE have been documented in St. Tammany Parish. In 2002, a major human outbreak of West Nile occurred in Louisiana with 329 cases and 29 deaths; St. Tammany Parish experienced 40 reported cases and four resulted in death. West Nile cases and some deaths have occurred each subsequent year, but at lower numbers.

The location, habitats, and climate of the refuge all contribute to the potential need for control of mosquito populations. Factors contributing to this need include the sub-tropical location in southeast Louisiana, large amounts of rainfall throughout the year (an average of 63 inches), susceptibility to major rain events associated with hurricanes and other tropical storm systems, a long warm/hot growing season, abundant vegetation, and wetland habitats. Adding to this are the large number of mosquito species present, including known disease vector species.

In 1995, the refuge approved the application of selected larvicides for use within the refuge marshes. This approval and the use of these larvicides remain in effect and have been important tools for the control of pre-emergent mosquitoes. The District has been approved under emergency conditions to use the chemical insecticide Dibrom (active ingredient Naled) for controlling mosquitoes post-emergent on the refuge. Prior to the acquisition of the forested areas into the Refuge System, Naled had been used as a mosquito adulticide on the area.

The District proposes the ultra-low volume application of Dibrom, when warranted, for the control of adult mosquitoes on the refuge and the continuation of such activities in other areas within the District, which may be added to the refuge in the future. Spraying of Naled occurs usually from April to October. Spray operations are conducted at night from fixed-wing aircraft using ultra-low volume spray technology. Spraying at night maximizes potential for exposure to mosquitoes by the insecticide since they are most active aerially at night. This also minimizes exposure by diurnal insects and wildlife. The use of ultra-low volume spray technology provides for the application of the insecticide at rates determined to minimize potential risk to non-target insect species. The District tests new equipment and techniques to further reduce the rates at which insecticide would be applied.

**Availability of Resources:** Costs to the refuge for this use would include administrative overhead to issue and monitor pesticide use proposals, special use permits, and other requirements supported by annual operation and maintenance funds. This use would result in a need for refuge staff to periodically inspect spray operations, review and maintain records of treatment history, and conduct wildlife assessments and monitoring. The refuge would not supply equipment or facilities for these operations, but would expend funds for salaries dealing with administrative overhead. Unanticipated costs associated with the administration of this use could require a re-evaluation.

Special equipment, facilities, or improvements: none

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**Anticipated Impacts of the Use:** The District has conducted mosquito control activities, including the use of Naled, in these locations prior to acquisition by the refuge and for emergency control of mosquito populations after acquisition. According to EPA's risk assessment, the use of Naled for mosquito control does not exceed the Agency's level of concern for human health, mammals, and plants. If new labeling restrictions or additional risk assessment information becomes available, they would be incorporated into the re-evaluation of this use.

A Risk Characterization: Application of Naled to The Big Branch Marsh, (EcoStat, Inc., 2005, unpublished), assessed the risk of Naled as applied in mosquito control to aquatic and terrestrial biota, specifically the endangered red-cockaded woodpecker, non-target prey insects of the red-cockaded woodpecker, and insects of social interest (zebra long-wing butterfly), ground-browsing mammals (white-tailed deer), and freshwater fish and aquatic invertebrates. Potential risks of toxicity for the red-cockaded woodpecker and its prey species, white-tailed deer, and freshwater fish are insignificant. However, risk to freshwater invertebrates is present. Because of a short half-life (<1 day) and quick rate of degradation, the long-term risks of Naled to aquatic invertebrates are minimal. These findings are consistent to those of EPA. It is anticipated that mosquito populations would be reduced within the treated area.

Additional information on impacts to both target and non-target organisms can be found in the document, Environmental Assessment for Proposed Application of Aerially Applied Ultra-Low Volume Naled for the Control of Adult Mosquitoes within the Big Branch National Wildlife Refuge in Lacombe, Louisiana.

**Public Review and Comment:** This compatibility determination is provided for public review and comment during the Draft Comprehensive Conservation Plan comment period.

**Determination (check one below):**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

Use of Naled must be approved by the Division of Environmental Contaminants in the Washington Office of the U.S. Fish and Wildlife Service, and any special conditions will be made a part of a Special Use Permit and Pesticide Use Permit.

