

TEXAS CHENIER PLAIN REFUGE COMPLEX

Moody National Wildlife Refuge
Anahuac National Wildlife Refuge
McFaddin National Wildlife Refuge
Texas Point National Wildlife Refuge

EXECUTIVE SUMMARY

Final Environmental Impact Statement, Comprehensive Conservation Plan, and Land Protection Plan

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Comprehensive Conservation Plans provide long-term guidance for management decisions; set forth goals, objectives, and strategies needed to accomplish refuge purposes; and identify the U.S. Fish and Wildlife Service's best estimate of future needs. These plans detail planning program levels that are sometimes substantially above current budget allocations and, as such, are primarily for USFWS strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

EXECUTIVE SUMMARY

The U.S. Fish and Wildlife Service (USFWS) has developed this Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA) of 1969 to develop alternatives for a Comprehensive Conservation Plan (CCP) and Land Protection Plan for the Texas Chenier Plain National Wildlife Refuge Complex (Refuge Complex), and disclose the impacts associated with the alternatives. The Texas Chenier Plain Refuge Complex consists of four separate units of the National Wildlife Refuge System administered by the USFWS as one Refuge Complex. The four units are: Anahuac National Wildlife Refuge (NWR), McFaddin NWR, Texas Point NWR, and Moody NWR. These Refuge units are located along the upper Texas Gulf Coast in Chambers County, Jefferson County, and Galveston County (see map on next page).

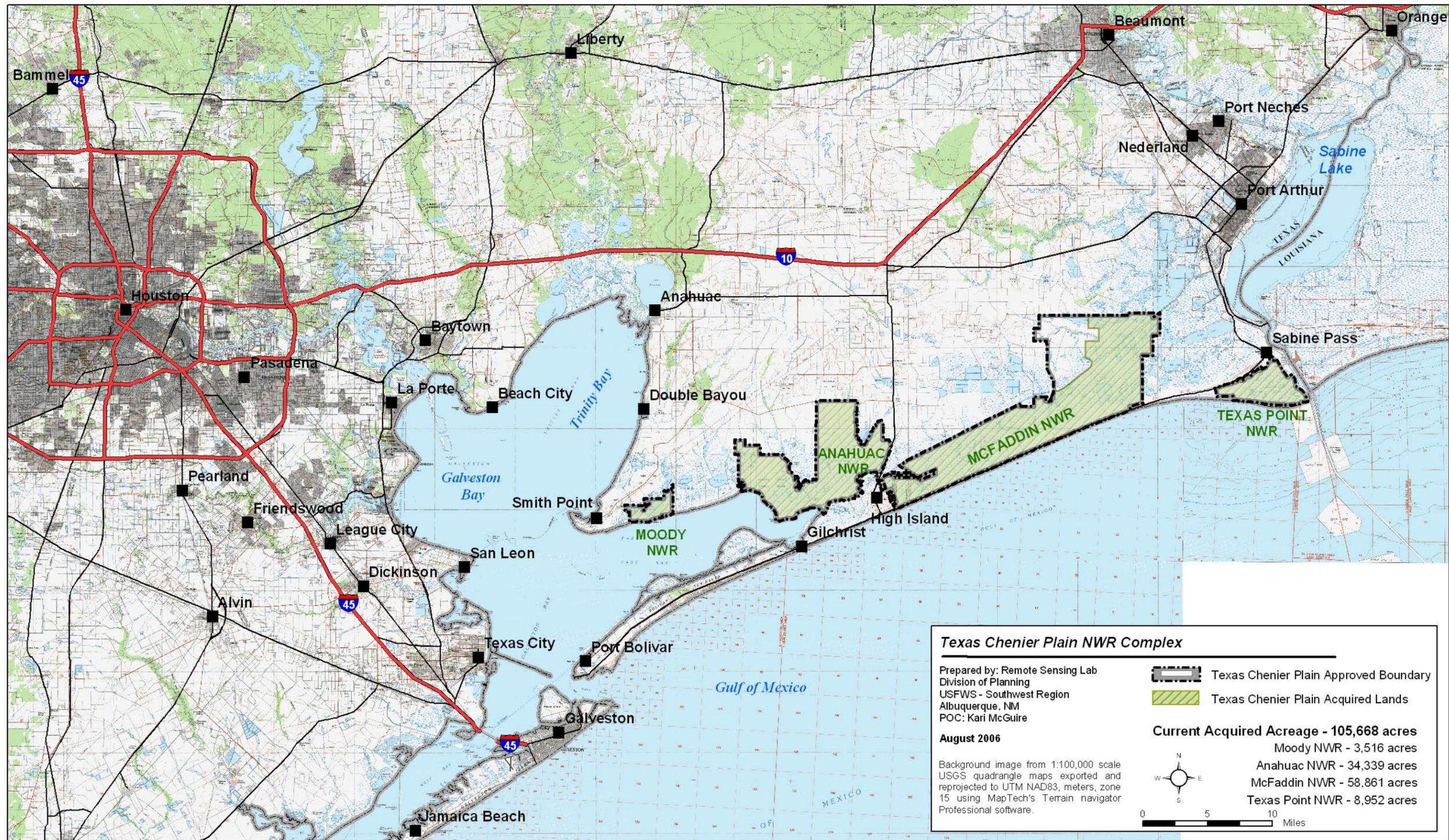
A CCP for the Texas Chenier Plain Refuge Complex is required by the National Wildlife Refuge System Improvement Act (Refuge System Improvement Act) of 1997 (Public Law 105-57). The CCP provides programmatic guidance, in the form of goals, objectives, and strategies, to provide managers with a 15-year vision that contributes to the achievement of refuge purposes and the mission of the Refuge System. The CCP provides a comprehensive look at management of waterfowl, resource values, wetlands loss, and native coastal prairie, and a desire to preserve and protect the natural values for which the Refuge was created. Specific implementation activities will be developed for individual program areas through step-down management plans within approximately 5 years after CCP completion. Some step-down plans may require additional NEPA compliance. Step-down plans anticipated for the Refuge Complex include the following:

- Revised Fire Management Plan
- Habitat Management Plan
- Oil & Gas Management Plan
- Inventory and Monitoring Plan
- Revised Hunt Plan
- Visitor Services Plan
- Integrated Pest Management Plan

The Land Protection Plan delineates a refuge acquisition boundary for the four constituent refuges to help the USFWS better achieve refuge purposes and accomplish mandates provided by law and treaty that are related to the protection of migratory birds and other USFWS Trust resources. Implementation of a boundary expansion proposal is expected to assist the USFWS meet its goals and objectives of the ecosystem plan for the Texas Gulf Coast. Expansion of any of the Refuge Complex's constituent refuge acquisition boundaries would then authorize the USFWS to work with willing sellers using the acquisition standards and parameters defined in USFWS law, policy, and government regulation. Lands acquired by the USFWS would be managed as part of the Refuge System. Although achievement of the refuge purposes is not necessarily dependent upon additional land acquisition, the possible inclusion of other lands within these refuges should assist the USFWS in achieving its larger ecosystem-wide goals and objectives to ensure the long-term sustainability of migratory bird populations.

BRIEF BACKGROUND OF THE TEXAS CHENIER PLAIN REFUGE COMPLEX

The USFWS identified a need to retain and intensively manage a significant block of the coastal marsh for waterfowl habitat in the upper coastal region of Texas. As the coastal region of Texas became settled, marshlands were modified to meet the demand for farmland and later land for industry. Waterfowl suffered loss of nesting, feeding, and resting areas when vast tracts of marshland were drained but thrived on the feed available from the rice fields and cultivated pasture lands which replaced the wetlands. As more industry flourished in the Galveston-Houston-Beaumont metropolitan area, the economic expansion created a demand for more land to accommodate the continued growth. Coastal marshes have been filled to provide sites for factories, refineries, roads, commercial, and residential areas.



Land acquisition to form the Refuge began in 1954. Currently, the Refuge Complex administers a total of 103,668 acres in combined fee title and conservation easements. As additional parcels were added to the National Wildlife Refuge System for the protection of coastal waterfowl habitat through the Migratory Bird Conservation Act, these acquisitions created a closely linked cluster of Refuges along the coast. In the early 1980s, the USFWS decided that this closely-related group of four refuges could be more efficiently administered as one Refuge Complex. Subsequently, the Refuge Complex was named for the geologic/geographic feature called “cheniers” found along this part of the Louisiana and Texas coastline.

