APPENDIX F: WILDERNESS REVIEW

Introduction

A wilderness review is the process used by the U.S. Fish & Wildlife Service (USFWS) to identify and recommend for Congressional designation, National Wildlife Refuge System (System) lands and waters that merit inclusion in the National Wilderness Preservation System (NWPS). The USFWS is required to conduct a wilderness review for each refuge as part of the Comprehensive Conservation Plan (CCP) process.

For a refuge to be considered for wilderness designation, all or part of the refuge must:

- Be affected primarily by the forces of nature, with the human imprint substantially unnoticeable;
- Have outstanding opportunities for solitude or primitive and unconfined type of recreation;
- Have at least 5,000 contiguous acres or be sufficient in size to make practical its preservation and use in an unimpaired condition, or be capable of restoration to wilderness character through appropriate management, at the time of review; and
- Be a roadless island.

There are three phases to the wilderness review process: (1) inventory, (2) study; and (3) recommendation. Lands and waters that meet the minimum criteria for wilderness are identified in the inventory phase. These areas are called Wilderness Study Areas (SA).

In the study phase, a range of management alternatives are evaluated to determine if a SA is suitable for wilderness designation or management under an alternate set of goals and objectives that do not involve wilderness designation.

The recommendation phase consists of forwarding or reporting the suitable recommendations, if any, from the Director through the Secretary and the President to Congress in a wilderness study report. The wilderness study report is prepared after the record of decision for the final CCP has been signed. Areas recommended for designation are managed to maintain wilderness character in accordance with management goals, objectives, and strategies outlined in the final CCP until Congress makes a decision or the CCP is amended to modify or remove the wilderness proposal.

Wilderness Act

Wilderness Act of 1964 (16 U.S.C. 1131-1136, 78 Stat. 890) -- Public Law 88-577, approved September 3, 1964, directed the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System, with final decisions made by Congress. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System (USFWS 2004a, b; BLM, 2001; Wilderness.net, 2004).

The Act provides criteria for determining suitability and establishes restrictions on activities that can be undertaken on a designated area. It authorizes the acceptance of gifts, bequests and contributions in furtherance of the purposes of the Act and requires an annual report at the opening of each session of Congress on the status of the wilderness system.
Under authority of this Act over 25 million acres of land and water in the National Wildlife Refuge System were reviewed. Some 7 million acres in 92 units were found suitable for designation. From these recommendations, as of December 1998, over 6,832,800 acres in 65 units have been established as part of the National Wilderness Preservation System by special Acts of Congress. (USFWS 2004a, Wilderness.net, 2004)

Wilderness Characteristics

Wilderness characteristics are discussed in Section 2 (c) of the Wilderness Act of 1964 (BLM 2001), which Congress incorporated in FLPMA, Sec. 603 (43 USC 1782). The Wilderness Act states:

> *"A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."*

Analysis of Wilderness Characteristics

Each inventory unit must be evaluated for:

Size - Determine if the inventory unit, including acres of contiguous lands having wilderness character "has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition" (USFWS 2004a, b; BLM 2001).

Roadless - Inventory units must be roadless. Roads were clearly identified and their impact on the naturalness of the area evaluated. If an access route met the road definition, its use and possible long-term need was documented. In order to ensure a consistent identification of "roads" as opposed to an unmaintained vehicle way, the following definition was used:

> *"The word 'roadless' refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A 'way' maintained solely by the passage of vehicles does not constitute a road."*

This language is from the House Committee Report 94-1163, page 17, dated May 15, 1976, which forms part of the legislative history of the Federal Land Policy and Management Act (FLPMA) (BLM 2001). The 1978 BLM Wilderness Inventory Handbook further defined certain words and phrases in the road definition and these were also used in this inventory:

> "*Improved and maintained*" - Actions taken physically by people to keep the road open to vehicle traffic.
>
> "*Improved*" does not necessarily mean formal construction. "Maintained" does not necessarily mean annual maintenance.
>
> "*Mechanical means*" - Use of hand or power machinery or tools.
>
> "*Relatively regular and continuous use*"—Vehicular use that has occurred and will continue to occur on a relatively regular basis. Examples include access roads for equipment to maintain a stock water tank or other established water sources, access roads to maintained recreation sites or facilities, or access roads to mining claims". (BLM 20001, USFWS 2004a)

Road areas within the Refuge Complex include levees, canals, and ditches due to the required access necessary to maintain all water control structures located throughout the Refuge Complex. Additionally,

the road analysis identified public roads, USFWS management roads and primitive roads located on the beach ridge traveled by the public within and adjacent to McFaddin NWR.

