Draft Environmental Assessment

Removal of Feral Horses from Sevilleta National Wildlife Refuge

July 2026

Prepared by Sevilleta National Wildlife Refuge

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U.S. Department of Interior
Fish and Wildlife Service
Region 2 (Southwest Region)
Sevilleta National Wildlife Refuge
San Acacia, New Mexico

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Executive Summary

This Environmental Assessment (EA) evaluates one action alternative and a no action alternative. The proposed action would remove feral horses at Sevilleta National Wildlife Refuge (NWR). The proposed action would be achieved by gathering horses in corrals using bait and/or mounted wranglers, followed by transporting them to a holding pen and adopting or selling them off to horse rescue organizations and/or members of the public. The No Action Alternative would allow the feral horse population to continue to grow, checked only by natural forces. Feral horses degrade habitat quality and threaten the native species on the refuge including some threatened and endangered species. Since their introduction, horses have continued to multiply in number and expand their range on the refuge.

Executive Order 14154, *Unleashing American Energy* (Jan. 20, 2025), and a Presidential Memorandum, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity* (Jan. 21, 2025), require the Department to strictly adhere to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq. Further, such Order and Memorandum repeal Executive Orders 12898 (Feb. 11, 1994) and 14096 (Apr. 21, 2023). Because Executive Orders 12898 and 14096 have been repealed, complying with such Orders is a legal impossibility. The U.S. Fish and Wildlife Service (Service) verifies that it has complied with the requirements of NEPA, including the Department's regulations and procedures implementing NEPA at 43 C.F.R. Part 46 and Part 516 of the Departmental Manual, consistent with the President's January 2025 Order and Memorandum. The Service has also voluntarily considered the Council on Environmental Quality's rescinded regulations implementing NEPA, previously found at 40 C.F.R. Parts 1500–1508, as guidance to the extent appropriate and consistent with the requirements of NEPA and Executive Order 14154.

The following resources were analyzed in the EA: habitat and vegetation, wetlands, vegetation of special management concern, fish and wildlife species, Candidate, Threatened and Endangered Species and Critical Habitat, water resources, historic properties, archeological resources, and local economy (see Chapter 4 for more information). Several other resources were initially considered by the Service but were ultimately dismissed from further analysis because neither the proposed action nor its alternative would have the potential to result in measurable impacts to these resources (see Appendix B).

On or before August 23, Sevilleta National Wildlife Refuge will request public review and comment on a Draft Environmental Assessment to remove feral horses from roughly 229,000 acres of the refuge. The refuge is proposing to non-lethally remove feral horses from Sevilleta NWR in Socorro County, New Mexico, meeting established objectives to "maintain a natural functioning ecosystem" as described within the refuge's Warranty Deed and Comprehensive Conservation Plan. This effort also supports similar actions conducted by the Bureau of Land Management adjacent to refuge property. The refuge will post on the Sevilleta NWR webpage, Sevilleta's social media, and post flyers at the refuge. Letters will be sent to federally recognized tribes.

Chapter 1: Introduction

1.1 Background

National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, federal laws and executive orders, 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 NWRS 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 Service manual.

The mission of the NWRS, as outlined by the NWRS Administration Act of 1966, as amended by the NWRS 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 NWRS Improvement Act of 1997 directs the Secretary of the Department of the Interior to ensure that Refuges are fulfilling the intended mission of the NWRS and the purposes of individual Refuges (16 U.S.C. 668dd(5)(a)(3)(A-M)).

Sevilleta NWR was established in 1973 for "incidental fish and wildlife-oriented recreational development", "the protection of natural resources", and "the conservation of endangered species or threatened species (Refuge Recreation Act (16 U.S.C. § 460k-1), as amended). It is intended "... for the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. § 742f(a)(4) "... for the benefit of the Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act of 1956) and "... to preserve and enhance the integrity and the natural character of the ecosystems of the above property by creating a wildlife refuge managed as nearly as possible in its natural state, employing only those management tools and techniques that are consistent with the maintenance of a natural ecological process" (Sevilleta NWR Warranty Deed, dated Dec. 28, 1973).

The management of the Sevilleta NWR is also guided by the Comprehensive Conservation Plan (CCP). This document identifies "preserving and restoring habitats to their natural condition" including the "aggressive removal of non-native [plants and animals]" as management priorities (Sevilleta NWR CCP 2000). The refuge has the legal authority to remove horses in compliance with the above documents as they are not native to the refuge, were released onto the property within the past two decades, and cause significant ecological damage to the refuge.

1.2 Proposed Action

The Service is proposing to gather and remove the feral horses that currently inhabit Sevilleta NWR. The refuge would construct corrals (see Appendix E) and lure the horses into them with

bait. Once captured, custody of the horses will be transferred to horse rescue organizations, and any horses those organizations are unable to take would be transported to a holding pen from which they could be sold. The bait will most likely be a water source, but could include a salt lick, hay, or other treat.

A proposed action is an initial proposal and may evolve during the development of alternatives, the impact analysis and public involvement. This EA may determine that there are other, better or less impactful ways to address the purpose and need and may become the preferred alternative. The proposed action and alternatives may change during the NEPA process as the agency refines its proposal and gathers feedback from the public, federally recognized tribes and tribal entities and other agencies or organizations. Therefore, the final action may be different from the originally identified preferred alternative and will be finalized at the conclusion of the public comment period after the incorporation of substantive comments. A decision to implement a proposed action will not be made until the environmental review process is complete.

1.3 Purpose and Need for Action

The purpose of the proposed action is to remove horses in an effective and humane manner to halt damage done by horses to sensitive refuge habitats including riparian areas, desert water sources, and uplands.

The proposed action is needed to fulfill the establishment purposes of the Sevilleta NWR and comply with agency guidance, which both direct the refuge to preserve natural resources and maintain ecological integrity. The horses on the refuge cause damage in the form of overgrazing, competing for water and resources with native and threatened and endangered species, and degrading vegetation (see Chapter 4 for more information). Many of the horses on the refuge are in poor body condition and they receive no farrier or veterinary care leading to poor health and a low quality of life. Also, horses could potentially be a reservoir for diseases and parasites, such as new world screwworm, that can spread to and have adverse effects on native species. The number of horses will grow as they continue to reproduce, exacerbating these negative effects.