The management focus of these refuges is to retain and intensively manage this significant block of the coastal marsh for migrating, wintering and breeding waterfowl, shorebirds and waterbirds, and provide strategic and crucial resting areas for neotropical migratory songbirds migrating across the Gulf of Mexico. The Refuge Complex encompasses a diversity of habitats: aquatic habitats (open water and near-shore Gulf habitats); freshwater to saline marshes; riparian habitats; coastal woodlots; rice fields; native prairies, cheniers, and coastal beach; and dune habitats. These areas host a multitude of plant, invertebrate and vertebrate species including over 300 bird species, 75 species of freshwater fish, and 400 species of salt and brackish water fish and shellfish. Water management, prescribed burning, and controlled grazing have been traditional tools in the management of coastal marshes in these Refuges. Rice farming has been continued on Anahuac NWR to provide valuable foraging habitats for waterfowl. Wildlife recreation including waterfowl hunting, which has been a long tradition of the area, and fishing and bird watching continue to be popular on the Refuge Complex.

Establishment Purposes of the Texas Chenier Plain Refuge Complex

National Wildlife Refuge System lands are acquired and refuges are established under a variety of legislative acts and administrative orders. The USFWS defines the purposes of national wildlife refuges when a refuge is established, based upon the establishing authorities or legislation. The primary authority used in establishing the four Refuges comprising the Texas Chenier Plain Refuge Complex was the Migratory Bird Conservation Act. National wildlife refuges established through this Act were acquired:

“...for use as an inviolate sanctuary, or for any other management purpose for migratory birds.” 16 U.S.C. § 715d (Migratory Bird Conservation Act).

Three other acquisition authorities have been utilized at Anahuac NWR, with the three following additional purposes:

“...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...” 16 U.S.C. § 3901 (b), 100 Sta. 3583 (Emergency Wetlands Resources Act);

“...suitable’ for — (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species...” 16 U.S.C. § 460K-1 (Refuge Recreation Act); and,

“... for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon...” 16 U.S.C. § 661-667e (Fish and Wildlife Coordination Act).

The large majority of lands within the Texas Chenier Plain Refuge Complex were acquired with Migratory Bird Conservation Funds; and, in compliance with the statutory restrictions (1958 Amendment to the Duck Stamp Act), approximately 40% of Anahuac, McFaddin, and Texas Point NWRs are open to waterfowl hunting. Priority recreation uses at the Texas Chenier Plain Refuge Complex includes the six wildlife-dependent uses in accordance with the National Wildlife Refuge Administration Act (Administration Act), as amended by the 1997 National Wildlife System Improvement Act: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Compatibility Determinations completed in accordance with the Administration Act for existing and proposed uses on the Texas Chenier Plain Refuge Complex are found in Appendix E.

National Wildlife Refuge System Mission and Goals

The mission of the National Wildlife Refuge System is:

“To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” (National Wildlife Refuge System Improvement Act of 1997)

The goals of the National Wildlife Refuge System (Director’s Order No. 132, January 18, 2001) are:

- To fulfill our statutory duty to achieve refuge purpose(s) and further the System mission.
- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- Perpetuate migratory bird, inter-jurisdictional fish, and marine mammal populations.
- Conserve a diversity of fish, wildlife, and plants.
- Conserve and restore, where appropriate, representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems
- To foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

Texas Chenier Plain Refuge Complex Vision Statement and Goals

Vision Statement

The Texas Chenier Plain Refuge Complex will provide healthy and sustainable habitats for the diverse fish and wildlife resources of this rich coastal ecosystem. The full array of the region’s native habitats - coastal marshes and prairie wetlands, coastal tallgrass prairie, and coastal woodlands - will be represented on the Refuge Complex. Protection, enhancement, and restoration of these habitats will help maintain and restore the ecosystem’s rich biological diversity.

Refuge habitats will be enhanced through management and restoration with an emphasis on benefiting waterfowl and other wetland-dependent migratory birds, declining songbird species, and all other species at risk within the ecosystem. Management activities on the Refuges will also seek to maintain and enhance habitat values for coastal fisheries, which support vital recreational and commercial fishing industries. Sound scientific monitoring and research will support an adaptive approach to management, facilitating continual refinement and improvement of Refuge management practices.

By working with partners both governmental and private, the Refuge Complex will seek to ensure the long-term sustainability of coastal wetlands threatened by erosion, subsidence, rising sea levels, and altered hydrological regimes. Working with the scientific community, the Refuge Complex will actively seek to develop and implement solutions to these complex problems.

The Refuges will provide high quality recreational and educational opportunities for the public. The importance of the Refuge Complex in supporting a rapidly expanding nature tourism industry will be increased. By reaching out to and working within our communities, awareness of the importance of conserving fish, wildlife and habitats will increase and new and innovative opportunities to promote and implement conservation on private lands will emerge. By helping to conserve natural resources, the Refuges will maintain and enhance the quality of life for residents, who have always greatly valued and treasured the region’s rich natural heritage.

Goals

The Texas Gulf Coast Ecosystems goals and objectives were considered in developing the Refuge goals. The goals of the Texas Chenier Plain Refuge Complex are:

- Goal 1 - Conserve, enhance and restore the Texas Chenier Plain region's coastal wetlands to provide wintering, migrational, and nesting/brood-rearing habitat for waterfowl, shorebirds, marsh and wading birds, other wetland-dependent migratory birds, and habitat for other native fish and wildlife.
- Goal 2 - Conserve, enhance and restore the Texas Chenier Plain region's coastal prairies and coastal woodlands to provide wintering, migrational, and nesting habitat for resident and migratory landbirds, including neotropical/heartic migratory birds, and habitat for other native wildlife.
- Goal 3 - A comprehensive biological program will guide and support conservation efforts for all species of native fish, wildlife and plants on the Texas Chenier Plain Refuge Complex.
- Goal 4 - By working with others locally and on a landscape level, threats to biological integrity, biological diversity and environmental health on the Refuge Complex will be addressed.
- Goal 5 - All local, national and international visitors will enjoy safe and high quality outdoor experiences on the Refuge Complex, and learn of the Refuge Complex's role in conserving the region's coastal natural resources. New partnerships with our local communities will be forged to highlight, promote and conserve the unique natural assets of the upper Texas Gulf Coast.

SUMMARY OF SCOPING AND PUBLIC INVOLVEMENT

Major issues related to the proposed actions were actively solicited from the general public, local public officials, local governmental entities, affected landowners, federal and state agencies, private organizations, and the USFWS' interdisciplinary core Planning Team. A "Notice of Intent to Prepare a Comprehensive Conservation Plan and Associated Environmental Impact Statement" was published in the Federal Register on October 21, 1999. The public scoping efforts began with public meetings on January 11-12, 2000; public workshops on November 16 & 18, 2000; a town hall meeting on March 20, 2000; multiple briefings for local government officials and their staffs; and a waterfowl hunters' forum on October 23, 2000. A second set of public scoping meetings were held on June 18 & 20, 2002 to present a conceptual set of the management alternatives and refuge boundary alternatives. A mailing list of over 1,200 persons and organizations is maintained at the Refuge Complex Office and was used to distribute planning newsletters and public meeting announcements. A summary of public involvement efforts is provided in Chapter 1, Part VI of the EIS/CCP/LPP.

MAJOR ISSUES

Four (4) major issues identified during the public and internal scoping process were considered during the development of alternatives and evaluations of environmental impacts.

Issue 1: Expansion of the Refuge Complex (Land Acquisition)

- The USFWS has insufficient resources (people and money) to adequately manage current lands, never mind any additional lands it might acquire. USFWS should spend its money on taking care of what they already own, not spend it on buying more land that they won't be able to adequately manage.
- Private lands would be taken away through condemnation in a big Federal "land grab."
- Federal land acquisition removes lands from the tax rolls and causes a permanent loss of tax base. This results in substantially lower revenues to the counties, school districts, and other taxing entities.
- USFWS should have a large expansion of the Refuge Complex to include all the marshes and adjoining uplands in both Jefferson and Chambers Counties because all of those lands will eventually be lost to development.
- Land acquisition by USFWS would cause large negative economic impacts to agribusiness and the service industry that supports it because ongoing agricultural practices will cease when USFWS acquires land.