Naturalness - Determine if the area ". . . generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable." Findings regarding naturalness should be based on the appearance of the area as seen from the ground (USFWS 2004a, b; BLM 2001).

Solitude or a Primitive and Unconfined Type of Recreation - Determine if the area ". . . has outstanding opportunities for solitude or a primitive and unconfined type of recreation ...." The word "or" in this sentence means that an area has to possess only one or the other. It does not have to possess outstanding opportunities for both elements, and does not need to have outstanding opportunities on every acre. However, there must be outstanding opportunities somewhere in the unit. When review units are contiguous to wilderness study areas or other agency lands with identified wilderness values, they were considered an extension of the wilderness study area; no additional evaluation of outstanding opportunities was required (BLM 2001, USFWS 2004a, b).

Supplemental Values - Determine if the inventory unit contains ". . . ecological, geological, or other features of scientific, educational, scenic, or historical value." The Wilderness Act states a wilderness "may also contain" these values. Supplemental values are not required for wilderness, but their presence is documented where they exist. A finding that an inventory unit lacks any or all of the supplemental values did not affect the determination of the existence of wilderness character (USFWS 2004a, b; BLM 2001).

The Refuge Complex Description

The Refuge Complex project area (105,668 acres) includes the Moody, Anahuac, McFaddin, and Texas Point National Wildlife Refuges.

Moody NWR is located in along East Galveston Bay in south-central Chambers County and contains approximately 3,516 acres. The USFWS holds a perpetual non-development conservation easement on Moody NWR, which is otherwise entirely privately owned.

Anahuac NWR is located on the north shore of East Galveston Bay. Almost all of the Refuge lies within Chambers County, with a small portion lying south of the GIWW in Galveston County. The Refuge is bounded by Robinson Bayou on the west, State Highway 124 on the east, several private farms and ranches and F.M. Road 1985 on the north, and East Bay and the GIWW on the south. Anahuac NWR consists of approximately 34,339 acres which is owned primarily in fee by the United States.

McFaddin NWR is located along the Gulf Coast between the towns of High Island, to the west, and Sabine Pass, to the east, and contains about 15 miles of Gulf shoreline. Almost all of the refuge lies in Jefferson County with very small areas in Chambers and Galveston Counties. The GIWW dissects McFaddin NWR and divides once contiguous watersheds into two distinct units. The approximately 58, 861 acres within McFaddin NWR are owned primarily in fee except for a nearly 6,475 acre conservation easement (White Easement) on the Gulf side of the GIWW.

Texas Point NWR is located on the southeastern most tip of Texas, bounded by the Sabine Pass waterway on the east and the Gulf on the south, with about 6 miles of Gulf shoreline. The approximately 8,952 acres within Texas Point NWR are all owned in fee.

Wilderness Inventory and Study

The wilderness inventory is a broad look at the planning area to identify SAs. These are roadless areas that meet the minimum criteria for wilderness identified in Section 2 (c) of the Wilderness Act. A SA must meet the size criteria, appear natural, and provide outstanding opportunities for solitude or primitive recreation (USFWS 2004a, b; BLM 2001).

Size Criteria

Roadless areas meet the size criteria if any one of the following standards applied.

- An area with over 5,000 contiguous acres. State and private lands are not included in making this acreage determination.
- An area of less than 5,000 contiguous Federal acres that is of sufficient size as to make practicable its preservation and use in an unimpaired condition, and of a size suitable for wilderness management.
- An area of less than 5,000 contiguous Federal acres that is contiguous with a designated wilderness, recommended wilderness, or area under wilderness review by another Federal wilderness managing agency such as the Forest Service, National Park Service, or Bureau of Land Management.

Evaluation of Size Criteria

Moody NWR: does not meet the size criteria because is consists entirely of private lands. Since Moody NWR does not meet the minimum necessary standard of being " an area of undeveloped federal land [emphasis added]" in the Wilderness Act, it does not qualify for recommendation as a wilderness area.

Anahuac NWR: does meet the minimum size requirement and will be further evaluated.

McFaddin NWR: does meet the minimum size requirement, except for the White Easement which is private lands.

Texas Point NWR: does meet the minimum size requirement and will be further evaluated.

