Draft Environmental Assessment

Expansion of Hunting Program on Laguna Atascosa National Wildlife Refuge

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This draft Environmental Assessment (EA) is being prepared to evaluate the effects associated with this proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

Proposed Action

The U.S. Fish and Wildlife Service (Service) is proposing to expand hunting opportunities for white-tailed deer (*Odocoileus virginianus*), feral hog (*Sus scrofa*), nilgai antelope (*Boselaphus tragocamelus*), and other exotic ungulates as defined by the State of Texas to include fallow deer (*Dama dama*), axis deer (*Axis axis*), sika deer (*Cervus nippon*), Barbary sheep (*Ammotragus lervia*), and black buck (*Antilope cervicapra*) on the Laguna Atascosa National Wildlife Refuge (Laguna Atascosa NWR, LANWR, or refuge) in accordance with the refuge's 2010 Comprehensive Conservation Plan (CCP). In addition, the Service is proposing to add the American alligator (*Alligator mississipiensis*) as a hunted species at the Laguna Atascosa Unit. The primary objectives of the hunting program on Laguna Atascosa NWR are: 1) to provide a quality recreational and educational experience for a diverse audience and 2) to manage and control exotic wildlife. The Service is proposing to expand hunting to 33,766 huntable acres on the Laguna Atascosa Unit, 9,293 huntable acres on the Bahia Grande Unit, and 2,027 huntable acres on the La Selva Verde Unit. This includes a total of 45,086 acres that will be available to hunters and an expansion of hunting by 25,086 acres overall.

This proposed action is often iterative and evolves over time during the process as the agency refines its proposal and learns more from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The final decision on the proposed action will be made at the conclusion of the public comment period for the EA and the Draft 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations. The Service cannot open a refuge to hunting and/or fishing until a final rule has been published in the Federal Register formally opening the refuge to hunting and/or fishing (50 CFR 32.63).

Background

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

Laguna Atascosa NWR was established on March 29, 1946, pursuant to the Migratory Bird Conservation Act of 1929.

The primary purpose of the refuge is *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds..."* (Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended); and for conservation and enhancement of other wildlife species, as well as providing opportunities for wildlife-dependent recreation to the public.

Refuge staff completed a refuge hunt plan in 1986 to provide the public with hunting opportunities for white-tailed deer and feral hogs (USFWS 1986). A revised hunt plan was drafted, but potentially never signed, in 1994, which added nilgai antelope (*Boselaphus tragocamelus*) to the species hunted (USFWS 1994). In 2015, a hunt plan was drafted that went out for informal public scoping and received primarily favorable comments. The 2019 hunt plan, supersedes previous hunt plans, and is updated to include the continued hunting of white-tailed deer and feral hogs, and the addition of American alligator and other non-native exotic ungulates as hunted species. This plan also expands areas where hunting is allowed in the Laguna Atascosa Unit, and opens two additional refuge Units to hunting for the first time: Bahia Grande and La Selva Verde.

The refuge is located in Cameron County, Texas, approximately 25 miles northeast of Los Fresnos, Texas (Figure 1). Partly bordering the lower reaches of the Laguna Madre, one of only five hypersaline lagoons in the world. The refuge supports a wide range of habitats including thornscrub forests, coastal and saline prairies, tidal flats, and sand and clay dunes. The location of the refuge at the southern extent of Texas exposes it to ecological influences from the Great Planes, tropics, Gulf Coast, and desert, creating one of the most biologically diverse regions in North America. Hosting over 400 bird species, the refuge is situated at the confluence of the Mississippi and Central Flyways and is a crucial stopover point for millions of migrating birds, with numbers peaking during fall migration (USFWS 2019b). The refuge's native thornscrub habitat is home to one of two remaining breeding populations of ocelot (*Leopardus pardalis*) in the United States, and the freshwater Laguna Atascosa and adjacent wetlands of the Laguna Madre host approximately 80 percent of the nation's overwintering redhead ducks. Other refuge focal species include the aplomado falcon (*Falco femoralis*) and Kemp's ridley sea turtle (*Lepidochelys kempii*). Supporting an extensive array of plant, amphibian, reptile, and mammal species, the refuge is also an important observation area for uncommon and rare butterflies (USFWS 2019c).

The refuge is part of the South Texas Refuge Complex (STRC), which also includes the Santa Ana National Wildlife Refuge and Lower Rio Grande Valley National Wildlife Refuge (LRGVNWR). Located in a region that was historically characterized by thornscrub and prairie habitat, then largely converted over time to agriculture, the refuge is gradually becoming surrounded by areas increasingly influenced by energy and urban development. The STRC headquarters is located in Alamo, Texas, approximately 60 miles west of Laguna Atascosa NWR. Due to geographical logistics, and through an internal agreement, LANWR manages several areas under the jurisdiction of LRGVNWR.

The mission of the NWRS, as outlined by the National Wildlife Refuge System Administration Act (NWRSAA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is to:

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

The NWRSAA, in 16 U.S.C. 668dd (a)(4), mandates the Secretary of the Interior, in administering the NWRS, to:

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd (a)(2) and the purposes of each refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the states in which the units of the NWRS are located;
- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the NWRS and the purposes of each refuge;
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the NWRS through which the American public can develop an appreciation for fish and wildlife;
- Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses; and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Therefore, it is a priority of the Service to provide for wildlife-dependent recreational opportunities, including hunting and fishing, when those opportunities are compatible with the purposes for which the refuge was established and the mission of the NWRS.

The LANWR hunting program provides affordable and accessible public hunting opportunities that are very limited in South Texas. White-tailed deer hunting on the refuge is one of the most popular public deer hunts in the Rio Grande Valley (Valley), especially for local hunters. Archery hunts have been held annually since 1970, and firearm hunts have been held annually since 1979. Special youth hunts and exotic-only (feral hog and nilgai antelope) hunts have been held most years since their inception around 2010 (USFWS 2010). All white-tailed deer hunts are conducted during seasons set by the State of Texas (State).

Purpose and Need for the Proposed Action

The purpose of this proposed action is to provide compatible wildlife-dependent recreational opportunities on Laguna Atascosa National Wildlife Refuge. The need of the proposed action is to meet the Service's priorities and mandates as outlined by the NWRSAA to "recognize compatible wildlife-dependent recreational uses as the priority general uses of the NWRS" and "ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses." 16 U.S.C. 668dd(a)(4) One of the CCP's public use objectives is to *"...enhance hunting access and opportunities for a safe, quality hunting experience for diverse audiences, and develop hunting opportunities, as compatible, for other Refuge units."* Strategies

call for revising the hunting plan and to evaluate the feasibility of opening additional areas that can sustain regulated hunting or that contain "huntable" big game and exotic wildlife (e.g., deer, feral hogs, and nilgai antelope). Refuge staff completed a refuge hunt plan in 1986, to provide the public with hunting opportunities for white-tailed deer and feral hogs (USFWS 1986). A revised hunt plan was drafted, but never finalized, in 1994, which added nilgai antelope to the species hunted (USFWS 1994).

The Laguna Atascosa NWR has expanded from 45,187 acres in 1999, to a total of 89,555 acres in 2016. There's an additional 10,064 acres the refuge manages for the LRGVNWR. Therefore, according to the latest Service realty figures, LANWR manages a total of 99,619 acres.

The 1997 Refuge System Improvement Act emphasizes that wildlife-dependent recreation uses are appropriate, priority uses and should be facilitated when compatible with refuge purposes and the mission of the NWRS. Priority wildlife-dependent uses include hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Laguna Atascosa NWR offers the largest public hunt in the Valley, an area known for limited public hunting opportunities.

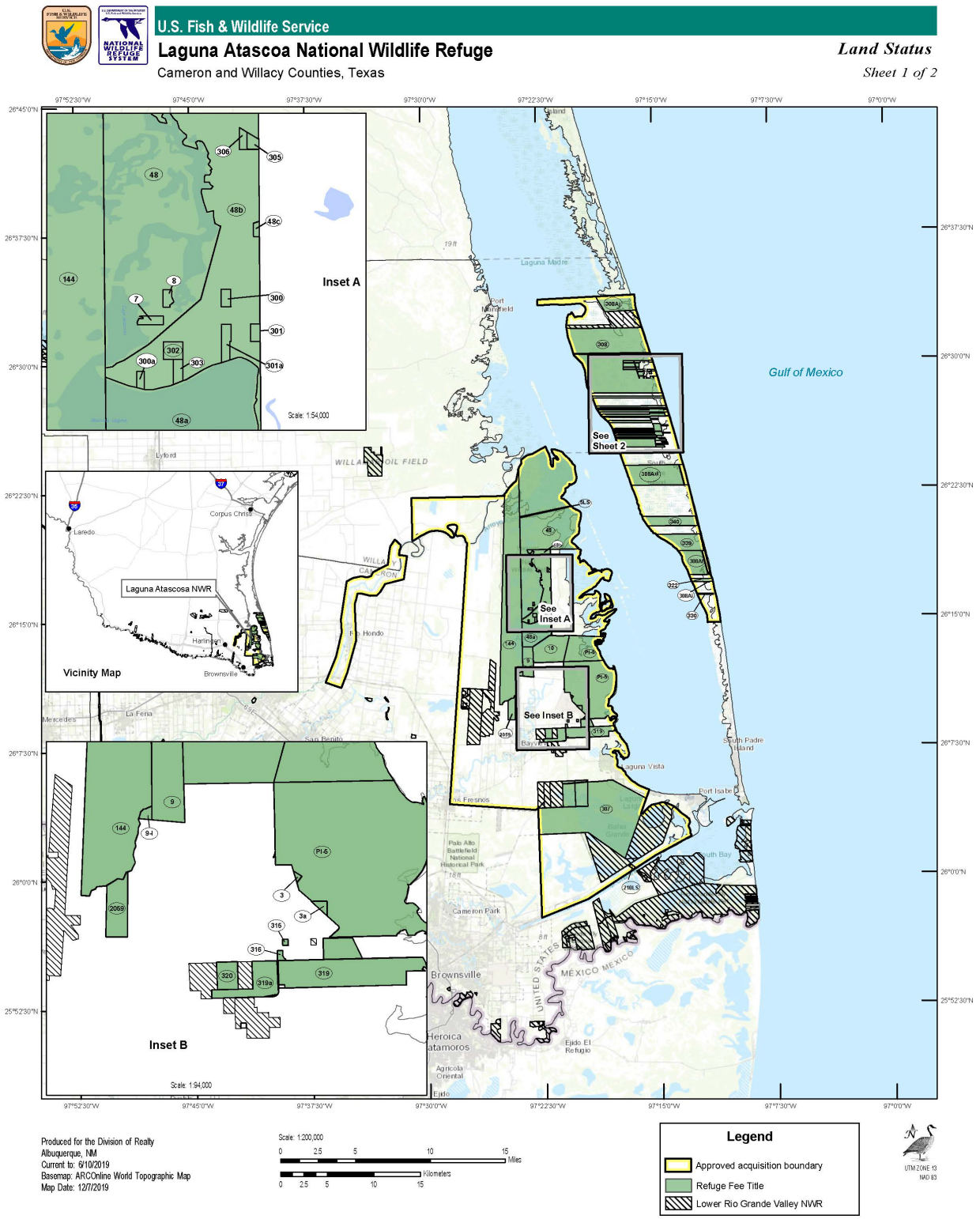

Figure 1. Laguna Atascosa NWR Location Map

Alternatives

Alternatives Considered

There are no unresolved conflicts about the proposed action with respect to the alternative uses of available resources as none have been received during our public comment period. Therefore, based upon input from interested parties, there is agreement that the proposed action is sufficient. Therefore, the Service does not need to consider additional alternatives (43 CFR 46.310).

The National Environmental Policy Act (NEPA) requires federal agencies to consider a reasonable range of alternatives that meet the purpose and need for the proposed action. Based on the issues, concerns, and opportunities raised during the public and internal scoping process, the alternatives listed below were identified and are analyzed in detail in this EA. Other scenarios/alternatives were also considered but were found to be not feasible (i.e., *they do not meet the stated purpose and need*); therefore, they were eliminated from detailed analysis.

Alternative A – Current Management Activities [No Action Alternative]

The No Action Alternative would continue to maintain the current level of hunting and in the same hunt Units (status quo) during the typical period (November through January) as described below:

Hunts are administered through a Texas Parks and Wildlife Department (TPWD) hunt permit and through a signed refuge permit (tearsheet) issued to each hunter. They are conducted during specific periods within the State's hunting season. Special youth hunts and exotic-only hunts (e.g., feral hog and nilgai antelope) have been established. Special hunts are by refuge permit (tearsheet) only and may occur at any time during the year. The incidental take of feral hog and nilgai antelope is allowed during all refuge hunts. Laguna Atascosa NWR hunts are challenging, yet reward individuals who spend time scouting during the designated scouting period(s). Hunters with a permit are allowed to hunt in any of the available units on a "first-come, first served" basis. No assistance is guaranteed to hunters when retrieving harvested game, and therefore many hunters must prepare to quarter their harvested game and pack or cart it out.

Approximately 20,000 acres of the Main Laguna Atascosa Unit only (Subunits 1, 2, 3, 5, 6, and 8) are currently open to hunting (Figure 2). Only white-tailed deer, feral hogs, and nilgai antelope are allowed to be hunted on the refuge. At the Laguna Atascosa Unit, no more than 800 archery permits are issued to hunters in Subunits 1, 2, 3, 5, 6, and 8. The archery hunt targets white-tailed deer with incidental take of exotic species. White-tailed deer bag limits are established by TPWD. However, based on survey data and the need to maintain a stable deer population at or above 1 deer per 100 acres, the refuge typically issues a more restrictive bag limit of 2 deer (1 male and 1 female). Archery hunts are usually spread-out over either three or four different hunt periods. Therefore, each hunt includes either ~265 or 200 hunters respectively. Each archery hunt is 5 full days in length, which totals 4,000 hunt days (800 hunters x 5 days each).