The horses on the Sevilleta NWR are feral, not wild, and are therefore not subject to protections under the 1971 Wild Free-Roaming Horses and Burros Act. They are a result of a local nearby landowner releasing them within the last 20 years as reported by several neighboring landowners. The individual who released the animals has since passed away and property has been sold (J. Sanchez and M. Chavez, personal communication, 2024). The horses relatively tame demeanor and willingness to approach vehicles demonstrates their domestic past. One of the horses has been documented wearing tack (See Appendix A). Hence, the horses should be considered feral rather than wild. Feral livestock lack protection under state or federal law.

Chapter 2: Public Involvement, Coordination and Consultation

2.1 Public Involvement

This draft EA will be available for public review and comment for 30 days from August 19, 2026 to September 17, 2026. Members of the public will be notified of the availability of the draft documents by postings at the refuge visitor center, on refuge social media, and on the refuge website. The draft document will be made available at the Sevilleta NWR visitor center (40 Refuge Rd, San Acacia, NM 87831), via email (R2plancomments@fws.gov) and can be downloaded from the refuge website (https://www.fws.gov/refuge/sevilleta). For access to the document in an alternative format contact the refuge. Comments may be submitted in writing via email or by mail (PO Box 1248, Socorro, NM 87801). Any comments, concerns, suggestions or other feedback will be incorporated into the final EA if a substantive response is required.

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. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Chapter 3: Alternatives

3.1 Decision Framework

The Regional Director in Region 2 of the Service will make two decisions based on this EA once the review process is complete. They will: (1) select an alternative for the refuge, and (2) determine if the selected alternative is a major federal action that would significantly affect the quality of the human and/or natural environment, and therefore, require the preparation of an environmental impact statement.

Alternatives

Alternative A – No Horse Removal – No Action Alternative

Under the No Action Alternative, gathering and removal of feral horses would not occur. There would continue to be no active management to control the population size of the horses or their distribution on the refuge. The horses would continue to live on the refuge without veterinary care. Horse activity and populations would remain checked only by natural forces.

Alternative B – Horse Removal – Preferred Alternative

Under Alternative B, horses would be gathered and removed from the refuge using baited corrals. Corral structures would be temporarily installed for the duration of the gather and removed once it is completed. Bait would consist of an attractant such as a salt lick, protein tub, water, or hay. If bait is ineffective at luring horses into the corral, mounted wranglers and dogs may also be used to herd horses into the corral. Once all the members of the targeted group of horses are inside the corral, custody would be transferred to horse rescue organizations, and they will be transported off refuge. Horses will be inspected for brands by the New Mexico

Livestock Board (NMLB) and transferred to the owner if they have one. A veterinarian will be on call during horse capture efforts to tend to any horses in need of medical attention, and the capture plan will undergo an internal veterinary review to ensure it meets animal welfare standards. Horses that are grievously injured, lame, in extremely poor health, or trespassing on to the refuge subsequent to completion of removal efforts may be subject to euthanasia. However, all available resources will be utilized to safely capture and remove the horses prior to such action.

Mitigation Measures

- Hay used to bait horses will be weed-free.
- Gather sites will be surveyed and the State Historic Preservation Officer will write a letter of concurrence certifying there is no threat to archaeological or historical resources before construction of a corral.
- Corral structures will be temporary and removed following gather completion.
- Gather sites would be returned to their natural states post-gather.

Monitoring Applicable to All Alternatives

Monitoring of horses on the Sevilleta NWR are already underway. Since September of 2024, the refuge has collaborated with the New Mexico Department of Game and Fish (NMDGF) to conduct aerial survey flights to estimate the populations of ungulates on the refuge. Monitoring horse populations and activity under all alternatives would consist of several different methods used in tandem, including camera trapping, aerial surveys, road transects, and anecdotal observations. Camera traps have been used across the Refuge for seventeen years and would continue to be utilized to monitor horse activity. Finally, observations of horses on the refuge have been collected and entered into a collaborative ArcGIS map created in July 2024 which would be used indefinitely should no action be taken, or until all horses are removed under Alternative B.

Chapter 4: Affected Environment and Environmental Consequences

This section is organized by affected resource categories. Each affected resource discusses both (1) the existing environmental and socioeconomic baseline 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(i)). The impact analysis directly follows the affected environment description for a resource and is organized by alternative.

The impact analysis will evaluate a variety of criteria, as defined below, to describe the context and intensity of impacts on affected resources. The Council on Environmental Quality does not require the use of these terms, however, they are commonly used in NEPA documents and will be referenced in the subsequent sections.

Impact analysis criteria and terminology:

- Negative effects: harmful or detrimental effect to the resource (40 CFR 1501.3, 1508.1(i))
- Beneficial effects: positive effect to the resource (40 CFR 1501.3, 1508.1(i))
- Reasonably foreseeable 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(i))
- Direct effects: caused by the action and occur at the same time and place (40 CFR 1508.1(i))
- Irreversible: unable to be undone or altered
- Irretrievable: unable to regain, recover or repair
- Less than significant: effects are detectable but localized, minor and short-term
- Major: effects are significant, readily detectable and would cause a substantive decline or increase in the resource
- Minor: effects are detectable but insignificant and would not affect the population or resources on a large-scale
- Moderate: effects are negligible, readily detectable and may have some temporary effects on the population or resources on a large-scale but would not cause a substantive decline or increase in the resource
- Negligible: resource is slightly affected but the impact is so minimal that effects are not detectable or may not be observable
- No effect: resources would not be affected and there are no impacts
- Short-term effects: occurring in or relating to a relatively short period of time (40 CFR 1501.3)
- Significant: effects are readily detectable and obvious, localized or regional, major and long-term
- Long-term effects: occurring in or relating to a relatively long period of time (40 CFR 1501.3)
- Unavoidable: unable to be prevented or ignored; inevitable

