

National Park Service  
U.S. Department of the Interior

Great Sand Dunes National Park and Preserve  
Colorado



# Great Sand Dunes National Park and Preserve Ungulate Management Plan USFWS Abbreviated Final Environmental Impact Statement

June 2019



Estimated Lead Agency Total  
Costs Associated with Developing  
and Producing this EIS: \$850,000

**Ungulate Management Plan**  
**Abbreviated Final Environmental Impact Statement**  
**Great Sand Dunes National Park and Preserve**

Alamosa and Saguache Counties, Colorado

October 2018

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**Lead Agency:** National Park Service (NPS)

The combined General Management Plan (GMP) / Wilderness Study for the Great Sand Dunes National Park and Preserve (GRSA) was approved in 2007. The GMP concluded that the NPS should develop an elk management plan to address concerns of elk concentrations in GRSA. Currently there is an overconcentration of elk in the park and the wintering elk population on NPS lands is much higher than that which occurs on adjacent winter ranges. The GMP also addressed the potential future acquisition of the Medano Ranch from The Nature Conservancy (TNC) where TNC currently manages a bison herd, concluding that if additional bison habitat became available at some time in the future, the NPS could consider managing bison in the park.

As a result of the guidance in the GMP and the pending acquisition of the Medano Ranch, the NPS has prepared an Ungulate Management Plan / Draft Environmental Impact Statement (UMP/DEIS) to determine the appropriate future management of elk and bison in GRSA. The UMP/DEIS was available for public review and comment from April 13, 2018, to May 31, 2018, at [http://parkplanning.nps.gov/grsa\\_ungulates\\_deis](http://parkplanning.nps.gov/grsa_ungulates_deis) and public meetings were held on May 9, 2018 in Alamosa, Colorado and May 10, 2018 in Crestone, Colorado. The UMP/DEIS provided background information about conditions in and around GRSA and analyzed, in detail, environmental impacts on wetland vegetation communities, elk and bison, wilderness character, archeological resources, and socioeconomics (game damage) that would be expected from implementing each of the four alternatives for elk and bison management, including the no action alternative (i.e., continuation of current management practices) and the NPS preferred alternative (i.e., Alternative 3).

Because the comments received during the UMP/DEIS public comment period resulted in minor changes involving only factual corrections, the NPS has prepared this Abbreviated Final EIS for the Ungulate Management Plan (UMP/Abbreviated FEIS), consistent with regulations at 40 CFR 1503.4(c). The UMP/Abbreviated FEIS includes errata that capture text changes from the UMP/DEIS and responses to substantive public comments. A 30-day no-action period will follow the Environmental Protection Agency's Notice of Availability of the UMP/Abbreviated FEIS. After the 30-day period, a Record of Decision will be signed by the Regional Director of the Intermountain Region that will document the selected action that will become the Ungulate Management Plan. For further information, contact:

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## INTRODUCTION

The Department of the Interior (DOI), National Park Service (NPS), has prepared this Ungulate Management Plan / Abbreviated Final Environmental Impact Statement (UMP/Abbreviated FEIS) for the Great Sand Dunes National Park and Preserve (GRSA<sup>1</sup>). Substantive comments received on the UMP/Draft Environmental Impact Statement (UMP/DEIS), which is available at [https://parkplanning.nps.gov/grsa\\_ungulates\\_deis](https://parkplanning.nps.gov/grsa_ungulates_deis) and is hereby incorporated by reference, required only minor factual changes or explanations of why the comments did not warrant further response. Therefore, the attached errata sheets (Attachment A) and responses to substantive comments (Attachment B) are included herein as the UMP/Abbreviated FEIS.

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<sup>1</sup> Hereafter referred to as GRSA when referring to the park and preserve, Park when referring only to the Park, and Preserve, when referring only to the Preserve.



## ATTACHMENT A: ERRATA

### Summary

**Page i, Need for Action, fourth bullet** – the text is revised to read “*The Department of the Interior Bison Conservation Initiative (DOI 2008) and the National Park Service (NPS) Call to Action (Back Home on the Range)*, combined with additional information about bison and bison habitat in the San Luis Valley..”