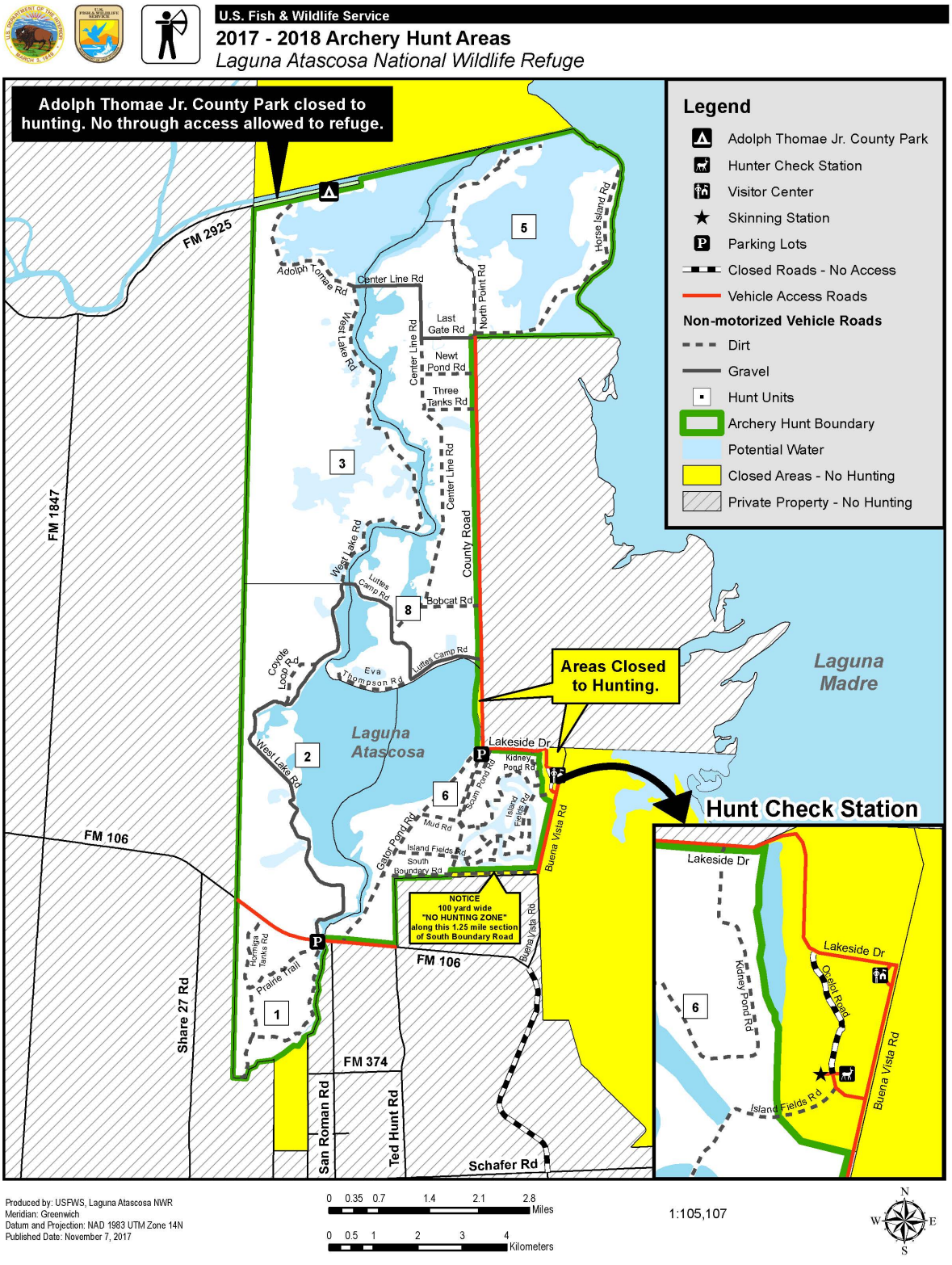

Figure 2. Laguna Atascosa NWR Current Hunt Map

During firearm hunts at the Laguna Atascosa Unit, the refuge issues 200 permits annually. These permits are distributed in separate hunt periods to a maximum of 35 hunters. The firearm hunts occur in Subunits 2, 3, 5, and 8. Each hunt period is 3 full days in length, which totals no more than 600 hunt days (200 hunters x 3 days each). White-tailed deer bag limits are set in the same manner as the archery hunts. The relatively low number of permits issued for firearm hunts is due to concern for hunter safety during gun hunts in the open-landscapes at LANWR. No hunting is allowed in Subunits 1 and 6 due to proximity to housing and government facilities; therefore, approximately 6,000 fewer acres are available. With approximately 14,000 acres available to hunt, the hunter to acres of land acre ratio is approximately 1:400. Hunters are required to wear hunter orange and keep it on at all times during the firearm hunts.

Alternative B – Expand Hunting Opportunities on Additional Units and Include American Alligator Hunting [Proposed Action Alternative]

The refuge has prepared a hunt plan (The Laguna Atascosa National Wildlife Refuge White-tailed Deer, Exotic Ungulate, and Alligator Hunt Plan), which is presented in this document as the Proposed Action Alternative. Under the Proposed Action Alternative, the Service seeks to expand hunting opportunities to include five new opportunities: 1) expansion of hunting on the Laguna Atascosa Unit; 2) opening Bahia Grande Unit to hunting; 3) providing an opportunity to hunt alligators on the LANWR Subunit; 4) opening hunting on the La Selva Verde Tract (a portion of LRGVNWR); and 5) including all invasive ungulates as part of the hunted species at all the above mentioned units. The hunts will be planned in priority order. Currently, the highest priority hunts are those proposed for Bahia Grande. The lowest priority hunts are the Subunit 4 hunts and the American alligator hunt.

The Bahia Grande Unit is a large contiguous tract and has large populations of non-native animals such as nilgai antelope and feral hogs. The LRGVNWR owns 3,865 huntable acres of those being proposed. This unit includes approximately 9,293 total huntable acres proposed to be opened to nilgai and feral hog hunting for archery and muzzleloader/shotgun hunts only. Up to 150 archery permits and 150 muzzleloader/shotgun permits may be issued annually on the Bahia Grande Unit.

As part of this alternative, 4,366 huntable acres that make up Laguna Atascosa's Subunit 4 would be opened to nilgai and feral hog hunting during firearm hunts. A maximum of 50 firearm permits may be issued annually. This unit is located north of the Harlingen Ship Channel on an island of coastal prairie and isolated thornscrub patches. The hunt would be accessible by boat only. Approximately 9,400 huntable acres in Subunit 7 and 2,027 acres of huntable acres at La Selva Verde are also proposed to be opened for hunting during youth firearm hunts. These hunts would be open to no more than 30 youth at Subunit 7 and 20 at La Selva Verde. At both locations, each youth hunter, age 9 to 17, would be under the direct supervision of an adult age 18 or older.

In addition, a new refuge hunt for alligators within the Laguna Atascosa Unit is proposed. There would be a maximum of 20 permits issued annually in a small portion of human-made canals and a portion of the Cayo Atascosa within Subunit 6. The new hunt for this species is proposed to help the refuge management better control population numbers especially during periods of high rainfall and overall high water (when American alligator numbers have a tendency to increase).

The proposed action is consistent with Goal 3 of the refuge's 2010 CCP, which calls for enhancement of hunting access and opportunities for compatible, safe, quality hunting experiences for a diverse public. Under the proposed alternative, up to 45,086 acres may be open to hunting (25,086 acres more than Alternative A). As in Alternative A, only white-tailed deer, feral hogs, and nilgai would be hunted on the refuge during the typical period (November through January). American alligator hunts will occur within the designated TPWD hunt season and follow the State regulations and bag limits. Additionally, special youth hunts and exotic-only hunts (e.g., feral hog and nilgai antelope) would continue to be conducted at any time during the year. The incidental take of feral hog and nilgai antelope would continue to be allowed in addition the other exotic ungulates as defined by the State of Texas except during American alligator hunts. In total, the Service is proposing to issue an additional 420 hunt permits annually for either a nilgai/feral hog hunt or an American alligator hunt.

This alternative offers increased opportunities for public hunting/fishing and fulfills the Service's mandate under the National Wildlife Refuge System Improvement Act of 1997. The Service anticipates that the hunt plan would be found compatible with the purposes of the Laguna Atascosa National Wildlife Refuge and the mission of the NWRS.

Mitigation Measures to Avoid Conflicts:
Four federally-listed endangered or threatened species, including the ocelot, jaguarundi (*Herpailurus yagouaroundi*), and northern aplomado falcon, may occur within refuge hunt tracts. As per the Endangered Species Act, the refuge has conducted an Intra-Service Section 7 consultation on any potential impacts from the Hunt Program on federally-listed species to ensure any impacts to these species are adequately addressed. Hunting would not be permitted within or near any active northern aplomado falcon territories during the nesting season.

With respect to other public uses, areas in which hunting occurs would need to be closed to all other public uses during the active hunting period. During hunts, alternative areas are available for other public users of the refuge to reduce conflicts. Hunt dates and areas are planned far enough in advance so that interpretive tours and environmental education field trips can be planned and scheduled to avoid any conflicts. Information on areas closed due to hunting will be provided at those locations, as well as on the refuge website. Closed areas will be clearly signed for visitor safety.

The goal of the refuge would be to monitor sensitive wildlife species such as nesting colonial nesting birds using the Bahia Grande wetlands to determine whether increased use would affect their nesting success. Use of adaptive management and the phased approach to implementation is expected to keep any impact to these species at a nominal level.

Alternative(s) Considered, But Dismissed from Further Consideration
A range of alternatives were considered in this EA based on public comments and internal scoping. Those alternatives, eliminated from detailed consideration along with the rationale for their dismissal, are as follows:

- **Close the Refuge to Hunting**. One commenter suggested a third alternative, which is to close the refuge to hunting in favor of other public uses such as hiking, camping, and kayaking. This alternative was eliminated from further analysis since hunting is an

important wildlife management tool that the refuge recognizes as a healthy, traditional outdoor pastime. Hunting has been determined to be an appropriate use of the NWRS, but the refuge manager must still determine if and where hunting is compatible on a particular refuge. The current hunt program has been determined to be a compatible use occurring on Laguna Atascosa NWR, particularly in efforts to help control non-native species such as hogs and nilgai. Non-native species, particularly feral hogs, cause extensive habitat damage as a result of their rooting activities (Stevens 2010). Therefore, some level of hunting (for exotic species) is necessary to help to control these species to minimize the damage they cause to native habitats. Hunting is also considered a priority public use of the NWRS and receives enhanced consideration over non-priority uses (e.g., hiking, camping, or kayaking). Laguna Atascosa NWR offers the largest public hunt in the Valley, which is an area limited in public hunting opportunities.

- **Open All Units of the Refuge to Hunting**. Another alternative proposed was to open up big-game hunting on all units of the refuge that support populations that can sustain regulated hunting or those that are huntable. However, this would exclude refuge units on South Padre Island. As stated in the refuge's 1999 Refuge Expansion Plan, it was decided not to allow public hunting on South Padre Island due, in part, to the lack of huntable populations of big game, upland game, and migratory birds. Additionally, the non-contiguous tracts on South Padre Island are interspersed with private property and public beachfront, which do not facilitate safe public hunts. In addition, many of the other refuge tracts either do not support huntable populations or are designated areas for other public uses (e.g., fishing, wildlife observation, photography, hiking, bicycling, etc.) where such uses may conflict with hunting or pose a safety concern. Therefore, this alternative was eliminated from further analysis.

Affected Environment and Environmental Consequences

Affected Environment

The refuge consists of approximately 100,000 acres of fee-owned lands in Cameron and Willacy County, Texas (Figure 1). This figure includes over 10,000 aces that are owned in fee title by the LRGVNWR and administratively managed by LANWR. Approximately 20,000 acres of the refuge are currently authorized for hunting. The landscape of the refuge consists of coastal prairie, South Texas brushland, and numerous saline, brackish, and freshwater wetlands. Brushlands are the general habitat type that support big game hunting and are found on all of the hunt tracts. These areas are dominated by woody vegetation with at least 50 percent or more canopy cover. Common brushland vegetation includes mesquite (*Prosopis glandulosa*), huisache, granjeno (*Celtis pallida*), brasil (*Condalia hookeri var. hookeri*), coyotillo (*Karwinskia humboldtiana*), retama, Texas ebony (*Pithecellobium flexicaule*), yucca, prickly pear cactus, and Colima (*Zanthoxylum fagara*). Areas of the refuge that support targeted species include the main Laguna Atascosa Unit, La Selva Verde, and the Bahia Grande Unit. The South Padre Island Unit does support significant wildlife species but is a mix of public and private ownership that could be unsafe for big game hunt management. For more information regarding the affected environment, please see Section 3 of the refuge's CCP, which can be found here.

