Draft Environmental Assessment

Fort Niobrara National Wildlife Refuge Cooperative Agricultural Programs

April 2025

Prepared by Fort Niobrara NWR

U.S. Department of Interior
Fish and Wildlife Service
Region 6 Mountain-Prairie Region
Fort Niobrara NWR
Valentine, Nebraska

Table of Contents

Chapter 1: Introduction

1.1 Proposed Action

The U.S. Fish and Wildlife Service (Service) is proposing to expand grassland management activities at Fort Niobrara National Wildlife Refuge (Refuge) through cooperative agriculture including, permittee grazing, haying, and seed harvest. Permittee grazing may occur in areas where bison do not currently graze while haying and seed harvest may occur within grassland habitats throughout the refuge. These activities will not take place in the designated wilderness area.

This environmental assessment examines the potential environmental impacts associated with the proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with the Council on Environmental Quality NEPA regulations (40 Code of Federal Regulations, or CFR, 1500-1508), the Department of the Interior NEPA regulations (43 CFR 46; 516 Department Manual, or DM, 8), U.S. Fish and Wildlife Service policies (550 Service manual, or FW, 3) and other relevant regulations and requirements. NEPA requires examination of the effects of proposed actions on the natural and human environment.

1.2 Background

National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System, the purposes of an individual refuge, federal laws and executive orders, U.S. Fish and Wildlife Service policy and international treaties. Relevant guidance includes but is not limited to the National Wildlife Refuge Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 United States Code [U.S.C.] 668dd et seq.), the Refuge Recreation Act of 1962 and selected portions of the Code of Federal Regulations and the U.S. Fish and Wildlife Service manual. See Appendix A for a list of relevant laws and regulations.

The mission of the National Wildlife Refuge System, as outlined by the National Wildlife Refuge System Administration Act (NWRSAA) of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd), is:

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

The National Wildlife Refuge System Improvement Act of 1997 directs the Secretary of the Department of the Interior to ensure that refuges are fulfilling the intended mission of the refuge system and the purposes of individual refuges (16 U.S.C. 668dd(5)(a)(3) (A-M)).

Executive Order (EO) 1461 established Fort Niobrara National Wildlife Refuge (NWR) on January 11, 1912, as the "Niobrara Reservation… a preserve and breeding ground for native birds." EO 1642 (November 12, 1912) and EO 3256 (March 31, 1920) authorized the acquisition of additional acreage for native birds. On February 21, 1936, EO 7301 authorized additional acreage to be added to the refuge "…to effectuate further the purposes of the Migratory Bird Conservation Act." The Niobrara River was designated a national scenic river in 1991 (Public law 102-50). A 4,635-acre part of the refuge was designated as wilderness by Public Law 94-557 on October 19, 1976.

Habitat management at Fort Niobrara NWR is guided by the habitat management goal in the Fort Niobrara Comprehensive Conservation Plan (CCP) to: "Preserve, restore and enhance the unique

diversity of upland and riparian plant communities…" of the refuge (FWS 1999). The CCP further refines this goal in a grassland management objective: "Maintain the approximate 14,264 acres of Sandhill Prairie and Mixed Prairie vegetation communities in early through late successional states to meet nesting, brooding, feeding and/or protective cover requirements of various grassland dependent birds." For grassland dependent birds, the refuge is focusing on maintaining > 90% of grasslands in a middle-to-late successional stage, having a grassland composition of 75-85% grasses, 5-10% forbs, and 5% shrubs and keeping a vegetation structure in a range of heights and densities. Implementing additional habitat management activities such as cattle grazing, haying, and native seed harvest will assist refuge staff in meeting goals and objective in the Fort Niobrara NWR CCP.

1.3 Purpose and Need for Action

The purpose of the proposed action is to improve habitat conditions on refuge lands by using cooperative agriculture programs such as cattle grazing, haying, and native seed harvest. In the 1999 CCP, the FWS proposed to expand bison fencing on the refuge and manage additional grassland habitats with bison. Logistics and funding have prevented implementation of this proposal and areas on the refuge that are not grazed by bison have accumulated excessive litter which results in a decrease in grassland vigor. Decreased vigor of grasslands can allow invasive grasses to increase negatively impacting species richness and diversity. While prescribed fire can be used to manage litter and improve grassland vigor, prescribed fire resources have historically been insufficient to manage grasslands at desired levels.

While anticipated to be minimally used, haying could be utilized at the refuge to treat decadent stands of grasslands that are underutilized during grazing treatments or where prescribed fire is not regularly implemented. Seed harvest may be utilized to collect seed for prairie restoration at the refuge or for prairie restoration activities on other refuge lands.

Chapter 2: Involvement, Coordination and Consultation

2.1 Public Involvement

This draft environmental assessment will be available for public review and comment for 30 days from April 1, 2025, through April 30, 2025. The document will be made available on the refuge website. Comments may be submitted in writing via email FortNiobrara@fws.gov or by mail to the refuge, 39983 Refuge Road Valentine NE, 69201. Any substantive comments, concerns, suggestions, or other feedback will be incorporated or addressed in the final environmental assessment. Before including your address, phone number, email address or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time.

Chapter 3: Alternatives

This section presents the Proposed Action, and the No-Action Alternative evaluated in this EA. It also includes a summary of alternatives considered, but not carried forward for detailed analysis. This information is included because, as referenced in the CEQ's NEPA regulations regarding the contents of an EA (40 CRF 1501.5(c)), NEPA Section 102(2)(E) requires federal agencies to develop, study, and briefly describe alternatives to any Proposed Action with the potential to result in unresolved resource conflicts.

Alternative A – Current Management Activities - No Action Alternative

With the No Action Alternative current habitat management activities will remain. Prescribed fire and herbicide treatment will still be conducted but no cattle grazing, haying or seed harvest will take place anywhere on the Refuge. Existing interior fence and windmills/solar wells north and west of the Niobrara River, with exception of the bison fence in the wilderness, will be removed.

Alternative B – Habitat Management - Preferred Alternative

Under the Preferred Alternative, Alternative B, current management activities will continue with the added management tools of cattle grazing, haying, and seed harvest.

Each of these activities is described in further detail below. Through the utilization of Adaptive Resource Management (ARM) techniques, the Service would assess existing natural resources and monitor the effects of management tools.

3.1 Cattle Grazing

The Service proposes to use cattle grazing as a management tool in grasslands to address specific management objectives (e.g., invasive grass control, litter reduction, encourage structural diversity). Grazing would be conducted on refuge lands west of Highway 12 and adjacent to the Niobrara River where bison fencing is not present (approximately 1,600 acres). Cattle grazing will be conducted primarily from April through October. Timing, duration and intensity of grazing will depend on the Service's management objectives for a particular unit that will be outlined in an annual grazing plan.

Permitted cooperative grazing would be conducted through the issuance of a Special Use Permit (SUP) that would include location, Animal Unit Months (AUMs), dates, and specific guidelines related to grazing activities in accordance with the Service's Cooperative Agriculture Policy. Grazing units would be surrounded with appropriate fencing and may include cross-fencing. Mineral blocks and water tanks may be used to supplement and distribute animals throughout the unit to meet management objectives.

3.2 Haying

Haying, the process of cutting, drying, and baling field grasses, is performed using a swather or tractor with a variety of implements (i.e., mower, hay conditioner, rake, baler, and forks) and a truck or tractor with a flatbed trailer, hay trailer, or stack mover for removing bales. The Service would potentially hay in areas of the refuge outside the designated Wilderness Area. Haying would be used sparingly and will generally be limited to areas where grazing or prescribed fire has repeatedly failed to remove litter over extensive areas (> 10 acres). Haying could also be used during grassland restoration. In this case, grassland areas would be hayed prior to seeding to enhance seed-to-soil contact. All haying would be conducted through the issuance of a SUP which would cover the location, dates, and number of acres to be hayed, in accordance with the Service's Cooperative Agriculture Policy.

3.3 Seed Harvest

The Service proposes to conduct seed harvesting in areas throughout the refuge, except the Wilderness Area. Seed harvest would occur at any time of the year, with most of the collection in the fall, when seeds have matured. Seeds would be collected to restore grasslands on refuge lands. Harvesting may require the use of tractors, all-terrain vehicles (ATVs), implements, combines, and/or grain carts. Multiple pieces of equipment may be used in the field at a time. The timing of collecting native seeds

would depend on the physiology of the target plant species. Agreements and permits in accordance with the Service's Cooperative Agriculture Policy, would outline the target species, location, and dates for collection. The permit holder would provide all equipment and labor.

3.4 Site Access

The Service would access and tow equipment for habitat management activities using passenger trucks on existing trails and roadways, such as Highway 12 and Berry Bridge Road, to the greatest extent possible. Trucks, off-highway recreational vehicles (OHRVs), tractors, and other specialized equipment would travel off road within the refuge.

3.5 Best Management Practices to Avoid Conflicts

All cooperative agriculture activities will follow agency policy, including 620 FW 2, *Cooperative Agricultural Use Policy*, and the *Region 6 Cooperative Agricultural Program Guidance* (Service 2022b).

Alternatives Considered but Dismissed

Bison Grazing Alternative

The Service considered grazing the entire refuge with bison but determined that this alternative is not feasible. Areas not currently grazed with bison have fencing that is insufficient for bison. To graze these areas with bison, approximately 11 miles of bison fence would be required at an estimated cost of $550,000.00. Grazing west of the Niobrara River would create logistical challenges requiring bison moves across two bridges and along a state highway. Lastly, the area west of the river is bordered by private cattle and grazing bison in this area would result in additional opportunities for disease transmission between bison and domestic livestock. Because of costs, logistics and disease concerns, no further analysis of this alternative is warranted.

No Grazing Alternative

Under this alternative, livestock grazing would not be used as a management tool. This alternative was considered during the development of preliminary alternatives, but dismissed from further consideration, primarily because of the detrimental effects that removal of grazing would have on grassland-habitat composition and structure. Managed livestock grazing is currently the most economically feasible tool for management of exotic grasses (smooth brome, Kentucky bluegrass, cheatgrass, etc.). Therefore, a no-grazing alternative would not accomplish refuge purposes, nor maintain biological integrity, diversity, or environmental health, in accordance with the National Wildlife Refuge System Improvement Act.

Monitoring Applicable to All Alternatives

Regardless of the alternative selected, monitoring would occur to ensure that the alternatives continue to have no adverse impacts on the environment beyond those already described. To address impacts to the greatest extent possible, the refuge uses an adaptive approach as part of all management programs. Impacts that may occur from habitat management activities would continue to be monitored through ongoing efforts. Furthermore, vegetative-response monitoring may be increased under Alternative B, especially regarding invasive species. Additional follow-up monitoring of invasive species populations would be implemented to ensure success following any treatment prescribed. In addition, refuge staff would remain knowledgeable about the status of threatened and endangered species through consultation and local monitoring.