Conclusion: Moody NWR does not meet the size criteria and will not be considered further.
Anahuac NWR, Texas Point NWR, and McFaddin NWR (except for the White Easement) meet the size criteria and will be considered further.

Roadless Criteria

Identification of Roadless Areas

Identification of roadless areas required gathering land status maps, land use and road inventory data, and aerial photographs of existing Refuge Complex mainland tracts and islands. The definition of "roadless" was discussed earlier in this document in the Introduction. Lands currently owned by the USFWS in fee title were evaluated. These lands are included within the project area boundaries of Anahuac NWR, McFaddin NWR, Texas Point NWR.

In summary there are 10 bridges and 420.6 miles of roads, levees, ditches and canals utilized throughout the proposed project area providing access for various needs. This access primarily is for water control and access to refuge lands for management activities, associated oil and gas exploration, and public use.

In addition, there are a total of 180 water control structures located throughout the project area that are utilized by agencies, organizations and water districts for water management purposes. Access to the water control structures is needed daily in some cases. Therefore, there are no roadless areas that provide for the "naturalness" as defined in the House Committee Report 94-1163, page 17, dated May 15, 1976, which forms part of the legislative history of the Federal Land Policy and Management Act (FLPMA) (BLM 2001).

Evaluation of Roadless Criteria

The three remaining possible SA's are evaluated to determine if they meet the "roadless" wilderness characteristic.

Anahuac NWR: Access via roads, levees, canals and ditches to the refuge totals 321 miles. Specifically, the 321 miles of access includes 253.8 miles of levee, canal or ditch access for maintenance of the levees, canals or ditches. This also provides access to the 171 water control structures located within the refuge. There are seven bridges utilized by agencies, organizations and the public to access the refuge for numerous needs. Roads used by the refuge staff for refuge management purposes totals 30.4 miles with public access roads totaling 36.8 miles (USFWS 2005a)

McFaddin NWR: Access via roads, levees, canals and ditches to access the refuge totals 97.6 miles which includes the GIWW levees. Specifically, the 97.6 miles of access includes 63.5 miles of levee, canal or ditch access for maintenance of the levees, canals or ditches. This also provides access to the nine water control structures located within the refuge. There are three bridges utilized by agencies, organizations and the public to access the refuge for numerous needs (USFWS 2005a). Roads used by the refuge staff for refuge management purposes totals 7.6 miles with public access roads totaling 26.5 miles which includes 15 miles of 4-WD primitive road located on the beach ridge which is traveled by the public and receives minimal maintenance (USFWS 2005a).

Texas Point NWR: Access via levees to the refuge totals two miles. This also provides access to the five water control structures located within the refuge. There are no canals, ditches, USFWS management roads or public roads located on this refuge (USFWS 2005a).

In summary there are 10 bridges and 420.6 miles of roads, levees, ditches and canals utilized throughout the Refuge Complex providing access for various needs. This access primarily is for water control and access to refuge lands for management activities, associated oil and gas exploration/development, and public use. In addition, there are a total of 180 water control structures located throughout the Refuge Complex that are utilized by agencies, organizations and water districts for water management purposes. Access to the water control structures is needed daily in some cases.

Conclusion: None of the three areas meet the criteria for being "roadless".

Naturalness Criteria

In addition to being roadless, a SA must meet the naturalness criteria. Section 2(©) defines wilderness as an area that "... generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable." The area must appear natural to the average visitor rather than "pristine." The presence of historic landscape conditions is not required. An area may include some human impacts provided they are substantially unnoticeable in the unit as a whole (BLM 2001, USFWS 2004a, b).

Significant human-caused hazards, such as the presence oil & gas exploration/development activities and the physical impacts of refuge management facilities and activities are also considered in evaluation of the naturalness criteria. An area may not be considered unnatural in appearance solely on the basis of the "sights and sounds" of human impacts and activities outside the boundary of the unit. The cumulative effects of these factors in conjunction with size, extent of Federal holdings, and physiographic and vegetative characteristics were considered in the evaluation of naturalness for each area (USFWS 2004a, b).