The Laguna Atascosa National Wildlife Refuge is primarily coastal prairie interspersed with scattered "lomas" that contain dense Tamaulipan thornscrub. Other dominant habitat types

include brackish and saline wetlands, and sand-tidal flats, which are seasonally inundated with overflow flood waters originating from the Laguna Madre. The proposed action is located in all the above-mentioned habitats except most of the more-permanent wetlands. The proposed American alligator hunt occurs in permanent wetlands in a small portion of the Laguna Atascosa Unit that connects to the Laguna Atascosa Lake (see map of the general area and proposed project site on the refuge at Figure 1).

For more information regarding the affected environment, please see chapter 3 of the refuge's CCP, which can be found here.

Environmental Consequences of the Action

This section analyzes the environmental consequences of the action on each affected resource, including direct and indirect effects. This EA only includes the written analyses of the environmental consequences on a resource when the impacts on that resource could be more than negligible and therefore considered an "affected resource." An analysis of the effects of management actions has been conducted on the physical environment (air quality, water quality, and soils); biological environment (vegetation, wildlife, and threatened and endangered species); and socioeconomic environment (cultural resources, socioeconomic features including public use/recreation, and visual and aesthetic resource). Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses.

Impact Types:

- *Direct effects* are those that are caused by the action and occur at the same time and place.
- *Indirect effects* are those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.
- *Cumulative impacts* result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions.

The sections below contain brief descriptions of each resource affected by the alternatives considered and anticipated direct and indirect impacts on each resource.

Affected Natural Resources and Anticipated Impacts of the No Action and Proposed Action Alternatives

Hunted Species – White-tailed Deer
In the early 1900s, there were an estimated 500,000 white-tailed deer in the United States. Unregulated commercial hunting and subsistence hunting threatened to eliminate white-tailed deer from much of its range. At that time, many state wildlife agencies were formed with the goal of conserving the nation's depleted wildlife resources. Hunting regulations were put into place, and the harvest of antlerless (female) deer was prohibited. The rebound of white-tailed deer populations that followed is considered a wildlife management success story. Today, there are over 20 million deer in the United States and numbers are rising (Swihart and DeNicola 1997). *Regional Analysis*

Anticipated annual deer harvest on the refuge and other national wildlife refuges open to deer hunting is an extremely small percentage of the state's annual harvest and just a fraction of the national population. TPWD estimated 112,139 white-tailed deer were harvested in the 20 million-acre South Texas Plains region of the State during the 2010–2011 hunting season (latest data available at the time). This represents 0.005 deer harvested per acre within our region. This level of harvest is therefore a minor or negligible impact on deer populations on a regional scale, at current hunt levels as well as for the proposed alternative. In addition to native white-tailed deer populations, surrounding ranches and ranches throughout Texas have promoted the transport and establishment of "exotics" as new huntable species. The popularity of this practice in areas around Austin and San Antonio has spread to South Texas in more recent years. The popularity of exotics includes many species in Texas, but the potential spread of exotic ungulates is the primary concern for the refuge, due to their ability to escape ranches and their large home ranges.

Local Analysis

Annual spotlight surveys conducted by refuge staff estimated the deer herd on LANWR to fluctuate between 529 to 1,892 individuals. Data from the most recently available hunts indicate an average harvest of 66.5 deer per season. Based on 1,000 permits available, the hunter success rate for white-tailed deer would equate to 6 percent. However, out of the roughly 800 archery permits that are available or sold, only approximately 600 hunters show up. Therefore, the success rate can more accurately be reported at roughly 8 percent. Outside nilgai antelope and feral hogs, there are no other established exotic ungulates on the refuge. Fallow deer and barbary sheep have been spotted by refuge staff on refuge managed lands. Black buck individuals have been spotted very close to refuge property. Observations such as these rare sightings of sheep and black buck are very similar to the way nilgai antelope established themselves on the refuge in the 1980s (Pers. Communication, Kelly McDowell and Alfredo Salinas).

Direct and Indirect Impacts

Alternative A (No Action Alternative)

Annual surveys conducted by refuge biologists over the last few years estimate the deer herd on Laguna Atascosa NWR to be approximately 640 animals. Under Alternative A, hunts have resulted in an average of 97 individual deer harvested annually, based on reported harvest data. This current level of harvest continues to maintain white-tailed deer populations at sustainable levels on the refuge.

The No Action Alternative is not expected to have any change in the current management practices at the refuge or the resident wildlife. One negative indirect impact of Alternative A would be the potential increase/overpopulation of white-tailed deer at LANWR. This increase in population would put the overall population at risk for wildlife disease outbreak. Additionally, the threat to other native species on the refuge could increase competition. Species such as javelina and Texas tortoise may be impacted by that competition. The resident wildlife populations are monitored before and after each hunt period by a nighttime spotlight survey. The refuge staff use the collected data to determine whether a change should be made to daily/annual bag limits for white-tailed deer.

Alternative B (Proposed Action Alternative)

The preferred alternative includes no increase in white-tailed deer harvest. This alternative only includes new opportunity for the harvest of exotic or invasive game species. Therefore, it can be surmised that the overall impact of this proposal on white-tailed deer will be a net increase in forage and available food due to the desired decrease in the non-native populations.

In addition, the white-tailed deer hunt opportunities are the only hunt opportunities in which native non-invasive wildlife is the "target" of the hunt. The proposed new hunts targeting nilgai, hogs, and other exotic ungulates would relieve pressure from the current hunts and allow refuge management to adjust bag limits and number of permits while continuing to allow hunting on other areas and for other species. Furthermore, the timing, duration, and anticipated deer harvest levels of the refuge's hunt program would be adjusted annually, if needed, so that the hunt program will not result in long-term, adverse impacts to refuge resources, wildlife populations, or the surrounding environment. The refuge would continue to support a deer herd that will be at or below habitat carrying capacity based on continuing surveys.

Feral Hog

Regional Analysis

In Texas, feral hogs are unprotected, exotic, non-game animals (Taylor 2003). As such, they may be taken by any means or methods at any time of year. There are no seasons or bag limits; however, a hunting license and landowner permission are required to hunt them (Taylor 2003). Feral hog populations have been expanding (currently estimated at more than 2 million in the state) and there are very few inhibiting factors to curtail this population growth and distribution (Taylor 2003). Feral hogs are highly adaptive, have high reproductive capabilities, and can be found in a wide range of habitat types. Rooting and digging activities negatively impact vegetative communities, soil properties, and plant successional patterns (Stevens 2010). Feral hogs are opportunistic omnivores and compete with game and non-game wildlife species for available food, water, and space. Tate (1984) found that feral hogs compete with deer, turkey, waterfowl, and other wildlife species for food resources. Feral hogs can impact nesting sea turtles (eggs), ground-nesting species, particularly quail and turkey, through nest destruction and predation. Beach (1993) also found that feral hogs prey on fawns and ground nesting birds.

Local Analysis

Feral hogs are a major issue for surrounding farmers. Although a select number of neighboring hunt leases prefer to keep hogs on their land, most are unsatisfied with their presence and are therefore pleased when the refuge reduces the overall number. In 2016, the refuge partnered with the USDA-APHIS to aerially remove feral hogs from the Laguna Unit. In 2 days of harvests from a helicopter, 173 were taken. During refuge hunts in 2014, 43 hogs were harvested. During the 2016 hunt (the same year the aerial harvest), hunters' harvest rate fell to 6 hogs for all hunts combined. Therefore, it seems safe to estimate the population of hogs on the refuge at its peak is in the range of 175–200 hogs. The refuge has the potential to be a source population for the area if refuge management does not continue to target the removal of this species.

Although habitat competition between feral hogs and other wildlife has not directly been studied on the refuge, observations and damage inspections from refuge staff show that feral

hogs are destructive to sensitive habitats. This is consistent with conclusions of other feral hog research done throughout the U.S. and Texas. This includes sensitive areas such as wetlands as well as wildlife guzzlers that are designed and installed to provide all wildlife, including the federally endangered ocelot, with a freshwater source during drought conditions. Feral hogs also damage research equipment for ocelot conservation and monitoring, refuge facilities, and infrastructure. Feral hogs are present in relatively large numbers on the refuge, although there are no total estimates of the feral hog population. Refuge harvest data from the last 10 years indicates approximately 34 feral hogs are harvested annually. Therefore, based on our analysis, feral hog populations are present in sufficient numbers to support all refuge objectives. Feral hog hunting and other management of hogs is expected to reduce intra and inter-species competition within available habitat.

Direct and Indirect Impacts

Alternative A (No Action Alternative)

Alternative A would assuredly result in an increase in hog populations on both the Laguna Atascosa Unit and the Bahia Grande Unit. At La Selva Verde, feral hog damage has already resulted in multiple sites with drastic wetland damage. The damage witnessed by staff at LANWR includes acres of rutted wetlands in areas that has in some cases been inundated by non-native invasive grasses. Recent observations of wetland disturbance has caused refuge staff to recommend contracting trappers to reduce the hog population. During most of our current hunts, the number of hogs harvested fluctuates between 5 and 10 (during a single hunt). Therefore, it is anticipated that the harvest of feral hogs will not be sufficient in reducing the population and additional management actions (such as trapping and opportunistic staff culls) will need to take place. If hog numbers are not reduced in Alternative A, the refuge expects to see more resource damage that was mentioned above.

Alternative B (Proposed Action Alternative)

The feral hog is a non-native species. Increasing the number of hogs removed from the refuge and from the surrounding population is the desired effect. An increase in the number of hogs harvested is anticipated, however many hunters choose to target other species while hunting at LANWR. The number of new permits available targeting nilgai or hogs is 230, annually. The bag limit proposed would be unlimited, but as mentioned above, nilgai antelope are usually the preferred target invasive species for hunters to harvest. During most of our current hunts, the number of hogs harvested fluctuates between 5 and 10 (during a single hunt). The refuge only expects an increase in feral hog harvest to occur at LANWR Subunit 7 and at La Selva Verde where hog populations support the increased take. With similar harvest numbers, adding two additional hunts for feral hogs may add approximately 5 to 10 additional hogs harvested for each hunt, for a total of 10 to 20 hogs harvested. At Bahia Grande and Subunit 4 the hog populations are currently small and the refuge rarely observe them. Therefore, it is anticipated that the harvest of feral hogs would not be sufficient in reducing the population and additional management actions (such as trapping and opportunistic staff culls) will need to take place. The Service will follow the Laguna Atascosa NWR Feral Hog and Nilgai Removal Plan (2014) when conducting the needed management actions.

Nilgai Antelope and Other Exotic Ungulates

A native of India and Pakistan, nilgai antelope (*Boselaphus tragocamelus*) are an exotic species on the refuge. Nilgai females have 1–2 offspring annually, similar to that of white-

tailed deer. Nilgai are grazers and primarily eat grasses, but also will feed on forbs, and browse. Sheffield et al. (1983a) found that the diets of nilgai and white-tailed deer differ in their forage classes, plant species, and plant parts, although there is some overlap. Nonetheless, nilgai have high food consumption rates and can easily switch between their grazing tendencies to forbs and browse. Their ability to reach higher into trees and shrubs may even give them a competitive advantage over the native white-tailed deer (Ortega *et al.* 2005).

This section includes the other ungulate species that have become prevalent in the area surrounding the refuge since the late 1970s (Refuge Annual Narratives).

Regional Analysis
Nilgai populations have increased recently and are one of the most successfully established exotics in Texas (Sheffield et al. 1983a). Nilgai populations have been estimated at more than 36,000 animals statewide (Traweek and Welch 1992). Since 1992, that number has been estimated at closer to 70,000.

Local Analysis
Nilgai observations have been recorded in the past four years during annual trend surveys for white-tailed deer conducted by refuge biologists. The nilgai population averages 207 animals. Refuge biologists believe them to be good estimates as the daily activities of nilgai are similar to that of white-tailed deer. Although habitat competition between nilgai antelope and other native wildlife has not been studied on the refuge, it is reasonable to conclude that nilgai populations displace food and habitat needs of white-tailed deer populations. In addition to forage competition with native wildlife, nilgai are also destructive to fences, which causes large breaches allowing neighboring cattle to enter the refuge.

Observations of fallow deer, axis deer, sika deer, Barbary sheep, and black buck has occurred in higher prevalence in recent years. Large ranches north of LANWR have introduced more exotic species as a means to diversify their huntable species offered and to provide a source of revenue. The refuge hopes allowing hunters the ability to harvest these species will help prevent these species from becoming established and naturalized in the manner nilgai antelope have spread.

Direct and Indirect Impacts
Alternative A (No Action Alternative)
The No Action Alternative would result in the non-native nilgai antelope continuing to increase in population levels. The refuge desires to have the ability to remove more invasive mammals from the refuge for management purposes. The reduction in this species' population levels is the goal and therefore this action could have a detrimental effect on resident wildlife that compete with nilgai antelope for resources. According to refuge harvest data over the last 10 years, about 19 nilgai are harvested annually. Population management of nilgai is expected to reduce intra- and interspecies competition within available habitat. In summary, based on our analysis, nilgai are present in sufficient numbers for hunting and other refuge management objectives.

Alternative B (Proposed Action Alternative)

Nilgai antelope are the primary target species that would be taken with 400 of the 420 new permits authorized within these expanded hunts (excluding the 20 hog permits). The nilgai antelope is a popular species to hunt using either archery or firearms in South Texas. It is easily expected that 30 additional nilgai would be harvested annually at Bahia Grande, 15 annually harvested at Subunit 7, 5 harvested at Subunit 4, and 10 harvested at La Selva Verde. These figures represent a potential 10 percent success rate at all units other than Subunits 4 and 7 where the success rate is expected to be 50 percent. Therefore a total of 60 additional nilgai would be harvested annually under Alternative B (compared to Alternative A). According to refuge harvest data over the last 10 years, about 19 nilgai are harvested annually within the current hunt areas. Population management of nilgai is expected to reduce intra and interspecies competition within available habitat resulting in lessening impacts on native wildlife such as whitetail deer. Alternative B proposes to increase population management of nilgai on additional portions of the refuge. The harvest of the occasional exotic ungulate that escapes from private property would benefit the refuge by removing potential competition for native wildlife. We do not anticipate many, if any, other exotic ungulates on the refuge, but we want the public to be able to harvest other exotics should they come across them.