- Land acquisition by USFWS would harm the commercial waterfowl guide and outfitter industry because commercial guides/outfitters would lose leases on lands acquired in fee title by the USFWS.
- The commercial alligator ranching industry would be negatively impacted by USFWS land acquisition. Most alligator eggs supporting this industry come from the wild on private lands and most eggs are currently collected in areas identified for refuge expansion. Alligator egg collecting is not allowed on refuge lands.
- Land acquisition by the USFWS would cause negative economic impacts because restrictions imposed on oil and gas development on refuges limits or prevents such development from occurring.
- The USFWS should acquire and protect woodlots as critical resting and foraging habitat for neotropical migratory birds.
- Conservation easements should be considered as a means of protecting wildlife habitat while still retaining lands in private ownership.
- Major drainage/flood control projects being planned for western Jefferson County and eastern Chambers County would be prevented or made more difficult by USFWS land acquisition.
- Waterfowl hunting would decrease on lands acquired by the USFWS because hunting is allowed on only up to 40% of the lands acquired with Migratory Bird Conservation Funds and hunting is allowed only three days a week until noon on the refuges.
- Conservation easements negatively impact waterfowl hunters who have helped fund the acquisition with their duck stamp purchases because typically, the USFWS doesn't purchase hunting rights, and therefore the property is not open for public hunting.
- Conservation of coastal wetlands and associated habitats in the project area through additional land acquisition by the USFWS is needed to ensure healthy populations of waterfowl, shorebirds and other migratory birds.
- Native coastal prairie should be acquired and protected because most of the native tallgrass coastal prairie on the Texas Gulf Coast has already been lost to development and conversion to other land uses. Protection of remaining prairies is critical to protecting the region's biological diversity.
- Many "at risk" fish, wildlife and plant species would benefit from additional habitat protection through USFWS land acquisition in the project area.

Issue 2: Administration of Wildlife-Dependent Recreational Uses

- The areas on the refuges open to waterfowl hunting are inaccessible. Access to the marsh in the areas open to hunting is so difficult that it limits hunting to young, in-shape hunters.
- The USFWS closes the areas on the refuges where the best waterfowl hunting is located.
- All of the refuges should be closed to hunting and maintained as "inviolate sanctuaries".
- The USFWS does not provide adequate facilities for disabled hunters.
- The USFWS should allow hunting of other species including rails, gallinules, mourning doves, and feral hogs.
- Waterfowl hunting opportunities on the refuges are too restricted by only opening the refuges to hunting three days per week until noon.
- The reservation and permit issuance system at McFaddin NWR is not working well and is inherently unfair to parts of the working public. Also, waterfowl hunters accessing McFaddin's Star Lake from adjacent private lands have an unfair advantage over hunter's entering through the main refuge entrance.
- Airboats should or should not be allowed on the refuges.
- The USFWS should improve access for waterfowl hunting by developing more access facilities (roads, boat launches, access ditches, walkways, etc.) and by supporting the reconstruction of State Highway 87.
- An annual Hunting Permit which applies to the entire Refuge Complex should be made available to the public by the USFWS.

- The USFWS should offer more “spaced blind” hunting opportunities on the refuges to decrease the problems caused by hunters setting up too close to each other and interfering with the quality of each other’s hunts.
- The USFWS should improve maintenance of existing facilities (roads, boat ramps, etc.) and develop new facilities (fishing piers, walkways, etc.) to support recreational fishing on the refuges.
- Additional fishing, wildlife observation and photography opportunities should be provided on McFaddin NWR by lengthening the hours the refuge is open on weekdays, opening the refuge on weekends, and allowing these uses in additional areas of the refuge.
- The USFWS should improve maintenance on existing and develop additional facilities for wildlife observation and photography (paths, boardwalks, observation platforms, photography blinds, etc.)
- More interpretive signs and kiosks are needed on the refuges to interpret natural resources and refuge management programs and to provide more information to orient visitors.
- The Refuge Complex needs a new Visitor Center/Administrative Headquarters in Chambers County. This building should include interpretive exhibits and classroom space to support the environmental education and interpretive programs on the refuges.

Issue 3: Habitat Management and Restoration of Refuge Lands

- The USFWS has done a poor job managing for waterfowl because there were more ducks and geese in the marsh before the USFWS took over.
- The USFWS is holding too many ducks and geese in refuge sanctuary areas, where they are unavailable to hunters.
- The Willow Slough Levee and spillway project on the North Unit of McFaddin NWR has impeded drainage in upstream areas and has caused flooding on adjacent private land resulting in the landowners being unable to farm rice.
- Smoke from prescribed burning activities is causing air quality problems in the Beaumont-Port Arthur area. Even when prescribed burns are done on a north wind, smoke which has blown out over the Gulf gets blown back into town when the wind turns around the next day.
- The marshes on McFaddin NWR are drying up. When it was privately-owned, water was managed better and marshes stayed wet for waterfowl and other wildlife.
- Too much water is held on marshes on Anahuac NWR, for too long. This causes problems with the vegetation and also depletes oxygen from the water causing fish kills.
- The USFWS is not adequately maintaining water control structures and other infrastructure, thereby allowing saltwater intrusion which is destroying the marshes.
- Most of the refuges were bought with “Duck Stamp” dollars, generated by hunter’s purchases; therefore, the USFWS should be managing habitat on these refuges primarily for migratory waterfowl.
- The timing of refuge prescribed burns, combined with a better grazing program, should be modified to improve the habitat benefits to waterfowl.
- The USFWS should burn more acreage and more often.
- Prairie habitats should be restored because most native prairie on the Texas Gulf Coast has been lost and this habitat type is critically important for declining populations of grassland songbirds and other rare native plants and animals.
- The USFWS should restore, enhance and protect woodlots because these habitats are critical for nearctic/neotropical migratory birds, especially those making trans-Gulf migrations in the spring.
- Refuges should expand habitat management efforts for shorebirds.
- Annual breeding pair and monthly wintering waterfowl surveys on Texas Coast national wildlife refuges indicate the Mottled Duck populations are declining. Refuge habitat projects are needed to restore/enhance shallow freshwater wetlands and grasslands to provide brood-rearing and nesting habitat for Mottled Ducks.
- Alligator populations on the refuges are too high and may be negatively impacting Mottled Duck production.
- The USFWS needs to expand monitoring and biological research to gain baseline data on all native fish, wildlife and plant species, with rare and declining species being the priority.

- The USFWS should expand existing and develop new partnerships to enhance conservation of natural resources in the project area. This includes working with landowners, volunteers, conservation organizations, industry and other agencies.

Issue 4: Threats to the Ecosystem

- Rising sea levels, land subsidence and reduced sediment supplies have accelerated coastal erosion along the Gulf of Mexico, resulting in significant loss of wetlands and other important coastal habitats on McFaddin and Texas Point NWRs. Shoreline erosion is also a concern along Anahuac NWR's Galveston Bay shoreline.
- Loss of the barrier beaches and dunes on McFaddin NWR has resulted in increased saltwater intrusion in interior marshes, and coastal erosion and wetland loss on McFaddin NWR will greatly accelerate if the already threatened beach ridge is lost completely.
- Saltwater intrusion, erosion of marsh soils, subsidence and rising sea levels are factors contributing to marsh loss (conversion of emergent marsh to open water) in the project area's interior marshes.
- Erosion along the Gulf Intracoastal Waterway is also causing wetland loss and is threatening thousands of acres of fresh and intermediate marshes on McFaddin and Anahuac NWRs with saltwater intrusion and conversion to brackish marsh.
- Land subsidence and eustatic sea level rise pose a significant future threat to the region's coastal wetlands. If marshes cannot accrete vertically (gain elevation through soil building processes) at a rate which keeps up with relative sea level rise (subsidence plus eustatic sea level rise), marshes will be inundated and converted to open water resulting in a major loss of wildlife habitat.
- Loss or restriction of freshwater inflows has contributed, along with saltwater intrusion, to the conversion of historically fresh or intermediate marsh to brackish marsh resulting in a loss of biological diversity.
- Chinese tallow is a highly invasive exotic plant species which rapidly invades upland habitats and shallow wetlands, levees, and fallowed fields in the project area. It quickly forms monotypic closed-canopy stands, out-competes native plants and provides few benefits to native wildlife resulting in a loss of biological diversity.
- Several exotic/invasive aquatic plant species, including water hyacinth and alligatorweed, are also threatening biological diversity and wetland habitat value for migratory waterfowl and other native fish and wildlife species. Giant Salvinia, which is a great threat to freshwater wetlands, has recently been discovered in the project area.
- Deep-rooted sedge, a South American sedge, has recently become established and is invading fallowed rice fields and wet pastures in the project area. Little is currently known about this invasive species, other than it forms dense monotypic stands and out-competes native plants.
- Feral hogs are causing damage to habitats and management infrastructure on the Refuge Complex.
- The USFWS must expand its Integrated Pest Management Program and overall efforts to manage exotic and invasive species.
- Contaminants in the air, water, and soils pose a threat to native fish and wildlife in the region. Petroleum and petrochemical spills from underground pipelines and shipping in the Gulf Intracoastal Waterway and the Gulf of Mexico could have significant negative impacts on habitats, fish and wildlife.

