Draft Environmental Assessment

Deep Fork National Wildlife Refuge Integrated Pest Management Plan

March 2023

Prepared by

Deep Fork National Wildlife Refuge
Okmulgee, OK

Contents

Environmental Assessment for Integrated Pest Management Plan

Date: February 2023

This Draft Environmental Assessment is being prepared to evaluate the effects associated with the proposed action and complies with the National Environmental Policy Act 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. The National Environmental Policy Act (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 or FWS) is proposing to implement an Integrated Pest Management Plan (IPMP) to control invasive species in accordance with the Deep Fork National Wildlife Refuge (NWR/refuge) Comprehensive Conservation Plan (CCP). The IPMP focuses on improving and restoring degraded forest, wetlands, and upland habitats within the acquisition boundary of the refuge by identifying invasive species most detrimental to those habitats and outlining best management practices to control those invasive species.

A proposed action may evolve during the NEPA process as the agency refines its proposal and gathers feedback from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The proposed action will be finalized at the conclusion of the public comment period for the EA.

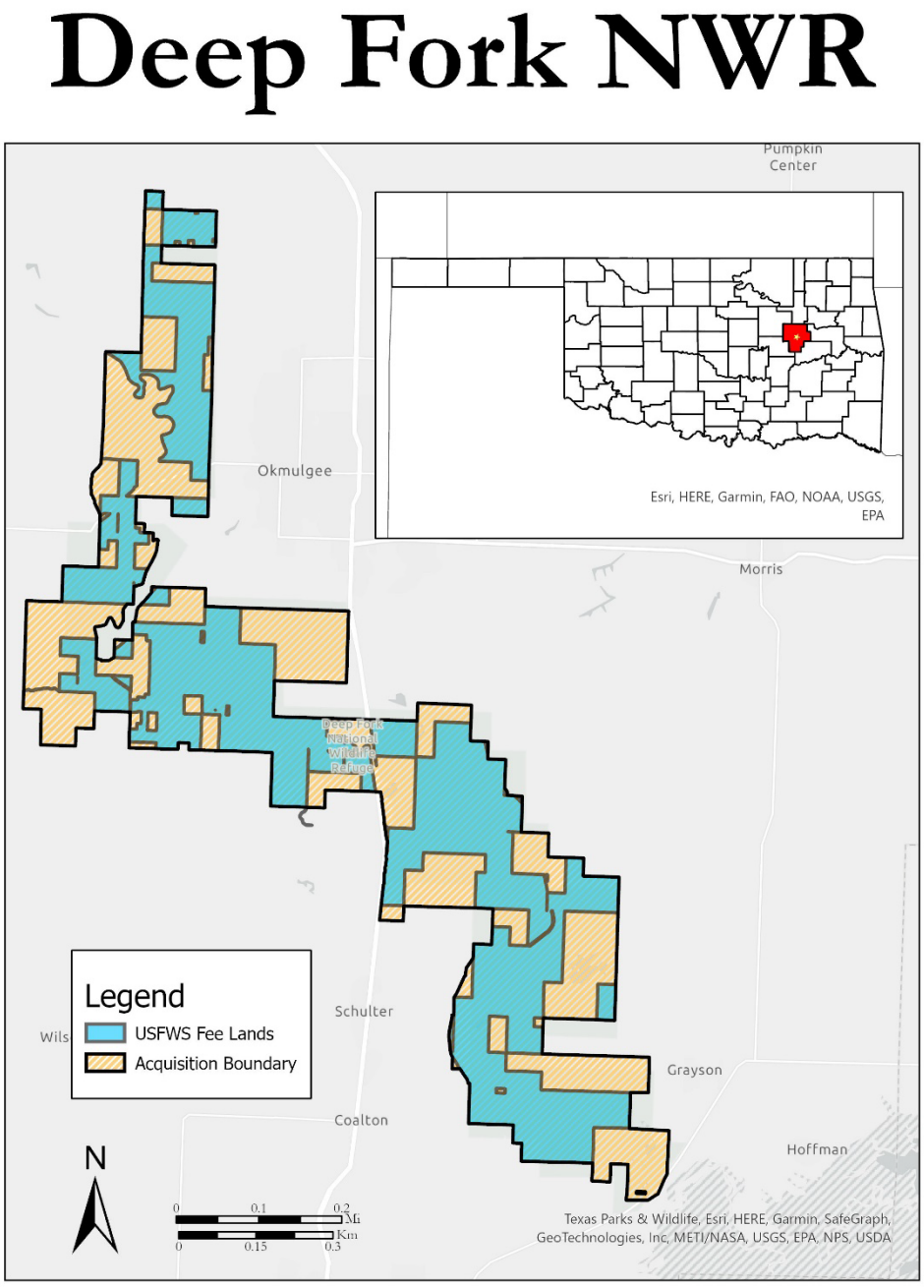
Background

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.

The refuge was established pursuant to the Federal Property and Administrative Act of 1949 (40 U.S.C. 471-535), as amended; Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661-666C) as amended; the Act of May 19, 1948, Public Law 80-537 (16 U.S.C. 667b-667d; 62 Stat. 240) as amended; and The National Wildlife Refuge System Administration Ac of 1966 (16 U.S.C. 668dd-668ee), as amended.

The refuge (Figure 1) was established in June 1993 under the provisions of the Emergency Wetlands Resources Act of 1986 and the Migratory Bird Conservation Act of 1929. The primary purpose of the refuge is to protect and enhance the high quality of wetlands found along the Deep Fork River and their associated fish and wildlife values, including economic, food supply, water supply and quality, flood control, fish, wildlife, and plant resources, and outdoor recreation.

Figure 1: Acquisition and fee title boundaries of Deep Fork NWR.



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"

Additionally, the NWRSAA mandates the Secretary of the Interior in administering the NWRS (16 U.S.C. 668dd(a)(4)) 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;
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Established in 1993, Deep Fork National Wildlife Refuge currently covers 10,337 acres in Okmulgee County, Oklahoma with a total acquisition boundary of 18,228 acres. Prior management efforts to control invasive plant populations on the refuge have been limited to prescribed fire and mechanical treatments. Much of this effort was concentrated in grassland areas to maintain and restore native tall grass prairie communities. No formal plan was in place due to the variability of available funds, staffing, and time constraints.

In 2004, the refuge developed a Pest Management Plan to address increasing nuisance or invasive wildlife populations, specifically feral swine (*Sus scrofa*) and beaver (*Castor canadensis*). The plan identified several control methods and refuge actions to reduce pest populations. Currently, the refuge removes beaver dams affecting refuge infrastructure and private property and traps nuisance beavers. Both refuge staff and USDA Animal and Plant Health Inspection Service (APHIS) trappers trap feral swine. Feral swine can also be taken during daylight hours of any established refuge hunting season.