American Alligator

Regional Analysis

The American alligator was federally protected in 1967, throughout its range (including Texas). This protection was largely needed due to illegal hunting (not lack of habitat). When the Endangered Species Act was passed by Congress the American alligator received protection that was already unnecessary in some states like Louisiana due to large population sizes (Seasholes, 2013). It is estimated that the entire population of alligators in the U.S. was 734,000 at the time of listing and that population grew to 1–1.5 million at delisting. Many conservationists view the American alligator as an Endangered Species Act success story.

In various parts of the U.S., the American alligator has become a nuisance or a species relegated to human-made wetlands that are in close proximity of homes and other human development.

Herpetologists generally agree that the American alligator is an introduced species that has become naturalized in South Texas. The naturalist and author Barlandier never indicated the animals' presence in the Rio Grande River despite inhabiting Matamoros, Mexico from roughly 1827 to 1851. The refuge considers the American alligator an "invasive" species to the refuge, recognizing that it is native to Texas. Historical records show that the American alligator (even in recent times) has never been documented in Willacy and Kennedy Counties. The lack of available freshwater South of Corpus Christi and North of the Rio Grande River has long been considered a biological barrier to the American alligator and other amphibious species' movement into the area (including LANWR).

Local Analysis

LANWR had never documented the presence of alligators until they were discovered by biologists in the 1970s. Since the late 70s, the refuge conducted annual American alligator counts and discovered that their numbers would rise and fall with the limited water accumulated in the man-made wetlands that were dependent on rainfall to be full or empty.

The proposed Laguna Atascosa NWR alligator hunting unit is located in Cameron County, which is considered a "non-core county" by TPWD. This means that the County is not in the core population area for alligators and therefore, only a spring hunt is allowed unless coordinated with TPWD. In Cameron County, TPWD allows American alligator hunting from April 1 to June 30; however the refuge will coordinate with TPWD to propose the flexibility to allow either spring or fall hunts (as they are allowed in the core counties).

Refuge Annual Narrative records give excellent insight to the origin and the status of the American alligator population over recent history. In the 1970s, six alligators were released onto the refuge (rumored to have been alligators that were captured and then released by TPWD). Prior to the sightings in the late 70s, the American alligator was never recorded on the refuge species lists. By 1978, the population at one monitored pond was recorded at 37, and in 1979, it jumped to 50. In 1980, the pond's population was up to 57. By at least 1990, the refuge was conducting informal annual surveys of Laguna Atascosa Lake. This is what was noted by the Annual Narrative author in 1990:

> "…alligators were observed more frequently in the Laguna Atascosa than in previous years, and we also had several complaints of increased alligator numbers in the Bayview area. These alligators apparently had to move to these areas because of the lack of freshwater ponds on the refuge."

Direct and Indirect Impacts

Alternative A (No Action Alternative)

The American alligator is currently not hunted on LANWR. The American alligator is a top-tier predator that is only regulated in number through human activity, cannibalism, disease, and drought conditions. Lack of natural predators will result in higher population numbers (if water levels remain high). Due to the fact that this species can potentially affect numerous mammal and avian species, the continued increase in their populations could have a deleterious effect on many mammal and migratory bird species. The number of American alligators present on the refuge is also tied to the management activities currently conducted to protect and conserve waterfowl. The refuge retains as much freshwater as physically possible in the "Lake" known as Laguna Atascosa. This is an approximately 5,000-acre partially impounded wetland that is a critical area for red head and other waterfowl species. This practice of maximizing freshwater (especially permanent freshwater) allows for a naturalized alligator population to exist at LANWR.

Alternative B (Proposed Action Alternative)

Twenty refuge tearsheets would be made available to hunters by a TPWD administered lottery/drawing each year. A successful hunt season would likely result in an 80–90 percent success rate at best. Therefore, 16–18 adult American alligators may be removed from the population that is directly connected to the Laguna Atascosa Lake and the Cayo Atascosa. The bag limit would be one American alligator per hunter. The depletion of the population in this area is deemed necessary by the refuge due to the manipulated hydrology in that area which has resulted in continuous freshwater supplies (historically not possible due to annual drought cycles). Removal of a maximum of 20 alligators from what is now a population that has outgrown its resources should make a positive impact on the potential prey species. American alligators are considered generalists in regards to their dietary habits and therefore it

is difficult to pinpoint a single species that may be more affected by their population reduction, but the refuge is attempting to increase mammal populations and reduce the risk to rare species such as the ocelot. Any potential prey species that visits a freshwater system at LANWR would have a lower probability of predation if fewer alligators existed at LANWR.

Other Wildlife and Aquatic Species

The refuge's diverse coastal prairies and wetlands provide habitat to a variety of fish and wildlife species, as well as important wintering habitat for many migratory shorebirds. The refuge provides habitat for approximately 415 species of migratory and residential birds, approximately 45 species of mammals, approximately 44 species of reptiles and amphibians, and approximately 40 fish species (Service 2010). Common bird species within the refuge include the northern bobwhite (*Colinus virginianus*), pied-billed grebe (*Podilymbus podiceps*), double-crested cormorant (*Phalacrocorax auritus*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), white-eyed vireo (*Vireo griseus*), green jay (*Cyanocorax yncas*), horned lark (*Eremophila alpestris*), black-crested titmouse (*Baeolophus atricristatus*), eastern meadowlark (*Sturnella magna*), northern cardinal (*Cardinalis cardinalis*), great-tailed grackle (*Quiscalus mexicanus*), and many others (Service 2010). At least 95 nesting bird species have been recorded at the refuge. Located on the southern end of the Central Flyway, the refuge is a major stopover point on the lower Texas coast for migrating waterfowl going to and from Mexico. Peak use occurs in November when more than 250,000 ducks depend on the refuge, with thousands more adjacent to the refuge on the Laguna Madre. It is estimated that 80 percent of the North American population of redhead ducks winter in this area. The refuge is also a vital stopover for migrating neotropical songbirds. Painted buntings (*Passerina ciris*), Bullock's oriole (*Icterus bullockii*), and various warbler and hummingbird species all depend on the refuge during their migration.

Resident mammal species found at the refuge include white-tailed deer, coyote (*Canis latrans*), bobcat (*Lynx rufus*), javelina (*Pecari tajacu*), feral hogs, gray fox (*Urocyon cinereoargenteus*), long-tailed weasel (*Mustela frenata*), and Mexican free-tailed bats (*Tadarida brasiliensis*).

Reptile species occurring at the refuge include Texas tortoise (*Gopherus berlandieri*), six-lined racerunner lizard (*Cnemidophorus sexlineatus*), bullsnake (*Pituophis catenifer sayi*), and red-eared slider turtles (*Trachemys scripta elegans*). The refuge is also home to many species of invertebrates, including the blue metalmark (*Lasaia sula*), a species that reaches its northern limits in South Texas.

Direct and Indirect Impacts

Alternative A (No Action Alternative)

Under the No Action Alternative, the existing habitat conditions for wildlife would be maintained. No new short-term or long-term impacts on wildlife or wildlife habitat would occur with exception to any potential damage that may occur from higher feral hog numbers. The disturbance regime associated with this species includes dramatic changes to wetland structure at LANWR. The species has been observed "rooting" through entire ephemeral wetlands which allows invasive plants to take hold and flourish. This change in the habitat has a negative impact on amphibians like the black spotted newt (*Notophthalamus meridionalis*) and the Lower Rio Grande lesser siren (*Siren intermedia*), which are found in many of these

wetlands. The hunting program may result in the short-term disturbance to wildlife on the refuge, which causes wildlife to disperse to other areas of the refuge free from human disturbance instead of feeding, resting, and reproducing. The timing of hunts, established trails and parking areas, and keeping vehicles on designated routes, education during hunter orientation, and enforcement of regulations reduces the impacts from human caused disturbance.

Alternative B (Proposed Action Alternative)
Impacts from hunter activity would be nominal (such as those described in Alternative A). However, there would be an increase in hunter disturbance due to an increase in areas open to hunters and number of total hunters. Because the newly proposed hunts will only target exotic or invasive species, there is less concern over displacement of non-invasive native species. However, increased traffic at Bahia Grande would introduce a new disturbance to native species such as the Texas tortoise, Texas indigo snake, the road runner, Texas horned lizard, and other species which might be susceptible to vehicle-induced mortality. Increased law enforcement presence would be required to maintain an orderly and safe experience for hunters parking inside Bahia Grande.

Hunt units comprise approximately 45,086 acres of the 99,619-acre refuge compared to 20,000 acres of the total 45,189-acre Laguna Unit in Alternative A. The majority of the refuge is not open to hunting, therefore impacts will not affect the entire refuge and hunting will only be allowed on select dates that are within the proper State season and minimize disturbance of non-target species.

Wintering waterfowl concentrations on the refuge are highest from late November to February. Because the refuge is surrounded by available waterfowl hunting locations, the refuge is a vital feeding and resting area. From late November to February, the refuge would continue to maintain no hunt zones for waterfowl that allows for resting locations. Impacts to migrating waterfowl and other birds is expected to be negligible. However, the access to Subunit 4 is by watercraft only. In order to minimize waterfowl disturbance at that hunt area, hunters will only be allowed to moor their boats along the Harlingen Ship Channel.

The active breeding season for most birds is from March through September (primarily due to breeding and nesting activity). The newly proposed exotic hunts will potentially have negligible impacts to nesting birds, therefore care will be taken to schedule hunts either before or after egg laying activity begins. More concern will be given to nesting endangered birds such as the aplomado falcon, which will be covered in that section of this EA (below).

Threatened and Endangered Species and other Special Status Species

Under the Endangered Species Act, the refuge has responsibility to address impacts on federally listed, candidate, and proposed species. Other special status species are species listed as threated, endangered, or species of concern by TPWD.

Four federally-listed endangered or threatened species, including the ocelot, jaguarundi (*Herpailurus yagouaroundi*), and northern aplomado falcon, may occur within refuge hunt tracts. As per the Endangered Species Act, the refuge has conducted an Intra-Service Section

7 consultation on any potential impacts from the Hunt Program on federally-listed species to ensure any impacts to these species are adequately addressed.

Federally-listed cats such as the ocelot may be present in areas where hunts are occurring. Although the refuge has not specifically studied the effects of ocelot movements during hunts, adverse effects on ocelots have not been documented in association with annual public hunts conducted in South Texas. The federally-listed jaguarundi is an exceedingly rare cat and no recent confirmed observations have been recorded on any of the refuge units since the 1980s. Although it is believed the jaguarundi may still exist in South Texas, none have been documented since 1989 near the Sabal Palm Grove Sanctuary in Southeast Brownsville.

Although aplomado falcons may be present on the refuge during hunts, aplomado falcons are generally tolerant of human activity, except during the nesting season extending from March through August. Hunting, particularly dove hunting, would not be permitted within or near any active territories during the nesting season. All known aplomado falcon territories and habitat occur in open, salt prairie habitats in eastern Cameron County.

For a detailed list of the federally and State listed species please refer to the refuge's CCP. The CCP includes a summary of the species that are protected within the boundaries of Laguna Atascosa NWR, but the black rail (*Laterallus jamaicensis*) was added to the Candidate Species for consideration to be listed by the Service. Federally-listed and candidate species that are present at the refuge, along with their potential to occur in the project area are listed in Table 3-1. Potential for each species to occur in the project area is based on habitat requirements and records maintained from both staff and formerly conducted research and monitoring projects (Service 2010, 2013). The black rail has recently been observed in greater number than previously expected and therefore, will be considered when making hunt management decisions.

Direct and Indirect Impacts

Alternative A (No Action Alternative)

Although the refuge has not specifically studied the effects of ocelot movements during hunts, adverse effects on ocelots have not been documented in association with annual public hunts conducted in South Texas. The federally-listed jaguarundi is an exceedingly rare cat and no recent confirmed observations have been recorded on any of the refuge units since the 1980s. Therefore, it is unlikely that any impacts from hunting will affect this species. All known aplomado falcon territories and habitat occur in open, salt prairie habitats in eastern Cameron County. Therefore, the hunt program is not likely to adversely affect this species.

Alternative B (Proposed Action Alternative)

Northern aplomado falcons, piping plovers, Gulf Coast jaguarundis, ocelots, peregrine falcons, reddish egrets, Texas Bottieri's sparrows, white-faced ibises, white-tailed hawks, wood storks, Texas horned lizards, Texas indigo snakes, and Texas tortoises could be temporarily disturbed or displaced by increased human access to newly opened units. The impacts would restricted to the units being considered for opening (Subunit 4, Subunit 7, and the Bahia Grande Unit). Furthermore, none of the identified hunt tracts contain suitable aplomado habitat nor are any active territories present on these tracts. The main concern would be introducing vehicle access in to Subunit 7 and Bahia Grande where wildlife species are not accustomed to that

disturbance. In Subunit 7, the vehicle access issues will be mitigated by the fact that refuge staff will transport or guide all hunters to their hunt location, and then pick them up at the end of their hunt. However, at Bahia Grande there will be a maximum of 300 vehicles annually that would be allowed access into the interior road at that property over various hunts. The refuge staff have traditionally been concerned over vehicle access in areas where dense thornscrub vegetation comes in contact with narrow roads. The public vehicle use in these areas is a risk and danger to ocelots even if drivers are operating at a slow speed and being cautious.