In accordance with Integrated Pest Management, the District will continue in its use of biological larvicides as a first line treatment, methoprene as a second line defense; and adulticiding, where appropriate and applicable, as a third line defense.

- The District would continue to explore new spray technologies aimed at reducing rates or numbers of applications and implement such technologies when proven to be effective and reliable.
- The District would continue its monitoring efforts and provide such information to the refuge.
- The District would provide monthly reports of all treatments and monitoring records.
- The District would continue the use of GPS technology to target spray sites and reduce impacts to non-target marsh and other sites

- 
- The District would work cooperatively with the refuge to educate the public on mosquito control efforts on refuge lands, and provide information to refuge neighbors on the role they can play in reducing mosquito populations around their homes and communities

**Justification:** Given the refuge's proximity to an urban area, the human health threat demonstrated in the District's area of operation, and the dense mosquito populations of southeast Louisiana, the Service recognizes the need of mosquito population control on Big Branch Marsh National Wildlife Refuge. The treatment is permitted in order to reduce the previously demonstrated occurrences of mosquito borne diseases in proximity to the refuge. Ultra-low volume aerially applied Naled is found to be the most effective mosquitocide currently available.

**Mandatory 10-year Re-evaluation Date:** \_\_\_\_\_

### Approval of Compatibility Determinations

The signature of approval is for all compatibility determinations considered within the CCP for Big Branch Marsh National Wildlife Refuge. If one of the descriptive uses is considered for compatibility outside of the CCP, the approval signature becomes part of that determination.

Refuge Manager: \_\_\_\_\_  
(Signature/Date)

Regional Compatibility  
Coordinator: \_\_\_\_\_  
(Signature/Date)

Refuge Supervisor: \_\_\_\_\_  
(Signature/Date)

Regional Chief, National  
Wildlife Refuge System,  
Southeast Region: \_\_\_\_\_  
(Signature/Date)

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# Appendix G. Intra-Service Section 7 Biological Evaluation

**Originating Person:** Ken Litzenberger, Project Leader

**Telephone Number:** 985-882-2000

**Date:** \_\_\_\_\_

**Project Name:** Big Branch Marsh National Wildlife Refuge Comprehensive Conservation Plan

**I. Service Program:**

- Ecological Services
- Federal Aid
- Clean Vessel Act
- Coastal Wetlands
- Endangered Species Section 6
- Partners for Fish and Wildlife
- Sport Fish Restoration
- Wildlife Restoration
- Fisheries
- Refuges/Wildlife

**II. State/Agency:** Louisiana/U.S. Fish and Wildlife Service

**III. Station Name:** Big Branch Marsh National Wildlife Refuge

**IV. Description of Proposed Action (attach additional pages as needed):** Implementation of the Comprehensive Conservation Plan for Big Branch Marsh National Wildlife Refuge by adopting the preferred alternative, which will provide guidance, management direction, and operation plans for the next 15 years.

**V. Pertinent Species and Habitat:**

**A.**

A small red-cockaded woodpecker population resides within the forested area of the refuge. At present, fourteen to nineteen clusters are active with most of them supporting a potential breeding pair with helpers. Hurricane Katrina eliminated a few birds, but the population should rebound with the increase in insects in response to the dead and downed trees. In the Red-cockaded Woodpecker Recovery Plan, this population is the sole group occurring in the Gulf Coast Prairies and Marshes Ecoregion, and is considered a significant support population for recoverable populations.

Bald eagles occur on the refuge from fall until early summer, and usually nest within the refuge and adjacent lands. The nest is constructed in tall pines along the tree line, which abruptly changes to marsh surrounding Lake Pontchartrain, a feeding ground for the eagles.

Waters of the refuge are within the designated critical habitat for the Gulf sturgeon. Research has shown that juveniles and sub-adults use Lake Pontchartrain as wintering habitat. Records on Lake Pontchartrain show concentrations near Bayou Lacombe and Goose Point.

Although neither species breeds in the area, brown pelicans are commonly seen feeding in refuge waters and an occasional West Indian manatee is sighted during the summer.