GENERAL DESCRIPTION OF THE ALTERNATIVES AND ASSOCIATED ENVIRONMENTAL CONSEQUENCES

The alternatives must meet the purposes of the Federal proposal, meet the goals of the refuges, and comply with the missions of the Refuge System and the USFWS. NEPA also requires that the alternatives include the alternative of "No Action" and rigorously explore and objectively evaluate a reasonable range of alternatives.

The USFWS is considering two separate, but related federal actions and purposes within this EIS. The first proposes the development of a CCP for each of the Refuges in the Refuge Complex, and the second proposes the expansion of the Refuge boundary for each of the Refuges in the Refuge Complex. To more accurately inform the public and to better facilitate analysis of the impacts, the USFWS has developed two separate sets of alternatives, with each set addressing one of the two Federal actions. There is a set of “Refuge Management Alternatives” addressing the development of a CCP for each Refuge, and there is a set of “Refuge Boundary Expansion Alternatives” addressing the expansion of each Refuge’s boundary. Each set contains the appropriate “No Action” alternative, explores and evaluates a reasonable range of alternatives to the proposed action, and identifies a “Preferred Alternative” to be implemented.

The following criteria will be used in selecting the alternatives for implementation:

- Best meets the Refuge System mission
- Best meets the refuge purposes
- Best meets the USFWS Biological Integrity, Biological Diversity, and Environmental Health Policy

Based on this criteria, the USFWS has selected a Preferred Alternative for each action: Refuge Management Alternative D is the Preferred Alternative for management; and, Refuge Boundary Expansion Alternative C is the Preferred Alternative for the expanding the Refuge boundaries of the Refuges within the Refuge Complex. A CCP and a Land Protection Plan for the Preferred Alternatives are presented in Appendix D and Appendix H, respectively, which represent the final plan products that would be implemented if these alternatives were selected.

The environmental consequences that could result from the management prescriptions of the five Refuge Management Alternatives (A-E) and four Refuge Boundary Expansion Alternatives (A-D) are described in Chapter 4 and are summarized and compared in tables located at the end of Chapter 4, Parts A and B of the EIS/CCP/LPP. A general summary of those impacts identified are presented in this section below the alternatives descriptions. Combined and cumulative impacts are discussed in detail in Chapter 4, Part C.

Refuge Management Alternatives

The CCP provides a framework for future management of the Moody, Anahuac, McFaddin, and Texas Point NWRs. The CCP is designed to serve as a vision for the Refuge Complex and provide management guidance through maintenance, restoration, and use of Refuge resources during the next 15 years. The environmental analysis of this plan is addressed at the conceptual and programmatic level. While it contains some relative analytical specificity, it is not intended to be a detailed site plan with exact locations for facilities or precise descriptions of programs. Overall, there is a need to make the management of each Refuge consistent with the National Wildlife Refuge System mission, goals, and policies. The five Refuge Management Alternatives (A - E) are listed below with a short summary for each. Each of these five Refuge Management Alternatives is described in much more detail in Chapter 2, Part A of the EIS/CCP/LPP.

Elements Common to All Refuge Management Alternatives

Although the Refuge Management Alternatives all differ in their emphasis and focus, the management programs for each of the Alternatives have a number of elements or features common to all. Following is a description of those elements or features common to all of the Refuge Management Alternatives. More detail is provided in Chapter 2, Part A of the EIS.

- **Complete Land Acquisition within Current Refuge Boundaries.** The remaining lands within the current Refuge boundaries will be acquired when, and if, the owners are willing to sell and funding is available.
- **Wilderness Review.** The USFWS is required to conduct a wilderness review for each Refuge as part of the CCP process, which is contained in Appendix F in the EIS.

- **Protection of Cultural Resources.** The USFWS will ensure the same level of cultural resource protection required by law under each of the Refuge Management Alternatives.
- **Protection for Research Natural Areas (RNAs).** RNAs are areas where natural processes are allowed to predominate without human intervention. There is one RNA within the Texas Chenier Plain Refuge Complex, the 200-acre Lone Tree Bayou Research Natural Area located within the Anahuac NWR.

Alternatives Considered

There were five alternatives considered and analyzed for Refuge Management. In addition to the No Action Alternative (Refuge Management Alternative A) and the Preferred Alternative (Refuge Management Alternative D), three other action alternatives were considered. These alternatives are briefly discussed below.

- **Refuge Management Alternative A (NEPA No Action Alternative): Continuation of Current Management.** Under this Alternative, current management programs on the Refuge Complex would continue unchanged. Management of wetland habitats, coastal marsh, prairie, and woodlands to benefit waterfowl, shorebirds, wading birds, and other wetland-dependent migratory birds would continue at current levels and intensities using existing techniques. Currently, activities include prescribed burning on 12-15,000 acres annually, rotational grazing on approximately 41,000 acres, water level and salinity management (approximately 30,000 acres of semi-impoundments and impoundments on the Refuge Complex), rice farming on 500-700 acres, 500 acres of moist soil units, and mowing and haying on 100 acres. The Refuge Complex biological program involving systematic field surveys to monitor population status and trends of migratory birds including waterfowl, shorebirds and neotropical and neoartic migratory songbirds, alligators, and habitats would continue. Ongoing efforts to address threats to ecosystem health posed by relative sea level rise and hydrological alterations, invasive/exotic species and contaminants would continue. These include coordination with other agencies and conservation organizations on ongoing planning processes and studies aimed at developing solutions to address coastal land loss, continuing to implement small-scale erosion abatement projects along the Gulf of Mexico, Galveston Bay and the Gulf Intracoastal Waterway through interagency partnerships, and maintaining existing shoreline restoration projects. Invasive plant and animal control programs would continue at current levels. The Refuge Complex would continue to provide opportunities for all six of the Refuge System's priority wildlife-dependent recreational uses, including hunting, fishing, wildlife observation and photography, and environmental education and interpretation through the use of existing programs and facilities. Waterfowl hunting opportunities would continue under existing regulations on approximately 37,300 acres of the Refuge Complex.
- **Refuge Management Alternative B: Emphasis on Intensifying Management of Wetland Habitats for Waterfowl, Shorebirds, Wading Birds, and Other Wetland-Dependent Migratory Birds.** Under this Alternative, the Refuge Complex would focus its management efforts on active management of wetland and upland habitats to benefit waterfowl, shorebirds, wading birds, and other wetland-dependent migratory and resident birds. The Refuge Complex would also continue to provide and promote opportunities for all six of the National Wildlife Refuge System's priority wildlife-dependent recreational uses, with an emphasis on providing more public hunting opportunities.
- **Refuge Management Alternative C: Emphasis on Native Habitat Restoration and Addressing Major Threats to the Ecosystem.** Under this Alternative, the Refuge Complex would focus its management efforts on restoring wetlands, native prairie and woodlots, and on reversing trends of loss and degradation of these native habitats by increasing efforts to address coastal erosion, saltwater intrusion, and loss of freshwater and sediment inflows. The Refuge Complex would continue to provide the current level of opportunities for all six of the National Wildlife Refuge System's priority wildlife-dependent recreational uses.
- **Refuge Management Alternative D (Preferred Alternative): Emphasis on an Integrated Management Approach Combining: 1) Expanded Habitat Management and Restoration Programs, 2) New Research and Wildlife Population Monitoring, and 3) Increased Efforts to Address Major Threats to the Ecosystem.** Under this Alternative, the Refuge Complex would

continue and expand current habitat management and native habitat restoration programs, with increased monitoring and research to assess management actions and facilitate an adaptive management approach. Management under this Alternative is explained in more detail on the following pages.

- **Refuge Management Alternative E: Emphasis on a Passive Management Approach.** Under this Alternative, the Refuge Complex would change its management focus from active habitat management and restoration to a more passive management approach, in which plant communities and wildlife populations are influenced primarily by natural events such as lightning-caused fires, herbivory by native wildlife, and tidal or stream flooding. The Refuge Complex would continue to provide opportunities for all six of the National Wildlife Refuge System's priority wildlife-dependent recreational uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation, but administrative oversight and management would occur at reduced levels.

Refuge Management Alternative D (*Preferred Alternative*): Emphasis on an Integrated Management Approach Combining: 1) Expanded Habitat Management and Restoration Programs, 2) New Research and Wildlife Population Monitoring, and 3) Increased Efforts to Address Major Threats to the Ecosystem

Under this Alternative, the Refuge Complex would continue and expand current habitat management and native habitat restoration programs, with increased monitoring and research to assess management actions and facilitate an adaptive management approach. Wetland habitat management activities for waterfowl, shorebirds and other wetland-dependent migratory birds including prescribed burning, controlled grazing, management of marsh semi-impoundments, and moist soil management would be refined and expanded through development of new infrastructure. Concurrently, additional restoration of native habitats including wetlands, prairie and woodlots would be undertaken to benefit a variety of native fauna, with a focus on priority species identified as in need of conservation actions through national and international conservation initiatives.