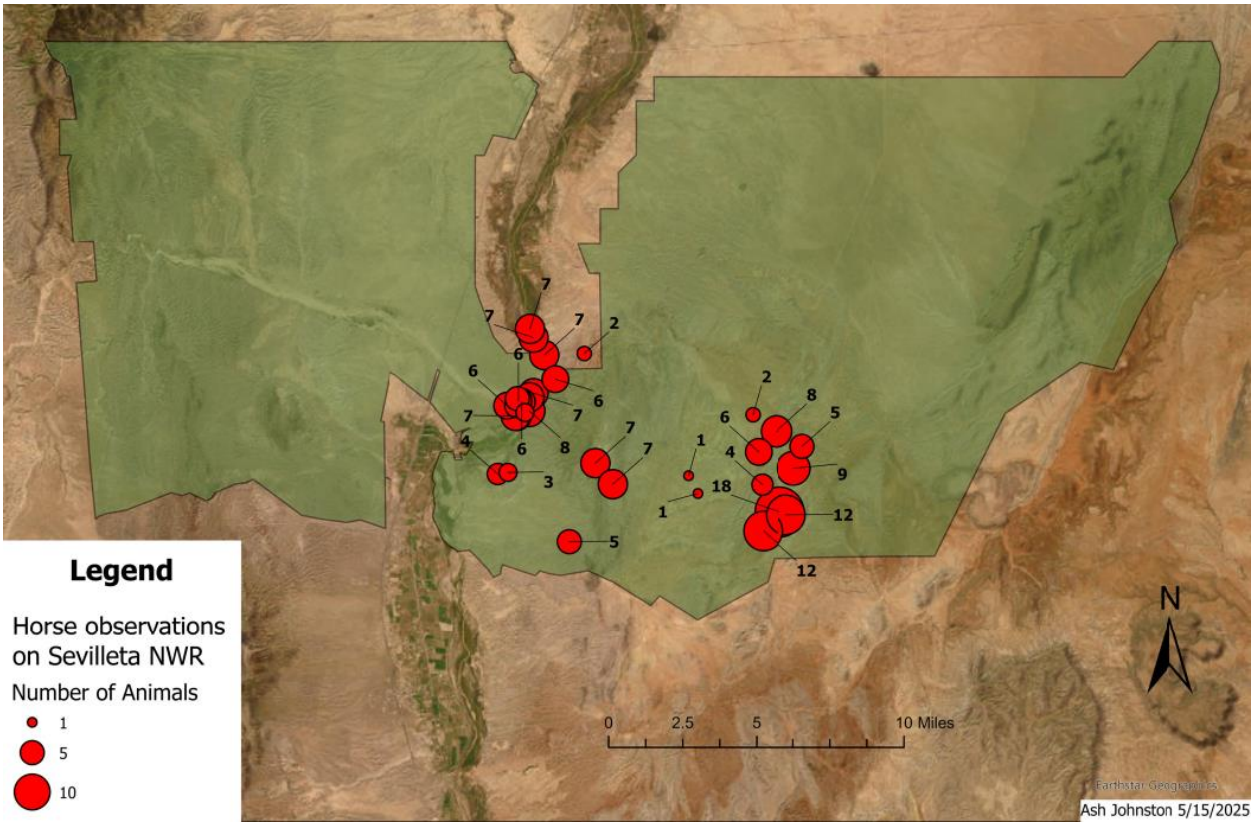
Impacts that are speculative (i.e., there is a remote possibility that the impact would occur, but no meaningful information exists on which to base a prediction) or indefinite will not be included (43 CFR 46.30). If a resource is not expected to be affected, a brief justification will be provided as to why it was dismissed. For a list of resources considered but removed from analysis, see Appendix B.

4.1 General Description of Affected Environmental Applicable to All Affected Resources

Sevilleta NWR is located near Socorro, New Mexico. It encompasses 228,770 acres (357 square miles) of diverse and rich wildlife habitat bisected by the Rio Grande and runs from the Sierra Ladrones in the west to Los Piños Mountains in the east. Elevation on the refuge ranges from 4,430 feet at the Rio Grande to 8,953 feet at Ladron Peak. Five different biomes intersect within

the refuge: Piñon-Juniper Woodland, Chihuahuan Desert, Great Plains Grassland, Colorado Plateau Shrub-Steppe, and Rio Grande Bosque. The refuge has a dry, temperate, semi-arid climate typical of New Mexico.

Horses inhabit the eastern half of the refuge and are known to inhabit all five biomes. Below is a map of the refuge that depicts live horse sightings as of May 2025.



The proposed horse removal would occur within the wetland areas adjacent to the Rio Grande and in upland areas near water sources where horses congregate.

The refuge's wetlands host critical habitat for the Endangered Species Act (ESA) listed southwestern willow flycatcher (*E. traillii extimus*), Rio Grande silvery minnow (*H. amarus*), and yellow-billed cuckoo (*C. americanus*). Additionally, the refuge intensively manages the wetlands to provide food for waterfowl and migratory birds. This area is one of the few on the refuge open to the public and is used recreationally throughout the year.

Upland areas on the refuge are generally pristine with few invasive plant species. Numerous natural and artificial water sources occur across this landscape, providing a critical resource to wildlife. The refuge's cultural resources include archaeological and historic resources dating from as old as 5,000 years ago. Several roads traverse these areas of the refuge.

The refuge is sensitive to impacts from alterations in long-term weather patterns. Potential impacts to the refuge include reductions in surface water and the productivity of plants (Archer

and Predick, 2008, Miller et al., 2021), and increased wildfire frequency (Abatzoglou and Kolden, 2011).

4.2 Natural Resources

Habitat and Vegetation: Affected Environment

Feral horse grazing reduces vegetation height and increases bare ground in wetland areas (Boyd et al. 2017). Horses degrade the habitat quality in upland water sources by urinating and defecating in or near the water. Areas around water sources, and the trails leading to and from water sources, experience greater amounts of horse activity leading to soil compaction and decreased vegetation. Additionally, horses overgraze across upland areas, facilitating the spread of invasive species and changing the structure of vegetation communities (King et al., 2019, Root et al., 2020) as well as contributing to grassland decline (Yanoff and Muldavin, 2008). Grazing also reduces biocrust, increasing the potential for soil erosion (Gao et al., 2020).