**Page iii, Alternative 1 (No Action), first paragraph** – the text is revised to read “A *standalone elk management plan would be developed* under Alternative 1 (no-action) according to the 2007 GMP Record of Decision. Under this alternative, ~~there would be no active elk management and no new action would occur to manage impacts from elk, including the effects of elk herbivory.~~ TNC would continue to graze bison on the Medano Ranch until government acquisition and would be responsible for removing their bison and associated fencing prior to NPS acquisition of the Medano Ranch. The NPS would remove the current bison fencing on NPS lands.”

**Page iii, Alternative 3 (Preferred Alternative), third sentence** – text is revised to read “For the first 5-7 years after acquisition of the Medano Ranch, the NPS would seek to partner with TNC to manage *the existing bison conservation herd.*”

**Page iii, Alternative 4, last sentence** – the text is revised to read “*Bison would initially be managed on NPS land within the existing bison fence, yet the bison range could be expanded within the life of the plan.*”

**Page v (Table), Alternative 1, Impacts to Wetland Vegetation Communities** – the text is revised to read “Prior to the removal of bison from the Medano Ranch, current overconcentration of elk and bison would continue *until an elk management plan could be developed and implemented* and ecological conditions would likely worsen during that time.

Following removal of bison, the ecological condition of wetland vegetation communities could improve. However, elk use and overconcentration would continue (and could increase) *until an elk management plan could be developed and implemented* and impacts to wetland vegetation communities as a result of grazing and browsing, erosion and soil compaction, creation of game trails, introduction of invasive species, and alteration of height and structure in woody species dominated communities could worsen.”

**Page v (Table), Alternative 1, Impacts to Elk Population** – the text is revised to read “*Until a standalone elk management plan could be developed and implemented*, elk overconcentration and high levels of herbivory could continue in the absence of active elk management, likely resulting in continued habitat degradation and high levels of intraspecific competition in portions of their range, which can increase stress for individual elk and affect overall herd productivity and growth if conditions worsen over time.

Following removal of bison, the condition of habitat on the Medano Ranch could improve from reduced browsing pressure potentially providing more habitat and forage available for elk. However, elk concentration on the Medano Ranch could *continue to increase until an elk management plan could be developed and implemented and*, as a result, potentially offsetting any benefits.”

**Page vi (Table), Alternative 1, Impacts to Wilderness Character** – the text is revised to read “Unmanaged elk populations are consistent with the natural and untrammled values of wilderness. However, taking no action to actively manage the distribution of elk in the Park *in the interim while a standalone elk management plan is developed and implemented* could adversely impact the natural quality of wilderness character in those areas.

**Page vii (Table), Alternative 1, Impacts to Impacts to Game Damage Potential** – the text is revised to read “No actions to reduce the elk herd *until a standalone elk management plan could be developed and implemented* and the potential for the local elk population to increase once bison are removed from the Medano Ranch (due to reduced forage competition) could increase the potential for game damage.”

## **Chapter 1: Purpose and Need**

**Page 1, Project Background, second paragraph, third sentence** – the text is revised to read “TNC currently manages *a bison conservation herd* on this land (Figure 1).”

**Page 2, Figure 1** – Figure 1 has been revised to show the correct boundaries of the Rio Grande National Forest (see page A-5).

**Page 5, third bullet** – the text is revised to read “*The Department of the Interior Bison Conservation Initiative (DOI 2008) and the National Park Service (NPS) Call to Action (Back Home on the Range), combined with additional information about bison and bison habitat in the San Luis Valley..*”

**Page 6, Desired Conditions, third paragraph, last sentence** – the text is revised to read “Because of this, GRSA should support a diverse array of ecologically healthy ~~and minimally disturbed~~ wetland communities across the landscape.”

**Page 8, Wetland Vegetation, first paragraph, last sentence** – the text is revised to read “Impacts to these vegetation communities threaten the desired condition of GRSA supporting a diverse array of ecologically healthy ~~and minimally disturbed~~ wetland communities across the landscape.”