In the wilderness inventory, specific human impacts were identified that significantly affected the overall apparent naturalness of the lands located within the three evaluated Refuges and are considered in combination with size and physical characteristics. The following factors were primary considerations in evaluating naturalness:

- presence of 180 water control structures (WCS) and 420.6 miles of associated levees, canals, ditches, USFWS management roads, and public access roads (USFWS 2005a);
- presence of oils & gas pads, platforms, access roads, pipelines, and future expansion of oil and gas fieldS;
- recent 3-D seismic exploration which requires sounding in a grid pattern of 220 feet by 1760 feet for an entire area. Currently a 3-D seismic exploration survey is occurring at McFaddin NWR which is proposed to cover 233 square miles that encompasses on and off refuge properties (USFWS 2005b);
- further development of existing oil and gas fields with technological advancements and additional 3-D seismic exploration surveys;
- water management activities;
- grazing and agricultural programs which utilize various portions of the refuges at various time of the year limiting the naturalness of the area;
- prescribe burning for habitat improvement and invasive species control limits the naturalness of the area;
- substantial private inholdings with developments such as private residences or incompatible activities;
- presence of established recreational facilities; and/or
- areas unsafe for public use or public access.

Evaluation of Naturalness Criteria

Mineral Resources and Related Exploration and Development

Oil and gas exploration and development has occurred within the project area for over 100 years. The famous “Spindletop Dome” discovery well which came in as a “gusher” on January 10, 1901, is located just to the north of McFaddin NWR in Jefferson County. This discovery well and the subsequent oil boom ushered in the modern age of petroleum. The gusher at Spindletop was responsible for creating several companies that were to become giants in the oil industry including Gulf Oil, Amoco, and Humble Oil Company (later to become part of Exxon).

The USFWS acquired the lands within the Refuge Complex subject to outstanding third-party minerals interests and the reservation by the Sellers of their mineral interests. Also, the USFWS acquired these lands subject to many pipeline easements and has subsequently issued a number of pipeline rights-of-way. Since the USFWS does not own the mineral interest under the lands within the Refuge Complex, the USFWS must provide reasonable and necessary access to mineral owners to explore and develop their mineral interests under provisions provided under 50 CFR 29.32.

Anahuac NWR: Oil and gas exploration and development has also occurred throughout the Anahuac NWR, and infrastructure associated with formerly producing wells remains. The Roberts-Mueller oil and gas field was developed in the 1950’s and 1960’s, and is the site of the most-concentrated oil and gas exploration and development on the Refuge. Houston Oil Producing Enterprises, Inc. and Alegre Energy, Inc., are the current leaseholders/operators of the Roberts-Mueller field which includes a tank battery facility. Kerr-McGee Oil and Gas Onshore, LLC currently holds exploration and development leases and drilled a producing well on the northern portion of the East Unit on the Refuge in 2000/2001. Product from this well is transported via a gathering line to an off-refuge separator/tank battery facility located north of F.M. Road 1985. Kerr-McGee has now proposed drilling additional wells on this lease.

There are several pipeline easements within Anahuac NWR. The Centena Pipeline Co. holds an easement for a 12” natural gas pipeline which comes onshore from Galveston Bay near Robinson Bayou and traverses the western portion of the Refuge. A Rutherford Oil Company 6” natural gas pipeline crosses the Mitigation Tract Unit of the Refuge and connects to the Centana pipeline. A small above-ground metering station is located near the intersection of these pipelines. Both the Rutherford pipeline and metering station are permitted under a Refuge Special Use Permit. The Winnie Pipeline Co. holds an easement for a natural gas pipeline which traverses the Roberts-Mueller and East units in the

central portion of the Refuge. Kerr-McGee transports natural gas produced from the well on the Refuge via a connecting pipeline from their separator facility north of F.M. Road 1985 back south and west through the Refuge and connects to this pipeline.

McFaddin NWR: The Clam Lake field resulted in 85 wells being drilled. There are 29 to 50 wells that are currently active, although only a small number are producing at any one time. The oil field encompasses approximately 100 acres and includes separator facilities and tank batteries. PAPCO, Inc. is the current leaseholder/operator of the Clam Lake field. The oil and gas produced is transported by pipelines to temporary storage facilities located on the GIWW and then to distant refining facilities by barge. Oil and gas exploration and development has occurred throughout the refuge, and infrastructure (well pads, levees, roads, and gathering lines) from these activities remains. There are currently no producing wells outside of the Clam Lake field on the Refuge.