Habitat and Vegetation: Environmental Consequences

Alternative A

The impacts of horses on riparian and upland areas would continue to accumulate, degrading habitat and further reducing the quality of and access to upland water sources, including natural springs, and surrounding areas. Wildlife species dependent on degraded habitats may decline and locally unique species in upland areas may be lost. Additionally, problematic invasive plants such as downy brome (*Bromus tectorum*), yellow bluestem (*Bothriochloa ischaemum*), Russian thistle (*Salsola tragus*), and perennial pepperweed (*Lepidium latifolium*) will invade areas disturbed by horses.

Alternative B

Riparian and upland areas would be released from the pressures of horse activity. The habitat of listed species would no longer be threatened by vegetation loss. Upland water sources would be more accessible for native wildlife and have improved soil, water, and vegetation quality. Ecosystems refuge-wide would return to a more natural state.

Wetlands: Affected Environment

The refuge has five wetland subunits which are intensively managed to provide food for wintering waterfowl and to provide critical habitat for the yellow-billed cuckoo (*Coccyzus americanus*), Southwestern willow flycatcher (*Empidonax traillii extimus*), and the Rio Grande silvery minnow (*Hybognathus amarus*). Feral horses inhabit the wetlands and have been documented consuming a large portion of the annual plants intended to support waterbirds.

Wetlands: Environmental Consequences

Alternative A

Horses will continue to consume food intended for waterbirds, impeding the refuge's ability to meet its goals of providing habitat for these species. This may lead to migratory birds being

unable to sustain themselves on the refuge and skipping over the area, resulting in fewer recreational opportunities of lesser quality for the public.

Alternative B

Migratory fowl will be attracted by an increased availability of food, allowing the refuge to support more waterfowl and recreational opportunities. The water quality of the wetlands will recover, enhancing vegetation growth throughout the area and benefitting numerous other species of wildlife.

Vegetation of special management concern: Affected Environment

Several species of state-listed rare and imperiled plants are present on the refuge. These plants and their respective sensitivity ranking in parentheses include *Silene plankii* (S2/G2); *Hymenoxys brachyactis* (S3/G3); *Mentzelia humilis* (S1S2/G4T1T2); *Sphaeralcea procera* (SH/GH); *Sphaeralcea wrightii* (S3/G4); and *Amsonia fugatei* (S1/G1) (New Mexico Rare Plants, 2025). Rankings are based off the New Mexico Rare Plant List G1 = Globally Critically Imperiled G2 = Globally Imperiled G3 = Globally Vulnerable S1 = Critically Imperiled Statewide S2 = Imperiled Statewide S3 = Vulnerable Statewide.

Vegetation of special management concern: Environmental Consequences

Alternative A

Feral horses will continue to harm the environment of the refuge in the manners described previously. *Silene plankii* grows on cliffs and rocky outcroppings (New Mexico Rare Plants, 2025); this habitat type can be found at natural springs on the refuge that also attract horses. It is possible that horses on the refuge are coming into contact with this plant and may be grazing or trampling them and disturbing their habitat. *Hymenoxys brachyactis* occurs in piñon-juniper woodland (New Mexico Rare Plants, 2025) which can be found on the refuge; when horses encounter these plants they may graze or trample them and disturb their habitat. *Mentzelia humilis* grows in rocky gypsum soil (New Mexico Rare Plants, 2025); horse may encounter these plants on the refuge potentially grazing or trampling them and disturbing the soil in which they grow. *Sphaeralcea procera* may be conspecific with *Sphaeralcea polychroma* (New Mexico Rare Plants, 2025), which is found on the refuge. *Sphaeralcea polychroma* maybe trampled or grazed by horses where it occurs on the refuge. *Sphaeralcea wrightii* occurs on rocky slopes in desert scrub and grassland (New Mexico Rare Plants, 2025) horses may be grazing and trampling it as well as disturbing the rocky soil it depends on. *Amsonia fugatei* grows in limy conglomerate ridges and associated outwash slopes in desert scrub (New Mexico Rare Plants, 2025); it is not palatable to livestock but may be trampled by them and horse activity can disturb the areas where it grows.

Alternative B

Removal of horses from the refuge removes any risk that these plants will be grazed or trampled. They will not be at risk from soil disturbance caused by horse activity. Pressures from feral horses on the environment of the refuge will be lifted, mitigating the degradation of the

Refuge's ecosystems and improving the quality of these species' habitats. Horse removal efforts (corral construction, horse movement, road maintenance and traffic) would not be carried out in the vicinity of anywhere these plants are found on the refuge.

Fish and Wildlife Species: Affected Environment

Feral horses compete with native ungulates for water. Horse presence at water sources deters several species including bighorn sheep (Ostermann-Kelm et al., 2008), pronghorn, mule deer (Hall et al., 2018) and elk (Perry et al., 2015). Wildlife communities are also less diverse in areas where horses are present compared to where they are not (Hall et al., 2016). Water sources in upland areas may host endemic invertebrate or plant species and are currently receiving research to investigate these communities. Waterfowl depend on annual plants and invertebrates in the refuge's wetland areas to sustain themselves throughout the winter months.

Fish and Wildlife Species: Environmental Consequences

Alternative A

Feral horses would continue to dominate water sources, lowering the wildlife diversity around such areas and preventing other species from accessing water. Horses could act as a disease and parasite reservoir, spreading diseases to native wildlife. Wildlife burrows may also be trampled by horses. Horses would continue to consume annual plants in the wetland areas, decreasing habitat for waterfowl and reducing support for migratory birds. This has the potential to reduce the abundance and frequency of waterfowl and bird visits to the refuge.

Alternative B

The quality and accessibility of water sources would improve for native ungulates. Diversity of wildlife around these areas would rebound. Wildlife burrows would not be threatened by horse activity. Waterfowl would enjoy increased food availability, potentially attracting them to the refuge more frequently and in greater numbers.