Chapter 4: Affected Environment and Environmental Consequences

This section is organized by resource categories that may be impacted by the proposed action. Each affected resource discusses both current conditions of the resource in the action area and (2) the effects and impacts of the alternatives on each resource. Effects and impacts from the proposed action or alternatives are changes to the human environment, whether adverse or beneficial, that are reasonably foreseeable (40 CFR 1508.1(g)).

The impact analysis will evaluate a variety of criteria, as defined below, to describe the context and intensity of impacts on affected resources.

- Adverse effects: negative or detrimental effect to the resource (40 CFR 1501.3)
- Beneficial effects: positive effect to the resource (40 CFR 1501.3)
- Cumulative effects: effects on the environment resulting from the incremental effects of the action when added to other past, present and reasonably foreseeable actions regardless of what agency (e.g., federal or non-federal) or person undertakes the action (40 CFR 1508.1(g))
- Direct effects: caused by the action and occur at the same time and place (40 CFR 1508.1(g))
- Indirect effects: incidentally caused by the action and are often later in time or farther in distance but are still reasonably foreseeable (40 CFR 1508.1(g))
- Short-term effects: occurring in or relating to a relatively short period of time (40 CFR 1501.3)
- Long-term effects: occurring in or relating to a relatively long period of time (40 CFR 1501.3)

The following resources are not anticipated to be affected or impacted by the proposed action and so are not analyzed further in this document:

- Flood Plains
- Special Land Designations
- Cultural and Historic Resources
- Archeological Resources
- Architectural Resources
- Air Quality
- Soundscape
- Public Health and Safety
- Land use
- Aesthetics, Viewsheds, and Visual Resources

4.1 Natural Resources

Habitat and Vegetation: Affected Environment

The Fort Niobrara NWR covers 19,131 acres and is located along the Niobrara River in Cherry County near Valentine, Nebraska (Figure 1). The refuge, once a frontier military fort, supports an exceptional diversity of native plants and wildlife representative of the northern Great Plains. The Niobrara River is an ecological boundary in the vicinity of the refuge separating mixed grass prairie to the north and sandhills prairie to the south. Forests along the Niobrara River are dominated by ponderosa pine and eastern red cedar on dry, rocky soils, and along canyons and cliffs. Lower elevation areas within the river

valley are dominated by deciduous trees. Relative abundance of habitats on the refuge is approximately 75 percent grassland, 23 percent woodland, and 2 percent open water and wetland.

Habitats in the proposed area for cattle grazing include grassland, canyon woodlands and riparian woodlands (Figure 2). Grasslands are dominated by native grasses that include little bluestem, sand bluestem, big bluestem, switchgrass, prairie sandreed and needle and thread. Invasive grasses including cheatgrass, Kentucky bluegrass and smooth brome are found throughout grassland areas and are the dominant species in some locations. Canyon woodlands include closed canopy woodlands and savannah-like areas that are dominated by ponderosa pine and eastern red cedar. Riparian woodlands, mostly found along the Niobrara River are largely dominated by deciduous tree species including oak and ash. Eastern red cedar is present throughout the riparian woodlands.

Great Plains grasslands co-evolved with herbivores. Historically, herds of grazing ungulates, particularly plains bison, affected nutrient cycling, plant community composition and vegetative structure. Large ungulate grazing can be used to increase spatial heterogeneity in vegetation creating greater variability in grassland bird communities (Fuhlendorf et al. 2006, Krausman et al 2009). Large ungulate grazing impacts species composition through defoliation and the creation of germination niches. Bison grazing has been found to increase plant species richness and spatial heterogeneity in prairie grasslands (Hartnett et al. 1996). Similarly, cattle grazing, can increase plant diversity in grassland and wetland areas (Liu et al. 2015, Marty 2005); however, when misapplied, livestock grazing can decrease vegetation diversity and homogenize vegetative structure (Steinhauer et al. 2011). Long-term rest (no fire or grazing) has been found to negatively impact grasslands by increasing the percentage of cool season invasive species including smooth brome and Kentucky bluegrass (DeKeyser et al. 2015, Grant and Murphy 2005).

Haying of grasslands is often a less effective management practice when compared to fire or grazing (Steinhauer et al. 2011). Haying creates a homogeneous vegetative structure and is minimally effective at targeting specific species (e.g., cool vs. warm season grasses). Haying can be beneficial when grazing or fire do not effectively remove litter. Haying can also be used to prepare grassland areas for noxious weed treatments or for prairie restoration. For example, in areas that are heavily infested by Canada thistle, haying may be used prior to herbicide treatment to improve herbicide efficacy and minimize damage to non-target species.

Habitat and Vegetation: Environmental Consequences

Alternative A

Under Alternative A, current habitat management consisting of bison grazing in select areas (Figure 3), prescribed burns, and limited mechanical and herbicide management of invasive species would continue. Areas not fenced for bison would not be grazed. No haying or seed harvest would occur.

Grasslands

Under Alternative A, extended rest periods of grasslands not grazed by bison are anticipated to negatively impact species richness, diversity and habitat structure. Extended rest periods within grasslands are associated with the expansion of Kentucky bluegrass and smooth brome (Printz and Hendrickson 2015, Grant et al. 2009, Grant et al. 2020). Under Alternative A, it is expected that Kentucky bluegrass and smooth brome will increase within non-grazed grasslands and species richness, and possibly species diversity, will decrease over time. As plant species richness and diversity decrease over

time, it is anticipated that structural diversity of grassland habitat will decrease as the plant community becomes more homogeneous.

Grassland invasion by woody species, particularly eastern red cedar, is common in Sandhills grasslands. Over the next 15 years, we do not anticipate implementing a historic fire return interval (three to seven years on average) within non-grazed grasslands which are mostly located north and west of the Niobrara River. These areas are low priority for prescribed fire because other refuge habitats have higher quality habitat and are part of larger contiguous grassland tracts. Due to limited resources, prescribed fires will be prioritized south and east of the Niobrara River to maintain the highest quality contiguous habitat on the refuge. Infrequent fire intervals in non-grazed areas will likely result in establishment and expansion of woody species.

Haying and seed harvest would not be utilized under alternative A. Without local seed harvest, we anticipate that prairie restoration efforts on the refuge and at other refuges within the Sandhills ecosystem may be hindered. This may result in less acres being restored or restoration costs being higher. Seed harvest is expected to impact < 250 acres over a 15-year period.

Canyon Woodlands

Under Alternative A, woody cover within canyon woodlands is expected to increase. Without regular prescribed fires, we anticipate eastern red cedar percent cover will increase. In the long-term, it is expected that canyon woodlands will trend towards closed canopies dominated by ponderosa pine and eastern red cedar. Regular mechanical treatment of woody vegetation would be necessary to prevent increased woody vegetation. Infrequent prescribed fires may result in more intense wildfires as ground litter increases over time. Interspersed grassland areas are expected to be further invaded by invasive grasses such as Kentucky bluegrass and smooth brome due to continuous rest.

Riparian Woodlands

Under Alternative A, we expect an increase in woody vegetation and invasive grasses. Over the next 15 years, we do not anticipate implementing a historic fire return interval within riparian woodlands. These areas are low priority for prescribed fire because other refuge habitats have higher quality habitat and are part of larger contiguous grassland tracts. Due to limited resources, prescribed fires will be prioritized in grasslands south and east of the Niobrara River. Infrequent fire intervals in riparian woodlands will likely result in establishment and expansion of eastern red cedar unless mechanical tree removal is regularly conducted. Limited recruitment of desirable (oak, maple, ash, elm, poplar) deciduous woody species is expected due to relatively high deer numbers that forage on young deciduous woody growth. Interspersed grassland areas within riparian woodlands are expected to be further invaded by invasive grasses such as Kentucky bluegrass and smooth brome due to continuous rest. Litter layers (both herbaceous and woody) are expected to increase due to infrequent prescribed fires. If wildfires do start within riparian woodlands, accumulated litter and increases in eastern red cedar will increase the intensity of fires which could result in higher mortality of desirable deciduous woody species.

Alternative B

Under Alternative B, cattle grazing will be utilized in areas where bison do not graze. Haying and seed harvest could occur on refuge lands outside the designated Wilderness Area

Grasslands

Grazing impacts will ultimately depend on the intensity, timing, and duration. In general, grazing will target non-native cool season grasses. This will be accomplished by grazing in spring for 30-60 days at moderately high stocking rates. Grazing will not be repeated annually on individual units but is expected to be prescribed every 3-7 years depending upon habitat conditions. Early season grazing will result in heterogeneous vegetation as cattle are expected to intensively graze and trample areas dominated by cool season grasses and avoid decadent warm season vegetation. Following grazing treatments (which will typically end in late May-early June), vegetation in areas dominated by cool season grasses is expected to be short with minimal litter remaining. Areas dominated by warm season grasses are expected to be minimally impacted by cattle grazing. Over time, repeated spring grazing is expected to decrease invasive cool season grasses and allow native species to recolonize areas formerly dominated by brome and bluegrass.

Adjustments to timing, duration and frequency of grazing will be required to ensure that grazing prescriptions impact invasive grasses but do not decrease cool season native plants beyond acceptable levels identified in the 2020 Inventory and Monitoring Plan (Service 2020). An annual grazing plan will accompany all grazing prescriptions to ensure that habitat objectives are articulated prior to cattle grazing.

Upland and Riparian Woodlands

Impacts Under Alternative B within canyon and riparian woodlands is expected to be similar to Alternative A. While grazing cattle may impact eastern red cedar and ponderosa pine through trampling and rubbing, these impacts are expected to be minimal. Cattle grazing will generally not affect mature deciduous trees, but seedlings and saplings within riparian areas would be vulnerable to cattle grazing, particularly if a heavy graze is prescribed. Repeated annual grazing (years to decades) within riparian areas could impact recruitment of certain species. Since annual grazing will not being prescribed, we do not anticipate long-term negative effects to deciduous tree recruitment due to cattle grazing.

No impacts due to haying or seed harvest are anticipated because these activities will not occur in woodlands or riparian areas due to the topography and presence of woody vegetation.

The maintenance of biological integrity, diversity, and environmental health pertains to the protection of habitat composition and structure, as well as functional natural ecosystem processes that shape and maintain the landscape for native plants. The Proposed Action Alternative is intended to restore the native habitat composition and structure, resulting in long-term beneficial impacts on vegetations communities at the Refuge.

Grazing - Managed grazing is expected to promote establishment of new, young plants, and increase productivity or herbaceous vegetation. The growing season after grazing usually results in a flush of vigorous new growth. Grazing herbaceous plants during the dormant season in general has little impact

on plant health; however, fall grazing can remove litter encouraging plant vigor the following growing season.

Livestock have the potential to carry and spread weed seeds from outside and within the refuge. Refuge staff would monitor grazed sites in subsequent years to combat potential weed establishment or expansion.

Haying – Proposed haying is expected to promote productivity of existing vegetation and possibly support a more diverse plant composition. Harvest equipment can spread weeds. Lessees would be required to clean and inspect equipment prior to haying on the refuge. Refuge staff would monitor sites to minimize transfer of weeds. Impacts because of haying are generally anticipated to be minimal since this management practice is anticipated to be used sparingly on the refuge.