Easements for buried pipelines within McFaddin NWR are held by several companies. A 50-foot pipeline easement is held by United Gas Company for a 16 inch natural gas pipeline from the British Petroleum-Vastar facility north across the Refuge to private property located along the GIWW. A 50-foot easement is held by Scurlock Oil Company for a six inch crude oil pipeline paralleling the aboveground 16 inch line. Scurlock also holds a 50-foot easement for a four inch crude oil line located along the Gulf of Mexico shoreline. Shell Company/Exxon USA holds a 50-foot easement for a three inch natural gas pipeline from private property (Phelan property) along the GIWW to the Clam Lake oil field. The U.S. Department of Energy holds an easement for a buried 48" pipeline that carries brine from the Big Hill Strategic Petroleum Reserve to the Gulf of Mexico.

Texas Point NWR: No active oil and gas wells are present on Texas Point NWR at this time. Several inactive gas wells exist on the southeast end of the Refuge. A total of ten natural gas/crude oil pipelines cross Texas Point NWR. A waterline also exists along the western boundary of the Refuge.

Recent 3-D Seismic Surveys

Extensive seismic surveys have been conducted throughout the Refuge Complex, including several recent 3-D surveys conducted by several companies from 1996-2002. These recent seismic surveys have covered almost all of Anahuac and Texas Point NWRs, and the eastern portion of McFaddin NWR. Current 3-D seismic survey technologies consist of sample grids that are 220 feet by 1760 feet in area and extend seven miles in length. As many as 10 grid lines are run at the same time over a six day period (USFWS 2005b)

Refuge Complex Water Management

Water Rights

Anahuac NWR and McFaddin NWR have water rights associated with the Trinity River Basin and the western portion of the Neches-Trinity Coastal Basin (final determination October 30, 1985). Anahuac NWR is entitled to diversion and use of 21,000 acre feet of water per year from Oyster Bayou, tributary of East Bay, for wildlife purposes and irrigation of 825 acres of land. There are three diversion points on Oyster Bayou for a maximum combined rate of 88.89 cfs. With this water right (priority date of December 31, 1943), the USFWS can maintain reservoirs and impound 1,025 acre feet of water. Impounded water is used to maintain the following marsh units: Shoveler Pond, approximately 800 acre feet; Teal Slough, approximately 150 acre feet; and Marsh Pond, approximately 75 acre feet (Claim #2084, Certificate of Adjudication 07-4296, 1985).

Water rights associated with the East Unit of Anahuac NWR authorize diversion from two points on Onion Bayou, tributary of Oyster Bayou (priority date of September 21, 1970). This water right allows for the diversion and use of 5,932 acre feet of water annually from Onion Bayou to irrigate a maximum of 1,853.75 acres of land out of a 12,779.50 acre tract with a maximum rate of 26.67 cfs.

Most drainage ditches and agricultural water delivery systems are owned and maintained by county navigation and drainage districts, or similar agencies. Acquiring and receiving irrigation water may be possible from one of three water related authorities in the area, Chambers-Liberty Counties Navigation District, Devers Canal Association, and Lower Neches Valley Water Authority.

Lands within the study area that receive irrigation water either have water rights and pump from the creeks and bayous or purchase water from the above mentioned water purveyors. These irrigation and drainage districts provide water on a per acre or acre-foot basis which costs from approximately $45 per acre in the Lower Neches River Authority to $85 per acre in the Chambers-Liberty Counties Navigation District (USFWS, Engineering Assessment, 1998).

Water Management Regime

The historic hydrologic regimes of the coastal marshes in the project area have been greatly modified by the construction of the GIWW and numerous smaller canals and ditches, roads, levees and impoundments, and by the channelization of natural waterways. Saltwater intrusion, reduced or restricted freshwater inflows, and altered hydroperiods (wetting and drying cycles) resulted, which in turn impacted natural biological diversity and in some cases contributed to a net loss of emergent wetlands (Stone *et al.* 1978, Moulton *et al.* 1997). Land subsidence due to oil and gas extraction is the main cause of salt water intrusion into freshwater areas, which in turn requires extensive water management activities.

Given these extensive changes which in general have increased the potential for saltwater intrusion on the Refuge Complex, water management to control salinities and water levels within marsh habitats is implemented to help maintain the historic continuum of fresh, intermediate, brackish and saline marshes and the native plant, fish and animal communities that depend on these habitats. Water management, in coordination with the Refuge Complex controlled grazing and fire management programs, is also used to enhance marsh habitats for wintering and migrating waterfowl, shorebirds, wading birds, and other marsh and waterbirds.