Candidate/Threatened/Endangered Species & Critical Habitat: Affected Environment

The refuge hosts populations of and Critical Habitat for the federally listed yellow-billed cuckoo (*Coccyzus americanus*), Southwestern willow flycatcher (*Empidonax traillii extimus*), and the Rio Grande silvery minnow (*Hybognathus amarus*). It also supports a captive population of translocated Bolson tortoises (*Gopherus flavomarginatus*). Information on other species not affected can be found in Appendixes C and D. The vegetation and waters that comprise Critical Habitat are threatened by horse activity.

The-yellow billed cuckoo is a federally threatened species that depends on early succession riparian habitats. They nest in dense vegetation and require adequate canopy cover (Wohner et al., 2020). The loss and fragmentation of its habitat due to agriculture, overgrazing, and changes to the stream flow have contributed to its decline (Wohner et al., 2020). Its habitat is further degraded by the channelization and damming of rivers which reduces the frequency of the floods required to create early succession riparian areas (Wohner et al., 2020).

Like the yellow-billed cuckoo the Southwestern willow flycatcher, a federally endangered subspecies, also prefers riparian habitats with dense understories (Wohner et al., 2020). It has been known to nest in along the Rio Grande as well as other streams and wetlands in New Mexico. They primarily nest in dense riparian vegetation (Hatten & Paradzick, 2003). The loss of its riparian habitat is the primary reason for its decline (Hatten & Paradzick, 2003).

The Rio Grande silvery minnow, which has been federally listed as endangered since 1994, can be found in small portion of its former range. The minnows prefer water with a moderate to low current, and mud, gravel, or sand-silt substrate; they tend to be found away from the main current or channel where the water is too deep and fast (Middle Rio Grande Endangered Species Collaborative Program, 2018). Their decline has been attributed to river channelization and decreased flooding leading to reduced nursery habitat.

Bolson tortoises, which have been listed as endangered since 1979, are being reintroduced to the refuge. Threats to their population include human predation and habitat loss. They are known to avoid areas where weeds form dense monocultures (Becerra-López et al., 2017). Degraded habitat quality and changes in vegetation cover causes tortoises to abandon their burrows (Becerra-López et al., 2017). Tortoises on the refuge are currently limited to release pens, but their future survival on the refuge depends on high quality habitat. As well as affecting vegetation cover, horses can also potentially trample tortoise burrows causing them to collapse.

Candidate/Threatened/Endangered Species & Critical Habitat: Environmental Consequences

Alternative A

Southwestern willow flycatchers and yellow-billed cuckoos both rely on dense vegetation for nesting; feral horse grazing reduces vegetation height and increases bare ground in wetland areas (Boyd et al. 2017). Horse activity would continue to alter water quality contributing to habitat degradation (Krall & Roni, 2023). Continued grazing by horses would reduce the density of vegetation in riparian areas, reducing nesting habitat for these species. Trails created by horses through dense vegetation can also increase the risk of predation for these species. Horse activity and grazing in Rio Grande silvery minnow nursery habitat will continue to degrade that habitat by removing protective vegetation and increasing turbidity. Bolson tortoises would continue to be at risk of having their burrows trampled by horses. Horses can spread and encourage the growth of invasive plants, decreasing the quality of forage for Bolson tortoises. Horses would continue to compete for forage with Bolson tortoises potentially preventing a successful population of Bolson tortoises from being established on the refuge. Overgrazing from livestock is one of the threats that led the Bolson tortoises to be listed under the Endangered Species Act.

Alternative B

Removal of grazing would lead to an increase in riparian vegetation and canopy cover (Krall & Roni, 2023) creating more nesting areas for Southwestern willow flycatchers and yellow-billed

cuckoos. The increased water quality and vegetation would contribute to an overall increase in habitat quality in riparian areas. Horse removal would not take place in the wetlands where these birds have been known to occur during their breeding season (April 15 through September 1).

Reduction in grazing near streams would improve water quality in backwaters of the Rio Grande increasing habitat for Rio Grande silvery minnows (Krall & Roni, 2023). Horse removal will not take place where the minnows occur and will not have a negative effect on their habitat.

The vegetation in Bolson tortoise habitat would no longer be altered or reduced by grazing. Tortoises would no longer be at risk of having their burrows trampled by horses. Tortoises are currently only located within soft release pens; horse removal efforts will not take place near the pens and will not negatively affect the tortoises currently on the refuge.

Water Resources: Affected Environment

The refuge's water resources consist of a portion of the Rio Grande and 34 natural and 38 artificial water sources in upland areas. Livestock grazing near waterways leads to decreased water quality, increased bank erosion and decreased bank stability (Krall & Roni, 2023). Livestock grazing also causes soil compaction which prevents water from absorbing into the ground leading to lowered water tables and greater runoff (Davies and Boyd, 2019). Increased runoff contributes to increased erosion.

Alternative A

Horses will continue to disturb water systems on the refuge. Water sources are areas of high horse activity which contributes to soil compaction, greater runoff, and potentially lowered water tables (Davies and Boyd, 2019). Horses will continue to contribute to decreased water quality, increased erosion, and decreased bank stability.

Alternative B

With less soil compaction, runoff and erosion would decrease. That, along with improvements to bank stability would improve water quality overall as horses are removed.

4.3 Cultural and Historic Resources: Affected Environment

Cultural resources are tangible and intangible evidence of cultural heritage and includes archaeological sites, structures, buildings, artifacts, objects, landscapes, traditions, and places important for scientific, religious, or historical reasons. The Sevilleta NWR is situated at an important intersection of the archaeological and historical cultural traditions of the Middle Rio Grande Valley. The cultural history of the region is typically divided by archaeologists into five general temporal periods: Paleoindian (ca. 10,000 – 6,000 BCE), Archaic (ca. 6,000 – 200 CE), Ceramic/Ancestral Puebloan (ca. 200 – 1541 CE), Spanish Colonial (1541-1821 CE), and Historic (1821 CE - present).

Less than two percent of the entire Sevilleta NWR has been subject to intensive cultural resources inventory; however, resources from every time period have been documented due to a combination of academic, research, volunteer, and compliance-driven cultural resources studies. The sites include Paleoindian period rock shelters, Archaic period camp sites and artifact scatters, Ancestral Puebloan pueblos, isolated rooms, structures, granaries, artifact scatters, and petroglyphs, and Spanish Colonial to Historic period trails (including segments of the *Camino Real de Tierra Adentro*), fences, one-room sheep camp structures, ranching sites, windmills, and historic artifact scatters.