Seed Harvest – Repeated seed harvesting could deplete local seed sources; however, based on the amount of future restoration activity that will occur (estimated 250 acres), seed harvest on the refuge would be so infrequent and minimal in scope that no to negligible habitat impacts are anticipated. Consideration would be required to ensure that seed harvesting does not deplete seed sources excessively. Collecting seeds sustainably and from a wide range of plant species would ensure the preservation of plant diversity and ecosystem health. Seed harvesting would be managed with caution to prevent the spread of invasive plant species. Proper cleaning and processing of harvested seeds would minimize the unintentional dispersal of invasive plants within the Refuge. Eleven state-designated noxious weed species (Young, 2025), and 8 county-designated noxious weed species have been identified in the state and county (Noxious Weeds, 2025). Most of Nebraska's native grasslands include a mix of native and nonnative species. Exotic grasses, such as smooth brome, Kentucky bluegrass, and cheatgrass, are aggressive and often increase under season-long grazing or when soil disturbance occurs. Invasive forbs, such as musk thistle and leafy spurge, affect both natural communities and grazing lands, resulting in impacts on biological diversity (Schneider et al. 2011). Purple loosestrife and reed canary grass are found on the refuge and threaten riparian areas and wetlands (Schneider et al. 2011).

Fish and Wildlife Species: Affected Environment

More than 300 species of resident and migratory birds, 55 species of mammals, 75 species of fish, and 27 species of reptiles and amphibians have been documented in the Nebraska Sandhills ecoregion (Schneider et al 2011). Bison were introduced to the refuge in 1913, and the herd is currently managed at 350 (post fall roundup). This section of the EA focuses on wildlife species that are not federally listed or protected.

Fish and Wildlife Species: Environmental Consequences

Alternative A

Grassland Dependent Wildlife - Under Alternative A, bird species, such as mourning dove, robins and cedar waxwings may benefit over time from increased eastern red cedars. Grassland birds are expected to decline as habitat quality decreases and woody species establish within grasslands due to infrequent fires and a decrease in vegetative species richness and species diversity.

Alternative B

Grazing - Grazing creates heterogeneous habitat that provides the needs of numerous bird species, often serving as useful shorebird nesting habitat, waterfowl pairing and pre-nesting habitat and habitat for upland bird broods. However, there are some negative wildlife aspects to grazing including the temporary loss of nesting habitat and wildlife cover. Additionally, use of grazing livestock can trample nests, disturb feeding and resting birds, and possibly expose birds and eggs to predation and cowbird parasitism. A continuous grazing pattern and lack of controls to keep cattle out of water sources can cause water pollution and exacerbate pathogen transmission between species, which can occur bidirectionally between wildlife and livestock (Miller et al. 2013). To minimize these potential short-term impacts, grazing would be conducted periodically (every 3-7 years/unit; approximately 400 acres of cattle grazing annually) allowing wildlife to find suitable habitat nearby. It is likely that some wildlife species would avoid the presence of livestock and increased human activity. This would result in temporary displacement from a localized area. Where used, temporary electric fences could also affect wildlife movements. These impacts would be temporary and the intended benefits to habitat are expected to outweigh anticipated impacts. Over the long term, grazing should improve habitat quality and benefit a wide suite of avian species, compared to unmanaged grasslands.

In the near term, cattle grazing would not occur directly adjacent to areas grazed with bison. While refuge bison do graze adjacent to cattle along the refuge boundary, extra caution will be exercised on the refuge to minimize disease transmission between permittee cattle and refuge bison.

Similar to Alternative A, without mechanical tree control, we anticipate expansion of eastern red cedar into areas that are not grazed by bison. While a cattle grazing program may slow the spread of eastern red cedar, even grasslands that are well managed with cattle grazing experience eastern red cedar encroachment.

Harvesting hay is well known for its potential impacts to nesting birds, broods, and other young animals during the summer. The Proposed Action would occur in the late summer and fall well after the nesting and brood period. However, there may still be young birds that could be vulnerable to haying operations. Under each proposed lease, refuge staff would direct how haying operations would be conducted to minimize the risk to birds and other wildlife using these sites. For example, conducting mowing from the center of a cover plot outward allows animals to disperse. In addition to bird species, haying equipment can negatively affect some small mammals, reptiles, and amphibians by causing mortality for species that cannot move away in time. The infrequent use and limited scale of haying as a management tool would allow local populations of small mammals, reptiles, and amphibians to recover quickly. The use of noise-producing equipment, such as ATVs, tractors, swather or rotary mowers, rakes, and other equipment, may also cause short-term localized disturbance to wildlife.

Seed Harvest – Careful consideration would be required to ensure that seed harvesting does not deplete seed sources excessively. At the levels anticipated (< 250 acres over 15 years) seed harvest would not measurably affect wildlife on the refuge.

Seed harvesting would assist in the restoration of native plants on the refuge and at other refuges within the Sandhills. Areas restored with native seed harvest (approximately 250 acres) should provide better habitat for wildlife compared to current grasslands dominated by smooth brome and Kentucky bluegrass. Seed-rich habitats can support migratory and resident birds during their foraging and nesting

seasons. Many small mammals such as mice, squirrels, and chipmunks, rely on seeds as a primary food source. Seed-rich habitats resulting from restoration using a diverse seed mix can sustain these mammal populations and contribute to the overall food web. Native plants and their seeds attract diverse invertebrate species, including butterflies and other pollinators. A thriving invertebrate population further supports various wildlife, such as insectivorous birds and small mammals.

Candidate, Threatened and Endangered Species and Critical Habitat: Affected Environment

The Service's Information for Planning and Consultation (IPaC) Resource List for the Proposed Action Area and the County identified four endangered species and three threatened species with ranges that include the Proposed Action Area (Service 2025). These species may potentially be affected by the Proposed Action. According to the ESA of 1973, as amended, 16 U.S.C. 1531–1544; 36 CFR Part 13; and 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450, the effects of the Proposed Action on these species must be considered. The four endangered species are pallid sturgeon, whooping crane, blowout penstemon and northern long-eared bat (NELB). The three threatened species are American burying beetle (ABB), piping plover, and the western prairie fringed orchid (WPFO). The Service has also proposed listing the tricolored bat (87 FR 56381) and Suckley's cuckoo bumble bee (89 FR 102074) as endangered and the monarch butterfly (89 FR 100662) and western regal fritillary as threatened (89 FR 63888).

Northern long-eared and tricolored bats - The primary threat to NLEB, which resulted in the March 2023 uplisting of the species from threatened to endangered, is white-nose syndrome (WNS). WNS has been documented in Nebraska and surrounding states. During the summer, the females reproduce in maternity colonies, under the bark of live, dead, and dying trees. During the winter, approximately October through April, NLEB hibernate in caves and mines, and there are no caves or mines in the proposed action area. The northern long-eared bat (NLEB) may be found on the proposed action area in the summer.

The tricolored bat may be found on the proposed action area in the summer. During the summer, the females reproduce in maternity colonies, under the bark of live, dead, and dying trees. During the winter, approximately October through April, tricolored bats hibernate in caves and mines, and there are no caves or mines in the proposed action area. WNS is also a primary threat to tricolored bat populations. A study conducted by Bockart (2020) documented that WNS was likely a result of the tricolored bat's extended hibernation period. The declines observed at hibernacula are further supported by White et al. 2016. Inferences made from the WNS surveillance work conducted by Abernathy and Whittle (2024) suggest the fungus has been detected more recently in Nebraska. In addition to WNS, other threats to the tricolored bat include wind energy–related mortality, climate change, and habitat loss (87 FR 56381).

Loss of summer habitat for NLEB and tricolored bat (including, but not limited to, tree removal and forest conversion) may also affect the species. This includes loss of suitable roosting or foraging habitat, resulting in longer flights between sources of food and shelter due to habitat fragmentation, fragmentation of maternity colony networks, and direct injury or mortality (Service 2022a). Tricolored bats could also be notably affected with reductions in forested habitat or in cases of significant surface disturbance. During spring, summer, and fall months, tricolored bats prefer to roost among leaf clusters of live or recently dead deciduous hardwood trees (Service 2022c). In these cases, displacement of woody debris or trees could indirectly harm local tricolored bat populations.

Whooping Crane - Threats to whooping crane relevant to the Proposed Action Area include human settlement, human disturbance, disease and parasites, predation of chicks and young, life history, food availability, sibling aggression, climate change, collision with power lines, fences, and other human-made structures, collision with airplanes, and exposure to pesticides (Service 2007). The primary current threat is the conversion of pothole and prairie ecosystem to hay and grain production, which has made much of the area's historic nesting habitat unsuitable for whooping crane. Continued settlement of the midcontinent and coastal prairies and associated disturbance, in addition to alteration of habitat, is considered to have interfered with breeding whooping crane use of prairies and wetlands. The ongoing extensive drainage of wetlands in the prairie pothole region of Canada and the United States also has resulted in a loss of migration habitat available to whooping crane. Water diversions on major river systems, such as the Platte River, degrades migration habitat. Whooping cranes primarily roost and forage within and along the channels of major river systems, floodplains, and wetlands where suitable undisturbed habitat exists. Major rivers frequented by whooping cranes include the Central Platte, North Platte, Niobrara, and Loup River systems. Wetland complexes frequently used by whooping cranes include the western Rainwater Basins, Sandhill wetlands and central table playas. The whooping crane needs an open expanse for nightly roosting of sand or gravel bars in rivers and lakes (43 FR 20938). Whooping cranes sightings are extremely rare on the refuge with the last documented sighting in 1993.

American Burying Beetle - All ABB populations are expected to experience future threats from a changing climate over varying time periods (Service 2020a). Increased air temperatures, changes in precipitation, increased evaporative losses, and prolonged droughts may stress or kill individual ABBs, negatively affect reproductive success, or reduce the time periods with suitable conditions for reproduction. Most current ABB populations are threatened by habitat loss, primarily from conversion to agricultural land uses, although wind-energy development is also a driver of habitat loss. In addition, the expansion of red cedar and other brush decreases habitat quality. All habitat alterations have the potential to affect carrion populations, competing scavenger populations, and carrion availability, the ABB's primary food source. Anecdotal evidence indicates that the reduction of appropriate carrion resources is a primary mechanism of population decline for the ABB (Service 2019).

The range of the threatened American burying beetle also includes the proposed action area. The proposed action area is part of the Northern Great Plains, one of three areas that the ABB currently occupies. ABB and includes areas where suitable soils contain the excavation favorable soil elements for the formation of brood chambers and where appropriate carrion for reproduction is available. While incidental take from soil disturbance activities is prohibited there are exceptions for grazing, livestock ranching, and wildlife management activities (Service 2020a). In general, habitat management that improves diversity and richness of plants is generally regarded as beneficial to ABB. ABB are found in the proposed action area

Blowout penstemon - The primary threats to the blowout penstemon are the loss and degradation of its blowout habitat from control of unstable sand dunes from fire suppression and controlled grazing and a lack of effective habitat management. Historically, the blowouts in which this species lives were caused by two factors: wildfires and overgrazing. Since European settlement, control of both factors has resulted in the decline of blowouts. Without persistent disturbance, blowouts would heal naturally, further reducing suitable habitat for blowout penstemon. The range of the endangered blowout

penstemon is included in the proposed action area (Service 2025); however, the species has not been observed on the refuge.