This EA builds on several existing NEPA decisions to support the proposed action, specifically the ongoing use of herbicides and expanded methods for managing feral swine. The following NEPA documents are hereby incorporated by reference:

- Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (BLM 2007)
- Final Feral Swine Damage Management: A National Approach Environmental Impact Statement (APHIS 2015)
- Final Restoration Plan and Environmental Assessment for Restoring Injuries to Natural Resources from the Eagle Picher Creta Copper Site in Jackson County, Oklahoma (FWS 2020)

Purpose and Need for the Action

The purpose of this proposed action is to provide a framework for the control and eradication of priority invasive species including development of management objectives and identify priority treatment areas on Deep Fork NWR. The plan focuses on improving and restoring degraded forest, wetlands, and upland habitats on the refuge by identifying the invasive species most detrimental to those habitats and outlining the best management practices to control those invasive species. The need of the proposed action is to meet the Service's priorities and mandates as outlined by the NWRSAA (16 U.S.C. 668dd(a)(4)) to:

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the System;
- Ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans;
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Alternatives

This section describes the alternatives considered and analyzed in this EA. The No Action alternative (Alternative A) and two action alternatives (Alternative B and Alternative C) are presented for evaluation. The No Action alternative includes current management strategies. Alternative B is the implementation of the Integrated Pest Management Plan including aerial shooting of feral swine. Alternative C is implementation of the Integrated Pest Management Plan without aerial shooting of feral swine.

Under each alternative, feral swine and beaver control would occur to varying degrees with Alternative B and C expanding vegetation control. Best management practices identified and addressed in the plan include the following:

- Remove all bait from an area when trap is not in use or trap is relocated
- Use remote-sensing traps for feral swine to prevent non-target species from tripping gates.
- Use Offset Conibear traps set for nuisance beavers to prevent the accidental capture of river otter (*Lontra canadensis*)
- Proper handling and application by trained staff for use of herbicides

Alternative A – Current Management Strategies – No Action Alternative

Under the No Action Alternative, current programs and practices to control invasive species would continue consistent with the 2004 Pest Management Plan. The Refuge would continue to use prescribed fire and natural regeneration to maintain and restore grassland habitats. Feral swine and beaver populations would be managed through trapping and nighttime shooting, and beaver dams affecting refuge resources and private property would continue to be removed. Taking of feral swine during daylight hours of any established refuge hunt would continue to be allowed per the Refuge Hunt Plan.

Vegetation

Current management strategies prevent the use of herbicides to control invasive species. Limited use of herbicides in these habitats has resulted in heavy infestation from invasive plant species. For instance, grassland habitats have been invaded by winged elm (*Ulmus alata*). While prescribed fire often top kills plants, saplings can come back from stump or root sprouts, increasing stem density (Oklahoma 2014) and out-competing native grasses. Combining prescribed fire with mechanical or chemical treatment would greatly increase the effectiveness of control on winged elm and other invasives on the refuge.

Feral Swine Control

Under this Alternative, current management practices to help control feral swine would continue involving the trapping and shooting of feral swine either by refuge staff or through an Interagency Agreement with APHIS. When feral swine trapping began on the refuge, staff utilized corral style traps with drop gates or root gates. The use of a trip wire on the drop gates occasionally resulted in the accidental trip from other wildlife, such as white-tailed deer. With the advancement in technology, the refuge and APHIS now use drop gates with remote sensing cameras. The gates are controlled remotely, resulting in staff being able to monitor the trap using a cellular device and ensuring only the target species is present before tripping the gate. This has increased monitoring capabilities, resulting in no non-target species being accidentally caught in the trap. Corn, both plain or soaked in a sweetener, is used as bait to entice feral swine into the trap. The bait can attract other wildlife species, including raccoon, opossum, armadillo, and a variety of bird species. In addition to traps, nighttime shooting would occasionally take place to take target hogs that have become trap smart. The refuge allows the taking of feral swine under incidental take during daylight hours of any refuge hunting season. Feral swine must be taken with the legal means of take during established seasons. Feral swine may not leave the refuge alive.

Beaver Control

Under this Alternative, nuisance beavers would continue to be controlled using traps, either by refuge staff or a trapping special use permit. The refuge only targets beavers that pose a risk to refuge facilities and infrastructure, are causing major damage to natural resources by clearing large stands of trees, or building dams in areas that back water onto neighboring landowners. Conibear traps are used around dams, well-used beaver slides, and lodges to catch beavers. The trigger is offset to prevent the accidental capture of river otter. Beaver trapping typically does not occur in high public use areas unless the beavers are a threat to refuge facilities or infrastructure. For instance, the refuge will occasionally trap beavers around the Cussetah Bottoms Boardwalk Trail area if the beavers are chewing on the wooden posts of the boardwalk, causing a risk to public safety and damage to infrastructure. If trapping is necessary in high public use areas, the traps are placed in the evening, marked, and checked first thing in the morning. If nighttime shooting is necessary, then staff would wait until after dusk and ensure no visitors are present within the area. Any deceased beavers are removed from the area.

Alternative B – IPMP with aerial shooting of feral swine

Alternative B would implement management practices identified in the IPMP and establish a guideline for management practices, such as: invasive species detection and treatment; record keeping and monitoring; adaptive management; and best management practices using an integrated pest management approach.

Vegetation

Through this plan, the refuge has identified management strategies for control of invasive plant species using multiple control measures, including chemical application, mechanical removal, and prescribed fire. Chemical application would follow label application rates for the chemicals identified in the plan. Chemical application methods would include cut-stump treatment, basal bark application, hack-and-squirt, and foliar application.

- Cut-stump treatment is effective at controlling most woody invasive plants. An herbicide solution is applied directly to the stump after the plant has been cut down. It allows for selective treatment, resulting in little to no damage to surrounding vegetation from herbicide application.
- Basal bark herbicide applications are made using a low-pressure backpack sprayer to thoroughly wet 12-15 inches of the stem, root collar area, and exposed roots using a solid cone or flat fan nozzle. Basal bark herbicides use an oil carrier to penetrate the bark.
- Hack-and-squirt applications are target-specific treatments used to control trees that are 1 inch in diameter or greater. A hatchet or axe is used to cut multiple incisions into the tree at 4.5 feet or diameter breast height (DBH). The number of incisions is determined by the diameter of the tree. Herbicide is then applied to each incision using a spray bottle or sponge.
- Foliar application means using equipment to apply chemicals directly to the leaves of target plants. This can be done on individual plants or as a broadcast treatment to cover a large area of infestation.