Cultural resources can be adversely affected by ground disturbance (new construction, off-road vehicular travel, digging, etc.), animal congregation, looting, vandalism, increased visitation, and erosion. The area of potential effect for the proposed action is equal to 12.33 acres and includes the footprint of potential corral(s) plus a 30-meter (~100-foot) buffer around each proposed corral location. A Class III cultural resources inventory was completed for six of the 12.33 acres of the area of potential effect in July 2025 (Sanford 2025). One corral location was excluded from inventory because it is located within a moist soil unit within the Rio Grande floodplain and is cyclically tilled and inundated. The inventory resulted in the documentation of two Historic period archaeological sites (LA207158, LA207159) and one Historic period isolated occurrence. The documented sites were determined not eligible for listing in the National Register of Historic Places. The New Mexico State Historic Preservation Officer concurred with the eligibility determinations and a finding of no historic properties affected on August 6, 2025 (HPD Log 126020).

Cultural and Historical Resources: Environmental Consequences

Alternative A

Under the no action alternative, feral horse congregation around natural and artificial water sources would continue. Animal congregation has the potential for adverse direct and cumulative impacts at natural and artificial water sources throughout the refuge due to increased soil erosion and trampling/breakage and displacement of artifacts and features, if present.

Alternative B

Under the proposed action, new temporary corral construction and animal congregation at artificial water sources has the potential for adverse direct impacts similar to Alternative A but confined within a 12.33-acre area of potential effect. A cultural resource inventory documented no eligible cultural resources in the area of potential effect. The proposed action will have no adverse effect on historic properties.

4.4 Local Economy: Affected Environment

The Sevilleta NWR is entirely within Socorro County and is near the border of Valencia County. The two largest communities near the refuge are the rural cities of Belen (Valencia County) and Socorro (Socorro County). Both counties have a lower per capita income than the rest of New

Mexico. Prominent industries in the area include manufacturing, agriculture, education, and government work (Headwaters 2025).

Local Economy: Environmental Consequences

Alternative A

Allowing horses to remain on the Refuge would not impact local economies.

Alternative B

Removal of horses from the refuge and transferring them to horse rescues likely would not have an impact on local economies; selling them might provide a small stimulus to the agricultural sector of the local economy.

4.5 Reasonably Foreseeable Effects

Removal of horses from the refuge poses numerous benefits when considered alongside the effects of other actions currently happening in the region. The Bureau of Land Management (BLM) operates the Bordo Atravesado Herd Management Area (HMA), approximately ten miles from the refuge. The mares on the HMA are fertility-controlled, and there are 40 horses inhabiting the HMA as of December 2024 (personal communication). Removing horses from Sevilleta NWR in addition to the BLM's removal would create a greater overall benefit to the broader ecosystem than either action could achieve on its own.

Removing horses would temporarily, albeit minimally, add to the ground disturbance that is already present on the refuge. The proposed alternative would require use of preexisting roads to access corral locations and involve penetrating the ground with stakes to support the temporary corral structures for the duration of gathers. However, we anticipate no lasting impacts of this disturbance on corral areas.

Conversely, under Alternative A (no removal), natural resources on the refuge would continue to be degraded under the effects of horse activity. Horses would continue to decrease the quality of soil, water, and floral and faunal communities, resulting in additive loss of ecosystem integrity across the refuge. The refuge would lose out on a key opportunity to enhance overall environmental health in collaboration with interagency partners.

4.7 Summary of Analysis

Alternative A – No Horse Removal – No Action Alternative

Under the No Action Alternative (Alternative A), no management to control horse populations or remove them from the refuge would occur.

The main concern for environmental impact under this alternative is the long-term damage to the refuge engendered by horses. The sustainability of the refuge's ecosystems is jeopardized by horse presence and activity. Allowing the horses to remain on the refuge is also inconsistent with Refuge guiding documents, such as the Warrant Deed which dictates that the refuge be managed in its natural state (Warranty Deed for Campbell Family Foundation and The Nature

Conservancy 1973) and Service policy, including the mission of the NWRS. Horse populations would continue to be monitored.

Alternative B – Horse Removal – Preferred Alternative

Under the Preferred Alternative (Horse Removal), management actions would be implemented to remove horses from the refuge. The refuge, in collaboration with partners including the NMDGF, BLM, NMLB, and horse rescue organizations, would gather horses using temporary corral structures with bait and subsequently transfer custody to horse rescues. Every reasonable effort will be made to ensure that removal is undertaken in an ethical and humane manner. Corral structures would be removed after a short period of time (approximately one month) and have no lasting effects on the areas where they were installed. Prior to construction, areas would be surveyed to ensure no rare species, or cultural or historical artifacts would be disturbed. Hay used to bait horses would be weed-free.

Removal of horses would benefit the refuge in many ways. Numerous studies have demonstrated the positive effects of removing livestock from wild landscapes. Removal of horses would increase habitat and water quality (Krall & Roni, 2023). Vegetation would be able to increase with the reduced grazing pressure (Boyd et al. 2017; Krall & Roni, 2023) leading better habitat for species such as the Southwestern willow flycatcher, yellow-billed cuckoo, and multiple species of waterfowl. Native species would no longer compete with or be deterred from water sources by horses (Ostermann-Kelm et al., 2008; Hall et al., 2018; Perry et al., 2015). The horses would no longer threaten rare plants growing the refuge. The increased water quality in the absence of horse activity would benefit native species. Horses would no longer pose a risk to cultural and archeological resources found on the refuge. Refuge landscapes are expected to revitalize following removal as grazing pressure and soil disturbance would be reduced (Krall & Roni, 2023). Furthermore, the refuge's guiding documents, as well as Service policy and the mission of the NWRS, direct the refuge to remove horses from the landscape to maintain its natural ecosystem.