**Page 8, Wetland Vegetation, second paragraph, fifth sentence** – the text is revised to read “~~These behaviors can become a disturbance when it results in negative impacts from how and when ungulates use habitat. These disturbances might include~~ “*These behaviors can degrade wetland health when the amount and timing of ungulate use is excessive. These impacts might include...*”

**Page 8, Wetland Vegetation, second paragraph, seventh sentence** – replaced “disturbances” with “impacts”

**Page 12, Other Wildlife and Wildlife Habitat, second paragraph, second sentence** – the text is revised to read “Taking no action to reduce elk overuse of important wetland vegetation communities in the Park *until a standalone elk management plan could be developed and implemented* would likely reduce their desired condition.”

**Page 12, Other Wildlife and Wildlife Habitat, third paragraph, first sentence** – replaced “disturbances” with “degradation”

**Page 13, Other Wildlife and Wildlife Habitat, first paragraph, third sentence** – the text is revised to read “However, populations of other wildlife are expected to remain stable because these activities predominantly occur from ~~late July~~ *August* through late December, avoiding sensitive breeding and rearing stages and the harshest winter months.”

**Page 18, Species of Conservation Concern, third paragraph, first sentence** – the text is revised to say “As described above for wildlife and wildlife habitat, the no-action alternative could result in sustained or increased densities of elk *if the population begins to increase until GRSA could develop and implement a standalone elk management plan. If so,* the no-action alternative would likely impact some species of conservation concern at an individual scale. ~~Over the long term, potential adverse impacts of the no-action alternative would be expected to be detectable mostly within wetland vegetation communities.”~~

**Page 19, Special Status Species and Unique Natural Resources, first paragraph, third sentence** – replaced “disturbance” with “degradation”

**Page 22, Invasive Species, first paragraph, third sentence** – the text is revised to read “Hazing would occur from August through December which would limit the potential for impacts to the timeframe when the snowpack is low enough to be accommodating to the elk (presumably ~~late July~~ *August* through late October).”