Best management practices (BMPs) for invasive plant species control using herbicide would limit negative effects on species addressed in the Threatened and Endangered Species section of this EA. These BMPs include:

- Complete a pesticide use proposal via the Service's Pesticide Use Proposal System (PUPS) prior to applying any chemicals and report annual usage of pesticide per Service policy.
- Maintain records for a minimum of two (2) years at the facility for all applications of pesticide.
- Ensure all individuals performing control on invasive species are properly instructed on plant identification.
- Calibrate all chemical application equipment (backpack sprayers, pumps, helicopters) before each season and neutralized after each chemical use.
- Follow weather restrictions according to the label guidelines and approved Section 7 consultations. Examples include restriction of chemical applications to wind conditions below 10 mph and avoiding applications before any potential rain events.

- Follow all label instructions.
- Provide both application and/or vegetation buffers around sensitive areas.
- Ensure herbicide is approved for use in aquatic environments where appropriate.
- Ensure all vehicles, clothing, and personnel are properly decontaminated and cleaned before moving locations.

Mechanical removal involves physically removing plants from the environment through cutting, mowing, mulching, or pulling. Plants are cut to ground level or completely removed. Equipment, including chainsaws, skid steers with mulching or cutting attachments, or mowers, are used with this method of control.

Feral Swine

The refuge would expand control methods for feral swine to include aerial shooting. Aerial shooting from a helicopter is used in large areas or in areas that have limited access. Teams involved in shooting from a helicopter include a shooter and a pilot. Aerial shooting can be a humane method in removing feral swine when carried out by experienced and skilled shooters and pilots; the animal can be clearly seen and is within range; the correct firearm, lead-free ammunition, and shot placement is used; and wounded animals are promptly located and dispatched (Sharp 2012). Operations would be conducted by APHIS with assistance from refuge staff.

Aerial shooting would follow the methods outlined by USDA APHIS analyzed in the 2015 EIS to ensure that aerial shooting is conducted in a safe and environmentally sound manner, in accordance with applicable laws and regulations. Pilots and aircraft would be certified under APHIS-Wildlife Service's program procedures and only properly trained APHIS employees, or contractor would be approved to shoot from aircraft. Although unmanned aircraft, as allowed under Service policy, could be used in conducting monitoring for feral swine (measuring damage and locating swine), the Service is not proposing to shoot swine from unmanned aircraft. This alternative fulfills the Service's mandate under the NWRSAA.

Alternative C – IPMP without aerial shooting of feral swine

Alternative C is the same as Alternative B except without aerial shooting of feral swine.

Affected Environment and Environmental Consequences

This section is organized by affected resource categories and for each affected resource discusses both (1) the existing environmental and socioeconomic baseline in the action area for each resource and (2) the effects and impacts of the proposed action and alternatives on each resource. The effects of the proposed action considered here are changes to the human environment, whether adverse or beneficial, that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives. This EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Any resources that would not be more than negligibly impacted by the action have been dismissed from further analyses.

The refuge is located largely in the floodplain of the Deep Fork of the North Canadian River, commonly known as the Deep Fork River, extending along approximately 34 miles of the river in a northwest-

southeast direction. The refuge is bounded on the west by the Okmulgee Wildlife Management Area and on the south by the Eufaula Wildlife Management Area, both of which are administered by the Oklahoma Department of Wildlife Conservation (ODWC). The refuge currently encompasses roughly 15.6 square miles in Okmulgee County, OK, with a total acquisition boundary of 28 square miles. This IPMP would apply to the entire acquisition boundary. The USFWS would consult with other agencies as needed when land is acquired to ensure management activities covered in the IPMP are not detrimental to any resources found within the new acquisition.

Historically, the bottomland hardwood forest community of the Deep Fork River was a complex, diverse, and interrelated association of plants and animals, created and maintained by periodic, natural flooding. However, years of development and habitat alteration by humans have significantly modified the dynamic floodplain ecosystem.

Today, refuge lands are a mixture of regenerating bottomland hardwood forest, drained and natural wetlands, agricultural lands (mostly pastureland and pecan orchards with a small acreage of cropland), and some upland hardwood forest and prairie. Given time, protection, and proper management, the refuge bottomlands should regain much of the character of a mature riparian forest ecosystem, including the diverse assemblage of plants and animals representative of these vanishing habitats.

This EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses. The following resources either (1) do not exist within the project area or (2) would either not be affected or only negligibly affected by the proposed action and were not analyzed for potential impacts:

- Wilderness
- Air Quality
- Soils and Geology

Natural Resources

Terrestrial Wildlife and Aquatic Species

Affected Environment

Wildlife species found on the refuge are typical of bottomland hardwood forests, moist soils, upland post oak/blackjack oak forests, and tallgrass prairie. A total of 149 species of birds, 9 game species, and 140 nongame species are known or thought to use the bottomland forests and associated habitats in eastern Oklahoma. The numerous sloughs and streams support large numbers of great blue heron (*Ardea herodias*), little blue heron (*Egretta caerulea*), great egret (*Ardea alba*) and snowy egret (*Egretta thula*). Four great blue heron rookeries are located on the refuge; these rookeries are used by snowy egrets after the young herons fledge. Raptors, woodpeckers, and songbirds use the area in great numbers. The refuge is a very important migration stop for many species of neo-tropical birds and provides suitable nesting habitat for many others.

The refuge supports a diversity of wildlife species, including game and nongame species. Songbirds, raptors, and rails breed at the refuge, whereas shorebirds and waterfowl primarily utilize the refuge as wintering and migratory habitat. Wintering waterfowl concentrations on the refuge are highest from

late November through February. The refuge maintains a waterfowl sanctuary that excludes access to the public, including small game and migratory bird hunters. This area provides sanctuary and roosting areas for migratory birds and helps to offset potential disturbance effects.

Fifty-nine fish species have been identified from the river, streams, and reservoirs of the Deep Fork River basin and many are likely to be found in refuge waters. The Deep Fork River provides feeding and spawning habitat for many sportfish native to east-central Oklahoma. The most important species to anglers are the channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*), blue catfish (*Ictalurus furcatus*), crappie (*Pomoxis spp.*), white bass (*Morone chrysops*), and largemouth bass (*Micropterus salmoides*).

Approximately fifty-four species of reptiles and twenty-two species of amphibians have been reported from Okmulgee County. Many of these likely occur on the refuge.

Impacts on Affected Resource

Alternative A

Beaver Control
Under this Alternative, beavers would continue to be controlled using traps, either by refuge staff or a trapping special use permit. Impacts to non-target species would be avoided by using offset conibear traps to target only nuisance animals as described in the No Action Alternative.