Additional shoreline protection and hydrologic restoration projects would be implemented on the Refuge Complex and coordination with other agencies would be expanded to address shoreline erosion and interior marsh loss on a landscape scale. Implementation of major projects that protect, restore and enhance coastal marshes by restoring freshwater inflows, providing sediments through the beneficial use of dredge materials, restricting saltwater intrusion, and protecting shorelines would be the goal of this interagency coordination and cooperation. Through new partnerships with universities and other agencies, additional research and monitoring would be conducted to assess the impacts of relative sea level rise and to gather baseline data on fish and wildlife populations and habitat use with an emphasis on documenting the status of several sensitive or declining species. The Refuge Complex would also continue to provide and promote opportunities for all six of the National Wildlife Refuge System's priority wildlife-dependent recreational uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. The Refuge Complex would seek to improve the quality of visitor services and of the visitor experience.

The following summary of impacts would be associated with implementation of this alternative. A detailed description of the impacts analysis is provided in Chapter 4, Part A, Section IV.

- **Impacts to Air Quality.** Potential smoke impacts to air quality would continue to occur from USFWS prescribed burns on 12-15,000 acres annually.
- **Impacts to Geology and Soils.** Shoreline protection and marsh restoration help reduce coastal land loss. Water management and prescribed burning may contribute to organic soil formation. A substantial increase in shoreline protection and marsh restoration using dredge material would occur through expanded interagency coordination. Expanded monitoring and research on factors affecting coastal land loss would also occur.
- **Impacts to Hydrology and Water Quality.** Extensive water management would continue to help maintain historic continuum of coastal marsh habitats by reducing saltwater intrusion, managing water levels, and providing freshwater inflows. It would protect nationally-declining wetland types. Expanded interagency coordination would occur on watershed hydrologic

restoration projects, enhancement of water management, and acquisition of additional water rights. Water quality monitoring would also be expanded.

- **Impacts to Vegetation and Habitats.** Structural marsh management would continue to help maintain / restore a historic continuum of coastal marshes and plant and animal communities that are dependent on these habitats. Moist soil units would be expanded and the same levels of cooperative rice farming would occur. Native prairie plant associations would be increased by restoring 2,223 acres to native prairie and 29 acres to woodlands. Refined burning and grazing to increase benefits to migratory birds and other wildlife would occur. The IPM program would be expanded to additional areas. Interagency coordination efforts would be expanded to increase shoreline protection and marsh restoration. Additional monitoring and research to assess threats to habitats would also occur. Visitation would increase and Public Use Programs would result in some impacts to wetland vegetation, primarily from motorized boating (associated with hunting/fishing) and local impacts to habitats in heavily used areas. Regulations would help ensure that impacts are localized and not substantial. Impacts from the biological program, management of oil and gas exploration/development, and community outreach and partnerships would minimize impacts to habitats. Expanded monitoring and research would guide habitat management and restoration and improve exotic and invasive species management. Outreach and partnerships to increase habitat restoration and protection would also be expanded.
- **Impacts to Fish and Wildlife.** Expanded and enhanced habitat management and restoration activities would result in a diverse habitat mosaic which increases benefits to wintering waterfowl, Mottled Ducks, shorebirds, wading birds, and other wetland-dependent migratory birds. Prairie restoration and woodlot protection would benefit many declining landbird species. Overall, this Alternative provides greatest diversity of habitats benefiting several Avian Species of Conservation Concern. Increased beneficial impacts to fisheries would occur by incorporating fish passage into water management protocols. Management aimed at ensuring biological diversity and ecological integrity would benefit Threatened and Endangered species, declining species, and other wildlife species. An increase in all types of visitation associated with public use programs would be expected to result in minimal, localized increases in impacts to migratory birds and other wildlife. No change in impacts to Threatened and Endangered species or fisheries would be anticipated. Expansion of all programs associated with the biological program, management of oil and gas exploration/ development, and community outreach and partnerships would enhance benefits to fish and wildlife resources. Additional monitoring and research would focus on priority avian and other wildlife species.
- **Economic Impacts.** A substantial increase in direct contributions from Refuge operations by \$1.0m would occur. Smaller increases in grazing (\$.3m) and recreational visitors (\$.2m) would occur, but rice farming would remain at \$.25m. Corresponding increases in indirect and induced economic impacts would be anticipated with increases in direct impacts.
- **Impacts on Populations, Fiscal Impacts on Local Governments, and Social Impacts.** No environmental justice or population impacts would be anticipated. Payments would continue to local government entities under Refuge Revenue Sharing Act. Social conditions would remain generally unchanged with unresolved issues.
- **Cultural Impacts.** There is a potential for direct and indirect impacts to cultural sites under all of the management alternatives; however, avoidable impacts would not be considered adverse, but rather minor in nature. Unavoidable adverse impacts are anticipated to continue to occur at potentially eligible sites from natural phenomenon. In addition, this alternative may also reduce wave action at the McFaddin Beach site. Because water control and facilities construction and improvements occur more frequently under Refuge Management Alternative D, cultural resources may indirectly benefit.

Summary of Impacts from Other Alternatives Analyzed

The following summary of impacts would be associated with implementation of the four other alternatives analyzed. A detailed description of the impacts analysis is provided in Chapter 4, Part A, Sections I, II, III, and V.

Impacts under Refuge Management Alternatives A, B, and C would be similar to Alternative D; however, different management emphasis under Alternatives A, B, and C would result in focus of management

actions and extent of management. Refuge Management Alternative D represents the medium between Alternatives B and C and changes to issues identified under Alternative A. For example, prescribed burning and associated impacts would increase under Alternative B and decrease under Alternative C, but would not change between Alternatives A and D. Two new marsh semi-impoundments would expand water management under Alternative B, whereas interagency coordination and acquiring water rights would be the focus under Alternative C. Existing water management practices would continue under Alternative A. Existing cooperative rice farming would continue under Alternative A, increase under Alternative B, and be phased out under Alternative C. Native prairie restored and coastal woodlots protected under Alternative A. Prairie restoration would be reduced under Alternative B and would increase under Alternative C. Integrated burning, grazing, and water management would continue under Alternative A. Burning and grazing programs would be expanded under Alternative B and would be reduced under Alternative C. Economic impacts would also vary from Alternative D. Under Alternative A, refuge operations contribute \$2.7 million (m) directly to the local economy; refuge agriculture programs add \$2.1m (grazing) and \$.25m (rice farming); recreational visitors contribute another \$1.1m; and indirect and induced economic impacts from these direct impacts contribute an estimated \$3.3m more to local economies. Under Alternative B, direct contributions from refuge operations would increase by 10%, from grazing by \$0.5m, rice farming by \$0.16m, and recreational visitors by \$0.1m, with corresponding increases in indirect and induced economic impacts from increases in direct impacts. Under Alternative C, direct contributions from refuge operations would increase by 25%, but there would be substantial decreases from grazing by \$1.1m and rice farming by \$0.25m, and a very small increase in direct expenditures by recreational visitors. Corresponding increases or decreases in indirect and induced economic impacts would be dependent on direction of change in direct impacts.

Impacts associated with Refuge Management Alternative E would be markedly different from all other alternatives, as this alternative would remove all active management. Many programs and associated impacts would be discontinued, such as prescribed burning, shoreline protection and restoration, water management, moist soil units, cooperative rice farming, grazing, and the IPM program. Other programs such as surveys and monitoring and outreach and partnerships would be reduced to passive maintenance levels. This type of management in turn would generally result in increased coastal land loss, saltwater intrusion, loss of freshwater, altered hydroperiods, later successional plant communities, and increased populations of exotic / invasive plant and animal species. This in turn would decrease habitat values and use by waterfowl and other migratory birds and wildlife, contrary to the mission and goals of the Refuge Complex. As a result, visitation would decrease as well as direct economic contributions from refuge operations (by more than half by end of planning period) along with complete elimination of revenues from all refuge agricultural programs. A small localized reduction in employment in a rural area could also occur.