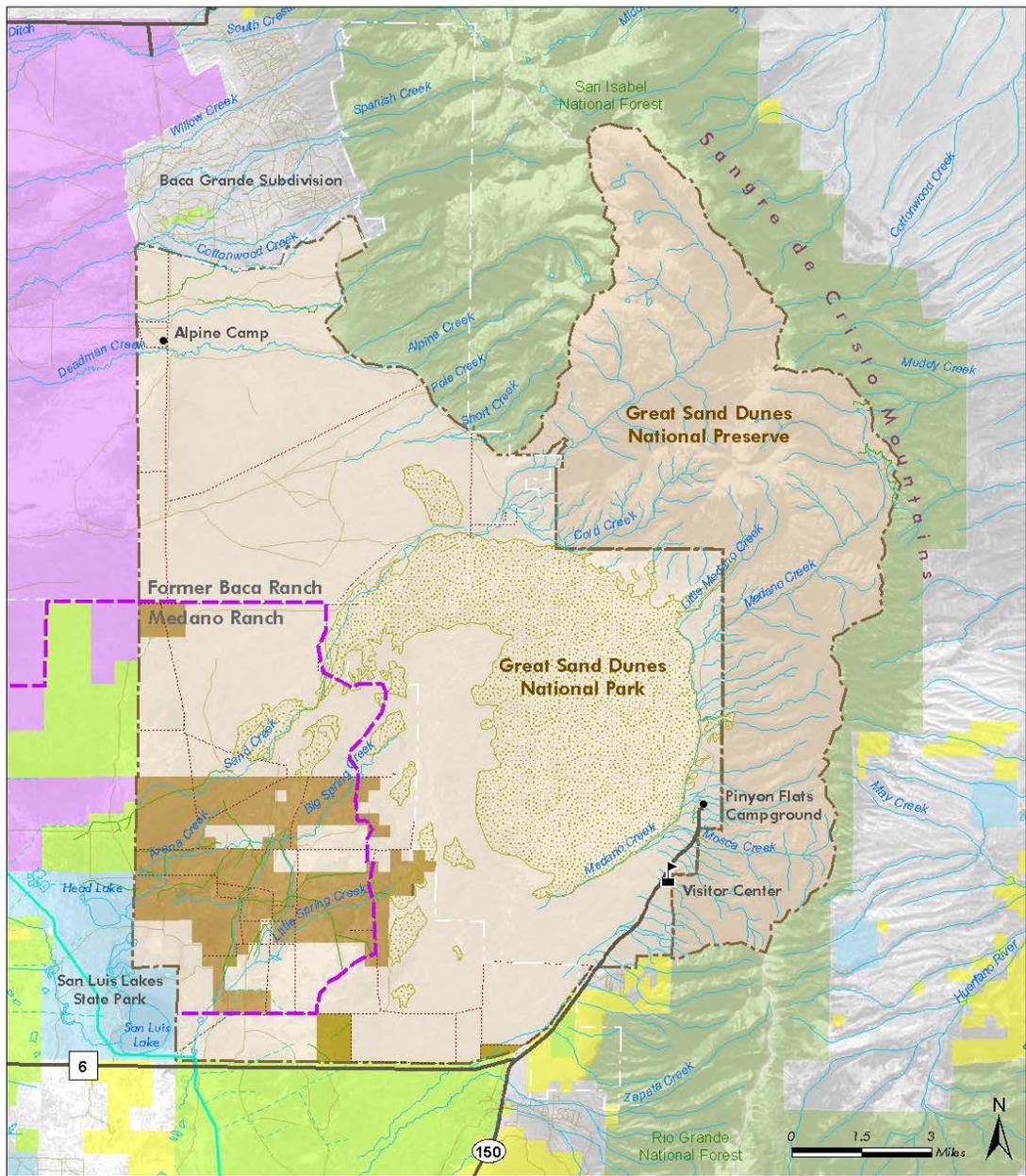
**Page 22, Invasive Species, second paragraph, last sentence** – the text is revised to read “This would be true for all action alternatives and no-action alternative as no bison or bison in lower densities would result in less (or no) ~~disturbances~~ *degradation* from *excessive* trampling, punching, and wallowing that would keep vegetation from establishing in those sites.”

**Page 24, Water Resources, first sentence** – the text is revised to say “Under the no-action alternative, high densities of elk (*prior to development and implementation of an elk management plan*) and bison (prior to their removal) would continue to *adversely impact* the streambanks and subsequently water quality in the Park due to the demonstrated impact of hoof action in creeks or along the banks of creeks.”

**Page 24, Water Resources, Figure 6** – the Figure caption has been revised to read “Denuded area along the streambank of *Big Spring Creek*”

**Page 25, Soundscapes, first paragraph, fourth sentence** – the text is revised to say “Lethal removal actions entailing sharpshooters could occur weekly from ~~late July~~ *August* through December.”

**Page 27, Socioeconomics, second paragraph, fifth sentence** – the text is revised to read “~~If~~ *When* NPS acquires the Medano Ranch *as part of the park,* these activities would no longer be permitted.”



Great Sand Dunes National Park and Preserve Ungulate Management Plan

- |                                    |             |                      |
|------------------------------------|-------------|----------------------|
| National Park Service Boundary     | USFS        | Stream               |
| Dune Field                         | Land Trust  | Closed Basin Canal   |
| Bison Fence                        | USFWS       | Closed Basin Lateral |
| Great Sand Dunes National Park     | BLM         | Ditch                |
| Great Sand Dunes National Preserve | State Parks | Existing Fence       |
| Medano Ranch to be acquired by NPS |             |                      |



Figure 1. Vicinity map

## Chapter 2: Alternatives

**Page 30, Alternative 1, first sentence** – the text is revised to read “~~Existing management would continue. A standalone elk management plan would be developed under Alternative 1 according to the 2007 GMP Record of Decision. Under this alternative, there would be no active elk management and no new action would occur to manage impacts from elk, including the effects of elk herbivory~~ TNC would continue to graze bison on the Medano Ranch until government acquisition and would be responsible for removing their bison and associated fencing prior to NPS acquisition of the Medano Ranch. The NPS would remove the current bison fencing on NPS lands.”