Feral Swine Control
Under this Alternative, current management practices using remotely controlled gates will ensure only the target species is present before tripping the gate. This ensures that other wildlife attracted to bait is not harmed. Refuge wildlife would continue to be adversely affected by habitat damage from uncontrolled feral swine

Chemical Treatments
Under the No Action Alternative, no chemical vegetation treatments would occur.

Mechanical/Manual Treatment
Under the No Action Alternative, there would be no additional disturbance on the refuge from current invasive species management practices. Terrestrial and aquatic wildlife would continue to experience the negative impacts of habitat degradation from invasive plant species.

Alternative B

Beaver Control
No additional changes would occur to the current control methods for nuisance beavers on the refuge.

Feral Swine Control
Along with current trapping and shooting practices to control feral swine, Alternative B would supplement these methods with aerial shooting. Aerial shooting is a humane way to control feral swine in areas with dense vegetation or difficult access. APHIS or a contractor would conduct aerial shooting on the refuge with support from refuge staff. These pilots and shooters are adequately trained to identify and shoot target animals from the air. There is a possibility of wounding an animal. Wounded

swine would be located and killed as quickly and humanely as possible to prevent the animal from suffering from pain and disabling effects from injury.

Direct or indirect impacts on non-target species would be minimal. There is a potential for misidentification of non-target species that look similar to target species and disturbance to wildlife from aircraft overflights (USDA 2019). In addition, noise from the aircraft and the firing of weapons may result in some temporary to non-target animals in the area.

Chemical Treatments

Alternatives B and C would allow for the use of herbicides to control invasive species on the refuge. Approved herbicides would likely expose fish and wildlife to constituent chemicals and adjuvants in one or more ways. Chemicals may enter aquatic environments via drift, runoff, percolation, and spills where exposure to aquatic invertebrates, aquatic-phase amphibians, and fish may occur.

Small mammals, including mice and other rodents and bats, may be exposed unintentionally by direct spray or from eating seeds, vegetation, or insects that have chemical residues. Larger predators, both mammal and avian, may in turn consume small mammals that have been exposed to chemical residues.

Herbivores may ingest chemical residues on vegetation. Though dead vegetation is less attractive to herbivores, a broad-leaf or grass-specific herbicide could leave palatable non-target plants unharmed but containing potential chemical residues until the chemical degrades.

Additionally, there is a small likelihood that wildlife may be unintentionally exposed to herbicides via spray drift or direct application, especially for invertebrate species that may forage on or otherwise target invasive plant species.

When herbicides are applied in a manner consistent with their label, wildlife exposure to chemicals would be short term and below thresholds for acute toxicity. The United States Environmental Protection Agency (US EPA) acute toxicity designations to aquatic and terrestrial wildlife, including honeybees, for the herbicides proposed for use are summarized below in Table 1.

Mechanical/Manual Treatment

Mechanical treatment of invasive plant species may displace wildlife species for a short period. Disturbance would be caused by heavy equipment, including skid steers, dozers, and tractors with mowing, cutting, or shearing implements. Such disturbance would be short term and timed to avoid nesting season or mating season.

Alternative C

Beaver Control

No additional changes would occur to the control of nuisance beavers on the refuge.

Feral Swine Control

There would be no change to control methods for feral swine. Terrestrial and aquatic wildlife species would continue to be negatively affected by disturbance from feral swine.

Chemical Treatments

Affects to terrestrial and aquatic wildlife would be the same as Alternative B.

Mechanical/Manual Treatment

Affects to terrestrial and aquatic wildlife would be the same as Alternative B.

Table 1: Acute Toxicity Summary of Herbicide

Herbicide	US EPA Warning Level[1]	US EPA Approved for Aquatic Use?	Target Species	Acute Toxicity to Aquatic Organisms[2]	Acute Toxicity to Terrestrial Organisms[3]
Glyphosate	Formulation Specific: Caution to Warning	Some	Broadleaf and grasses, some formulations for aquatic invasive plants	Glyphosate (excluding formulations and surfactants) is slightly to practically nontoxic to fish (US EPA 2008a). Based on the acute toxic data, there is no indication that amphibians are substantially more sensitive than fish to glyphosate (SERA 2011a). Glyphosate is slightly to practically nontoxic to aquatic invertebrates (US EPA 2008a)	Glyphosate (excluding formulations and surfactants) is practically nontoxic to mammals, avian species, and honeybees (US EPA 2008a)
Imazapyr	Caution	Some	Aquatic Invasive Plants	Practically nontoxic to fish and aquatic invertebrates (US EPA 2014e); no available information regarding toxicity to aquatic-phase amphibians (SERA 2011c)	Practically nontoxic to mammals, birds, and honeybees (US EPA 2014e
Triclopyr ester (Triclopyr BEE)*	Caution	No	Broadleaf	Triclopyr BEE is highly toxic to fish (US EPA 1998). No data available on the toxicity of unformulated triclopyr BEE in aquatic-phase amphibians (SERA 2011b)	Triclopyr BEE is practically nontoxic to mammals, birds, and honeybees (US EPA 1998)
2, 4 – D	Formulation Specific: Caution to Danger	Esters – No Amine – some	Broadleaf	2,4-D, depending on form, is slightly toxic to very toxic to fish and aquatic invertebrates. No data available on the toxicity in aquatic-phase amphibians	Moderate toxicity to birds and mammals, and practically non-toxic to honeybees (US EPA 2005)

1 US EPA warning levels are Danger, Warning, and Caution. Generally, products marked Danger are the most toxic, and those with Caution are the least toxic.

2 In general, US EPA uses fish toxicity data as a surrogate for aquatic-phase amphibian toxicity (US EPA 2015b)

3 Slightly toxic: ecotoxicity category representing over 2,000 mg/kg-body weight acute oral concentration for avian species and wild mammals; 1,001-5000 mg/kg diet dietary concentration for avian species; 10-100 mg/L acute concentration for aquatic organisms

Practically nontoxic: ecotoxicity category representing over 2,000 mg/kg-body weight oral concentration for avian species and wild mammals; over 5,000 mg/kg diet dietary concentration for avian species; over 100 mg/L acute concentration for aquatic organisms; over 11 ug/bee acute concentration for non-target insect

Threatened, Endangered, and Other Special Status Species

Description of Affected Environment for the Affected Resource

Several federally listed threatened and endangered species (T&E Species), listed under the Endangered Species Act of 1973, may occur within the project area. These species include interior least tern, whooping crane, piping plover, northern long-eared bat, and red knot. The alligator snapping turtle is a proposed threatened species known to occur in the Deep Fork River drainage. The American burying beetle (ABB) is a threatened species that occurs on the refuge, as first documented in 2011. The refuge has also documented a small population of tricolored bats, a proposed endangered species, within the project area.