Western Prairie Fringed Orchid - The main threats to the WPFO include the conversion of remnant prairie to cropland, other land-use or management changes, inappropriate application of herbicides and pesticides, spread of nonnative invasive plant species, encroaching woody vegetation, and changes in soil moisture and hydrology (Service 2021b). The range of the threatened western prairie fringed orchid (WPFO) includes the proposed action area (Service 2025). Soil moisture is a critical determinant of growth, flowering, and distribution of western prairie fringed orchid (Service 2009). Life history research has revealed that WPFO is dependent on mycorrhizal fungi for seed germination and to enable photosynthesis; and is also dependent on periodic disturbance from fire, mowing, or grazing (Service 2021). No suitable WPFO habitat is found on the refuge.

Monarch - Monarch butterflies are considered imperiled in the State of Nebraska (NatureServe 2023d) where the species has declined by roughly 90 percent. The primary driver of the decline is large-scale changes to monarch breeding habitat in North America, largely because of loss of their host plant, milkweed, which has resulted from the use of glyphosates in agriculture and land conversion of 25 million additional acres of Roundup Ready corn since 2007 (Solis-Sosa et al. 2021). In addition, climate change effects on local weather are also emerging as a threat to monarchs. Monarch butterflies are occasionally noted on the refuge.

Western regal fritillary butterfly - The western regal fritillary butterfly is large butterfly found in the native grasslands of the central and northern Great Plains and portions of the Midwest. The species has one annual generation. Egg-laying occurs in late summer and fall when individual females may lay hundreds to thousands of eggs in native grassland habitats. The species overwinters as first instar larvae in grassland vegetation, emerging in spring to search for violets (Viola spp.), their only larval food. After five molts (six instars), the larvae pupate within the grasslands and emerge as adult butterflies beginning in late May through mid-July depending on their regional location.

The regal fritillary is a landscape-level species, dependent on a shifting mosaic of suitable habitat resulting from periodic grassland disturbances, such as fire, grazing, and haying. These periodic disturbances sustain the species' habitat, but they can also cause individual- or population-level harm to regal fritillaries, particularly during the sedentary, early life stages. Adult females can move significant distances during their several-month long lifespan to access suitable habitats on the landscape. The regal fritillary is also a "boom-and-bust" species, which means that when environmental conditions and habitat characteristics are favorable, significant increases in annual population abundance and distribution may occur (Service 2023). Mowing, haying, and seed harvest have the potential to disturb the western regal fritillary but are also necessary environmental disturbances for the species to have a healthy habitat. The species may be found on the refuge.

Pallid sturgeon - The pallid sturgeon is native to the Missouri and Mississippi rivers and adapted to the pre-development habitat condition that historically existed in these reivers. These conditions generally can be described as large, free-flowing, warm-water, and turbid rivers with a diverse assemblage of dynamic physical habitats (USFWS 2014). No pallid sturgeon habitat exists on the refuge.

Piping plover - In the Northern Great Plains, piping plover "breed and raise young on sparsely vegetated sandbars and reservoir shorelines on river systems as well as on the shorelines of alkaline lakes" (Service

2016). Piping plovers winter in coastal areas of the United States from North Carolina to Texas. They also winter along the coast of eastern Mexico and on Caribbean islands from Barbados to Cuba and the Bahamas (50 CFR 17). Riverine habitats on the refuge may provide habitat for migrating piping plovers.

Suckley's cuckoo bumble bee - Suckley's cuckoo bumble bee is an obligate social parasite of social bumble bees. Suckley's cuckoo bumble bee are considered semi-specialist parasites, in the spring females emerge from hibernation and usurp the nest of a suitable host colony. They are unable to successfully reproduce without the availability of suitable host colonies. Additionally, they require a diversity of native floral resources (pollen and nectar) for nutrition (89 FR 102074). It is unknown whether the species occurs on the refuge.

There is no identified critical habitat in the proposed action area.

Candidate, Threatened and Endangered Species and Critical Habitat: Environmental Consequences

Alternative A

Under Alternative A, no cooperative agriculture agreements would take place. Invasive grasses in non-bison grazed grassland areas would continue to increase. Eastern red cedar will likely increase in grasslands, wooded canyons and wooded riparian areas without periodic mechanical tree control.

Northern long-eared bat and tricolored bat – Declines in vegetative richness and diversity may decrease insect diversity potentially impacting food supplies for both species. Additionally, increased eastern red cedar may over time decrease foraging habitat available to these species. The lack of deciduous tree recruitment and potentially more extreme wildfires may be detrimental to NLEB.

Whooping Crane – Although there is the potential for whopping cranes to utilize areas upstream of Cornell dam, alternative A is not anticipated to impact whooping cranes.

American Burying Beetle – Anticipated decreases in vegetative richness and diversity could negatively impact ABB if those vegetative changes result in changes or decreases in ABB food supplies. As eastern red cedar expands, available ABB habitat will decrease negatively impacting the species.

Blowout penstemon – The species has not been documented on the refuge. No impacts are expected.

Western Prairie Fringed Orchid – No suitable habitat exists for WPFO. No impacts are expected.

Monarch - Anticipated decreases in vegetative richness and diversity in grasslands could negatively impact monarchs if milkweed or other food sources decline.

Western regal fritillary butterfly – Anticipated decreases in grassland vegetative richness and diversity could negatively impact WRFB if those vegetative changes result if violets or other food sources decline.

Piping plover – No suitable habitat exists for piping plovers. No impacts are expected.

Suckley's cuckoo bumble bee - Anticipated decreases in grassland vegetative richness and diversity could negatively impact SCBB if those vegetative changes result in food sources declines for other bumble bee species that the SCBB is dependent upon.

Pallid sturgeon – No pallid sturgeon habitat exists on the refuge. No impacts are expected.

Alternative B

Pallid Sturgeon – Same as Alternative A.

Piping Plover – Same as Alternative A.

Whooping Crane – Same as Alternative A.

Blowout penstemon – Same as Alternative A.

Western Prairie Fringed Orchid – Same as Alternative A.

Northern long-eared and tricolored bat - Cooperative agriculture will not impact NLEB nesting or roosting habitat. Cooperative Agricultural activities in the project area have the potential to increase native insects that the NLEB needs to forage. Similar to Alternative A, minimal deciduous tree recruitment and increases in eastern red cedar may negatively impact both bat species.

American burying beetle – Cooperative Agricultural activities that lead to increases in plant diversity could increase carrion available to ABB. Equipment use associated with seed harvest and haying could result in direct mortality of ABB, but ABB are typically found below ground, so these impacts are unlikely. While incidental take from soil disturbance activities is prohibited there are exceptions for grazing, livestock ranching, and wildlife management activities (Service 2020a). In general, habitat management that improves diversity and richness of plants is generally regarded as beneficial to ABB.

Monarch and western regal fritillary - Haying and seed harvest activities could have temporary negative impacts to habitat for these species, but improved grassland quality associated with these practices should be beneficial. Similar to Alternative A, continued woody expansion of eastern red cedar into grasslands would be negative.

Suckley's cuckoo bumble bee – Cooperative agriculture activities promote more native vegetation which will increase Suckley's cuckoo bumble bees' nutrition and boost native bumble bee populations which could have a positive increase on Suckley's cuckoo bumble bee because they need bumble bees for reproduction.

Special Status Species: Affected Environment

Migratory Birds

The Refuge is located in the Central Flyway for migratory birds. The ranges of 14 Birds of Conservation Concern (BCC) overlap with the Proposed Action Area: bald eagle, black-billed cuckoo, bobolink, chimney swift, ferruginous hawk, Franklin's gull, golden eagle, grasshopper sparrow, lark bunting, lesser yellowlegs, long-eared owl, northern harrier, red-headed woodpecker, and Sprague's pipit (Service 2025). According to the following laws and Executive Order, impacts of the Proposed Action on these species must be analyzed: Migratory Bird Treaty Act, as amended; 16 U.S.C. 703–712; 50 CFR Parts 10, 12, 20, and 21; Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds,* 66 *Federal Register* [FR] 3853 (2001); and the Bald and Golden Eagle Protection Act, as amended, (16 U.S.C. 668–668c, 50 CFR 22).

Bald eagles typically nest in forested areas adjacent to large bodies of water, staying away from heavily developed areas when possible. They prefer tall, mature trees where they can view their surroundings.

Eagles are tolerant of human activity when feeding and may congregate below dams where they feed on birds, reptiles, amphibians, invertebrates, and mammals (Buehler 2000). Bald eagles are common along the Niobrara River.

Black-billed cuckoos are birds of woodlands and thickets who nest among leaves or tangles in deciduous trees, shrubs or brambles. Black-billed cuckoos eat large insects such as caterpillars, katydid, cicadas, and grasshoppers (Hughes, J. M, 2020). Black-billed cuckoos are only occasionally seen at the Refuge.

Bobolink breeding habitat includes tallgrass areas, flooded meadows, prairie, deep-cultivated grains, and hayfields. Bobolinks forage on a variety of insects, spiders, snails, and invertebrates (Renfrew, et al. 2020). It is uncommon to see a bobolink on the Refuge.

Chimney swifts are more concentrated in urban areas where there are large concentrations of chimneys for nest sites and communal roosts. During migration, chimney swifts have been observed along major river corridors. Beetles, various flies, wasps, and bees provide forage for swifts (Steeves, et al. 2020). Occasionally chimney swifts will be seen on the Refuge.

Ferruginous hawks inhabit grasslands, shrub-steppes, and deserts in North America. They will build their nests on powerlines, trees, cliffs, and on the ground if elevated sites are absent. Jackrabbits, ground squirrels, and prairie dogs are their primary prey (Ng. et al. 2020). Ferruginous hawks are occasionally seen on the Refuge.

Franklin's gulls depend on extensive prairie marshes for breeding and entire colonies will shift sites from year to year depending on water levels. They will sometimes follow farming equipment eating earthworms, grasshoppers, seeds, flying insects, and mice (Burger, J. and Gochfeld 2020). It is uncommon to see a Franklin's gull at the Refuge.

Golden eagles occupy a wide variety of habitats, including open grassland, desert, alpine or shrub-steppe. They feed on large and small prey (cranes, rabbits, domestic livestock, prairie dogs) and will also scavenge all year round (Katzner et al. 2020). Golden eagles are uncommonly seen on the Refuge.

Grasshopper sparrows breed in open grasslands, prairies, hayfields, and pastures, typically with some bare ground. Grasshopper sparrows usually avoid breeding in grasslands with extensive shrub cover but are more tolerant of shrubs in migration and during the winter. A grasshopper sparrow's main diet is grasshoppers, but other small bugs and insects are also consumed. Exposed bare ground is critical in the winter when they forage primarily on seeds from the ground (Vickery, P.D. 2020). Grasshopper sparrows are commonly seen throughout the Refuge.