Impacts from increased noise and human activity would be short-term, occurring only during select hunt days. The total maximum number of hunt days included in Alternative B would be 86 days. Currently the maximum number of hunt days allowed at LANWR is 35. Therefore, the increase from Alternative A to Alternative B would be 51 days. The refuge will monitor ocelot movements using radio telemetry and GPS during hunts and if necessary, road sections in prime ocelot habitat may be closed to reduce the risk of mortality. Hunter access will be restricted around aplomado falcon nest structures between March and August.

The refuge prepared an intra-service biological evaluation (BE) to document potential impacts and proposed mitigation measures to protect federally listed threatened and endangered species. The BE found that the Proposed Action would have no effect on the piping plover and may affect, but is not likely to adversely affect the aplomado falcon, Gulf Coast jaguarundi, and ocelot.

Vegetation

The refuge contains 450 documented plant species, in a variety of plant communities, including coastal prairie, sand and clay dunes, tidal flats, and wetlands. The lands included in Alternative B are representative of the LANWR and therefore are not unique sub-units onto themselves. However, in general, these proposed hunt areas are typically open habitats that include far more coastal prairie acres than other portions of the refuge. For instance, nearly all the proposed hunt acres on the Bahia Grande Unit are prairie that is excellent habitat for the aplomado falcon. The vegetation at Bahia Grande is not as suitable for the ocelot at this point in the restoration process. If restoration activities are successful and more thornscrub habitat is established, the refuge would need to spend more time evaluating impacts on those species.

Direct and Indirect Impacts

Alternative A (No Action Alternative)

No ground disturbance with the potential to adversely impact vegetation and wetlands would occur. Current maintenance activities on roads and parking areas in the project area would continue. The refuge currently issues no more than 1,000 total hunt tearsheets. The impact of those hunters is spread out over the 20,000 total acres and over a three-month hunt window. The refuge has not observed vegetative impacts from the current hunts.

Alternative B (Proposed Action Alternative)

Moving forward with the Proposed Action Alternative would impact vegetation in the Bahia Grande, La Selva Verde, Subunit 7, and Subunit 6. Increased traffic on refuge roads in those areas would require Service employees to increase duration and frequency of roadside mowing, grading, road repair, etc. However, the impacts would strictly be to invasive grasses

that are found along road-sides and previously disturbed sites. The refuge does not expect to remove or destroy any native thornscrub or coastal prairie.

Bahia Grande and La Selva Verde would be open to limited vehicle access along the main entry roads into the properties. Bahia Grande Units' "Centerline Road" is a 7-mile gravel route that would be open to vehicle access and parking in designated roadside locations. Maintenance staff would be required to mow roadsides more frequently in these areas. One designated parking area is located at the "Red Gate Entrance" located on Highway 48 another main hunter parking location will be located 1.5 miles north of the Red Gate on Centerline Road. During wet conditions at Bahia Grande, hunters would be allowed to park on the road shoulders of Centerline Road as a back up to the grass parking areas which could become muddy.

The La Selva Verde Unit currently has an entrance road that is accessible from FM 510 on the south side of the property. The road is oriented in a north-south direction and continues for approximately 2 miles. Up to 20 hunters would be allowed to enter and park along this road. The introduction of public vehicles on this road would require increased vegetation maintenance by Service staff. In order to provide a safe and quality experience, the refuge may also need to improve the surface of this 2-mile stretch of road to an all-weather limestone surface. The only impact from a resurfacing project would be to the current exotic grasses that cover the existing road.

Introducing vehicles back onto the STWD in Subunit 7 would be expected. Youth hunting in Subunit 7 would only occur along the 15-mile STWD and therefore any impacts to vegetation would be along that road. The only anticipated vegetation impacts would be to exotic grasses along the road shoulder due to blind set up for ten hunters at ten separate locations along the STWD.

Under the proposed hunt plan, American alligator hunters would be allowed to access the Southern Boundary of Unit 6, drive North on Alligator Pond Road and park along the "South Boundary Road" at its intersection.

Soils

The soils in and around the LANWR consist largely of the Laredo-Lomalta association. About 4 percent of Cameron County consists of this soil type. The Laredo-Lomalta soil association consists of areas of gently sloping to level, saline soils at an elevation of about 1 to 5 feet above the slightly depressional Lomalta soils. Lomalta soils are associated with the resascas or old meander channels of the Rio Grande, which occur within the project area. More specifically, the project area is comprised of Sejita silty clay loam on the lower elevations and Laredo silty clay and Lomalta clay, which support brush growth on higher elevations (Service 2017).

Direct and Indirect Impacts

Alternative A (No Action Alternative)

The No Action Alternative will have nominal impact to soils. The refuge staff encounters issues with potholes, slight erosion, and rutting on roads each year. These roads and roadside soils are impacted by the nearly 1,000 vehicles that hunt the refuge each year in its current

state. However, the refuge does not allow off-road motorized vehicle use of any kind. The only issue that may exist on current hunts is from hiking and biking off the main roads.

Alternative B (Proposed Action Alternative)
Bahia Grande and La Selva Verde would be open to limited vehicle access along the main entry roads into the properties. At Bahia Grande, "Centerline Road" is a 7-mile gravel route that would be open to vehicle access and parking in designated roadside locations. Maintenance staff would be required to mow roadsides more frequently in these areas. One designated parking area is located at the "Red Gate Entrance" located on Highway 48 another main hunter parking location will be located 1.5 miles north of the Red Gate on Centerline Road. During wet conditions at Bahia Grande, hunters would be allowed to park on the road shoulders of Centerline Road as a back up to the grass parking areas, which could become muddy. Minimal disturbance to soils may occur from road maintenance activities within Bahia Grande.

The La Selva Verde Unit currently has an entrance road that is accessible from FM 510 on the South side of the property. The road is oriented in a north-south direction and continues for approximately 2 miles. Hunters would be allowed to enter and park along this road. The introduction of public vehicles on this road will require increased vegetation maintenance by Service staff. In order to provide a safe and quality experience, the refuge may also need to improve the surface of this 2-mile stretch of road to an all-weather limestone surface. The only impact from a resurfacing project would be to the current exotic grasses that cover the existing road. In addition, minimal and short-term impacts may occur from light grading and smoothing of this current road surface. In order to facilitate hunter access refuge staff would use heavy equipment to conduct the leveling and grading work that would maintain the road in a safe and useable condition.

Under the proposed hunt plan, American alligator hunters would be allowed to access the Southern Boundary of Unit 6, drive North on Alligator Pond Road and park along the "South Boundary Drain" at its intersection. Hunters will likely cause minimal yet noticeable erosion and vegetative disturbance along the shoreline of the South Boundary Drain and along the short section of the Cayo Atascosa that would be open to American alligator hunting. Soil disturbance would be possible in a 10' x 10' area around each hunter's "set lines" used to trap/snare alligators in previously disturbed areas. Potential soil disturbance would only be at the surface and would likely be caused only by foot traffic.

Air Quality

Air pollution levels at LANWR are similar to or lower than other urban and rural areas in Texas, including air pollution originating from across the border in Mexico (EPA 1999). Air quality data from the Texas Commission on Environmental Quality website show the Brownsville-Harlingen region as ranging from "good" to "moderate" AQI (Air Quality Index) ratings from 2010 to 2017. This is due in large part to the prevailing southeasterly Gulf breeze.

Direct and Indirect Impacts
Alternative A (No Action Alternative)

The No Action Alternative would have only nominal impact to air resources. The refuge currently allows up to 1,000 hunters over 35 hunt days. The vehicles used on the LANWR are typically large trucks that use a higher-than-average amount of either gasoline or diesel. They also often tow trailers or haul equipment like blinds and bikes. The added vehicle traffic is certainly an impact from the carbon footprint of refuge users and from the stirring of dust, however it is short-term and a very small percentage of the overall commuter traffic in the surrounding area.

Alternative B (Proposed Action Alternative)
The Proposed Action may result in 420 new hunt permits/visits would be added to the 1,000 already offered in Alternative A. In the short-term some negative impacts at a local scale, as a result of additional vehicle access allowed at the Bahia Grande Unit, the new boat access allowed to LANWR-Unit 4 (50 boats), and the new youth hunt access allowed at LANWR-Unit 7 and La Selva Verde. Temporary reductions in air quality from the stirring of dust, and emissions produced by vehicles and watercraft would be minimal and would be a temporary impact confined to the hunt period.

Water Resources

The LANWR is known to contain high marsh or coastal prairie and salt flats or "salt prairie." Salt prairie is typically a few feet above sea level and is dominated by salt flat grass (*Monanthocloe littoralis*), saltwort (*Batis maritima*), glasswort (*Salicornia* sp.), annual seepweed (*Suaeda linearis*), and other low growing species adapted to saline conditions. Coastal prairie is found on higher elevations and can be easily identified by the vast expanses of Gulf cordgrass (*Spartina spartinae*) along with other species such as sea oxeye daisy (*Borrichia frutescens*), mesquite, and yucca along the fringes (Service 2017).

In addition, the hunt areas at LANWR are adjacent to freshwater impounded wetlands that are managed for wintering waterfowl. The refuge also borders a globally significant hypersaline lagoon, the Laguna Madre, which influences the surrounding habitat at the Laguna Atascosa Unit and the Bahia Grande Unit.

Direct and Indirect Impacts

Alternative A (No Action Alternative)
The No Action Alternative will have no impact to water resources. No access to the water is allowed during the current LANWR hunts.

Alternative B (Proposed Action Alternative)
The Proposed Action Alternative includes a proposal to include limited harvest of American alligator along the Southern boundary of Subunit 6 at LANWR. The American alligator is a naturalized species whose range has extended into the Lower Rio Grande Valley of Texas due to changes in hydrology caused by human influence. Regardless of the origin of this species into South Texas, they have become a part of the wetland environment at LANWR and managing their population levels will have a nominal yet measureable effect on the freshwater systems in Subunit 6. Under the proposed hunt plan, American alligator hunters would be allowed to access the Southern Boundary of Unit 6, drive North on Alligator Pond Road and park along the "South Boundary Drain" at its intersection. Hunters will likely cause minimal yet noticeable erosion and vegetative disturbance along the shoreline of the South Boundary

Drain and along the short section of the Cayo Atascosa that would be open to American alligator hunting, which would increase turbidity. Alternative B proposes 20 hunters would have access to these drainage areas.

Hunters would be spread out in at least 2 different hunting periods, but their access to the shoreline to set "traps" for American alligators would likely cause disturbance to the shoreline in a 10' x 10' area where the alligator set lines are placed. During American Alligator hunting the animal spirals, which causes suspension of silt and mud in the water column. The effects on water quality may last no more than a week and then settle after the hunting period in the 20-foot wide canal. The potential loss of vegetation in those areas will result in higher water disturbance and erosion after heavy rain events. Because alligator hunters will not be allowed to access the water by boat, there should be no pollutants introduced to the water as a result of these hunts.

Affected Visitor Use and Experience Resources and Anticipated Impacts of the No Action and Proposed Action Alternatives

Visitor Use and Experience

The refuge offers all the Service priority "Big 6" public uses including wildlife observation, hunting, fishing, wildlife photography, environmental education, and environmental interpretation.

The LANWR typically hosts approximately 350,000 visitors annually (Service 2010) including Adolph Thomae Jr. County Park, with peak visitation occurring from November through March. From the visitation estimate of 350,000, approximately 300,000 of those visits were reported from Adolph Thomae Jr. County Park. In 2019, visitation was reported at a slightly lower overall level of 320,000 but this decrease is anticipated to be a short-term departure from the norm due to construction on some of the popular tour routes. Fishing is a popular activity in and around LANWR and has the potential to increase visitation numbers significantly if a newly drafted Visitor Services Plan is implemented.

Hunting is a very popular activity in the LRGV and with few public lands available to hunters, the refuge lands managed in the South Texas Refuge Complex are very popular and in high demand by hunters. In 2019, the refuge received 1,277 archery applications for 800 permits. Therefore archery hunters had just over 60 percent chance of being drawn. During the same period, the refuge received 7,624 applications for 200 firearm permits, which resulted in firearm hunters having only a 2 percent chance of being drawn. The number of firearm permits allowed is aimed at keeping the hunter ratio at or below about 1 hunter per 600 acres during firearm hunts. The hunter ratio for archery is closer to 1 hunter per 100 acres during archery hunts. This is done to ensure each hunter has a quality experience and spacing between hunters is adequate for safety purposes. The difficulty some applicants have in obtaining a hunt permit in South Texas is due to the lack of public land outside the national wildlife refuges.

Another very popular activity at LANWR is bird watching. As one of the top birding areas in the nation, with 415 documented bird species (the most species of any national wildlife refuge), the refuge is a major destination for birding, wildlife observation, and photography.

Prior to 2013, the most popular feature of the LANWR was the STWD which was closed in 2013 to private vehicles due to the death of at least 2 ocelots. Prior to the closure of the STWD in October 2013, visitor numbers to the visitor center averaged 25,000 visitors per year with most accessing the STWD. After the closure, the average visitation checking in at the visitor center totaled 15,600 visitors per year, a 34 percent reduction in refuge visitation. The Service is working with the Federal Highway Administration to reconstruct, reroute, and reopen the STWD in the next few years. Prior to reopening to the public, it will officially will be renamed The Steve Thompson Wildlife Drive and reopened to private vehicles at least two days per week.