Refuge Boundary Expansion Alternatives

The second proposal addressed in this EIS/CCP/LPP is that of expanding the acquisition boundary of the four constituent refuges. The purpose of implementing a refuge boundary expansion proposal is to help the USFWS achieve larger mandates provided by law and treaty that are related to the protection of migratory birds and other Trust resources. Implementation of a boundary expansion proposal is expected to assist the USFWS meet its goals and objectives of the ecosystem plan for the Texas Gulf Coast. Although achievement of the refuge purposes is not necessarily dependent upon additional land acquisition, the possible inclusion of other lands within the refuges would assist the USFWS in more effectively managing existing refuges in this Refuge Complex and achieving its larger ecosystem-wide goals and objectives to ensure the long-term sustainability of migratory bird populations. Expansion of any of the Refuge Complex' constituent refuge acquisition boundaries would thereby authorize the USFWS to work with willing sellers using the acquisition standard and parameters defined in USFWS law, policy, and government regulations. Lands acquired by the USFWS would be managed as part of the National Wildlife Refuge System. The four Refuge Boundary Expansion Alternatives (A-D) are listed below with a short summary for each. Each of these four Refuge Boundary Expansion Alternatives is described in much more detail in Chapter 2, Part B of the EIS/CCP/LPP.

Elements Common to All Refuge Boundary Expansion Alternatives

Although the Refuge Boundary Expansion Alternatives all differ in the areas proposed for acquisition, the land acquisition program for each of the Alternatives has a number of elements or features common to all. The following is a list and description of those elements or features common to all of the Refuge Boundary Expansion Alternatives. More detail is provided in Chapter 2, Part B of the EIS/CCP/LPP.

- **Willing Sellers Only.** Although the USFWS, like all agencies of the United States Government, has condemnation authority, it is USFWS policy to acquire land and interests in land from willing sellers only. No lands have been condemned in the past for any refuge in the Refuge Complex and the USFWS does not propose condemnation of any lands in the future. The USFWS can acquire land or interests in land only within an approved refuge boundary. In fact, the USFWS can't even accept a donation of land outside of an approved refuge boundary. Lands in any of the refuge boundary expansions would be acquired only from willing sellers as funding becomes available. Landowners within an expanded refuge boundary would be completely free to keep their land, to sell their land to whoever they wished, to leave their land to their heirs, or to change uses of their land.
- **Acquisition methods.** For all land and interests in land acquired by the USFWS, title is taken by the United States of America. The USFWS acquires most land in one of two ways: 1) in fee, or 2) conservation easement. Both methods have been used in the past on the refuges in the Refuge Complex (A detailed acquisition history for each of the Refuges is located in the description of Refuge Boundary Expansion Alternative A: No Action in Chapter 2, Part A of the EIS/CCP/LPP). The "fee" means virtually all of the rights and interests in the land, that which would be generally recognized as "ownership of the land". Fee acquisition removes the land from the tax rolls. With conservation easements, the private landowner retains "ownership of the land" and associated tax obligations. Conservation easements can consist of one or more of the two following categories of interests in land: 1) negative covenants, which prevent a specific use (i.e., no development); and 2) possessory interests, which grant a specific use right (i.e., public hunting). Conservation easements are appraised and purchased in the same way as fee acquisitions. In a few instances, the USFWS acquires interests in land by lease, right-of-way easement, or agreement. These are typically either for a shorter period of time or for more limited use purposes compared to fee and conservation easements.
- **Acquisition funding sources.** The USFWS has only two primary land acquisition funding sources: 1) the Migratory Bird Conservation Fund and 2) the Land and Water Conservation Fund (LWCF). With funds acquired through the sale of Federal Duck Stamps, the Migratory Bird Conservation Fund has been the primary source of funding for land acquisition for all of the refuges within the Refuge Complex and it is expected that it will remain the primary source of funding in the future. This discretionary land acquisition funding source is very actively competed for on a national level within the USFWS. Some LWCF money has been appropriated to purchase land at McFaddin NWR, but it has been a minor amount compared to the amount of Migratory Bird Conservation Funds used for land acquisition on the Refuge Complex.
- **Refuge Revenue Sharing.** Lands acquired by the USFWS in fee are removed from the tax rolls, because as an agency of the United States Government, the USFWS, like city, township, county and state governments, is exempt from taxation. Those lands in which the USFWS only acquires a conservation easement remain on the tax rolls and the tax obligation remains with the private landowner. The Refuge Revenue Sharing Act (the Act of June 15, 1935, as amended in 1978 by Public Law 95-469) or (16 U.S.C. 715s) authorizes the USFWS to make payments to the county or other local unit of government to offset the tax losses for lands administered solely or primarily by the USFWS. The net income the USFWS receives from the sale of products or privileges on Refuges (like timber sales, grazing fees, right-of-way permit fees, etc.) is deposited in the National Wildlife Refuge Fund for revenue sharing payments. Table 3-52, representing the ten-year history of Refuge revenue sharing payments for the Refuge Complex, is located in Chapter 3, Affected Environment of the EIS/CCP/LPP. All lands acquired in the future or lands donated in the future to the Refuges would be included in the calculation and payment of Refuge Revenue Sharing payments.

- **Habitat and public use management on newly acquired lands.** Lands which are acquired in the future within the expanded refuge boundaries will be managed under the concepts expressed in the Preferred Refuge Management Alternative (Refuge Management Alternative D).

Alternatives Considered

There were four alternatives considered and analyzed for Refuge Boundary Expansion. In addition to the No Action Alternative (Refuge Boundary Expansion Alternative A) and the Preferred Alternative (Refuge Boundary Expansion Alternative C), two other alternatives were considered. These alternatives are briefly discussed below. A summary of the existing land acquisition status is provided in the table below.

Summary of Current Land Acquisition Status			
<u>Refuge</u>	<u>Approved Boundary</u>	<u>Acquired Lands</u>	<u>Percentage Acquired</u>
Moody NWR	3,516 acres	3,516 acres	100%
Anahuac NWR	34,339 acres	34,339 acres	100%
McFaddin NWR	70,710 acres	58,861 acres	83%
Texas Point NWR	8,952 acres	8,952 acres	100%

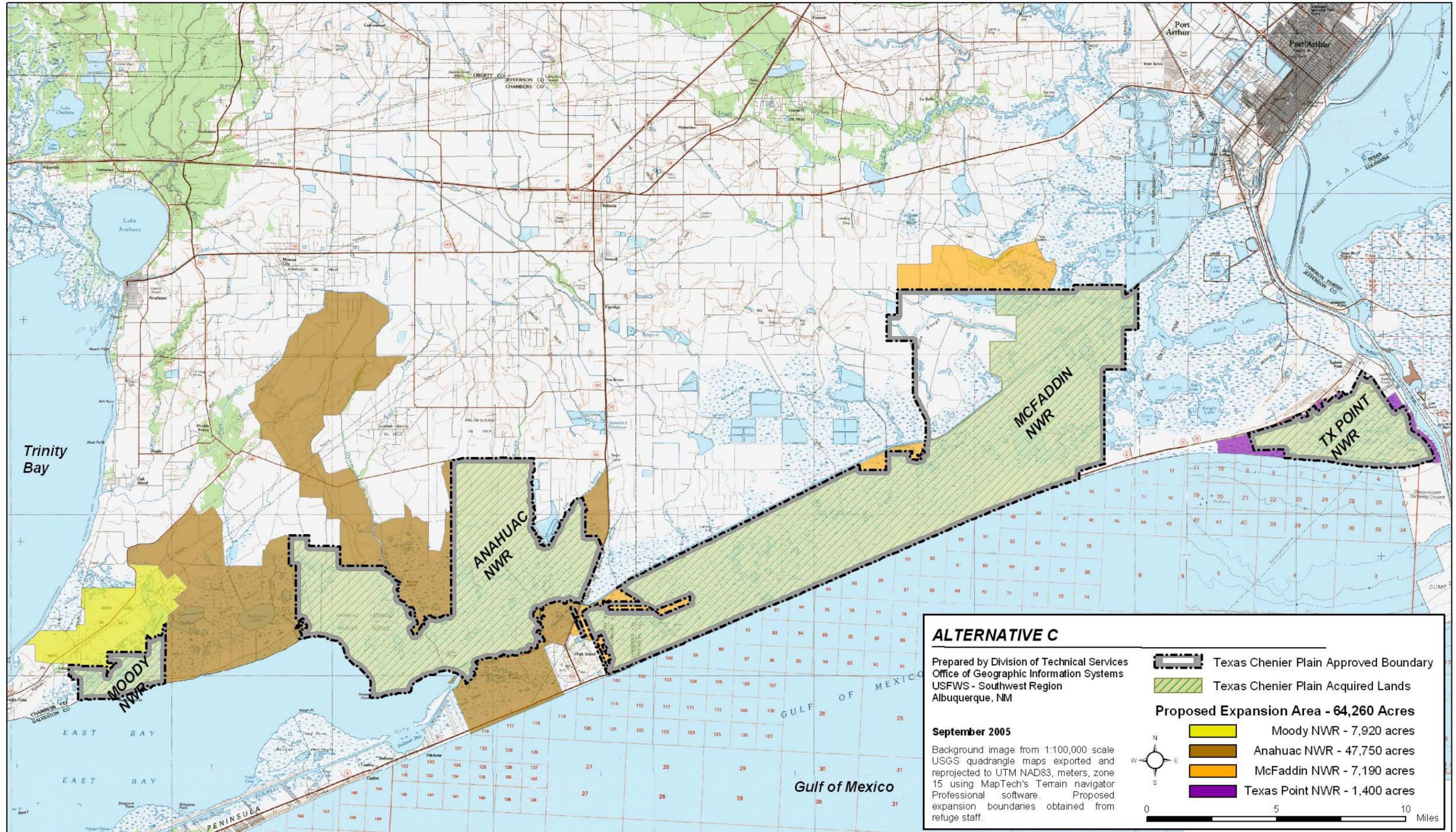
- **Refuge Boundary Expansion Alternative A (NEPA No Action Alternative): No Expansion, Current Status.** This Alternative assumes no change from the existing refuge boundaries within the Refuge Complex. This is the “no action” alternative as required under NEPA and is considered the base from which to compare the other expansion alternatives. There would be no expansion of any of the four refuge boundaries within the Refuge Complex.
- **Refuge Boundary Expansion Alternative B: 33,590 Acre Expansion.** This Alternative continues the four refuges’ historic focus on land acquisition primarily in the coastal marsh and the adjacent agricultural uplands that are contiguous to existing refuges.
- **Refuge Boundary Expansion Alternative C (Preferred Alternative): 64,260 Acre Expansion*** ***Please note that this alternative includes all of the lands in the Refuge Boundary Expansion Alternative B.** Similar to Refuge Boundary Expansion Alternative B, this Alternative continues the four refuges’ historic focus on land acquisition primarily in the coastal marsh and adjacent agricultural uplands, and includes two areas of important native coastal prairie. Management under this Alternative is explained in more detail on the following pages.
- **Refuge Boundary Alternative D: 104,120 Acre Expansion*.** *Please note that this alternative includes all of the lands in the Refuge Boundary Expansion Alternative C. Similar to Refuge Boundary Expansion Alternative C, this Alternative continues the four refuges’ historic focus on land acquisition primarily in the coastal marsh and adjacent agricultural uplands that are contiguous to existing refuges. In addition to these primarily wetland areas, this Alternative also includes two areas of important native coastal prairie with high habitat value for resident Mottled Ducks, many species of grassland-dependent migratory birds, and a wide variety of other native wildlife species. This Alternative also includes an important near-coast bottomland hardwood area, which is an acquisition target new to this Refuge Complex.