Lark buntings are endemic to the grasslands and shrub steppe of North America. They are most likely to be found in large areas of native grassland vegetation. Buntings need think vegetation such as four-winged saltbush green-plumed rabbitbrush, and red triple-awn grass to nest in. Lark buntings feed on seeds, invertebrates, and some fruit (Shane, T.G., 2020). Lark buntings are uncommonly seen at the Refuge.

Lesser yellowlegs tend to be found in vegetated wetlands, mudflats, marshes, lake and pond edges, and will nest in semi open woodlands or wet meadows interspersed with marshes. They feed on invertebrates gleaned from water or land (Tibbitts and Moskoff 2020). Lesser yellowlegs are occasionally seen on the Refuge.

Long-eared owl require a combination of grassland or other open country for foraging, and dense tall shrubs or trees for nesting and roosting. Long-eared owls eat mostly small mammals or birds (Marks et al., 2020). Long-eared owls are occasionally on the Refuge.

Northern harriers are most common in large, undisturbed tracts of wetlands, and grasslands with low, thick vegetation. They forage on small mammals, reptiles, amphibians, and birds (Smith et al. 2020). Northern harriers are commonly seen throughout the Refuge.

Red-headed woodpeckers are found in deciduous woodlands with oak or beech, groves or dead or dying trees, river bottoms, burned areas recent clearings, or grasslands with scattered trees. They forage on insects, fruit, and seeds (Frei, et al. 2020). Red-headed woodpeckers can be commonly seen on the Refuge.

Sprague's pipits are endemic nesters to the Great Plains, where they breed mostly in native mixed-grass prairie, usually in vegetation no more that 6-12 inches tall. They consume mostly insects or arthropods and seeds (Davis et at. 2020). Sprague's pipits are believed to be rare migrants through the refuge.

Special Status Species: Environmental Consequences

Alternative A

Under Alternative A, no cooperative agriculture agreements would take place. This would mean that invasive species would continue to spread in grassland areas. Grassland dependent species would be expected to be negatively impacted as grassland diversity decreases. Continued expansion of eastern red cedar may temporarily benefit some woodland edge species, but most birds except for species such as robins and cedar waxwings, would be negatively impacted as closed canopy stands of ERC invade grassland areas and fill canyon and riparian woodlands.

Alternative B

Under Alternative B, cooperative agriculture agreements would be permitted. This will allow cooperative grazing, haying, and seed harvest to promote native vegetation for native species. In general grassland dependent birds would benefit from improved richness and diversity of native vegetation. Similar to Alternative A, without periodic mechanical tree control, continued expansion of eastern red cedar may temporarily benefit some woodland edge species, but most birds except for species such as robins and cedar waxwings would be negatively impacted as closed canopy stands of ERC invade grassland areas and fill canyon and riparian woodlands.

Water Resources (Hydrology, Wetlands, Water Quality and Quantity): Affected Environment

Fort Niobrara NWR is part of the Niobrara River Basin. The Niobrara River Basin includes 269 designated stream segments and 69 designated lakes/reservoirs. Fort Niobrara NWR contains 5 watersheds: Fishberry Creek-Minnechaduza, Big Beaver Creek, Crooked Creek-Niobrara River, Cornell Dam-Niobrara River, Smith Falls-Niobrara River (Hydrologic Codes [HUC] 12-101500040608, 12-101500040903, 12-101500040904, 12-101500040902, 12-10100040905) (Figure 4). The Refuge has about 300 acres or 1.6% of open water (Figure 5).

In May 2021, the NDEE released their *2020 Water Quality Integrated Report* (NDEE 2021), which evaluated the water quality of streams throughout Nebraska. Fishberry Creek, Big Beaver Creek, and Crooked Creek were not sampled and are rated as category 3. Category 3 means, "*Waterbody where there is insufficient data to determine if any beneficial uses are being met*". Minnechaduza Creek was

rated as Category 4a/c which means the (4a) waterbody is impaired but, all the required total maximum daily loads (TMDLs) have been completed and (4c) the waterbody is impaired, but the impairment is not caused by a pollutant. The Niobrara River had several monitoring locations but in the project area the Niobrara River was rated 4a, the water was impaired from recreation and E. coli. The E. coli TMDLs were completed (NDEE 2021).

The primary producers in Nebraska streams generally appear to be limited by nitrogen concentrations. Several parameters in different basins correlate with nitrogen availability (especially nitrate and nitrite), including tolerant and sensitive algal species, the ratio of cyanobacteria to diatom cells, and the overall algal assemblage structure. In some basins, increased sestonic chlorophyll-a levels with increased nitrogen were found, which suggestions that increased nitrogen in the streams is the most likely factor to alter the structure and function of those ecosystems.

Water Resources (Hydrology, Wetlands, Water Quality and Quantity): Environmental Consequences

Alternative A

Under Alternative A, cooperative agriculture practices would not be implemented. No to negligible impacts to water quality are anticipated under Alternative A.

Alternative B

Grazing – Cattle grazing could result in increased nutrient loads from animal wastes and sedimentation into water sources. These effects can lead to increased water temperatures and a drop in dissolved oxygen levels, leading to eutrophication. Toxic blue-green algae (i.e., i.e., cyanobacteria) can form, which is deadly not only to wildlife within the water column, but also to animals that may drink the water, including cattle and deer. Additionally, cattle can trample vegetative cover along shorelines and incise streambanks, leading to erosion-related soil loss along water courses. Nonetheless, erosion and sediment transport are primarily associated with high-density stocking, which would not be likely to occur with implementation of grazing agreements that comply with the Service's Cooperative Agriculture Policy (50 CFR 29.2).

Grazing and Haying- The removal of vegetation cover can increase water run-off. Each proposed grazing lease opportunity would have a maximum grazing capacity to ensure residual cover for holding soils and capturing surface water. The purpose of both types of leases is to improve plant community composition and productivity which is expected to further reduce water run-off.

Haying - No haying activities would occur near open water resources.

Seed Harvest – No seed harvest would occur near open water resources.

Geology and Soils: Affected Environment

Various soils exist on the Refuge, with over 60% of the soil containing Valentine soils with varying degrees of slope. In general, the Valentine series consists of very deep, excessively drained soils formed in eolian sands and are found in interdunes, dunes, and valley sides of sandhills. The other large portion of soils present on the Refuge is the McKelvie series, over 20%. McKelvie soils, like Valentine soils are very deep, and excessively drained. The are also rapidly permeable soils found on valley sides and foot and toe slopes. Figure 6 and Table 1 illustrate the types of soil and where you can find them throughout the Refuge.

Geology and Soils: Environmental Consequences

Alternative A

Under Alternative A, no cooperative agreements will take place. Any soil movement due to wind or precipitation would continue to be minimal.

Alternative B

Grazing – Hoof action can disturb and compact soils, especially near watering and mineral locations. Proposed grazing durations would be temporary and compaction is expected to be minimal. This impact is considered minor due to the long, hard, freeze and thaw cycles in the fall, winter, and spring it is likely to loosen compacted soils by the grazing season, resulting in no adverse effects on soil porosity or permeability. Hoof action does have the benefit of cycling organic materials with soil and supporting seedling production.

Haying - Harvest equipment, such as tractors and swathers, can compact soils. Agricultural activities will be limited to when the ground is dry enough to avoid compaction issues. This restriction would be included in all hay lease agreements. With this mitigation measure in place, this impact is considered minor.

Seed Harvest – Seed harvesting efforts are unlikely to cause substantial ground disturbance or an increased risk of erosion and soil damage. The extent or motorized equipment use for seed harvesting would be the most important factor for assessing the level of impact. The movements of ground teams equipped with nonelectrified hand tools would contribute to soil effects that would be negligible. Larger operations that may employ utility vehicles or heavy farming equipment would likely mirror the minor negative effects detailed above.

4.4 Socioeconomics

Local and Regional Economies: Affected Environment

Fort Niobrara National Wildlife Refuge is located approximately 4 miles east of Valentine in Cherry County, Nebraska. Valentine is the county seat of Cherry County with a 2020 population of 2,633 (U.S. Census Bureau. 2020). Median household income (2016-2020 in 2020 dollars) in Cherry County was $55,431 with approximately 11.4% of the population living in poverty. Employment within the county is dominated by Education and Health Services (25%), Agriculture and related fields (25%) and Retail Trade (11%) (Cherry County Planning Commission 2020). Rosebud Sioux Tribal lands are located north of Cherry County in South Dakota.

The refuge receives approximately 80,000 visitors annually. Visitor numbers for different uses and activities include hunting, wildlife observation, river float trips, education and interpretation. Visitation occurs year-round; however, most people visit from June through September.

Local and Regional Economies: Environmental Consequences

Alternative A

This assessment has not identified any adverse or beneficial effects.

Alternative B

Under Alternative B, the refuge will establish limited revenue associated with a grazing program; however, adverse or beneficial impacts to the local economy will be minimal as we only anticipate 300-400 acres will be grazed annually by cooperator owned cattle.

4.5 Refuge Resources

Visitor Use and Experience (Aesthetics, Viewsheds and Visual Resources): Affected Environment

An estimated 80,000 people visit the Refuge. Most of these visitors enjoy wildlife-dependent recreational opportunities including, photography, hunting, wildlife observation, river floating, and hiking. Most public use occurs on the refuge between June and September when floating the river and summer visitation is at its highest. Hunting is permitted on Refuge lands north and west of the Niobrara River.

Visitor Use and Experience (Aesthetics, Viewsheds, and Visual Resources): Environmental Consequences

Alternative A

Under Alternative A, there is not predicted to be a change in visitation.

Alternative B

Grazing – The potential for cattle and visitor interactions is low; however, cattle have been known to become protective when calves are present in the spring and summer months. Furthermore, bulls have also been known to be aggressive when present in pastures for breeding. To manage grazing activities fencing and gates may need to be installed. Additionally, visitors would need to maintain situational awareness to avoid cattle-eroded areas and cattle manure, potentially reducing the quality of their experience at the Refuge. The presence of livestock as well as the reduction of forage and cover would be noticeable by people that recreate on the refuge and some members of the public may avoid these areas limiting their experience at the Refuge.

Haying and Seed Harvest – Haying and seed harvest can be performed concurrently with visitor use and can occur in localized areas. Transportation of equipment could cause slower traffic around the Refuge, although movement of vehicles is expected in the early and late hours of the day not during high visitation times. Visitors may also be impacted by the noise associated with the equipment, but impacts would be isolated and temporary.

Overall, Alternative B maximizes the Service's ability to manage and prevent the spread and expansion of invasive species. These activities are likely to benefit the visitor experience overall and increase the quality of native habitat at Fort Niobrara NWR, which would increase native wildlife and increase options for wildlife dependent recreation.

Management, Operations, and Administration: Affected Environment

Currently management, operations, and administration at Fort Niobrara NWR is limited to 4 employees who split their time between Fort Niobrara NWR and other USFWS facilities and locations.