Direct and Indirect Impacts

Alternative A (No Action Alternative)

Currently, refuge hunts are the primary reason a majority of the Laguna Atascosa Unit is closed to other uses on 35 days a year. During archery hunts, the refuge closes all Subunits other than four and seven. These hunts are five days long and there were four separate hunt periods in 2019, which caused further conflict with user groups like bird watchers. During firearm hunts, the refuge only closes Subunits 2, 3, 5, and 8 so there is less conflict with other users for the 15 days covering these hunts. Both archery and firearm hunts are scheduled to occur over a weekend period, which is a convenience to hunters but adds conflict on our busy days for other uses.

As mentioned elsewhere in this document, the LANWR hunts are very popular with both Texas applicants and hunters from out-of-state. As a result of the popularity, the LANWR documented attendance spikes during the hunts season when the hunters are present. The refuge also benefits from the fees charged hunters, which is far greater fees than any other LANWR user group.

If the No Action Alternative is selected, the impact on visitor use would include approximately 420 less hunters visiting the refuge, annually (compared to Alternative B). The reduced hunters on the new Bahia Grande Unit would allow for fewer restraints on the other Big 6 activities being proposed on the Bahia Grande.

Alternative B (Proposed Action Alternative)

The refuge is expanding the hunt areas to accommodate more hunters but continue to ensure a quality hunting experience. In addition, archery hunters currently are issued 800 out of 1,000 permits so the refuge is initiating new muzzleloader/shotgun hunts to help accommodate hunters less experienced with or lacking the desire for archery hunting.

As stated earlier in this document, approximately 45,086 huntable acres would be opened out of the 99,619 total acres managed by LANWR. That represents nearly half of the total LANWR acres potentially available to the public for recreation. In their current state, visitation to Bahia Grande, La Selva Verde, and Subunit 4 would only be positively impacted by hunting because they are currently closed to other public entry. However, future plans

include opening the Bahia Grande Unit to hiking, biking, fishing, canoeing, and kayaking. Hunting at the Bahia Grande Unit will undoubtedly lead to at least nominal conflict with other user groups because the Unit would need to be closed on up to 24 days per year to non-hunters while hunts are taking place.

Although restrictions would be in place to ensure hunters and other recreationists are not in conflict, expansion of hunting will also give refuge managers more flexibility in deciding when and where hunts occur so non-hunt visitors will always have ample locations to recreate safely.

Subunit 7 is the large area at LANWR containing the 15-mile wildlife drive. Once the STWD is completed and reopened to full-use, the proposed youth hunt would impact visitors on this popular infrastructure because it would be closed to non-hunters during all hunting operations in that Subunit.

At Subunit 4, there should be no conflicts with visitors and no anticipated impacts to visitor related issues because this area is closed to the public.

The proposed Hunt Plan would allow for hunt access on limited days which would include the firearm and archery hunts on the Laguna Atascosa Unit for a total of 35 days. The preferred alternative would include the hunts proposed in the Hunt Plan. The plan calls for an additional 41 days of hunting access spread out in the youth hunt at LANWR Subunit 7 and Selva Verde. It would also include new access to hunt on Bahia Grande and LANWR Subunit 4. The true impacts to visitors would be to hunts conducted on Bahia Grande (for a maximum of 24 days) and at LANWR Unit 7 (for a maximum of nine days), because these areas will get pressure from other user groups.

The above-mentioned newly proposed hunt days total 54 days of hunting access, during which the refuge would be closed to non-hunters. These new hunt days will likely produce new conflicts with other user groups.

Affected Cultural Resources and Anticipated Impacts of the No Action and Proposed Action Alternatives

Cultural Resources
Known archaeological, cultural, and historical resources at the refuge are described in the refuge's CCP (Service 2010). During World War II, parts of the refuge within the project area were used as a gunnery training range. Remnants of World War II structures still exist near the project area. Old storage bunkers, target tracks, and spent bullets can be found just off Bayside Wildlife Drive. In addition, prehistoric sites containing shells, otoliths, and bones have been identified within the project area (Fullerton and Morgan 2017).
Direct and Indirect Impacts Alternative A (No Action Alternative) Under this alternative, there are no anticipated direct or indirect impacts to the cultural environment, as current conditions would be maintained, and no ground disturbance would occur. Under the no action alternative cultural resources may be adversely impacted.

Artifacts can be found at specific sites and scattered throughout the landscape. Cultural resources could be affected by collectors and vandals or by hunters traversing the refuge. To minimize the effects of visitor use the public is notified of cultural resource rules and regulations via refuge brochures and on the official website.

Alternative B (Proposed Action Alternative)
Under the Proposed Action Alternative, there could be nominal impacts to cultural resources at La Selva Verde where there is potential ground disturbance required to make infrastructure (road repair) improvements. As part of the proposed Hunt Plan, the Service would only be creating infrastructure improvements along the access road into and out of La Selva Verde. The State Historical Preservation Officer will be consulted before any ground disturbing work is conducted. The Service's regional archeologist will also be consulted to determine what level of ground surveys are required before work may commence. If any archeological sites are found within the project area where mechanical treatments and ground disturbance is going to occur, construction would be halted and the State and Service archeologist would be immediately notified.

During the proposed American alligator hunts nominal ground disturbance will likely occur when hunters anchor their set lines. The set lines are attached loosely to a long pole which must be anchored or secured to the shoreline. The anchoring process would entail a hunter staking the set line up to three feet into the soil along the South Boundary ditch. This ditch is a man-made channel that connects to Cayo Atascosa. The channel shoreline where set lines would be placed is completely fill material from the ditch and therefore no cultural resource disturbance is expected.

Affected Refuge Management and Operations Resources and Anticipated Impacts of the No Action and Proposed Action Alternatives

Refuge Management and Operations

Land Use
Laguna Atascosa NWR is a unique blend of temperate, subtropical, coastal, and Chihuahuan desert habitats. Mexican plants and wildlife reach their northernmost limits here, while migratory birds stop to rest and feed during the spring and fall. This combination makes Laguna Atascosa NWR world famous for its mix of birds and other wildlife (Service 2010). The LANWR is comprised of three wetland community types: estuarine wetlands, lacustrine wetlands, and palustrine wetlands. The largest wetland feature on the refuge is the expansive estuarine system along the lower Laguna Madre boundaries. The landscape of the Laguna Unit has many lacustrine wetlands. A main lacustrine wetland feature is the 5,000-acre impoundment system known as Laguna Atascosa (which means "muddy lagoon") and includes the Upper Cayo Atascosa and the Laguna del Cayo.

Along with the native habitat, the refuge manages for wildlife some infrastructure is maintained at one administrative site on the main Laguna Atascosa Unit. The refuge offers a visitor center and roughly 50–70 miles of hiking and biking trails that originate there. A single access road known as Buena Vista Road runs a short 3.1 miles from FM 106 to the visitor center and administrative buildings. In addition to the visitor center, the refuge maintains and "Hunter Check Station" that is located south of the visitor center and serves as the main

contact station for hunters and as a volunteer comfort station. The refuge headquarters is a short walk from the visitor center and also is situated just north of the maintenance office and shop buildings.

There are only minor shed structures on any of the tracts outside the Laguna Atascosa Unit. There is a composting toilet located on the STWD and more are planned for the Bahia Grande Unit. For a detailed description of the staffing models and physical infrastructure please refer to the refuge's CCP:

Administration

The operating budget in fiscal year 2019 was approximately $950,000. The budget was needed to cover all salaries and benefits, repair and upkeep of equipment, maintenance of facilities, utilities, fuel, vehicles, etc. The LANWR has a staff of nine permanent employees and one term park ranger. The refuge is managed by one GS-13 refuge manager and one GS-12 assistant refuge manager. Currently, the assistant refuge manager conducts the day-to-day operations and management of the hunt program. The GS-9/11 wildlife biologist is also responsible for a portion of the support and oversight of the hunts.

Funding for the hunt program is supported by annual operating and Recreational Fee Program funds, and is roughly split into administrative and operational costs. Administrative costs include staff salaries, law enforcement coverage, and maintenance of access roads, hunt facilities, and signs. The expansion of the refuge hunting program to include additional units and species will increase administrative costs.

Two law enforcement officers are normally tasked with meeting the law enforcement needs for the roughly 120,000-acre refuge. Volunteers typically staff the hunt check station. Refuge biologists and managers administer hunter orientations, and all other refuge staff provide some measure of support for the hunt program, as well as other public use programs.

Direct and Indirect Impacts

Alternative A (No Action Alternative)

Land Use: There is no anticipated impact from the No Action Alternative because the current hunt program has been in effect since the 1980s.

Administration: There will be no increased cost to continue implementation of the No Action Alternative. Based on recent calculations of the current hunt program's costs it takes approximately $51,000 to administer the hunts each year. The cost associated with the current hunt program are covered within the roughly $950,000 annual budget, Recreational Fee Program dollars (which partly come from the hunts), and separate funds within the South Texas Complex law enforcement budget.

Alternative B (Proposed Action Alternative)

Land Use: Some potential conflicts with prescribed fire management could occur due to the increased number of "hunt days" that would be allowed on LANWR managed lands. In 2016, the fire program staff burned approximately 6,000 acres at LANWR and approximately 20,000 acres in 2017 (Service 2017). In South Texas, these burn days typically occur during the same season as the newly proposed hunts. Therefore, the primary land use conflict will be to the

prescribed fire program. In addition, each hunt subunit is restricted to staff unless there is an emergency. As a result, various maintenance and monitoring efforts are put on hold, including road repair, mowing, and biological monitoring.

Administration: It is estimated that annual administrative costs of the refuge hunt program will be approximately $85,100. That is roughly a $35,000 increase over the current estimate for funding the hunts. Both the current and proposed budget estimates are conservative and don't take into account the unpredictable emergency maintenance items that often arise (i.e. broken tractors, vehicle repair needs, turnover in staffing, etc.). Material costs include permit printing, portable restroom rental, and hunt check station operational costs. It is estimated that the annual material costs of the refuge hunt plan will be approximately $16,700. One aspect of the new hunt program that is difficult to quantify is the increased time and effort that will be required from all 10 staff at LANWR. Due to the increase in workload that is expected from implementing 51 additional days of hunts, the refuge will only initiate the proposed hunts through a phased approach. The hunts will be planned in priority order. Currently, the highest priority hunts are those proposed for Bahia Grande. The lowest priority hunts are the Subunit 4 hunts and the American alligator hunt.

Affected Socioeconomic Resources and Anticipated Impacts of the No Action and Proposed Action Alternatives

Socioeconomics

Local and Regional Economies

The refuge is located approximately 15 miles from the city of Rio Hondo, Texas with a population of 2,776. Los Fresnos is also within 20 miles of the refuge and is growing at a fast pace. The predominant land uses in the vicinity of the refuge are non-irrigated farming, cattle grazing, and hunt lease properties. The refuge averages about 350,000 visitors per year; many of those visitors are anglers who launch their vessels in Adolph Thomae Jr. County Park. Each year, the refuge visitation peaks between January and March from the influx of "Winter Texans" into the area. Another important user group are birders who come to the refuge during peak bird migrations in the fall and spring. One of the largest and fastest growing industries is tourism, particularly nature-based or ecotourism (Mathis and Matisoff 2004). Ecotourism here generated over $340 million and resulted in the creation of 4,407 full-time and part time jobs annually (Woosnam et al. 2011). According to Carver and Caudill (2013), the local economic benefit of the refuge totaled $23.4 million providing 205 jobs as of 2011. For every dollar of refuge budget expenditures, $37.17 is added to economy of the area (Service 2010).

Wild hogs are among the most destructive invasive species in the United States today. Two million to six million of the animals are wreaking havoc in at least 39 states and four Canadian provinces; half are in Texas, where they do some $400 million in damages annually (Morthland 2011).

Local and Regional Economies

The refuge is surrounded on three sides by large private ranches. Some of those ranches offer hunting opportunities to the public, but at a rate that many in the local area cannot afford. The price of a nilgai antelope hunt can cost roughly $500 to $3,000 for a single hunt on a private

ranch/farm. There are more services offered on the private hunts and generally the rate of success is better than on the LANWR hunts, but the $80 cost of a nilgai hunt on public land is a comparative bargain and much more attainable for most local residents.

Direct and Indirect Impacts

Alternative A (No Action Alternative)

The No Action Alternative will have a negative impact on the local economy compared to the Proposed Action. The refuge would continue managing the current hunts, which occur on approximately 35 days for a maximum of 1,000 hunters (a total of 35,000 hunt visits). This number of hunt visits is high for South Texas, but not compared to that compared to Alternative B (described below).

Alternative B (Proposed Action Alternative)

In the Proposed Alternative, 420 new hunt permits/visits would be added to the 1,000 already offered in Alternative A. Therefore, a total of 1,420 permits (tearsheets) would be available annually (420 more than Alternative A). In addition, Alternative B would provide for new hunt areas, which require 54 new hunt days. As a result, the new total number of hunt visits being proposed is 22,680. The effect of these visits on the local economy is impactful because many of the hunters require housing in local hotels. The refuge has not compared the number of local versus out of town hunters, but the general consensus among refuge staff is that the number of out of town hunters has gone up since the refuge moved to the TPWD online permit system.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

Direct and Indirect Impacts

Alternative A (No Action Alternative)

The No Action Alternative would not disproportionately place any adverse environmental, economic, social, or health impacts on minority or low-income populations. Despite the Valley's high Hispanic population, any impacts (either positive or negative) will be equally distributed across population demographics.