Alligator Snapping Turtle

The alligator snapping turtle is the largest freshwater turtle in North America. Found in rivers, lakes, backwater swamps, and periodically in brackish water systems from Florida to Texas and north to Illinois the alligator snapping turtle will spend almost their entire lives in water. Females venture on land to lay eggs in a subterranean cavity not far from the water between the months of April and June. The eggs hatch approximately three months later.

American Burying Beetle

The ABB is a large carrion beetle native to North America. The beetle is nocturnal and a strong flier, moving as far as a kilometer in one night. During the winter months, the adults will bury themselves in the soil, emerging when temperatures have reached above 15 C (60 F) to begin the mating process. They will use small vertebrate carcasses to feed, reproduce, and rear young (Schnell et. al. 2014).

Tricolored Bat

The tricolored bat is one of the smallest bats native to North America. The once common species is wide ranging across the eastern and central United States and portions of southern Canada, Mexico and Central America. During the winter, tricolored bats are found in caves and mines, although in the southern United States, where caves are sparse, tricolored bats are often found roosting in road-associated culverts. During the spring, summer and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves. As its name suggests, the tricolored bat is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle and dark at the tip.

Impacts on Affected Resource

Alternative A

Under the no action alternative, staff would continue to manage feral swine and beaver populations as outlined in the 2004 Pest Management Plan. Threatened and endangered species would continue to be impacted by degraded habitat caused by invasive plant and pest animal species.

Alternative B

A Programmatic Section 7 analysis was completed for this action and resulted in a finding of either No Effect or May Affect/ Not Likely to Adversely Affect for the ESA listed species that occur in the area. It was determined that actions identified in the IPMP may affect, but are not likely to adversely affect the tri-colored bat and the ABB. In addition, any take of the ABB that may occur as a result of actions identified in the plan is allowed for under the ESA Section 4(d) rules adopted for ABB (50.C.F.R. §17.47(d)). The life history of each of these species as described in the corresponding Species Status Assessment Reports prepared by FWS (hereby incorporated by reference) will be considered to ensure

that conservation measures including but not limited to timing, limited ground disturbance, vegetation management, and water management are prescribed and implemented as necessary.

Alternative C

Impacts to all three species for Alternative C would be similar to Alternative B.

Habitat and Vegetation

Affected Environment

The bottomland hardwood forest ecosystem of eastern Oklahoma is characterized by a great diversity of plant species and communities. Woodlands in areas with regularly saturated soil contain a variety of water-tolerant species, including black willow (*Sailix nigra*), river birch (*Betula nigra*), cottonwood (*Populus sp.*), sycamore (*Platanus sp*.), swamp privet (*Forestiers acuminata*), and buttonbush (*Cephalanthus occidentalis*). A complex mixture of oaks (*Quercus sp*.), black walnut (*Juglans nigra*), pecan (*Carya illinoiensis*), hickories (Carya sp.), sugarberry (*Celtis laevigata*), cottonwood (*Populus sp*.), boxelder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), and other hardwood species of all ages occupy somewhat higher ground. The vegetative communities present today have been altered from the mature hardwood forest ecosystem that once existed in the Deep Fork River floodplain. Today, the river bottomlands are a mosaic of open river, streams, oxbows, sloughs, marshes, beaver ponds, bottomland hardwood forest, cut-over areas regenerating with dense brush, pastureland, and pecan groves.

Plant associations occurring on the refuge currently consist of:

1. Emergent wetlands where floating aquatic vegetation, sedges (*Carex sp*.), bulrushes (*Schoenoplectus sp*.), and smartweed (*Polygonum sp*.) predominate, and buttonbush, swamp privet, and black willow comprise the woody component, usually growing around the edges of the wetlands.
2. Seasonally flooded areas with permanently saturated soils that support predominantly brushy species such as swamp privet, hawthorn (*Crataegus sp.*), and buttonbush with a ground cover of sedges, smartweed, and water-tolerant grasses in some places.
3. Seasonally flooded bottomlands where soils are not permanently saturated that support a mix of hardwoods, shrubs, vines, and herbaceous plants typical of floodplain forests in the area.
4. Steep upland slopes dominated by post oak (*Quercus stellata*)/blackjack (*Quercus marilandica*) oak forest.
5. Gently sloping or level sites above the floodplain that support grassland or grassland/oak savannah. Grasslands in the area are composed of species representative of the tallgrass prairie.

Impacts on Affected Resource

Alternative A

Under the no action alternative, there would be no additional disturbance to vegetation on the refuge. Vegetation communities would continue to transition to invasive-dominated, negatively affecting native species.

Alternative B

Alternative B would have the greatest impact, both negative and positive, on vegetation with the implementation of chemical and mechanical treatments on invasive plant species and aerial shooting to control feral swine.

Chemical Treatments

Use of the herbicides identified in the plan to treat invasive plants could result in localized impacts on adjacent native vegetation lasting days to years. Unintentional application of herbicides to native vegetation through spray drift, or localized trampling of native vegetation due to foot or mechanized access, are potential adverse impacts. Compared with mechanical/manual treatment, the use of herbicides could reduce the extent and intensity of soil disturbance and associated adverse impacts on native vegetation, especially when treating perennial invasive plants or plants with rhizomes.

Wildlife habitats would see long-term beneficial impacts on vegetation by removing, preventing, and reducing the spread of invasive plant species. The use of spot treatment applications, such as the "hack-and-squirt" method, minimizes the exposure to non-target species. Timing and type of treatment, as outlined in the IPMP, would depend on the target species. For instance, the optimal time for herbicide application on winged-elm is February through April, when plants have mature leaves, while the best time to treat tree-of-heaven is mid- to late summer through September (USDA 2014).

Mechanical/Manual Treatments

Mechanical/manual removal of invasive plants would create localized surface disturbance from equipment, potentially affecting individual native plants or small areas of native vegetation. This effect would be especially possible during removal of underground plant parts like roots or rhizomes. Foot or mechanized access to treat invasive plant infestations could cause localized trampling of native vegetation. These adverse impacts would last hours to days; however, the beneficial impacts lasting days to years by protecting native plant communities from displacement by invasive plants outweighs these adverse impacts.

Feral Swine Control

Aerial shooting of feral swine could allow the refuge to target large groups of swine, known as sounders, in areas where trapping is impractical or impossible. Localized trampling of native vegetation due to foot or mechanized access to locate downed hogs are adverse impacts. These impacts would be minimal compared to the vegetation disturbance caused by trapping and uncontrolled swine.