Management, Operations, and Administration: Environmental Consequences

Alternative A

Under Alternative A, there will be no changes to the management, operations, or administration at Fort Niobrara NWR.

Alternative B

Under Alternative B, there will be added work needed to develop and implement cooperative agriculture SUPs, grazing plans, and habitat plans. However, once these documents are in place limited staff time be needed to implement cooperative agriculture activities.

4.6 Cumulative Impacts

Natural Resources

The cumulative impacts to natural resources of cooperative agriculture activities on Fort Niobrara NWR are anticipated to be minimal. The proposed activities, when appropriately managed, have the potential to enhance overall habitat quality and benefit wildlife populations. Through careful monitoring and adaptive management, the Refuge can continue to provide vital habitat for its diverse wildlife species. No adverse natural resource cumulative effects are anticipated.

Socioeconomics

The cumulative impacts to socioeconomics of cooperative agriculture activities on Fort Niobrara NWR are anticipated to be minimal. Limited funds will be generated to the local community and bidders by the cooperative agriculture programs. No adverse socioeconomical cumulative effects are anticipated.

Refuge Resources

No adverse cumulative effects to refuge resources are anticipated. The Preferred Alternative maximizes the Refuge's ability to manage and prevent the spread and expansion of invasive species. This alternative will benefit the American public. This also helps refuges staff manage habitat for future generations.

4.7 Summary of Analysis

Alternative A – No Cooperative Agriculture – No Action Alternative

With the No Action Alternative current habitat management activities will remain. Prescribed fire and herbicide treatment will still be conducted but no grazing, haying or seed harvest will take place. This alternative does not meet Refuge purposes, to manage the Refuge for native birds.

Alternative B – Cooperative Agriculture – Preferred Alternative

Under the Preferred Alternative, Alternative B, current management activities will continue with the added management tools of cooperative agriculture including, cattle grazing, haying, and seed harvest. There are no negligible adverse impacts expected with this alternative.

The use of all of these management activities will allow the Refuge to fulfill its establishment purposes of creating a breeding ground for native birds.

Chapter 5: List of Preparers and Sources

5.1 List of Preparers

- U.S. Fish and Wildlife Service
    - Matt Sprenger, Complex Manager, Sandhills National Wildlife Refuge Complex
    - Katie Schober, Assistant Manager, Fort Niobrara National Wildlife Refuge

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Appendix A: Applicable Statutes and Executive Orders

Statutes

Alaska National Interest Lands Conservation Act of 1980, as amended
American Indian Religious Freedom Act (AIRFA) of 1978
Americans with Disabilities Act (ADA) of 1990
Anadromous Fish Conservation Act of 1965
Antiquities Act of 1906
Archaeological and Historic Preservation Act of 1974
Archaeological Resources Protection Act (ARPA) of 1979, as amended
Bald and Golden Eagle Protection Act of 1940, as amended
Clean Air Act of 1970
Clean Water Act of 1972, as amended
Coastal Barriers Resources Act of 1982
Coastal Zone Management Act (CZMA) of 1972, as amended
Emergency Wetlands Resources Act of 1986
Endangered Species Act of 1973, as amended
Farmland Protection Act of 1981, as amended
Federal Cave Protection Act (FCRPA) of 1988
Federal Noxious Weed Act of 1990
Fish and Wildlife Act of 1956
Fish and Wildlife Coordination Act (FWCA) of 1958
Fishery (Magnuson) Conservation and Management Act of 1976
Lacey Act of 1900
Marine Mammal Protection Act of 1972, as amended
Magnuson Stevens Fishery and Conservation Management Act of 1976, as amended
Migratory Bird Conservation Act of 1929
Migratory Bird Hunting and Conservation Stamp Act of 1934
Migratory Bird Treaty Act of 1918, as amended
National Environmental Policy Act (NEPA) of 1969
National Historic Preservation Act of 1966, as amended
National Wildlife Refuge System Administration Act of 1966, as amended
National Wildlife Refuge System Improvement Act of 1997
Native American Graves Protection and Repatriation Act (NAGPRA) of 1990
Noise Control Act of 1972
Paleontological Resources Protection Act of 2009
Refuge Recreation Act of 1962, as amended
Resource Conservation and Recovery Act of 1976
Rivers and Harbors Act of 1899
Safe Drinking Water Act of 1974
Water Resources Planning Act of 1965 (sole-source aquifers)
Wild and Scenic Rivers Act of 1968, as amended
Wilderness Act of 1964, as amended

Executive Orders

EO 11593, Protection and Enhancement of the Cultural Environment
EO 11644, Use of Off-Road Vehicles on Public Land
EO 11987, Exotic Organisms
EO 11988, Floodplain Management
EO 11990, Protection of Wetlands
EO 12866, Regulatory Planning and Review
EO 12898, Federal Actions to Address Environmental Justice for Minority Populations and Low-Income Populations
EO 12962, Recreational Fisheries
EO 12996, Management and General Public Use of the National Wildlife Refuge System
EO 13007, Indian Sacred Sites
EO 13084, Consultation and Coordination with Indian Tribal Governments
EO 13175, Consultation and Coordination with Indian Tribal Governments
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds
EO 13563, Improving Regulation and Regulatory Review
EO 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis
EO 14008, Tackling the Climate Crisis at Home and Abroad