Alternative B (Proposed Action Alternative)

Impacts would be the same as Alternative A.

Indian Trust Resources

There are three federally recognized Native American tribes in the State of Texas, none of which occur in the extreme Southeastern portion of Texas. Therefore, a representative for a Native American tribe was not contacted about this Environmental Assessment.

Direct and Indirect Impacts

Alternative A (No Action Alternative)
There are no aboveground Indian Trust Resources on this refuge and this action will not impact any Indian Trust Resources.

Alternative B (Proposed Action Alternative)
Impacts would be the same as Alternative A.

Cumulative Impact Analysis

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are the overall, net effects on a resource that arise from multiple actions. Impacts can "accumulate" spatially when different actions affect different areas of the same resource. They can also accumulate over the course of time from actions in the past, the present, and the future. Occasionally, different actions counterbalance one another, partially cancelling out each other's effects on a resource. But more typically, multiple effects add up, with each additional action contributing an incremental impact on the resource.

Hunt Plan EAs must include additional information and analysis. Further information on Refuge-Specific Hunting Regulations, Hunt Plan EA Examples, and the guidance memo dated January 19, 2007, can be found here.

Anticipated Cumulative Impacts of the No Action and Proposed Action Alternatives

Other past, present, and foreseeable activity impacting the affected environment	Descriptions of Anticipated Cumulative Impacts
Hunted Species A variety of factors may be effecting the hunted species in and around LANWR, for ease of viewing, those factors are bulleted below: • Cattle Fever Tick Management- Probably the biggest change in hunt management direction since 2014, was caused by the discovery of cattle fever ticks in South Texas. A vast area south of Raymondville and west to Zapata County, Texas has been included in a quarantine zone that requires landowners to assist in following best management practices if removing deer, nilgai, or when managing ungulates. Therefore, since 2014, LANWR has been cooperating to help remove fever ticks from the landscape. The refuge (and surrounding land owners) have increased harvests, conducted aerial harvests (of nilgai), and used medicated corn feeders to	**Alternative A:** The refuge staff have analyzed the effect of current hunts and determined that Alternative A provides for an effective hunt on the current 20,000-acre hunt area. During recent hunts at LANWR the deer harvest rate has fluctuated, but averaged near 60 animals taken each year. The exotic ungulate harvest rate has fluctuated even more over the years and therefore isn't accurately depicted using a year-to-year average. Much of the exotic ungulate fluctuation results from the refuge management practices which includes cattle fever tick management such as aerial harvests to reduce their numbers. **Alternative B:** The proposed expansion included in Alternative B would allow for unlimited bag limits and unlimited harvest of all exotic

treat deer populations. As one of the more extreme measures, the USDA and TAHC have even conducted culls on deer populations in areas north of LANWR. The treatment practices have increased the number of deer and nilgai harvested in Cameron and Willacy Counties and therefore may also have a long-term effect on the refuge populations by reducing surrounding source populations. • **Private Ranch Management-** The popularity of hunting in South Texas is considered a positive public use opportunity for locals and tourists alike. However, that popularity does put added pressure on the populations and makes it more challenging for land managers to estimate harvest goals. For deer, the issues are compounded by the spread of various diseases. For invasive species like nilgai and feral hogs, despite the pressure from both public land hunters and private ranches, these two species have been able to bounce back. To many land manager's consternation, almost no amount of pressure will completely control or eliminate these species. • **Chronic Wasting Disease-** Chronic Wasting Disease (CWD) is only a concern for the native deer population in Texas. Over the past two years, TPWD officials in the area have taken samples from Laguna deer and those samples have all been negative. However, there is concern that especially due to the popularity of exotic ungulate hunts in Texas, the CWD risk could be high in the State. Nationwide, there is grave concern for numerous ungulate species where CWD has spread rapidly.	ungulates and would open 25,086 new acres to hunting these species. Due to the land use around LANWR being dominated by active hunting ranches and hobby hunting ranches, there should be an effect in at least stabilizing the nilgai and feral hog populations. However, the harvest of exotic ungulates on the refuge would only have a short-term and local effect on these species. Refuge biological monitoring has shown that the annual harvests on LANWR only result in keeping the population levels stable (not declining). The American alligator is a new species to be hunted at LANWR. Although considered a naturalized invasive species, the implementation of this new hunt will be phased-in slowly. The proposed 20 hunt permits for alligators will allow for no more than 20 total alligators taken from the wetlands associated with the main Laguna Unit. As with exotic ungulates, the refuge intends to have an effect on the overall surrounding populations through these hunts. No other public American alligator hunts are allowed in South Texas, therefore the refuge anticipates this hunt only having a local effect on the population, and not effecting the region or statewide populations. Because the refuge uses an adaptive management approach for its hunt program, reviewing and revising the hunt program annually (if necessary), the Service's hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts of population growth and development on white-tailed deer.
Visitor Use and Experience In the area surrounding LANWR, there are numerous local attractions that have a tendency to swell the greater Rio Grande Valley demographics at certain times during the year. • **South Padre Island-**	**Alternative A:** The current hunts at LANWR allow for up to 1,000 hunters to access LANWR on either firearm or archery hunts. These hunts occur on no more than 35 days total and target white-tailed deer. The hunts also provide opportunity for hunters to harvest exotic

One of the greatest tourist destinations in the Valley is the fairly pristine beaches of South Padre Island (SPI). The greater SPI beaches receive over 1 million tourists each year. Many of those visitors are driving from the larger cities of San Antonio, Houston, Austin, etc. As a result, a great deal of the tourist traffic drives through LANWR to access SPI. • **RGV "World Birding Centers"-** Although, technically no longer managed as a network of partnering World Birding Centers, the name and the designation still exists for several centers across the RGV. • **County and TPWD Managed Lands -** Cameron County maintains 6 "coastal parks" that are all within a 30 minute drive from LANWR. Adolph Thomae Jr. County Park is one of those parks, but it is also park of the Refuge (owned by the USFWS). In addition, the area is known for the Las Palomas Wildlife Management Area and the Estero Llano Grande State Park (which is also known as a World Birding Center). • **Non-Profit Managed Lands-** The Nature Conservancy manages a natural area know as Southmost Preserve outside Brownsville. The Audubon Society plays a prominent role around the Valley, but specifically they manage a popular park known as Sabal Palm Sanctuary. The current impact of the LANWR hunts on visitor use has been minor at the Laguna Unit. However, the refuge has plans to allow for increased access and use on both the Laguna Unit and Bahia Grand Unit in the future. The Steve Thompson Wildlife Drive is expected to reopen in the next two years to public vehicle use and that would be negatively impacted by a youth hunt on nine days each year. At Bahia Grande, plans are being discussed that includes the following: a multi-use trail that would allow hikers and bikers to travel between Bahia Grande and the Palo Alto Battlefield;	nilgai and hogs as non-target species. With an estimated 95 percent of Texas owned and managed as private property, the value of large public hunt opportunities is rare and popular. Areas of the refuge remain open and available for refuge visitors who wish to engage in non-consumptive uses. Under current management, there are no anticipated cumulative impacts from continuation of the hunt program. **Alternative B:** Under the proposed alternative the public access which is currently offered would be increased by up to 420 additional hunt permits. All the planned improvements to Bahia Grande, coupled with the new hunting opportunities would add to the overall visitor experience. The Service would monitor and cautiously phase-in the above mentioned amenities and visitor opportunities based on observational data from refuge biologists. Areas of the refuge remain open and available for refuge visitors who wish to engage in non-consumptive uses. There are no anticipated cumulative impacts from the proposed additional hunting opportunities.

the opening of hiking and biking on "Centerline Trail" through the heart of the property; and opening the property to limited fishing within the next 2 years, including the basic infrastructure such as composting toilets, improved parking lots, signage, and observation areas. <u>Other Wildlife-Dependent Recreation (i.e., road and trail development and use)</u> The Service is expecting to work closely with Cameron County on requests for access to the Bahia Grande Unit in the future. A South Texas Ecotourism Center is proposed on the North boundary of Bahia Grande and the County plans to request access for visitors into the Unit from this location. Plans to allow hiking from that site will need to go through their own environmental review, but there is a potential to have refuge staff present on or near this site and to connect to trails interior to Bahia Grande. This access point is on the busy Highway 100, a main thoroughfare to South Padre Island. Over 1 million tourists travel to the area each year and the added pressure to a property like Bahia Grande would add to disturbance to wildlife species. The Service would work with partners like Cameron County to ensure that visitor activities are compatible with local wildlife before approval. In addition, the Service will need to monitor the cumulative impacts of activities in Bahia Grande with the added biking or other less-traditional wildlife dependent activities.	
Socioeconomics LANWR is expected to allow for access to the Bahia Grande Unit and improve access to the Laguna Unit by no later than 2025. These improvements may likely provide access to another 100,000 visitors to LANWR as a whole. The area population increased by 30 percent from 2001 to 2011, as compared to a 9 percent increase for the U.S. as a whole (Carver and Caudill 2013). The added infrastructure development in the areas surrounding the LANWR is likely going to	**Alternative A:** Under current management, there are no anticipated cumulative impacts. TPWD administers hunt permit issuance though their online system, which allows any hunter with internet access to see and apply for the available hunt opportunities. The result of the wider availability is that more out-of-state hunters are coming to South Texas. These visiting hunters are staying in hotels, eating at

have an impact on virtually all species within the refuge, including those being proposed for harvest in this plan. The planned development includes: • A proposed road and bridge project that could bisect refuge lands just south of the Laguna Unit. The bridge would span the Laguna Madre and link the mainland to South Padre Island. This bridge would have an impact on all large mammal movements. • Three liquid natural gas (LNG) facilities have been permitted by the Federal Energy and Regulatory Commission (FERC). The potential is that these plants could be constructed adjacent to the Bahia Grande Unit. The total impacts are approximately 1,500 acres directly adjacent to the Bahia Grande Unit and another site south of the Brownsville Ship Channel that will be within ½-mile of the Unit. • Wind farm development continues to expand in Cameron County. The LANWR is virtually surrounded on its western boundary, and plans for more turbines are being developed. • Planned but unspecified road expansion and development are always a possibility (especially because of the above-mentioned economic drivers that will fuel further population growth). • Agricultural Land Use: Agricultural lands in the valley have provided forage and habitat for exotic ungulates. However, the Valley is seeing a decrease in agriculture that is expected to continue into the future.	restaurants, and making visits to the surrounding tourist destinations. **Alternative B:** The Proposed Action Alternative would see an increase in hunters at LANWR. Under the proposed hunt plan, up to 420 additional hunt permits would be issued annually. Based on current trends, a large portion of the hunters would travel to the refuge from other parts of Texas or out-of-state. In some cases, the hunters are youth who travel to the refuge with their entire family. The increased opportunities would be a big economic boost for businesses around the refuge and to the greater Cameron County area.
Climate Change Refuge staff have noticed changes in habitat at LANWR that can be attributed to climate change. In coastal prairie and sand flat wetlands, researchers have witnessed encroachment by black mangroves which has affected the distribution of bird species (Mark Conway, pers. communication). The change in habitat has also caused an apparent shift in	Under both alternatives, the refuge would use an adaptive management approach for its hunt program, reviewing the hunt program annually and revising it annually (if necessary). The Service's hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts

some nilgai antelope movement patterns at the main Laguna Unit. The changes are at least indirectly attributed to climate change. Sea level rise (attributed to climate change) has had an effect on the distribution and prevalence of black mangroves at the refuge. Black mangroves are currently encroaching into native coastal prairie habitat, which is causing some species to abandon areas on the refuge. For instance, the seaside sparrow (*Ammodramus maritimus*) has moved out of at least one location that researchers consider a symptom of climate change and shifts in habitat. We also experience unprecedented weather, such as out-of-season heat waves, tornadoes and tropical storms. These effects of climate change can transform our environments by changing closely linked associations, such as the timing of hatching insects with the arrival of migratory birds (Climate Change). Three LNG facilities have been recently permitted by the FERC. LNG facilities and associated pipelines and infrastructure development has local, regional, and even global climate change implications that are difficult to measure, but add to the overall carbon footprint of the Valley. Due to the close proximity of the plants to the LANWR, they may add to the local air pollution observed in the area.	of climate change on all species harvested in this proposed hunt plan.
Use of Lead Ammunition The State of Texas has no current prohibition on the use of lead ammunition while hunting upland species. During the past 2–3 years, the refuge ocelot biologist has worked with visitor services staff to educate out firearm hunters on the impact of lead ammunition on wildlife. The hunters' use of non-toxic ammunition appears to be low at LANWR. However, because the refuge does not allow upland game bird hunting, the distribution of lead during the current hunts is expected to be low and only an issue when animals are wounded or not found. The refuge will continue to use educational	**Alternative A:** Under current management, there are no anticipated cumulative impacts. The LANWR currently issues 1,000 hunt permits, but 800 of those permits are for archery hunters (which cause no lead related environmental concerns). The other 200 permits are for big game hunts, which, in general have a low amount of lead dispersion into the environment (compared to hunters using pellets fired from a shotgun). **Alternative B**:

material that is distributed to hunters during orientations. The goal of this educational program is to reduce the potential impact on scavengers (that could include the ocelot) when they may feed on wounded game. However, it is widely known by locals that the original tracts of the Laguna Atascosa Unit were transferred from the Department of Defense (DOD) to the Service in 1946. As a result of the Laguna Atascosa Unit being a former military training facility, there are spent bullet casings and lead ammunition at several locations, but especially within Subunit 7.	Under the Proposed Action Alternative, the refuge is not proposing any expansion of hunting for deer. Despite only adding exotic and invasive species hunts at LANWR, there would be an increase in lead shot being used on the refuge. The 420 new hunt permits (and 420 new individual hunters) would all be using firearms of some type (unless they choose to use a more primitive weapon or non-toxic ammunition). This slight increase would not add to cumulative impacts from the presence of lead in the environment because in general big game hunts have a low amount of lead dispersion into the environment.
Cultural Resources During World War II, parts of the refuge within the project area were used as a gunnery training range. Remnants of World War II structures still exist. Old storage bunkers, target tracks, and spent bullets can be found off Bayside Wildlife Drive. In addition, prehistoric sites containing shells, otoliths, and bones have been identified within the project area (Fullerton and Morgan 2017). Presently there are few concerns in relation to scattered cultural resources in the refuge. The area with the highest concentration of WWII sites is in Subunit 7; however, that area is currently closed to hunting. The other huntable subunits have some potential concerns from visitor use. The refuge has had little documented artifact collection issues, however law enforcement is not often focusing on those potential concerns and may be missing their frequency. The following cumulative effects on cultural resources are anticipated. At Bahia Grande, there is potential risk to cultural resources associated with the planned improvements that will primarily be analyzed in another Environmental Assessment (currently being drafted). Although experts in the field would be consulted and necessary surveys conducted, there's a potential for impact to undiscovered	Under Alternative A, there are no anticipated cumulative impacts. Under Alternative B there are no significant changes to the structure of the hunts and what would be allowed except during the American alligator hunts. The alligator hunters would have permission to drive an anchor/spike into the ground. The concern is minimal in the area where alligator hunting is allowed because the area is a previously disturbed site.