In general, the typical water management regime for managed marshes on the Refuge Complex involves maintaining salinities within the range of the particular marsh type being targeted. Water level management regime across most of the Refuge Complex involves maintaining water levels which provide favorable conditions for dabbling ducks and geese during fall and winter.

Anahuac NWR: Approximately 12,000 acres of marsh habitats on Anahuac NWR are structurally managed by 253.8 miles of levees, canals and ditches that access 171 water control structures (USFWS 2005a). Large water control structures on Oyster Bayou, Onion Bayou, East Bay Bayou, Jackson Ditch, Oil Field Ditch and their associated levees and canal/ditch systems are the major water management infrastructure for these marsh units. Water management infrastructure on this refuge is extensive.

McFaddin NWR: The GIWW bisects the McFaddin NWR, and divides the Refuge into distinct units, the 5,914 acre North Unit and the 35,768 acre South Unit. The elevated banks of the GIWW are comprised of soils excavated during the canal's construction and are eroding rapidly due to barge traffic. Maintenance of these levees is a key management strategy to protect the interior marshes of the North and South units from saltwater intrusion. Approximately 18,000 acres of McFaddin NWR's marsh habitats are under structural marsh management that requires 63.5 miles of levees, canals and ditches which also includes the GIWW that access nine water control structures (USFWS 2005a).

The Willow Slough semi-impoundment, historically a reservoir supporting local rice production, is a large freshwater marsh now maintained via a 2,000-linear foot levee and low-level armored spillway located on the Refuge. The impoundment itself encompasses 1,500 acres of the Refuge (the North Unit) with the remaining 1,000 acres on private land.

Two major water control structures on Star Lake, one connecting it to the GIWW and the second at the outlet to Salt Bayou (5-mile Cut portion), prevent saltwater intrusion from the GIWW and provide

management capability to impound or release freshwater to help maintain the historically fresh and intermediate marshes in the central portion of the Refuge.

The 5000-acre Wild Cow Bayou Management Unit is located in the eastern portion of the Refuge. This levied marsh semi-impoundment is intensively managed as an intermediate marsh habitat. Two water control structures, one outletting to Salt Bayou and one to the GIWW, are used to maintain target water levels and salinities in this unit. The western two-thirds of the Refuge drains westward to the GIWW through an outlet ditch and via Mud Bayou. Water management in this portion of the Refuge is passive. Natural and man-made elevated features (several north-south levees and levees along the GIWW) control hydrology.

Refuge water control structures on the South Unit along Salt Bayou are part of a joint Texas Parks and Wildlife Department-USFWS water management plan, called the Salt Bayou Project (TPWD 1990). This management plan was developed for the entire 60,000 acres of federal and state wetlands located in southeastern Jefferson County, including the McFaddin NWR, Sea Rim State Park, and the J.D. Murphree Wildlife Management Area.

Refuge Complex Invasive Species Management

In general, mowing and prescribed burning are used on undisturbed native prairie and other grassland habitats to control upland exotic and invasive species. Prescribed burning and controlled grazing are the primary tool used in marsh habitats. Discing or roller chopping are used in rice fields and moist soil units to manage invasive species. Various control activities are also implemented by the local irrigation and drainage districts holding easements on Anahuac NWR. Target species are water hyacinth in canals and ditches, and Chinese tallow along canal and ditch banks.

Feral hogs are very prolific and are able to exploit wetland and upland habitats. Control activities for feral hogs implemented on the Refuge Complex primarily utilize State animal damage control agency personnel who capture and remove hogs or kill on-site. In addition, Refuge law enforcement personnel conduct periodic lethal control activities.

Refuge Complex Grazing Program

The Refuge Complex implements a controlled grazing program and has developed specific grazing plans to address the habitat objectives for each grazing unit. These plans are flexible and are adapted as necessary allowing for droughts, floods, and other circumstances. Grazing strategies include variations in the number of cattle (pressure) per unit, timing (cool vs. warm season), duration, and are developed for specific habitat objectives of each grazing unit. Stocking rates for the cool season grazing period are determined annually according to the quantity and condition of forage on the grazing units.