Alternative C

Chemical Treatments

Impacts on vegetation from chemical treatments would be the same under Alternative C as Alternative B.

Mechanical/Manual Treatments

Impacts on vegetation from mechanical and manual treatments would be the same under Alternative C as Alternative B.

Feral Swine Control

Impacts on vegetation from feral swine trampling and rooting would continue, especially in hard-to-reach areas. This disturbance could allow for establishment of invasive vegetation and degrade the quality of habitat across the refuge.

Water Resources

Affected Environment

The following section discusses water resources on the refuge, including surface and groundwater, floodplains, wetlands, and moist soil units.

Floodplains

Floodplains are areas of low-lying ground adjacent to a river, formed mainly of river, stream, or creek sediments and subject to flooding. Floodplains may be defined by the Federal Emergency Management Agency or state agencies such as the Oklahoma Water Resources Board. The Deep Fork River flood plain is characterized by temporarily flooded bottomland hardwood forests with oxbows, sloughs, marshes, and small drainages throughout.

Wetlands

Wetlands, as defined by the Service, are lands in transition between terrestrial and aquatic systems. They are areas where the water table is usually at or near the surface or where shallow water covers the land at least seasonally. Wetlands are primarily characterized by the presence of standing water throughout at least part of the growing season, wetland soils, and vegetation adapted to or tolerant of saturated soils. Forested wetlands cover approximately 85 percent of the Refuge.

Moist Soil Units and Artificial Impoundments

Moist soil units are areas managed for the production of smartweed, millet, nutgrass, and sedges which provides cover for waterfowl. Moist soil units are flooded to depths of eight inches or less, and saturated conditions are maintained year-round through manipulation of water levels.

Artificial impoundments provide open water habitat important to waterfowl, herons and egrets, and cormorants. Most of the artificial impoundments on the refuge are less than three acres in size. Native vegetation around the banks of these impoundments provide food, cover, and perching and nesting sites for migratory songbirds, wood ducks, and other native wildlife species.

Invasive plants can affect watershed function and water quality (Schmitz and Jacobs 2007). Invasive plant removal and native revegetation activities under Alternative B and C could result in two types of impacts on water quality: changes in sediment loading from soil disturbance and inputs of chemicals from herbicide use.

Disturbances to the land surface can increase the transport of soil to surface waters, which can adversely affect aquatic habitat and biota. Alternatively, invasive plants can affect wetlands by changing

sediment loading, surface and subsurface flows, vegetation structure, soil chemistry and biota, and water table depth (Gordon 1998).

Alternative A

Under Alternative A, water resources on the refuge would continue to be impacted by invasive plant species, negatively affecting wetlands and moist soil units important to migrating waterfowl and other wildlife species.

Alternative B

Chemical Treatments

Herbicide used to control invasive plants can affect water resources, floodplains, and wetlands directly by introducing or transporting chemicals into surface waters or groundwater. This can occur by unintentional spray drift, accidental spills, or chemical transport by erosion and sediment transport, runoff, or adsorption into groundwater. The degree of impacts would vary depending on the chemical or surfactant used, amount or duration of chemical introduction, whether the herbicide is labelled for aquatic or terrestrial use, and the rate of degradation or breakdown once the herbicide is exposed to the environment (Table 2).

Mechanical/Manual Treatment

Mechanical/manual treatment conducted near or along the edges of watercourses (creeks, streams, drainages, etc.) could potentially affect water quality. Impacts would include increase in runoff, soil erosion, and sedimentation. Frequent use of heavy equipment for mechanical control could result in slight soil disturbance or compaction. Mowing, cutting, or trimming of vegetation may temporarily reduce the ability of vegetation to protect soil surfaces from erosion and to filter out pollutants from water produced during storms. Adverse effects on water quality would result from the transport and deposition of eroded sediments that would include nutrient enrichment, increased turbidity, and decreased oxygen levels if nutrient concentrations sufficiently stimulate algal blooms. Alternatively, mechanical treatment on invasive species such as eastern red cedar could improve vegetative cover and the vegetative buffer would help to intercept sediments and contaminants.

Feral Swine Control

Aerial shooting as another means to control feral swine on the refuge would have indirect beneficial impacts to water resources. Wallows and rooting around water resources can cause erosion. Large sounders can leave a significant amount of urine and feces containing harmful parasites and bacteria, including *E. coli*, salmonella, and giardia. Run off from these sites can contaminate water sources used by wildlife, people, and cattle.

Alternative C

Chemical Treatments

Affects from chemical treatments would be the same as under Alternative B.

Mechanical/Manual Treatment

Effects from mechanical/manual treatment would be the same as under Alternative B.

Feral Swine Control

Impacts to water resources would be similar to Alternative B; however feral swine would continue to negatively impact water resources located in areas difficult to access for trapping.

Table 2: Herbicide Mobility and Degradation Characteristics

Herbicide	US EPA Approved for Aquatic Use?	Mobility in the Environment	Degradation Characteristics
Glyphosate	Some formulations	Glyphosate is highly water soluble and has a strong adsorption capacity. Glyphosate is classified as slightly to hardly mobile in soil and would not be expected to leach or move to surface water via dissolved runoff. However, glyphosate could contaminate surface water via soil erosion (US EPA 2008a).	Terrestrial dissipation field studies indicate half-lives ranging from a few days to as much as 142 days in cooler areas. Aquatic dissipation is roughly a week in the water, but glyphosate remains adsorbed to sediment particles for many months (US EPA 2008a).
Imazapyr	Some	Imazapyr is persistent and mobile in soil, leaching to 36 inches. Field study observations are consistent with imazapyr's intrinsic ability to persist in soils and move via runoff in surface water and leach to groundwater (US EPA 2014e).	Terrestrials field dissipation studies show soil half-life ranges from 94 to 126 days. In aquatic systems, imazapyr is stable to many degradation pathways, except for photolysis where it has a half-life of 2 to 3 days (US EPA 2014e).
Triclopyr ester (Triclopyr BEE)	No	Triclopyr is moderately persistent, with a half of approximately 2 weeks in the upper 6 inches; however, persistence increases as it reaches deeper soil levels and anaerobic conditions. The acid is the form remaining immediately after degradation of triclopyr acid and its major degradate TCP are expected to be very mobile in soils (US EPA 1998).	Triclopyr BEE hydrolyzes quickly to triclopyr acid in natural waters (pH 6.7; half-life of 0.5-3.5 days). Triclopyr BEE degrades to triclopyr acid with a half-life of about 3 hours when applied to silty clay loam, silt loam, and sandy loam soils. The predominant degradation pathway in soil is microbial degradation to the major degradate TCP (US EPA 1998).
2,4-D	Esters – No Amine – Some	2,4-D amine salts and esters are not persistent under most environmental conditions; are expected to degrade rapidly to the acid form. Soil half-life values have been estimated at 10 days for the acid, dimethylamine salt, and ester forms. In aerobic mineral soils, a half-life of 6.2 days. A granular formulation of the BEE form was	The half-life of 2,4-D in aerobic aquatic environments was estimated to be 15 days and 41-333 in anaerobic laboratory studies. A granular formulation of the BEE form degraded rapidly in the water column in alkaline conditions