sites. The refuge would halt activity upon accidental discovery of any site in the Bahia Grande Unit.	
Refuge Management and Operations The following cumulative effects on refuge management and operations are anticipated. The LANWR depends on prescribed fire as a tool to manage vegetation in coastal prairie habitat. The addition of new development and roads bordering the refuge coupled with the increase in visitor uses will add complexity to the prescribed burns on LANWR. Land management staff and fire managers will be required to spend more time planning and waiting for the appropriate weather (i.e., the correct wind directions to avoid smoke impacts on roads) before conducting future prescribed burns.	For both Alternative A and B, there are no anticipated cumulative impacts. Refuge management would continue to schedule and prioritize activities on an annual basis using an adaptive management approach.

Summary of Analysis
The purpose of this EA is to briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

Alternative A – No Action Alternative
Anticipated annual deer harvest on the refuge and other national wildlife refuges open to deer hunting is an extremely small percentage of the state's annual harvest and just a fraction of the national population. The same is true for the invasive species, such as feral hogs. The harvest of feral hogs will not be sufficient in reducing the population and additional management actions (such as trapping and opportunistic staff culls) will need to take place. If hog numbers are not reduced in Alternative A, the refuge expects to see more resource damage that was mentioned above. The disturbance regime associated with this species includes dramatic changes to wetland structure at LANWR. The species has been observed "rooting" through entire ephemeral wetlands which allows invasive plants to take hold and flourish. Population management of nilgai is expected to reduce intra and interspecies competition within available habitat. In summary, based on our analysis, nilgai are present in sufficient numbers for hunting and other refuge management objectives. In regards to American alligators, a lack of natural predators or any hunting pressure would result in higher population numbers. Because this species can potentially affect numerous mammal and avian species, the continued increase in their populations could have a deleterious effect on many mammals and migratory birds.

An analysis of refuge soils suggests there should be minimal effects from the current hunt program. The refuge does not allow off-road motorized vehicle use of any kind. Disturbance to soils may exist on current hunts from hiking and biking off the main roads only.

Air quality is potentially affected during current hunts from refuge users driving vehicles and agitating dust, however they are short-term and our vehicular traffic is a small percentage of the overall commuter traffic in the surrounding area.

The LANWR hunts are very popular with both Texas applicants and hunters from out-of-state. As a result of the popularity, the LANWR documented attendance spikes during the hunts season when the hunters are present. However, each hunt subunit is restricted to the visiting non-hunter or staff unless there is an emergency. As a result, various maintenance and monitoring efforts are put on hold, including road repair, mowing, and biological monitoring.

Cultural resources could be affected by collectors and vandals or by hunters traversing the refuge. To minimize the effects of visitor use the public is notified of cultural resource rules and regulations via refuge brochures and on the official website.

The cost associated with the current hunt program are covered within the roughly $950,000 annual budget, Recreational Fee Program dollars (which partly come from the hunts), and separate funds within the South Texas Complex law enforcement budget. As far as the overall costs or benefits to the local economy; the refuge would continue managing the current hunts, which occur on approximately 35 days for a maximum of 1,000 hunters (a total of 35,000 hunt visits). This would result in a positive economic benefit to the surrounding community.

There is an obvious influence on individual animal welfare through the current hunts, however the refuge makes every effort to minimize our impact. For instance, the refuge transitioned (in 2017) to mandatory pre-hunt orientations before all hunts, which have helped reduce mishaps and hunter violations in the field.

Despite the Valley's high Hispanic population, any environmental justice impacts (either positive or negative) will be equally distributed across population demographics.

This alternative also meets the purpose and needs of the Service as described above, because it would continue the wildlife-dependent recreation opportunities historically allowed on the refuge. However, the ability to maintain or control exotic ungulate populations is reduced compared to Alternative B.

Alternative B – Proposed Action Alternative

The Proposed Action Alternative (Alternative B) includes no increase in white-tailed deer harvest. This alternative only includes new opportunity for the harvest of non-native game species. Therefore, it can be surmised that the overall impact of this proposal on white-tailed deer will be a net increase in forage and available food due to the desired decrease in the non-native populations. Feral hog are a non-native species. Increasing the number of hogs harvested from the refuge and from the surrounding population is the desired effect. An increase in the number of hogs harvested is anticipated. Population management of nilgai is expected to reduce intra and interspecies competition within available habitat resulting in lessening impacts on native wildlife such as whitetail deer. Alternative B proposes to increase population management of nilgai on additional portions of the refuge. In regards to American alligators, the reduction of the population is deemed necessary by the refuge due to the manipulated hydrology, which has resulted in continuous freshwater supplies. Removal of a maximum of 20 alligators

from what is now a population that has outgrown its resources should make a positive impact on the potential prey species.

The newly proposed exotic hunts will potentially have impacts to nesting birds, therefore care will be taken to schedule hunts either before or after egg laying activity begins (outside March to September, when possible).

Soil disturbance should be a nominal factor to consider, but the refuge will be careful to monitor compaction, erosion, and ground disturbance closely. The visiting public may have a slight effect in local areas, but a more widespread concern could be from refuge staff making improvements to roads or simply trying to keep roads open for visitor use. To keep roads maintained there will be equipment used at La Selva Verde and Bahia Grande and disturbance to soils may occur from those activities.

The Proposed Action would result in 420 new hunt permits/visits added to the 1,000 already offered in Alternative A. The effect of these visits on the local economy is impactful because many of the hunters require housing in local hotels. In the short-term, negative impacts at a local scale, as a result of additional vehicle access would occur at the Bahia Grande Unit. Nearly half of the total LANWR acres potentially available to the public for recreation would be opened for public hunting. The plan calls for an additional 41 days of hunting access spread out in the youth hunt at LANWR Subunit 7 and La Selva Verde. All these items lead to a positive effect on the economic strength of the local area.

Hunters will likely cause minimal yet noticeable erosion and vegetative disturbance along the shoreline of the South Boundary Drain and along the short section of the Cayo Atascosa that would be open to American alligator hunting, which would increase turbidity and cause minor water quality concerns.

The refuge is expanding the hunt areas to accommodate more hunters but continue to ensure a quality hunting experience. In their current state, visitation to Bahia Grande, La Selva Verde, and Subunit 4 would only be positively impacted by hunting because they are currently closed to other public entry. Although restrictions would be in place to ensure hunters and other recreationists are not in conflict, expansion of hunting will also give refuge managers more flexibility in deciding when and where hunts occur so non-hunt visitors will always have ample locations to recreate safely. Subunit 7 is the large area at LANWR containing the 15-mile wildlife drive. Once the STWD is completed and reopened to full-use, the proposed youth hunt would impact visitors on this popular infrastructure because it would be closed to non-hunters during all hunting operations in that Subunit. At Subunit 4, there should be no conflicts with visitors and no anticipated impacts to visitor related issues because this area is closed to the public.

The proposed Hunt Plan would allow for hunt access on limited days which would include the firearm and archery hunts on the Laguna Atascosa Unit for a total of 35 days. This alternative calls for an additional 41 days of hunting access spread out in the youth hunt at LANWR Subunit 7 and Selva Verde. It would also include new access to hunt on Bahia Grande and LANWR Subunit 4. The true impacts to visitors would be to hunts conducted on Bahia Grande (for a

maximum of 24 days) and at LANWR Unit 7 (for a maximum of nine days), because these areas will get pressure from other user groups.

It is estimated that annual administrative costs of the refuge hunt program would be approximately $85,100. That is roughly a $35,000 increase over the current estimate for funding the hunts in Alternative A.

This alternative helps meet the purpose and needs of the Service as described above because it provides additional wildlife-dependent recreation opportunities on the refuge while managing undesired species that negatively impact the native trust species of South Texas.

Monitoring
The refuge conducts a pre- and post-hunt spot light survey to get a count of all ungulates. While conducting the surveys refuge personnel also count non-target species such as ocelots, bobcats, etc. The refuge previously had conducted limited American alligator nighttime surveys until the 1980s. Due to the proposed hunt for alligators, the refuge will resume those surveys in the proposed hunt area.

List of Sources, Agencies, and Persons Consulted

U.S. Fish and Wildlife Service
Chris Perez, Wildlife Biologist, Lower Rio Grande Valley National Wildlife Refuge
Sara Miller, Wildlife Biologist, Laguna Atascosa National Wildlife Refuge
Juli Niemann, Landscape Architect, Visitor Services, Albuquerque, New Mexico
Monica Kimbrough, Branch Chief, Planning/Deputy Refuge Supervisor, Albuquerque, New Mexico

Texas Parks and Wildlife Department
Kelly Edmiston, Public Hunting Program, Private Lands and Public Hunting Program

List of Preparers
US. Fish and Wildlife Service:
W. Boyd Blihovde, Refuge Manager, Laguna Atascosa NWR

State Coordination
On Thursday January 2, 2020, the Service met in Rockport, Texas with the Regional Manager of the Texas Parks and Wildlife Department to discuss the Laguna Atascosa National Wildlife Refuge proposed hunt plan. Refuge manager, Boyd Blihovde, also participated by calling in to the meeting.

Tribal Consultation
As of December 31, 2019, Laguna Atascosa National Wildlife Refuge staff did not consult with tribes because there are no federally designated tribe in this area.

Public Outreach
Informal public scooping was completed in 2015 for a draft Environmental Assessment that was a precursor to this EA. That process was not completed, but much of that document was

incorporated into this EA. During the 2019 calendar year, several press releases were completed for the current proposed hunt plan.

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Appendix 1

OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS & REGULATIONS

STATUTES, EXECUTIVE ORDERS, AND REGULATIONS	
Cultural Resources American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR Part 7 Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3 Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7 National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810 Paleontological Resources Protection Act, 16 U.S.C. 470aaa – 470aaa-11 Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10 Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971) Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)	The proposed action (Alternative B) includes no ground-disturbing activities, or other activities that might disturb undocumented paleontological, archaeological, or historic sites. The only disturbance associated with the American alligator hunts is on a previously disturbed area that will have no effect on cultural resources.
Fish & Wildlife Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22 Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450 Fish and Wildlife Act of 1956, 16 U.S.C. 742 a-m Lacey Act, as amended, 16 U.S.C. 3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904 Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21	No changes are proposed to current refuge-specific hunting regulations for migratory birds and upland game birds. The proposed action is not likely to adversely affect federally listed threatened or endangered species on the refuge (See X, ESA Section 7 Intra-Service Consultation). The proposed action is consistent with Executive Order 13186 because the Environmental Assessment for white tailed deer, feral hogs, nilgai, other exotic ungulates and alligators on LANNWR evaluates the effects of agency actions on migratory birds.

Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)	
Natural Resources Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23 Wilderness Act, 16 U.S.C. 1131 et seq. Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq. Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)	The Service has evaluated the suitability of the LANWR for wilderness designation and concluded that the Refuge does not meet the basic criteria for inclusion into the National Wilderness Preservation System. The Service has evaluated the eligibility of streams on LANWR for wild and scenic river designation and concluded no streams meet the basic criteria for inclusion into the National Wild and Scenic Rivers System The proposed action would have negligible effects to air quality. The proposed action is consistent with Executive Order 13112 because stipulations in permits would be designed to prevent the introduction of invasive species.
Water Resources Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq.; 15 CFR Parts 923, 930, 933 Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328 Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333 Safe Drinking Water Act of 1974, 42 U.S.C. 300f et seq.; 40 CFR Parts 141-148 Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977) Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)	The refuge contains no coastal zones, rivers, harbors, or navigable waters that would be affected by the proposed action. None of the activities proposed in this EA would affect the coastal zone, rivers, harbors, or navigable waters. There would be negligible impacts of the proposed action on water quality or water resources. The Refuge contains no drinking water sources and does not supply drinking water to any community. The proposed action is consistent with Executive Order 11990 because implementation of the Hunt Plan would protect existing wetlands. The proposed action is consistent with Executive Order 11988, because implementation of the Hunt Plan would not result in the modification or destruction of floodplains.