The Refuge Complex grazing program relies on livestock provided by local ranchers. The animals are referred to locally as a crossbred variety and typically contain strains of bramha, hereford, angus, and others. Anahuac NWR implements cool season and summer cattle grazing on various marsh and upland units. There are currently two grazing permittees on Anahuac NWR. Units grazed include Old Anahuac (several subunits), East Unit (also several subunits), and the Middleton Tract grazed by one permittee, and the Pace Tract and Roberts-Mueller Tract grazed by the second permittee. The grazing program is an effective tool in the control of the native red rice in farm fields of this Refuge. This is one primary grazing permittee on McFaddin NWR and grazing is permitted on a limited basis on Texas Point NWR. Annual animal unit months (AUM)'s vary by year and tract. During the 2001-2002 grazing season Anahuac NWR permitted 14,352 AUM's of grazing, McFaddin NWR permitted 10,240 AUM's, and Texas Point NWR permitted 845 AUM's (Booz Allen Hamilton (BAH), 2003).

Grazing within the Refuge Complex is dependent on natural weather patterns and the manipulation of the water that is control throughout the complex. Access to grazing units is provided via levee, canal, ditches, USFWS management roads along with public roads and bridges.

Refuge Complex Fire Management

The objective of the Refuge Complex fire management program is to manage prescribed fire and wildfire in a manner beneficial to native plant and animal communities and ecological functions, while providing for public and employee safety and minimizing negative impacts to the surrounding communities. Prescribed burning activities and wildfire response tactics are based on protecting public and employee safety, habitat/biological objectives, and minimizing air quality impacts from smoke on local communities and the region's air sheds.

The most recent 10-year fire occurrence history (1993 to 2002) for the Complex indicates an average of 28 fires per year with an average fire size of approximately 425 acres (Fire Management Information System). The relatively large average fire size is indicative of the flashy fuels present on the Refuge Complex and the fact that a common suppression strategy involves burning out from established fuel breaks.

In general, areas within the Refuge Complex are burned on a two-year rotation; however, the actual vegetation condition of the unit dictates the need for a burn. Most burns in marsh units are conducted during the fall and winter months, while burning in upland units occurs primarily in late winter and early spring. Prescribed burning for habitat management purposes occurs throughout the complex and utilizes all access structures associated with water management and motorized vehicles which do not permanently harm refuge habitats or wildlife.

Refuge Complex Cooperative Farming Program

The USFWS manages a cooperative farming program for certain areas within the Complex. The program supports rice farming and occurs solely on the Anahuac NWR. Currently four permittees farm approximately 500 to 800 acres of rice on an annual basis in the cooperative farming program. The USFWS recognizes the benefits of having rice produced on the refuge as a potential food source for migratory birds. Rice operations within the refuge must be compatible with wildlife goals. Thus, USFWS requires permittees to meet certain stipulations including: use of only approved herbicides, maintenance schedules, use of certified rice seed and restrictions on second growth harvests. The proportion of uplands utilized for rice production and pastureland in the project area varies from year to year. Currently, nearly two-thirds of the total acreage in the cooperative farming program is managed as an organic rice farming operation.

Rice production requires seasonal flooding which creates emergent wetland habitat utilized by many avian and other wildlife species throughout the spring and summer. During fall and winter flooded rice stubble and rice fallow, plowed fields, water leveled fields, weedy fields, ryegrass fields and pastureland in the project area provide habitats which historically have supported large concentrations of wintering and migrating waterfowl, shorebirds and wading birds.

Refuge Complex Recreational Resource Use

Public lands in the area support a variety of recreational opportunities. According to Executive Order 12996 (1996), the USFWS is to provide recreational opportunities that include hunting, fishing, wildlife observation, photography, and environmental education and interpretation as priority uses within the National Wildlife Refuge System (NWRS). Congress reaffirmed this with the passage of the National Wildlife Refuge System Improvement Act of 1997. All of the above priority public uses are currently allowed on the Complex and many are being expanded pending their compatibility with the purpose for which the refuge was established, (e.g., to provide and maintain quality wintering and migrational habitat for the migratory bird resource).

According to BAH (2003) beach and water use in 2002 accounted for 47.5 percent of the total public use with 26.6 percent used for fishing, 18.1 percent used for wildlife observation, 6.5percent used for hunting, with less than 1 percent used for each of the following: office visits, outdoor education, and other

recreational uses. Hunting opportunities on the Refuge Complex are allowed on about 40 percent of the lands which is the most allowable by law. Fishing opportunities require no permit and 24 hour access is allowed in some areas. Bank and boat fishing is popular in many bayous, tidal streams, and larger lakes throughout the Complex (BAH 2004).