Herbicide	US EPA Approved for Aquatic Use?	Mobility in the Environment	Degradation Characteristics
		detected in aquatic sediments for 186 days post-application, perhaps due to either the formulation or slow de-esterification of the sediment-bound chemical (US EPA 2005).	but was present in sediments for 186 days (US EPA 2005).

Cultural Resources

Affected Environment

Archaeological Resources

A Cultural Sites Inventory has been completed for Deep Fork NWR. The Oklahoma Archeological Survey (University of Oklahoma) provided information prior to development of the Refuge CCP. Pre-acquisition surveys identified six sites on lands now within the Refuge acquisition boundary. Additional unknown archeological sites are believed to exist on the Refuge.

The Refuge Manager would follow FWS policy found in the Service Manual (614 FW 1-6) and Refuge Manual (5 RM 16) to ensure protection of archaeological resources. Minimum impact standards for all activities would be enforced to protect archaeological resources.

Ethnographic Resources

The ethnographic record for Deep Fork NWR is incomplete. As information is added to the ethnographic record, ethnographic resource areas may be identified that would need to be considered concerning oil well plugging and reclamation activities. Consultation with tribes regarding ethnographic resources, including the Muscogee Creek Nation (the refuge is located within tribal reservation boundaries) is necessary to identify ethnographic resources and concerns. The Refuge Manager is then responsible for ensuring that these resources are considered and protected (as necessary) in the planning process.

Historic Structures

The number of historic structures on the Refuge is unknown. It is also unknown if any of these structures are recorded in the National Register of Historic Places.

Impacts on Affected Resource

Alternative A

Under the No Action alternative, there would be no change to the management of cultural resources related to vegetation treatments, feral swine, and nuisance animals.

Alternative B

Under Alternative B, ground disturbing activities from vegetation management including skid steers, mowers, and mulching attachments would occur across the refuge. The refuge would consult with the Oklahoma Archaeological Survey, State Historic Preservation Office, affected tribes, and the Muscogee Creek National Tribal Historic Preservation Office prior to commencing ground disturbing work in a specific refuge unit that has not been previously disturbed. Much of the refuge has been disturbed in the recent past during fire management or prior land use, limiting the potential for damage to cultural resources from the activities proposed in this EA.

Alternative C

Impacts to cultural resources would be the same as Alternative B.

Refuge Management and Operations

Affected Environment

Land Use on the Refuge

The refuge is managed for a variety of habitat types including bottomland hardwood forest, wetlands, and grasslands. There are maintained areas across the refuge at recreation sites, the refuge visitor center, and maintenance facility. In addition to managing for the refuge's purposes and allowing for compatible recreation, the refuge has an oil and gas program. Oil and gas activity on the refuge is primarily plugging and abandoning orphaned wells to reduce emissions and contamination.

Refuge Administration

Deep Fork NWR has six full-time employees. These include a refuge manager, assistant refuge manager, administrative officer, biologist (oil and gas specialist), and two maintenance workers. Vegetation management under the existing plan includes assistance from FWS fire crews for prescribed fire.

Impacts on Affected Resource

Alternative A

Land Use on the Refuge

The No Action alternative would maintain the current land use and land management practices across the refuge. Refuge staff would continue to work toward CCP goals using prescribed fire, manual vegetation treatments, and limited nuisance animal control methods.

Refuge Administration

The No Action alternative would maintain similar staff levels and capacity for existing vegetation treatment and nuisance animals

Alternative B

Land Use on the Refuge

The proposed action would not change the type of land use or allowable recreational activity on any part of the refuge. If implemented, the IPMP would protect the quality of existing lands on the refuge and increase the native component of habitat types.

Alongside the oil and gas program, vegetation treatments in areas where orphan oil and gas wells are plugged and remediated would enhance restoration and accelerate the return of desired habitat.

Refuge Administration

The proposed action would rely on refuge staff to complete herbicide applications with occasional support from seasonal crew or contractors. Additional administrative tasks may be required to coordinate and contract feral swine removal with APHIS. The additional time and resources required to implement the IPMP would be less than the resources required to manually restore the damage from nuisance wildlife and invasive species.

Alternative C

Land Use on the Refuge

Impacts to land use would be similar to Alternative B.

Refuge Administration

The proposed action without aerial gunning would require refuge staff to commit more time to nighttime shooting and trapping feral swine, displacing resources that would otherwise support other components of the IPMP or other refuge programs.

Socioeconomics

Local and Regional Economies

Affected Environment

The refuge is located approximately 1 mile from the city of Okmulgee, Oklahoma, with a population of 12,321 as of 2012. Several other small towns are also within 10 to twenty miles. The predominant land uses near the refuge are grazing and some oil and gas development. The refuge averages about 70,000 visitors per year. The presence and operation of the refuge provides benefits to the surrounding communities within a 30-mile radius in several ways. The refuge attracts visitors and by attracting visitors to the area, the refuge generates revenue for the local economy. Much of the refuge's annual budget is recycled into local businesses through refuge staff, purchases of equipment and supplies, as well as contracts for local labor to accomplish refuge projects. The refuge provides full-time employment for six to seven individuals that live in nearby communities.

Impacts on Affected Resource

Alternative A

Under the no action alternative there would be a negligible effect on the local economy. The refuge's main contribution would be through the equipment, materials, and salaries for normal refuge operations and local staff.

Alternative B

There would be a negligible effect on the local economy under the Alternative B. Like Alternative A, the refuge's main contribution would be through the equipment, materials, and salaries for normal refuge operations and local staff.

Alternative C

Effects under Alternative C would be similar to Alternative B.

Environmental Justice

Affected Environment

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.

Okmulgee county has a median household income of $45,319 per year. Additionally, the town of Okmulgee serves as the capital for the Muscogee (Creek) Nation tribe. The Environmental Protection Agency's Environmental Justice screening tool provides a demographic index of 42% for the county, which accounts for low income and minority households. Environmental issues impacting low income and minority populations in the county include wastewater discharges, lead paint exposure, underground storage tanks, hazardous waste proximity, airborne toxics, and elevated PM 2.5.