Other

Consultations for Essential Fish Habitat

Appendix B: Figures and Tables

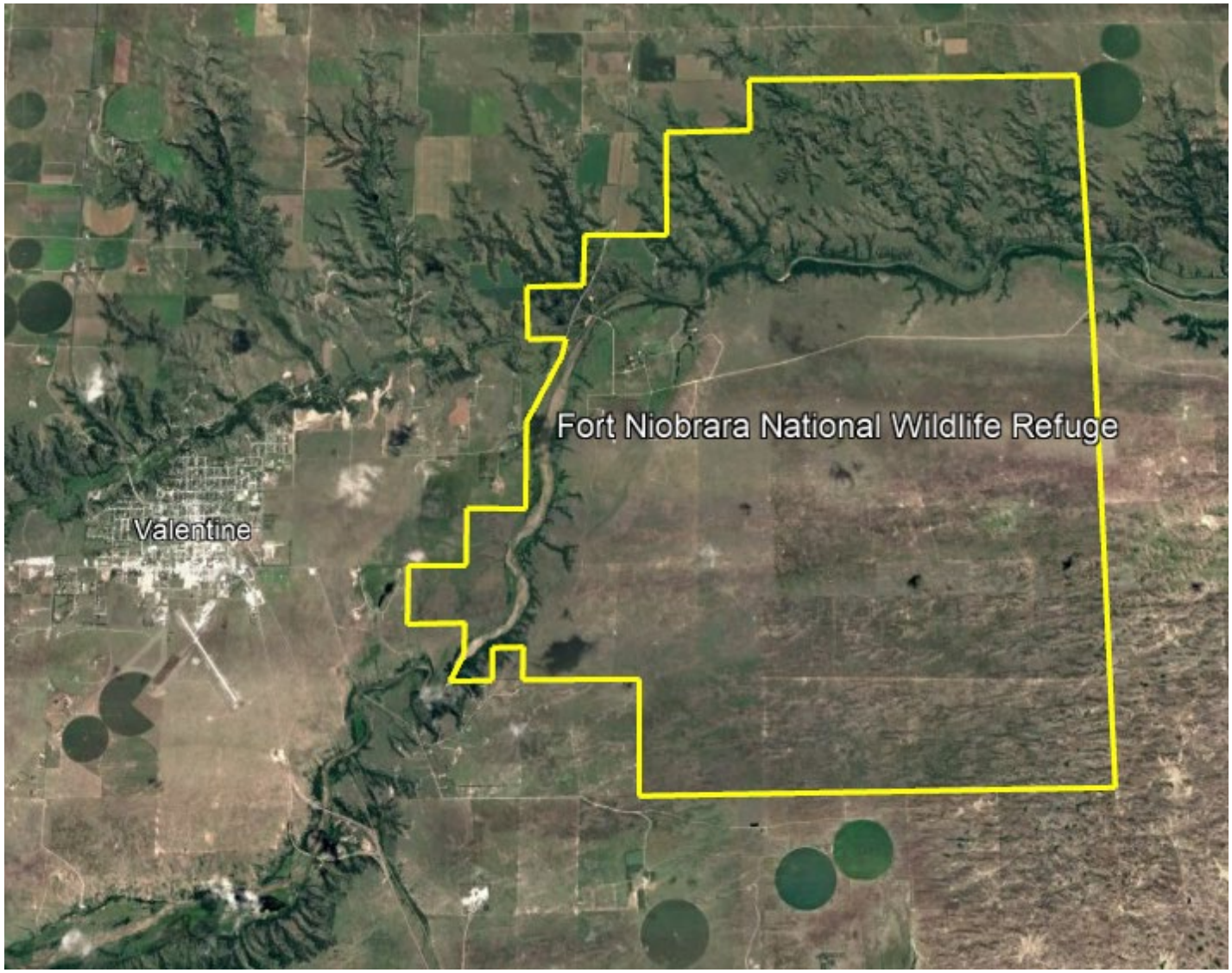

Figure 1: Project Location and Vicinity

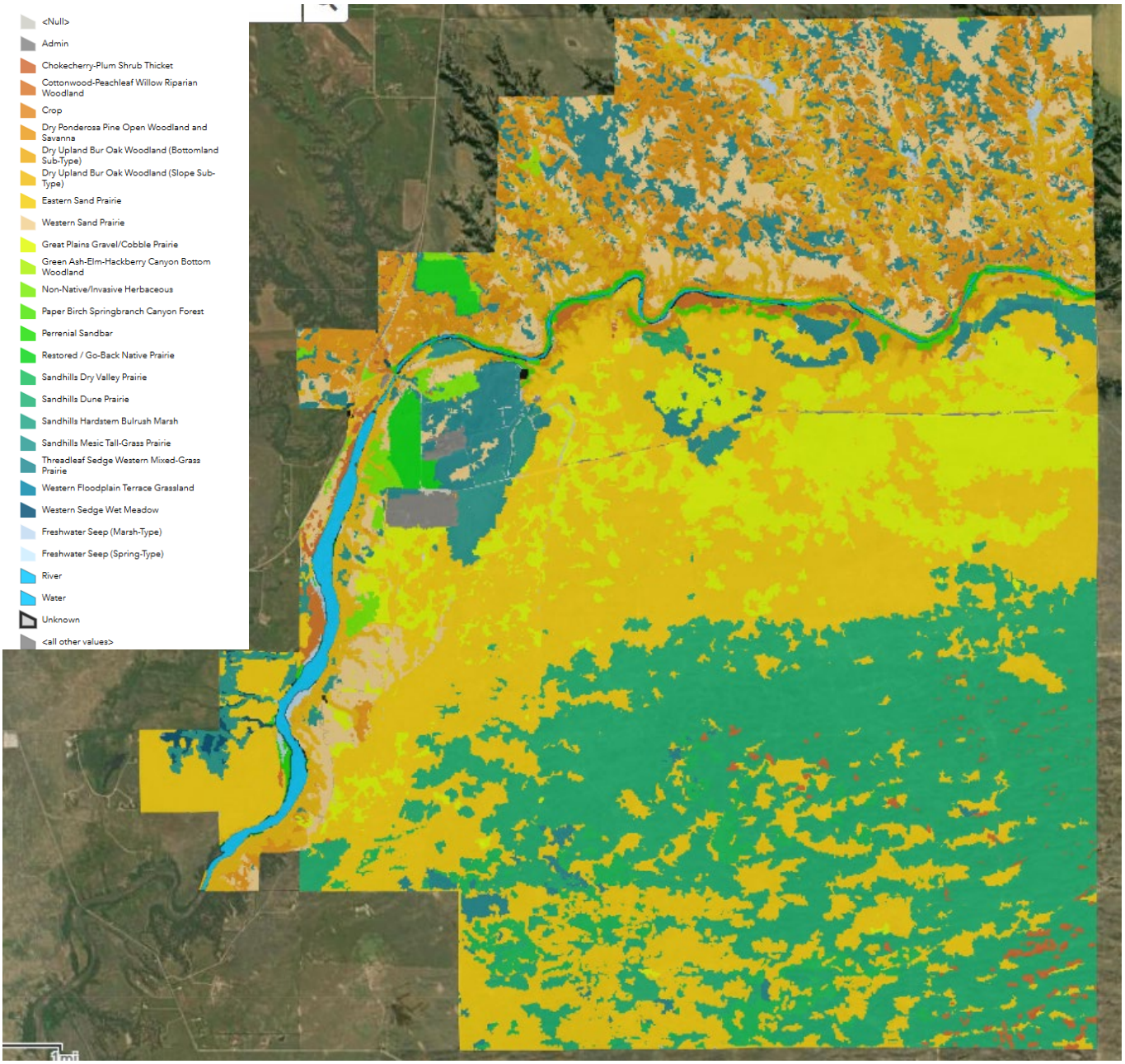

Figure 2: Landcover Map

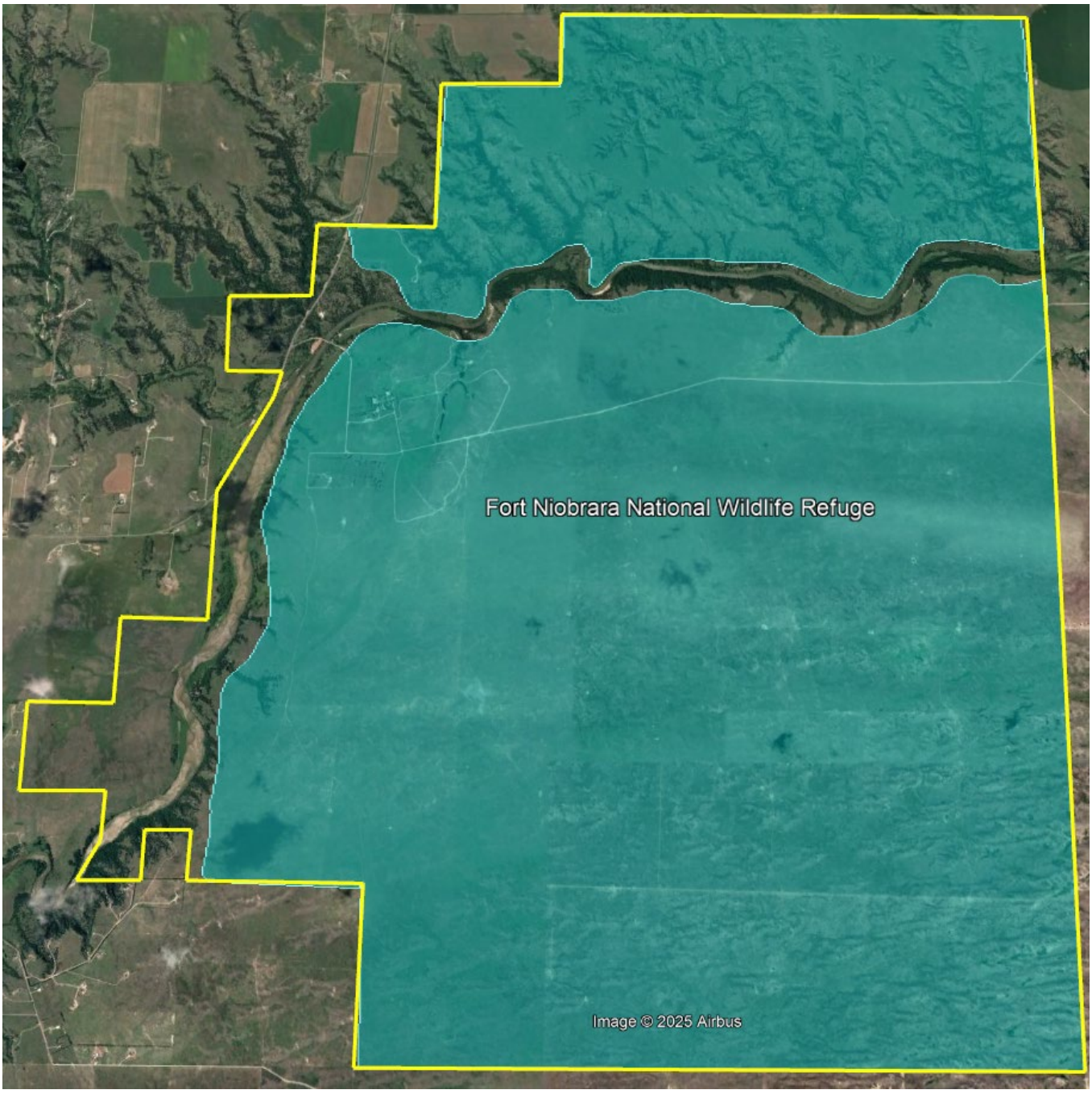

Figure 3: Blue Highlighted Areas Dictate Bison Grazing Areas

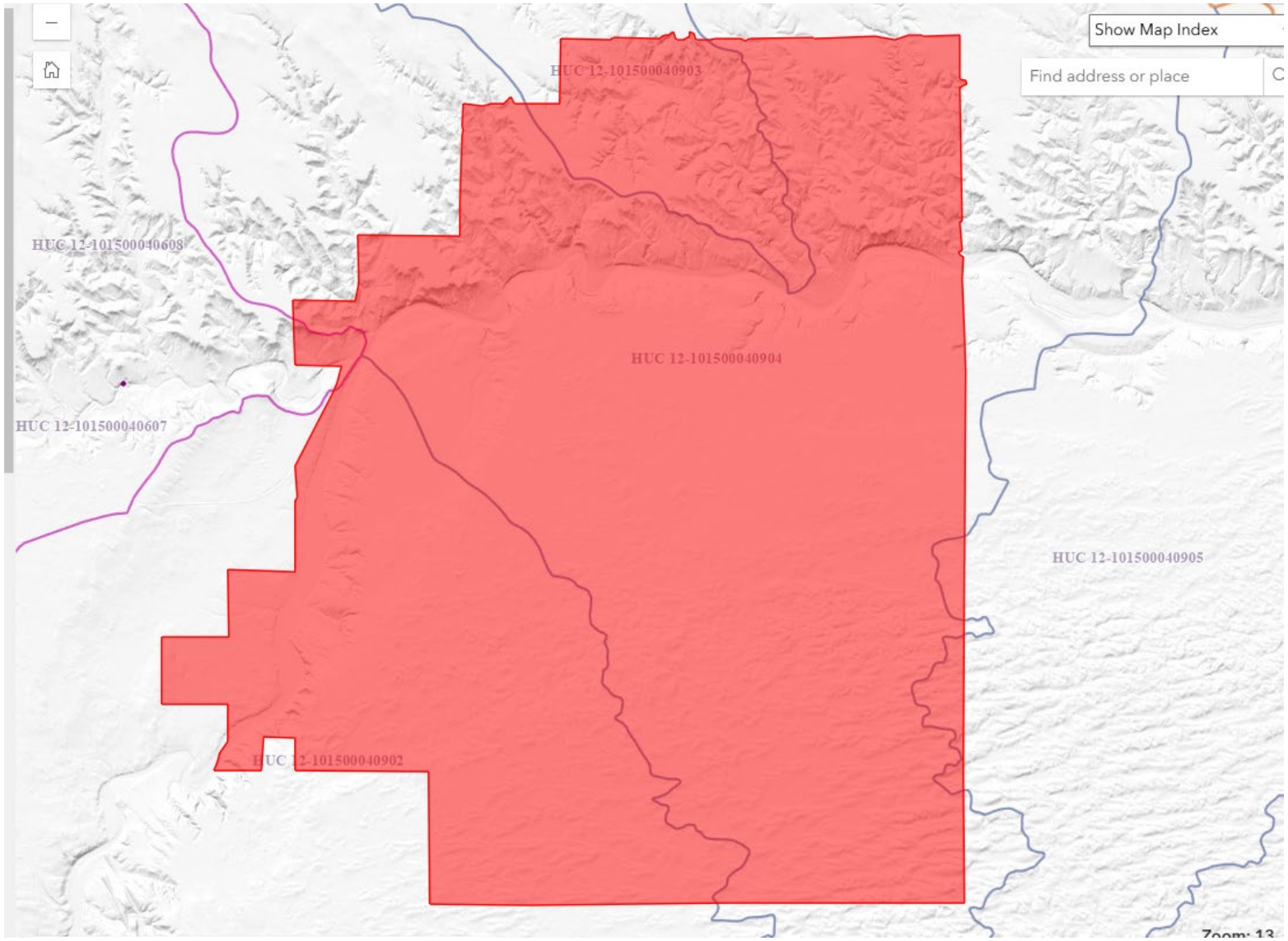

Figure 4: USGS National Hydrology Map

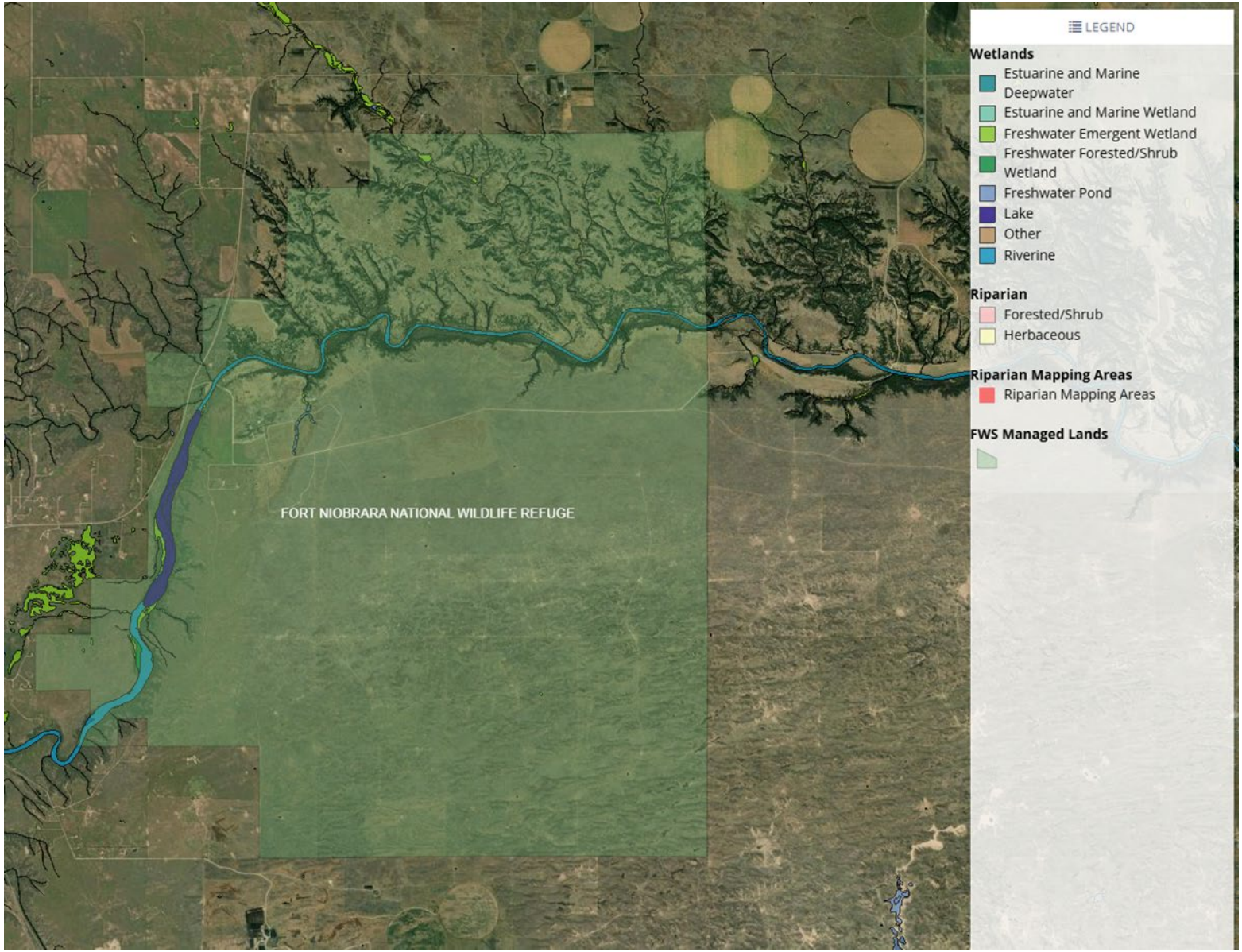

Figure 5: Fort Niobrara NWR Surface Water Resource Map

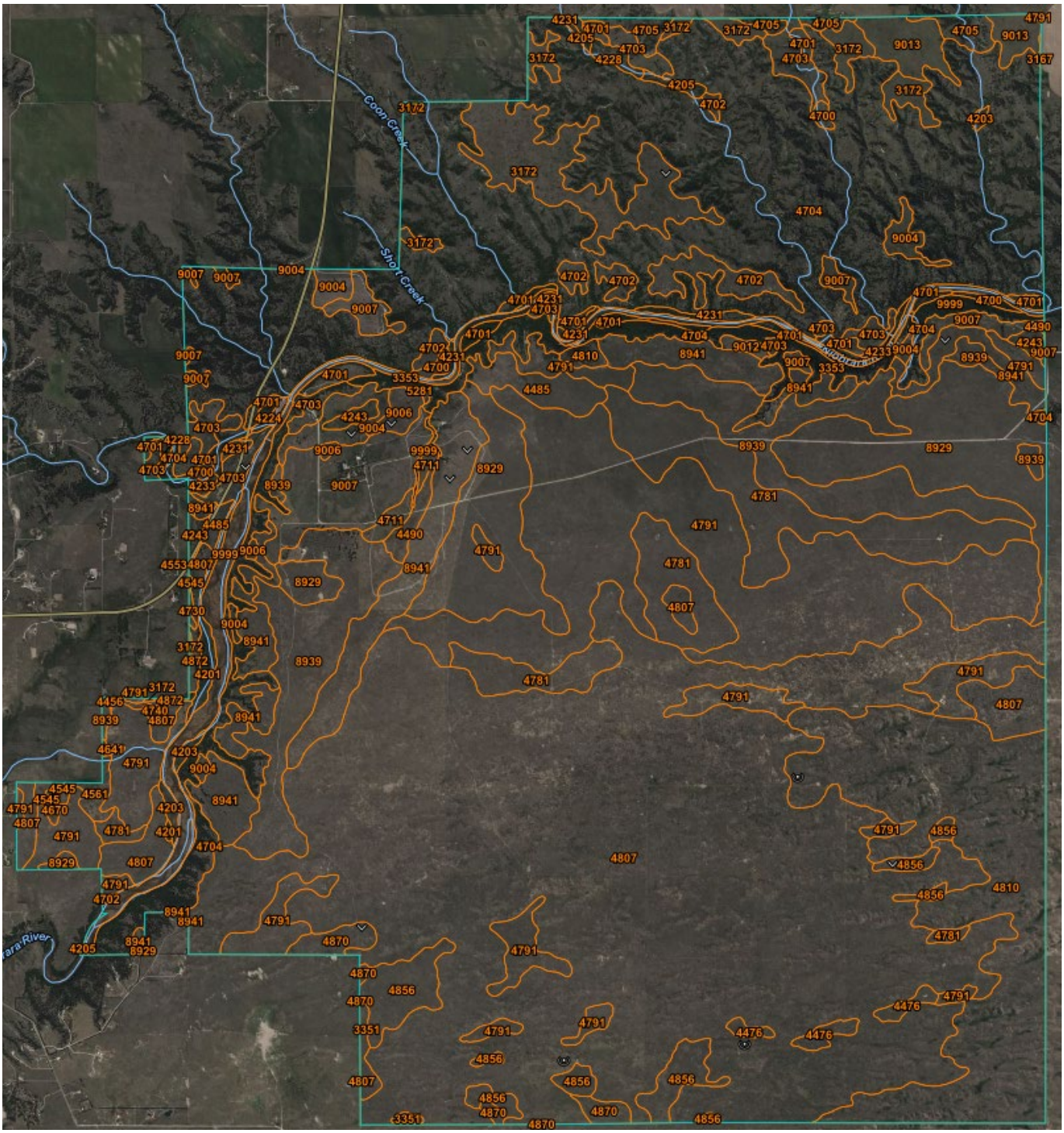

Figure 6:Fort Niobrara NWR Soil Types

Table 1: Fort Niobrara NWR Soil Composition

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3167	Hennings fine sandy loam, 0 to 3 percent slopes	1.0	0.0%
3172	Holt-Longpine fine sandy loams, 3 to 6 percent slopes	424.5	2.2%
3351	Fishberry fine sandy loam, 0 to 6 percent slopes	28.2	0.1%
3353	Fishberry-Rock outcrop complex, 30 to 60 percent slopes	100.7	0.5%
4201	Almeria fine sandy loam, occasionally flooded, 0 to 2 percent slopes	30.7	0.2%
4203	Almeria fine sandy loam, wet, occasionally flooded	26.2	0.1%
4205	Almeria loamy fine sand, channeled, frequently flooded, 0 to 2 percent slopes	17.5	0.1%
4224	Bolent loamy fine sand, channeled, occasionally flooded	8.2	0.0%
4228	Bolent-Calamus, calcareous loamy fine sands, occasionally flooded	27.8	0.1%
4231	Calamus fine sand, calcareous	43.1	0.2%
4233	Calamus loamy fine sand, calcareous, rarely flooded	18.5	0.1%
4243	Ord loam, rarely flooded	43.5	0.2%
4456	Crowther mucky peat	2.8	0.0%
4476	Duda-Fishberry loamy fine sands, 0 to 3 percent slopes	51.7	0.3%
4485	Dunday loamy fine sand, 0 to 3 percent slopes	107.3	0.6%
4490	Dunday loamy fine sand, 3 to 9 percent slopes	33.9	0.2%
4545	Els-Ipage fine sands, 0 to 3 percent slopes	18.3	0.1%
4553	Elsmere loamy fine sand, 0 to 3 percent slopes	0.2	0.0%