Chapter 5: List of Preparers and Sources

5.1 List of Preparers

Samuel Vassallo – Refuge Biologist
Ash Johnston – Invasive Species Specialist
Joel Miner – Conservation Planner
Jeff Sanchez – Refuge Manager

5.2 List of Sources Consulted

The following federal, state, county and local agencies, non-governmental organizations, Service personnel and other individuals were consulted during the EA drafting and review process.

Bureau of Land Management, Socorro Field Office

U. S. Fish and Wildlife Service, New Mexico Ecological Services Field Office

U. S. Fish and Wildlife Service, New Mexico Invasive Species Strike Team

New Mexico Livestock Board

New Mexico Department of Wildlife

The Horse Shelter

Amigos de la Sevilleta

Neighboring Landowners

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Appendix A: Figures

Appendix B: Resources Considered but Removed from Analysis

Resource	**Justification for removal**
Administration	No impact
Aesthetics, viewsheds, and visual resources	No impact
Air quality	No impact
Climate change	No impact
Environmental Justice	No impact
Floodplains	Effects evaluated under Wetlands
Geology and Soils	No impact
Land use	No impact
Management and Operations	No impact
Soundscape	No impact
Special land status designations	Refuge does not have special land status designations
Special status species	Effects covered under Habitat and Vegetation, Wetlands, Vegetation of special management concern, Fish and Wildlife Species, and Candidate, Threatened and Endangered Species and Critical Habitat
Visitor use and experience	Effects covered under Wetlands

Appendix C: IPaC Species Not Negatively Impacted

The Service Information for Planning and Consultation (IPaC) planning tool identifies listed species on the refuge. The official list of threatened and endangered species that may occur in the proposed project area or may be affected by the proposed project can be found under the project name/code: Sevilleta NWR Horse Removal/ 2026-0080887. An intra-service section 7 biological evaluation was performed for the listed species with a potential to be affected by the proposed action.

Listed Species not included in the Section 7 consultation

- Mexican Wolf – Rarely inhabit the refuge and is not impacted by horse activity.
- New Mexico Jumping Mouse – Not known to occur on the refuge. Possible habitat could be created or improved to attract them into the wetlands along the Rio Grande at a future date.
- Mexican Spotted Owl – Not known to occur on the refuge. It is possible that some inhabit the mountainous forested terrain of the refuge.
- Northern Aplomado Falcon – Not known to occur on the refuge.
- Piping Plover – Not known to occur on the refuge. A stray bird may very rarely land on the refuge during its migration.
- Pecos Sunflower – Not known to occur on the refuge but does occur directly north of the refuge in wetland areas. May benefit from horse removal as horses may roam into this area.

Candidate/Proposed Species not included in the Section 7 consultation

- Suckley's Cuckoo Bumble – Not known to occur on the refuge**.**

Appendix D: BISON-M Species Not Negatively Impacted

The Biota Information System of New Mexico (BISON-M) is a database containing species accounts of all vertebrate and many invertebrate species in New Mexico. We have used this database to collect a list of species of concern, including state-threatened or endangered species, species endemic to New Mexico, and species of greatest conservation need (SGCN) that occur in Socorro County where the refuge is located.

The list includes 91 species which we do not expect to be negatively impacted by Alternative B: Horse Removal. This is because they do not occur on the refuge, occur extremely rarely, or have life histories that are not influenced by the presence of horses. In fact, removal of horses from the refuge will likely result in slight positive impacts for these species.

Amphibians (4)

- Northern Leopard Frog (*Lithobates pipiens*); SGCN
- Chiricahua Leopard Frog (*Lithobates chiricahuensis*); SGCN
- Boreal Chorus Frog (*Pseudacris maculata*); SGCN
- Arizona Toad (*Anaxyrus microscaphus microscaphus*); SGCN

Birds (56)

- Eared Grebe (*Podiceps nigricollis californicus*); SGCN
- Clark's Grebe (*Aechmophorus clarkia*); SGCN
- Common Ground Dove (*Columbina passerina pallescens*); Endangered, SGCN
- Yellow-billed Cuckoo (*Coccyzus americanus*); SGCN
- Common Nighthawk (*Chordeiles minor*); SGCN
- Mexican Whip-poor-will (*Antrostomus arizonae arizonae*); SGCN
- Violet-crowned Hummingbird (*Leucolia violiceps* ellioti); Threatened, SGCN
- Piping Plover (*Charadrius melodus circumcinctus*); Threatened
- Mountain Plover (*Charadrius montanus*); SGCN
- Snowy Plover (*Charadrius nivosus*); SGCN
- Long-billed Curlew (*Numenius americanus americanus*); SGCN
- Least Tern (*Sternula antillarum athalassos*); Endangered, SGCN
- Neotropic Cormorant (*Phalacrocorax brasilianus*); SGCN
- Brown Pelican (*Pelecanus occidentalis carolinensis*); Endangered
- American Bittern (*Botaurus lentiginosus*); SGCN
- Bald Eagle (*Haliaeetus leucocephalus*); SGCN
- Common Black Hawk (*Buteogallus anthracinus anthracinus*); Threatened, SGCN
- Flammulated Owl (*Psiloscops flammeolus*); SGCN
- Elf Owl (*Micrathene whitneyi whitneyi*); SGCN
- Burrowing Owl (*Athene cunicularia hypugaea*); SGCN
- Mexican Spotted Owl (*Strix occidentalis lucida*); SGCN