There are 3 historic cemeteries on refuge managed lands which are frequently visited by members of the local community. Each cemetery serves a different demographic in the local community, including some low income and minority populations. The refuge maintains a perimeter around these cemeteries and works to ensure the accessibility and stability of each site.

Impacts on Affected Resource

Alternative A

Under the No Action Alternative, there are no anticipated affects to environmental justice.

Alternative B

Alternative B would have no anticipated impacts on minority or low-income populations. The refuge would continue to coordinate with local residents who wish to maintain access to the cemetery sites. Pest management work would be planned and executed in a manner that accommodates respectful and easy access for cemetery visitors.

Alternative C

The effects of alternative C would be similar to Alternative B.

Indian Trust Assets

An Indian Trust Asset is something the Federal government holds in trust for the benefit of a Native American individual or Tribe. In the case of trust lands, this means that an individual or Tribe earns money when companies lease rights to that land and earn income. No Indian Trust Assets have been identified within the Refuge. Because resources are not believed to be present, no impacts are anticipated to result from implementation of either alternative described in this EA.

Cumulative Impacts

A cumulative impact is defined as an impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future action regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (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.

Potential cumulative impacts may result from the added impacts of an orphan well plugging and abandonment program which will ramp up in fall of 2023. Mechanical disturbance from drilling equipment will disturb vegetation around orphan wells. However, the Service anticipate that implementation of this program and the IPMP will enhance rehabilitation efforts at the well sites by reducing soil and water pollution and enhancing native vegetation communities.

Irreversible and Irretrievable Commitment of Resources

None of the alternatives would result in a large commitment of nonrenewable resources. Project implementation would require the irretrievable commitment of fossil fuels (diesel and gasoline), oils, and lubricants used by heavy equipment and vehicles. The Proposed Action would result in unavoidable harm or harassment to some wildlife or vegetation. The Service would implement best management practices to minimize potential impacts to non-target species.

Monitoring

Vegetation

For monitoring purposes, vegetation surveys are divided into two categories: treatment surveys and post-treatment surveys. Treatment surveys would provide geospatial data on areas treated and post-treatment surveys will provide data to assess the previous year's treatment efficacy prior to further treatment. Treatment surveys would follow the draft guidelines established in the NWRS Management Actions tool for mechanical and chemical treatments. Data captured would include percent cover, area infested (sq. meters), and growth stage.

Feral Swine

The refuge would monitor and adjust control methods based on the amount of feral swine activity observed within an area.

Beaver

The refuge only conducts beaver management activities when a dam or beaver is causing damage to refuge resources or private property. Beavers and dams are only removed if there is a threat to those resources.

Summary of Analysis

Alternative A – Current Management Strategies

As described above, feral swine and beaver control would continue under the current management strategy. Feral swine would be controlled through either trapping, hunting, or nighttime (non-aerial) shooting activities. Nuisance beavers would be trapped and dams removed in areas where they pose a threat to refuge resources and private property. Control of invasive plant species using herbicides and mechanical treatment would not occur, resulting in further degradation of refuge habitat.

This alternative does not meet the purpose and need of the Service as described above because it would lead to a long-term deterioration of habitat at the Refuge.

Alternative B – IPMP with Aerial Shooting of Feral Swine

As described above, Alternative B would implement the Integrated Pest Management Plan. The plan outlines the goals, objectives, and management strategies for controlling invasive species on the refuge, including the use of herbicides and mechanical treatment. The refuge has established best management practices that would be followed to reduce the impact to non-target species.

Implementation of the plan would also allow for aerial shooting of feral swine. This addition would give the refuge more options for control, especially in areas where access is difficult.

This alternative helps meet the purpose and needs of the Service as described above because it would expand management capabilities for control of invasive species on the refuge, benefitting native wildlife species and improving refuge habitats. The Service has determined that the proposed action is compatible with the purposes of Deep Fork National Wildlife Refuge and the mission of the NWRS. The Integrated Pest Management Plan is attached (Appendix B).

Alternative C – IPMP without Aerial Shooting of Feral Swine

As described above, Alternative C would implement the Integrated Pest Management Plan without aerial shooting of feral swine. The implementation of the plan would allow the refuge to control invasive plant species with herbicide and mechanical treatments. The removal of aerial shooting of feral swine from the plan would restrict control option to only trapping and nighttime shooting. Aerial shooting would allow the refuge to target feral swine populations in areas where vehicle access and trapping is impossible or impractical. This alternative less sufficiently meets the purpose and need of the Service as described above because it would expand activities for invasive species management through the use of herbicide but limit the options available for controlling feral swine.

List of Sources, Agencies and Persons Consulted

Jacob Rippey – Biologist, Muscogee (Creek) Nation Department of Agriculture and Natural

Jay Rouk - Wildlife Biologist, Oklahoma Department of Wildlife Conservation Okmulgee WMA/Deep Fork WMA

R. David Walker – District 2 County Commissioner, Okmulgee County

List of Preparers

Catherine Bell – Supervisory Wildlife Refuge Specialist

Joel Miner – Conservation Planner

Todd Gallion – Refuge Manager

Tribal Consultation

Tribes with a potential for interest in this project were notified of the comment period for the draft EA prior to posting. An advance copy of the draft EA was provided to the Creek Nation prior to the public comment period. No written comments were received from tribes as a result of these communications, but we have discussed the coordination process with tribal specialists.

Public Outreach

This draft EA will be made available to the public for thirty days prior to the selection of a preferred alternative and decision.

Determination

This section will be filled out upon completion of the public comment period and at the time of finalization of the Environmental Assessment.

☐ The Service's action will not result in a significant impact on the quality of the human environment. See the attached **"Finding of No Significant Impact".**

☐ The Service's action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

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Appendix A – Applicable Regulations and Policies

Cultural Resources

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

Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10

The Service has worked closely with interested tribal governments to develop this environmental assessment. The refuge manager would consult with the Oklahoma State Historic Preservation Office and the Oklahoma Archeological Survey to meet requirements of the relevant laws, statutes, and policies.

Fish and Wildlife

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, 450

The Service has completed intra-agency consultation under Section 7. of the Endangered Species Act.

Natural Resources

Federal Insecticide, Fungicide, and Rodenticide Act of 1947, 7 U.S.C. 136, 40 CFR 11, 19, 156, 170

Compliance under FIFRA would be met by ensuring staff are certified and trained in herbicide use and applications, each herbicide is used consistent with label instructions, and herbicides are stored and transported appropriately.