4561	Elsmere-Loup complex, 0 to 3 percent slopes	27.4	0.1%
4641	Ipage fine sand, 0 to 3 percent slopes	4.5	0.0%
4700	McKelvie loamy fine sand, 0 to 3 percent slopes	37.3	0.2%
4701	McKelvie loamy fine sand, 3 to 9 percent slopes	153.7	0.8%
4702	McKelvie loamy fine sand, 9 to 30 percent slopes	143.0	0.7%
4703	McKelvie-Fishberry loamy fine sands, 9 to 30 percent slopes	249.4	1.3%
4704	McKelvie-Fishberry-Rock outcrop complex, 11 to 60 percent slopes	3,870.2	20.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4705	McKelvie-Rock outcrop complex, 20 to 60 percent slopes	89.7	0.5%
4711	Nenzel loamy fine sand, calcareous, 0 to 3 percent slopes	34.2	0.2%
4730	Sandose loamy fine sand, 0 to 3 percent slopes	3.4	0.0%
4740	Tryon fine sandy loam, 0 to 3 percent slopes	7.9	0.0%
4781	Valentine fine sand, 0 to 3 percent slopes	749.1	3.9%
4791	Valentine fine sand, 3 to 9 percent slopes	2,046.7	10.6%
4807	Valentine fine sand, rolling, 9 to 24 percent slopes	5,859.6	30.2%
4810	Valentine fine sand, rolling and hilly, 9 to 60 percent slopes	1,214.0	6.3%
4856	Valentine-Duda complex, 3 to 9 percent slopes	263.7	1.4%
4870	Valentine-Duda complex, 9 to 24 percent slopes	76.7	0.4%
4872	Valentine-Sandose complex, 0 to 9 percent slopes	22.2	0.1%
5281	Vetal fine sandy loam, 0 to 3 percent slopes	3.9	0.0%
8929	Simeon sand, 0 to 3 percent slopes	934.6	4.8%
8939	Simeon-Valentine complex, 0 to 9 percent slopes	846.3	4.4%
8941	Simeon-Valentine complex, 9 to 24 percent slopes	730.6	3.8%
9004	Anselmo fine sandy loam, 3 to 6 percent slopes	145.1	0.7%
9006	Anselmo fine sandy loam, 6 to 11 percent slopes	41.8	0.2%
9007	Anselmo fine sandy loam, 0 to 3 percent slopes	398.1	2.1%
9012	Anselmo loamy fine sand, 0 to 3 percent slopes	13.8	0.1%
9013	Anselmo loamy fine sand, 3 to 6 percent slopes	128.0	0.7%
9999	Water	309.6	1.6%
Totals for Area of Interest		19,393.4	100.0%