Refuge Boundary Expansion Alternative C (Preferred Alternative): 64,260 Acre Expansion*

***Please note that this alternative includes all of the lands in the Refuge Boundary Expansion Alternative B.** Similar to Refuge Boundary Expansion Alternative B, this Alternative continues the four refuges’ historic focus on land acquisition primarily in the coastal marsh and adjacent agricultural uplands. Much of the acquisition would still focus on habitats of particular value to the waterfowl resource and other wetland-dependent migratory birds. The wetlands portions of this expansion alternative concentrate on high-value wintering waterfowl habitats near the coast that are contiguous to existing Refuges. In addition to these primarily wetland areas, this Alternative includes two areas of important native coastal prairie with high habitat value for resident Mottled Ducks, many species of grassland-dependent migratory birds, and a wide variety of other native wildlife species. In addition to these two kinds of high biological value habitats, this Alternative also includes areas identified as necessary for refuge management. Expansion is proposed for each of the four refuges in the Refuge Complex (see map on next page).



Texas Chenier Plain Refuge Complex & Proposed Expansion Areas



The following summary of impacts would be associated with implementation of the preferred alternative. A detailed description of the impacts analysis is provided in Chapter 4, Part B, Section I of the EIS/CCP/LPP.

- **Impacts to Air Quality.** Smoke impacts to air quality from USFWS prescribed burning on newly acquired lands would be mitigated by strict adherence to prescription parameters.
- **Impacts to Geology and Soils.** USFWS would expand interagency coordination to address threats from coastal land loss on newly acquired lands, with goal of implementing major structural erosion abatement projects implemented along Gulf, Gulf Intercoastal Waterway, and East Galveston Bay shorelines. USFWS water management and prescribed burning on newly acquired lands may benefit soil formation and vertical accretion in marshes.
- **Impacts to Hydrology and Water Quality.** Wetland management and hydrologic restoration by USFWS on newly acquired lands would help restore historic continuum of fresh, intermediate, brackish, and saline marshes which support a natural diversity of native plant, fish, and animal communities. USFWS would increase efforts to improve water quality.
- **Impacts to Vegetation and Habitats.** USFWS would use habitat management and restoration activities, such as structural water management, on newly acquired lands to control salinities and water levels within marsh habitats to mimic natural marsh hydroperiods and provide more productive habitats for fish and wildlife. Moist soil management would be expanded and cooperative rice farming would be maintained where possible on newly acquired lands to provide freshwater habitat for waterfowl and other migratory birds. Prairie restoration and management on newly acquired lands would increase the abundance of native prairie grasses and forbs, protecting Globally Imperiled plant communities. USFWS would increase protection and enhancement of woodlot habitats. USFWS would use prescribed burning, controlled grazing, and exotic/invasive species control to enhance native habitats on newly acquired lands. Shoreline protection/restoration and marsh restoration on newly acquired lands would positively impact nationally-declining wetland habitats. Motorized boating for fishing and hunting can impact wetland vegetation; impacts from other public uses would be localized and minimal. The biological program would support the adaptive management approach and oil and gas management would reduce impacts to vegetation/habitats. Continuation of outreach and partnership efforts would result in additional habitat restoration and enhancement on the Refuge Complex and private lands throughout the project area.
- **Impacts to Fish and Wildlife.** Marsh habitats on newly acquired lands would be managed to enhance habitat for waterfowl, shorebirds, wading birds and other wetland-dependent migratory birds. Moist soil management would be expanded and cooperative rice farming continued on newly acquired lands providing additional high quality wetland habitat for wintering and resident waterfowl and other migratory birds. USFWS would provide and enhance habitats specifically needed by Mottled Ducks. USFWS would focus management/restoration activities to obtain a mosaic of diverse habitat types benefiting a wide variety of avian species, including several Avian Species of Conservation Concern. Restoration and enhanced management of native prairie habitats would benefit many declining landbird species. Integrated burning, grazing, and invasive species control on newly acquired lands would maintain naturally diverse and productive wetland and upland habitats benefiting avian species, Threatened and Endangered species, and a wide variety of other wildlife species. USFWS management of water control structures on newly acquired lands would benefit fisheries by increasing fish passage. USFWS would open specific areas within newly acquired lands for public wildlife-dependent recreational uses. Waterfowl and dove harvest would not affect overall populations and their long-term viability. Sanctuary areas would be established on newly acquired lands to maintain local waterfowl populations and mitigate hunting pressure. Motorized boating does affect distribution and habitat use of waterfowl and other wildlife species. Impacts from other recreational activities would be localized and minimal as to most species. No impacts to Threatened and Endangered species or long-term viability of fisheries resources would be anticipated. USFWS would implement a variety of new/expanded surveys, monitoring, and research on newly acquired lands to facilitate adaptive management, allowing continual refinement and improvement of management activities. The biological program would focus on priority wildlife species needing conservation action. Net effect of oil and gas management would be reduction of impacts to fish and wildlife resources from

these activities. Expanded outreach/partnership efforts would result in benefits to fish and wildlife resources as important habitats are restored and enhanced on private lands.

- **Economic Impacts.** New land acquisition would result in losses of agricultural support programs for rice farming by \$407,596 in Direct Payments, \$289,319 in Counter-Cyclical Payments, and \$175,710 in Indirect/Induced impacts. This represents maximum possible loss, more likely only a percentage of this would occur because some acreage would be included in coop rice farming and some base acreage would be retained by current landowners as farms are reconfigured. New land acquisition would be not expected to cause significant impacts in cattle grazing industry or commercial hunting operations.
- **Fiscal Impacts on Local Governments.** New land acquisition would result in losses of tax revenues to local governments by \$99,054. This represents maximum possible loss if all lands were acquired within an expansion boundary. Refuge Revenue Sharing payments on newly acquired lands would offset a portion of loss in tax revenues.
- **Impacts on Populations and Social Impacts.** No impacts on population or environmental justice would be anticipated. Social conditions would remain generally the same with some unresolved issues.
- **Cultural Impacts.** Unavoidable adverse impacts from natural phenomenon are anticipated to continue to occur at cultural resource sites under all of the Refuge Boundary Expansion Alternatives. In addition, Federal acquisition would provide additional protections under NHPA and associated regulations not afforded to cultural sites on private lands. Private lands acquired would also be subject to the actions and impacts identified for the preferred management alternative on existing Refuge Complex lands.