- Lewis's Woodpecker (*Melanerpes lewis*); SGCN
- Red-headed Woodpecker (*Melanerpes erythrocephalus caurinus*); SGCN
- Williamson's Sapsucker (*Sphyrapicus thyroideus nataliae*); SGCN
- Aplomado Falcon (*Falco femoralis septentrionalis*); Endangered, SGCN
- Peregrine Falcon (*Falco peregrinus*); Threatened, SGCN
- Olive-sided Flycatcher (*Contopus cooperi*); SGCN
- Southwestern Willow Flycatcher (*Empidonax traillii extimus*); Endangered, SGCN
- Loggerhead Shrike (*Lanius ludovicianus*); SGCN
- Bell's Vireo (*Vireo bellii*); Threatened, SGCN
- Gray Vireo (*Vireo vicinior*); Threatened, SGCN
- Pinyon Jay (*Gymnorhinus cyanocephalus*); SGCN
- Clark's Nutcracker (*Nucifraga Columbiana*); SGCN
- Bank Swallow (*Riparia riparia riparia*); SGCN
- Juniper Titmouse (*Baeolophus ridgwayi*); SGCN
- Pygmy Nuthatch (*Sitta pygmaea melanotis*); SGCN
- Western Bluebird (*Sialia mexicana bairdi*); SGCN
- Mountain Bluebird (*Sialia currucoides*); SGCN
- Bendire's Thrasher (*Toxostoma bendirei*); SGCN
- Sprague's Pipit (*Anthus spragueii*); SGCN
- Evening Grosbeak (*Coccothraustes vespertinus*); SGCN
- Cassin's Finch (*Haemorhous cassinii*); SGCN
- Chestnut-collared Longspur (*Calcarius ornatus*); SGCN
- Thick-billed Longspur (*Rhynchophanes mccownii*); SGCN
- Cassin's Sparrow (*Peucaea cassinii*); SGCN
- Black-chinned Sparrow (*Spizella atrogularis evura*); SGCN
- Sagebrush Sparrow (*Artemisiospiza nevadensis*); SGCN
- Vesper Sparrow (*Pooecetes gramineus*); SGCN
- Baird's Sparrow (*Centronyx bairdii*); Threatened, SGCN
- Lucy's Warbler (*Leiothlypis luciae*); SGCN
- Virginia's Warbler (*Leiothlypis virginiae*); SGCN
- Grace's Warbler (*Setophaga graciae*); SGCN
- Black-throated Gray Warbler (*Setophaga nigrescens*); SGCN
- Red-faced Warbler (*Cardellina rubrifrons*); SGCN
- Painted Redstart (*Myioborus pictus pictus*); SGCN
- Varied Bunting (*Passerina versicolor*); Threatened, SGCN

Crustaceans (6)

- Bowman's Fairy Shrimp (*Streptocephalus thomasbowmani*); SGCN
- Beavertail Fairy Shrimp (*Thamnocephalus platyurus*); SGCN

- Mexican Clam Shrimp (*Cyzicus mexicanus*); SGCN
- Diversity Clam Shrimp (*Eulimnadia diversa*); SGCN
- Clam Shrimp (*Eulimnadia follisimilis*); SGCN
- Socorro Isopod (*Thermosphaeroma thermophilum*); Endangered, endemic, SGCN

Fish (5)

- Headwater Chub (*Gila nigra*); SGCN
- Rio Grande Chub (*Gila pandora*); SGCN
- Roundtail Chub (*Gila robusta*); Endangered, SGCN
- Rio Grande Silvery Minnow (*Hybognathus amarus*); Endangered, SGCN
- Rio Grande Sucker (*Catostomus plebeius*); SGCN

Lepidoptera; moths and butterflies (2)

- Organ Mountains Poling's Hairstreak (*Satyrium polingi organensis*); Endemic
- Socorro Chryxus Arctic (*Oeneis chryxus Socorro*); Endemic

Mammals (7)

- Pale Townsend's Big-eared Bat (*Corynorhinus townsendii pallescens*); SGCN
- Spotted Bat (*Euderma maculatum*); Threatened, SGCN
- Mexican Gray Wolf (*Canis lupus baileyi*); Endangered, SGCN
- New Mexico Jumping Mouse (*Zapus hudsonius luteus*); Endangered, SGCN
- Desert Pocket Gopher (*Geomys arenarius brevirostris*); Endemic
- Gunnison's prairie dog (*Cynomys gunnisoni*); SGCN
- Oscura Mountains Colorado Chipmunk (*Neotamias quadrivittatus oscuraensis*); Threatened, endemic, SGCN

Molluscs (4)

- Ovate Vertigo Snail (*Vertigo ovata*); Threatened, SGCN
- Chupadera Springsnail (*Pyrgulopsis chupaderae*); Endangered, endemic, SGCN
- Socorro Springsnail (*Pyrgulopsis Neomexicana*); Endemic, SGCN
- Alamosa Springsnail (*Pseudotryonia alamosae*); Endemic, SGCN

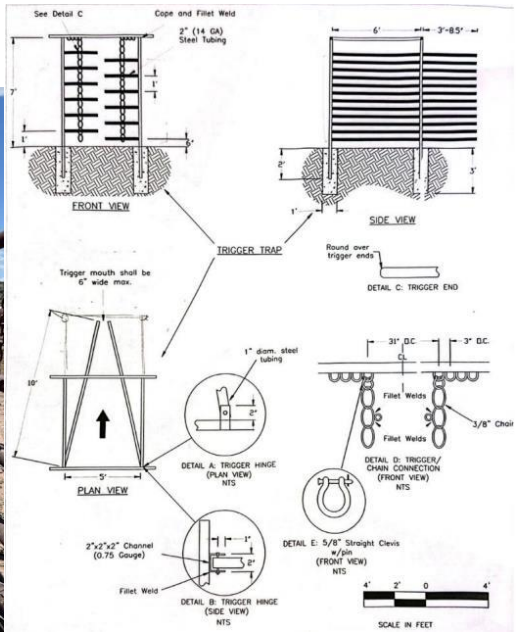
Reptiles (7)

- Western River Cooter (*Pseudemys gorzugi*); SGCN, threatened
- Big Bend Slider (*Trachemys gaigeae*); SGCN
- Sonoran Mud Turtle (*Kinosternon sonoriense sonoriense*); SGCN
- Woodland Striped Whiptail (*Aspidoscelis inornata junipera*); Endemic
- Plains Striped Whiptail (*Aspidoscelis inornata llanuras*); Endemic
- Banded Rock Rattlesnake (*Crotalus lepidus klauberi*); SGCN

- Western Massasauga (*Sistrurus tergeminus*); SGCN

Appendix E: Corral Structure and Design

The corral design involves portable siding and a one-way trap gate designed to allow horses entry into the corral while preventing their exit.



The photograph (left) and schematic (right) show the design of the trap gate.

The siding of the corral will be constructed of standard portable horse panels.