Overall, between 2001 and 2002 visitation to the Refuge Complex increased 2.5 percent. Beach use accounted for 87 percent of McFaddin NWR use, while fishing accounted for 75 percent of the use at Texas Point NWR, with 42 percent of the use at Anahuac NWR for wildlife observation (BAH 2003)

Conclusion: All three of the areas generally appear to have been affected primarily by oil & gas activities and refuge management activities, particularly water management, with the imprint of human uses and activities substantially noticeable. None of these areas meet the criteria for "naturalness".

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation Critera

In addition to meeting the size and naturalness criteria, a SA must provide outstanding opportunities for solitude or primitive recreation (BLM 2001, USFWS 2004a, b). The area does not have to possess outstanding opportunities for both solitude and primitive and unconfined recreation, and does not need to have outstanding opportunities on every acre. Further, an area does not have to be open to public use and access to qualify under this criteria; Congress has designated a number of wilderness areas in the Refuge System that are closed to public access to protect resource values.

Opportunities for solitude refer to the ability of a visitor to be alone and secluded from other visitors in the area. Primitive and unconfined recreation means non-motorized, dispersed outdoor recreation activities that are compatible and do not require developed facilities or mechanical transport. These primitive recreation activities may provide opportunities to experience challenge and risk, self reliance, and adventure. These two opportunities "elements" are not well defined by the Wilderness Act but, in most cases, can be expected to occur together. However, an outstanding opportunity for solitude may be present in an area offering only limited primitive recreation potential (BLM 2001, USFWS 2004a, b). Conversely, an area may be so attractive for recreation use that experiencing solitude is not an option.

In the wilderness inventory for the roadless areas within the project area, the following factors and their cumulative effects were the primary considerations in evaluating the availability of outstanding opportunities for solitude or primitive and unconfined recreation:

- size
- availability of vegetative screening
- proximity to or attached to the mainland at low tide in an area with intensive public use
- presence of water control structures which includes management of the water regime, maintenance of the structures themselves, and the access to and from the structures
- oil & gas exploration including the 3-D seismic surveys that are underway and the potential for additional 3-D seismic surveys within the entire Refuge Complex (USFWS 2005b)
- current and future oil and gas operations and associated structures
- current and future refuge management activities including future recreational development activities
- substantial private ownership with developments such as private residences and associated incompatible activities
- significant presence of oil & gas facilities for production, refinement and storage that makes the area unsafe or unattractive for public use

Evaluation of Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

The three possible SA's were evaluated for the factors considered in determining the availability of outstanding opportunities for solitude or primitive and unconfined recreation. Most of the factors considered are the same as the ones addressed under the section evaluating "Naturalness".

The issues addressed for each of the three areas under the following listed activities in the "Naturalness" section are also considered in this evaluation:

- Mineral Resources and Related Exploration and Development
- Refuge Complex Water Management
- Refuge Complex Invasive Species Management
- Refuge Complex Grazing Program
- Refuge Complex Management Fire Management
- Refuge Complex Cooperative Farming Program
- Refuge Complex Recreational Resource Use

Conclusion: All three of the areas offer some opportunities for both solitude or primitive and unconfined recreation. However, activities associated with the oil & gas activities, pipeline easements, current public uses, water management and other Refuge management activities affect outstanding opportunities for solitude or primitive and unconfined recreational activities. Opportunities for solitude or primitive and unconfined recreation were judged to be less than outstanding for all three areas.

Supplemental Values

Supplemental values are defined by the Wilderness Act as "...ecological, geological, or other features of scientific, educational, scenic, or historic value" (USFWS 2004b)." These values are not required for wilderness but their presence is documented in Chapter 3- Affected Environment in the Texas Chenier Plain Refuge Complex Draft CCP/EIS and is evaluated in this Wilderness Review.

Evaluation of Supplemental Values

All three of the areas offer outstanding ecological values with features of scientific, educational, and scenic interest. The undeveloped coastal area along Highway 87 that parallels McFaddin NWR offers a unique, and increasingly rare, opportunity to observe natural processes. The marshes, prairies and woodlots of the Chenier Region comprise hemispherically important biological areas. Regionally, all of the areas provide important habitats for Federal- and State-listed, and rare and declining plant and animal species.

SUMMARY: NONE OF THE AREAS MEET THE REQUIRED CRITERIA FOR WILDERNESS AND THEREFORE NONE WILL BE RECOMMEDED FOR INCLUSION IN THE NATIONAL WILDERNESS PRESERVATION SYSTEM.