Summary of Impacts from Other Alternatives Analyzed

The following summary of impacts would be associated with implementation of the three other alternatives considered. A detailed description of the impacts analysis is provided in Chapter 4, Part B, Sections I and II of the EIS/CCP/LPP.

Although the acquisition area changes under Refuge Boundary Expansion Alternatives B and D, impacts would be the same as Alternative C. However, some loss of development potential in and around Taylors Bayou by new land acquisition would be anticipated under Alternative D. Economic and Fiscal impacts would also slightly change from Alternative C. New land acquisition would result in losses of agricultural support programs for rice farming by \$351,808 under Alternative B and \$1,545,295 under Alternative D in Direct Payments, \$249,720 under Alternative B and \$1,096,880 under Alternative D in Counter-Cyclical Payments, and \$151,661 under Alternative B and \$666,160 under Alternative D in Indirect/Induced impacts. New land acquisition would result in losses of tax revenues to local governments by \$47,258 under Alternative B and \$184,303 under Alternative D.

Under Refuge Boundary Expansion Alternative A, coastal land loss would continue at existing or accelerated rates on private lands. Economic considerations would dictate the type and scope of activities affecting large-scale hydrology on private lands. Less management of marshes would be anticipated resulting from the trend to smaller ownerships. Habitat management and restoration activities such as water management on private lands primarily support agricultural uses, especially livestock grazing. Rice production would continue to decline with former rice fields fallowed or converted to improved pasture. Burning, grazing, water management, and invasive species control on some private lands would continue to enhance wetland habitats for waterfowl and other migratory birds. On private lands, economic considerations dictate land uses and habitat management or restoration practices that result in benefits to fish and wildlife. Agricultural practices would continue to provide substantial benefits to waterfowl, but may reduce wetland habitat available for other wetland-dependent avian species. Direct, indirect, and induced impacts from existing Refuge Complex operations, agriculture, and recreation would be the same as the impacts indicated for Refuge Management Alternative D. Refuge Revenue Sharing payments made to local governments based on already acquired lands would continue.

CONSULTATION AND COORDINATION

USFWS formally and informally coordinated and consulted with the local, State, and Federal governments/agencies as part of this process. This consultation and coordination is summarized below. More detail is provided in Chapter 5 of the EIS/CCP/LPP.

- **Cooperating Agencies.** The USFWS invited two federal agencies to participate as Cooperating Agencies in this planning effort the U.S. Army Corps of Engineers (COE) and the Federal Highway Administration (FHWA). Both agencies formally agreed in response to the invitations to become a part of the process.
- **National Marine Fisheries Service.** Habitats within the Refuge Complex include areas that have been identified by the Gulf of Mexico Fisheries Council (GMFMC) as Essential Fish Habitat (EFH) for juvenile white and brown shrimp and juvenile red drum. Required consultation with National Marine Fisheries Service for impacts to EFH from individual projects/strategies implemented under this EIS/CCP/LPP will be conducted as mandated under the Magnuson-Stevens Fishery Conservation and Management Act (P.L. 104-297).
- **Texas Parks and Wildlife Department.** The USFWS recognizes that both the USFWS and the State fish and wildlife agencies have authorities and responsibilities for management of fish and wildlife on national wildlife refuges, as described in 43 CFR 24. Consistent with the National Wildlife Refuge System Administration Act, as amended by the National Wildlife Refuge System Improvement Act, the Director of the USFWS will interact, coordinate, cooperate and collaborate with the State fish and wildlife agencies in a timely and effective manner on the acquisition and management of national wildlife refuges. Under the Administration Act and 43 CFR 24, the Director as the Secretary's designee will ensure that the National Wildlife Refuge System regulations and management plans are to the extent practicable, consistent with State laws, regulations, and management plans.
- **State Historic Preservation Office (Texas Historical Commission).** The USFWS completed a formal project review under Section 106 of the National Historic Preservation Act from the State Historic Preservation Officer, Texas Historical Commission. A copy of the State Historic Preservation Officer's review document, dated June 8, 2004, is contained in the EIS at Appendix I.
- **County and Local Governments.** The USFWS planning team, in particular the Refuge Complex Project Leader, made extensive efforts to inform and involve the counties and other local governments in the planning process. A number of formal briefings were provided for the Jefferson, Chambers, and Galveston County Judges and various County Commission members. Briefings were also provided for several local Drainage Districts and School Districts. Additionally, many of the County and other local government officials attended and participated in almost all of the public meetings held in their jurisdictions.
- **Elected Representatives.** The USFWS sought to obtain input from elected representatives in the project area by briefing them on the issues developed in the scoping process. The USFWS planning team conducted a number of personal meeting/briefings and telephone briefings during the scoping process.

DISTRIBUTION OF DRAFT EIS/CCP/LPP

The Notice of Availability for the Draft EIS/CCP/LPP was published in the Federal Register on October 17, 2006; with a public comment period closing on January 16, 2007. A copy was posted on the Service's Internet website at: <http://www.fws.gov/southwest/refuges/Plan/completeplans.html>. Digital and/or hard copies were provided to 15 libraries in the project area, two cooperating Federal agencies, Texas Parks and Wildlife Department, Environmental Protection Agency, 38 interested organizations, and a total of 58 other Federal or State agencies, governmental entities and elected representatives. Additionally, notice of availability letters were sent to the 400 landowners within the preferred expansion area, 272 individuals who participated in public meetings or workshops, and 220 members of the refuge "Friends" groups. (These letters also provided the date and time for two public hearings to receive comments)

COMMENTS AND SERVICE'S RESPONSES

A total of 23 comments were received and these are either printed verbatim or summarized in Chapter 6 along with the Service's responses.

Neither of the two cooperating Federal agencies made a comment on the draft document. However, TPWD provided a two page written comment generally supporting both of the preferred alternatives and expressing appreciation for the Complex's active hunting program. The Service thanks TPWD for their cooperation and participation in the development of this document; and, their continuing support. The Service also received a "Lack of Objections" comment from EPA following their review of the draft document. The NOAA's National Marine Fisheries Service commented that the Service will have to consult with NMFS on future structural marsh management projects; and, the Service readily recognizes its consultation obligations. No direct comments were received from local government entities or elected officials except for an action initiated by Chambers County. Chambers County Commissioner's Court has approved a donation of up to 25 acres to the United States for use by the Service as an administrative and visitor center for the Refuge Complex. The Beaumont Enterprise Newspaper issued an editorial supporting the Service's expanded acquisition program and recognizing the need for habitat protection. Additionally, the Service was contacted in writing by two landowners who expressed current interest in selling their land for inclusion in the Refuge Complex.

Five individuals provided comments at the two public hearings held on November 28 & 30, 2006, in Port Arthur and Hankamer, Texas. These comments generally supported the Service's proposals and added comments about the economic benefits of ecotourism, desire for additional hunting opportunities, need for added habitat protection, and the damages from feral hogs. The Service thanks these individuals for their participation and support; and, will continue to try to address their specific concerns.

Four organizations in the local area provided written comments: Golden Triangle Audubon Society (GTAS), Houston Audubon Society (HAS), Gulf Coast Bird Observatory (GCBO), and Houston Regional Group of the Sierra Club (HSC). Five individuals provided comments which were virtually identical to those from HSC; and three other individuals provided their comments. Comments from organizations and individuals generally supported the Service's conservation efforts and largely supported the Service's preferred management and refuge boundary expansion alternatives. However, some did express support for the larger refuge boundary expansion alternative; and, similarly, for Refuge Management Alternative C because of its emphasis on native habitat restoration and addressing threats to the ecosystem. The HSC and five individuals urged the removal of cattle to be replaced by bison and their opposition to the implementation of an entrance fee for Anahuac NWR. Some groups and individuals oppose initiating a dove hunt on Anahuac NWR; and, also, oppose fishing in Shoveler Pond and adjacent areas. There are some who feel that habitat types, in particular woodlots, are being outweighed by the focus on marshes. Also, some feel that a greater emphasis should be given to non-consumptive recreational users vs. the consumptive recreational users.

The Service thanks all of the individuals and groups who provided comments and refers readers to Chapter 6 of the EIS/CCP/LPP for the Service's detailed responses to these comments.