**Complete the following table:**

SPECIES/CRITICAL HABITAT	STATUS <sup>1</sup>
Red-cockaded woodpecker	E
Bald eagle	T
Gulf sturgeon	T
Brown pelican	E
West Indian manatee	E

<sup>1</sup>STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species, S/A=Similar Appearance

**VI. Location (attach map):**

**A. Ecoregion Number and Name:** No. 27, Lower Mississippi River

**B. County and State:** St. Tammany Parish, LA

**Section, township, and range (or latitude and longitude):** many sections in Townships 8, 9, and 10 south, Ranges 12, 13, 14 and 15 east

**Distance (miles) and direction to nearest town:** 1 mile south of Lacombe

**E. Species/habitat occurrence:**

Red-cockaded woodpeckers are year-round residents of the refuge’s forested habitat.

Bald eagles occur on the refuge during winter months and nest in the tree line bordering the marshes of Lake Pontchartrain.

Gulf sturgeon winter in Lake Pontchartrain, brown pelicans use the refuge waters year-round as a feeding area, and West Indian manatees are occasionally sighted in Lake Pontchartrain and canals in the summer.

**VII. Determination of Effects:**

**Explanation of effects of the action on species and critical habitats in item V. B:**

<b>SPECIES/ CRITICAL HABITAT</b>	<b>IMPACTS TO SPECIES/CRITICAL HABITAT</b>
Red-cockaded woodpecker	No negative impacts; provide support to other populations
Bald eagle	No negative impacts; provide habitat protection
Gulf sturgeon	No negative impacts; provide habitat protection
Brown pelican	No negative impacts; provide habitat protection
West Indian manatee	No negative impacts; provide habitat protection

**B. Explanation of actions to be implemented to reduce adverse effects:**

<b>SPECIES/ CRITICAL HABITAT</b>	<b>ACTIONS TO MITIGATE/MINIMIZE IMPACTS</b>
Red-cockaded woodpecker	Monitor refuge population, provide protection and more suitable habitat in growing urban environment
Bald eagle	Monitor nesting, provide protection and more suitable habitat in growing urban environment
Gulf sturgeon	Continue to monitor for occurrence and any problems
Brown pelican	Continue to monitor
West Indian manatee	Monitor and report any problems

**VIII. Effect Determination and Response Requested:**

SPECIES/CRITICAL HABITAT	DETERMINATION <sup>1</sup>			REQUESTED
	NE	NA	AA	
Red-cockaded woodpecker		X		Concurrence
Bald eagle		X		Concurrence
Gulf sturgeon		X		Concurrence
Brown pelican		X		Concurrence
West Indian manatee		X		Concurrence

<sup>1</sup>DETERMINATION/ RESPONSE REQUESTED:

*NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested is optional but a "Concurrence" is recommended for a complete Administrative Record.*

*NA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response Requested is a "Concurrence".*

*AA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested for listed species is "Formal Consultation". Response requested for proposed and candidate species is "Conference".*

\_\_\_\_\_  
Signature (originating station)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

**IX. Reviewing Ecological Services Office Evaluation:**

A. Concurrence \_\_\_\_\_ Nonconcurrence \_\_\_\_\_

B. Formal consultation required \_\_\_\_\_

C. Conference required \_\_\_\_\_

D. Informal conference required \_\_\_\_\_

E. Remarks (attach additional pages as needed):

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

\_\_\_\_\_  
Office

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## *Appendix H. Wilderness Review*

The Wilderness Act of 1964 defines a wilderness area as an area of Federal land that retains its primeval character and influence, without permanent improvements or human inhabitation, and is managed so as to preserve its natural conditions and which:

1. generally appears to have been influenced primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
2. has outstanding opportunities for solitude or primitive and unconfined types of recreation;
3. has at least 5,000 contiguous roadless acres or is of sufficient size to make practicable its preservation and use in an unimpeded condition; or is a roadless island, regardless of size;
4. does not substantially exhibit the effects of logging, farming, grazing, or other extensive development or alteration of the landscape, or its wilderness character could be restored through appropriate management at the time of review; and
5. may contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

The lands within Big Branch Marsh National Wildlife Refuge were reviewed for their suitability in meeting the criteria for wilderness, as defined by the Wilderness Act of 1964. No lands in the refuge were found to meet these criteria. Therefore, the suitability of refuge lands for wilderness designation is not further analyzed in this CCP.



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# Appendix I. Refuge Biota

Species of concern and/or significance for management purposes occurring on Big Branch Marsh National Wildlife Refuge are listed below. For a complete list of birds found on the refuge, contact refuge headquarters for a bird list.

## Common Name

## Scientific Name

### **Birds**

Red-cockaded Woodpecker	<i>Picoides borealis</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Brown Pelican	<i>Pelecanus occidentalis</i>
Wood Duck	<i>Aix sponsa</i>
Gadwall	<i>Anas strepera</i>
American Widgeon	<i>Anas americana</i>
Mallard	<i>Anas platyrhynchos</i>
Mottled Duck	<i>Anas fulvigula</i>
Blue-winged Teal	<i>Anas discors</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acuta</i>
Green-winged Teal	<i>Anas crecca</i>
Canvasback	<i>Aythya valisineria</i>
Redhead	<i>Aythya americana</i>
Ring-necked Duck	<i>Aythya collaris</i>
Greater Scaup	<i>Aythya marila</i>
Lesser Scaup	<i>Aythya affinis</i>
Common Goldeneye	<i>Bucephala clangula</i>
Bufflehead	<i>Bucephala albeola</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
American Swallow-tailed Kite	<i>Elanoides forficatus</i>

### **Mammals**

White-tailed Deer	<i>Odocoileus virginianus</i>
Nutria	<i>Myocastor coypus</i>
Feral Hogs	<i>Sus scrofa</i>

### **Reptiles and Amphibians**

American Alligator	<i>Alligator mississippiensis</i>
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### **Fish**

Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>
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### **Plant Communities**

Pine Flatwoods	Intermediate Marsh
Pine Savannah	Submergent Vascular Vegetation
Fresh Marsh	Bayhead Swamp (hardwood dominated drainage)
Brackish Marsh	



## Appendix J. Budget Requests

RONS NUMBER	PROJECT TITLE	FIRST YEAR COST	RECURRING ANNUAL COST	STAFF (FTE'S)
99017	REFUGE MANAGER	\$139,000	\$139,000	1
00060	GROUNDS MAINTENANCE	\$22,000	\$22,000	1
99018	RESOURCE SPECIALIST (FORESTER)	\$128,000	\$128,000	1
99010	ANNUAL BOUNDRY SURVEY	\$22,000	\$22,000	
00028	ANNUAL HABITAT RESTORATION	\$81,000	\$81,000	
00021	DIGITAL AERIAL PHOTOGRAPHY	\$54,000	0	
00061	ANNUAL BOUNDARY MAINTENANCE	\$50,000	\$50,000	
99021	ACQUIRE COMMUNICATIONS SYSTEM	\$144,000	0	
<b>TOTAL</b>		<b>\$640,000</b>	<b>\$442,000</b>	<b>3</b>

The Refuge Operating Needs System (RONS) is a system that has been used to track the needs for new projects and positions on national wildlife refuges. For this situation and the Southeast Louisiana Refuge Complex, RONS does not reflect all the present needs of the refuge, but does identify the need for a refuge manager position, a grounds keeper maintenance position, and a resource specialist/ forester position. Since the last entries into RONS in 2000, the refuge complex staff and organization have changed. The refuge manager of Big Branch Marsh Refuge is also responsible for Bogue Chitto and Atchafalaya Refuges. In addition to the staffing needs identified in RONS, a forestry technician and wildlife refuge operations specialist are needed for the combined three refuges.



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## *Appendix K. List of Preparers*

### **PLANNING TEAM**

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### **CONTRIBUTORS**

Pre-planning for this Draft CCP/EA began in 2002, when biological and public use reviews were held, followed by several workshops attended by stakeholders in the management of Big Branch Marsh National Wildlife Refuge. Recommendations from these meetings were used during the development of this Draft CCP/EA. Contributors include:

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