**Page 30, Alternative 3, second sentence** – the text is revised to read “Under this alternative, the NPS would amend the GMP and partner with another entity (*anticipated to be TNC*) to manage the existing bison conservation herd for 5-7 years following NPS acquisition of the Medano Ranch.”

**Page 30, Alternative 4** – the following sentence is added to the end of the paragraph “*Bison would initially be managed on NPS land in the existing bison fence, yet the bison range could be expanded within the life of the plan (Figure 7).*”

**Page 31, Figure 7** – Figure 7 has been revised to show the correct boundaries of the Rio Grande National Forest (see page A-8).

**Page 33, Ecological Monitoring and Data Collection, second paragraph, first sentence** – the text is revised to read “The ROMN protocol monitors wetland ecological integrity or health by monitoring wetland vegetation communities and their important drivers including groundwater hydrology, soils, natural disturbance (including the general level of ungulate use), and human disturbance (including groundwater diversion and other modifications and uses).”

**Page 34, Alternative 1, first sentence** – the text is revised to read “Alternative 1 is the no-action alternative and would involve the continuation of current management of elk and vegetation in GRSA.”

**Page 34, Alternative 1, Elk Management, first sentence** – the text is revised to read “While elk hunting in the Preserve would continue under this alternative, the NPS would not take any management actions to redistribute elk from areas of overconcentration in the Park *until a standalone elk management plan could be developed and implemented.*”

**Page 35, Alternative 1, Bison Management, first sentence** – the text is revised to read “TNC would continue to graze bison as a *conservation* herd on the Medano Ranch until government acquisition.”

**Page 35, Elements Common to All Action Alternatives (Alternatives 2, 3, and 4), first paragraph, last sentence** – the text is revised to read “Note that all actions in proposed or *designated* wilderness involving prohibited uses under the Wilderness Act would be subject to a minimum requirements analysis before being implemented.”

**Page 36, Elements Common to All Action Alternatives (Alternatives 2, 3, and 4), Active Elk Management, second paragraph, first sentence** – the text is revised to read “Lethal removal could occur from ~~late July~~ *August* through late December.”

**Page 37, Figure 10** – Figure 10 has been revised to show the correct boundaries of the Rio Grande National Forest (see page A-9).

**Page 38, Elements Common to All Action Alternatives (Alternatives 2, 3, and 4), Active Elk Management, Non-lethal Hazing as a Tool for Dispersal, first paragraph** – the text is revised to read “Hazing would be conducted starting in ~~late July~~ *August* and going through late December when elk are concentrated in the Park, and would be adjusted, as needed, based on effectiveness as describe above under “Lethal Removal as a Tool for Dispersal.” Generally, hazing would not be used during calving season and while the calves are still very young (late May through early July) or during severe winter (January through ~~March~~ *February*) to minimize animal welfare issues and reduce stress and adverse impacts to the animals.”

**Page 41, Elements Common to All Action Alternatives (Alternatives 2, 3, and 4), Adaptive Management, second paragraph, first sentence** – the text is revised to read “Using data collected over the first 3 to 5 years of implementation, ~~the~~ GRSA...”

**Page 43, Agency Coordination**—The following text was added “*Should unidentified archaeological resources be discovered in the course of the project, work will be stopped until the resources have been evaluated in terms of the National Register eligibility criteria (36 CFR 60.4) in consultation with the State Historic Preservation Office.*”

**Page 45, Alternative 3 (Preferred Alternative), Bison Management, second paragraph, first sentence** – the text is revised to read “For the first 5-7 years after acquisition of the Medano Ranch, the NPS would seek to partner with TNC to manage the *existing bison conservation herd.*”

**Page 46, Alternative 3 (Preferred Alternative), Bison Management, first paragraph** – the text is revised to read “Under all cases, bison management would be informed by NPS experience managing bison at other National Parks, following NPS guidelines. *In addition, the NPS would seek to involve American Indian tribes and provide opportunities for traditional cultural practices during bison management activities.*”

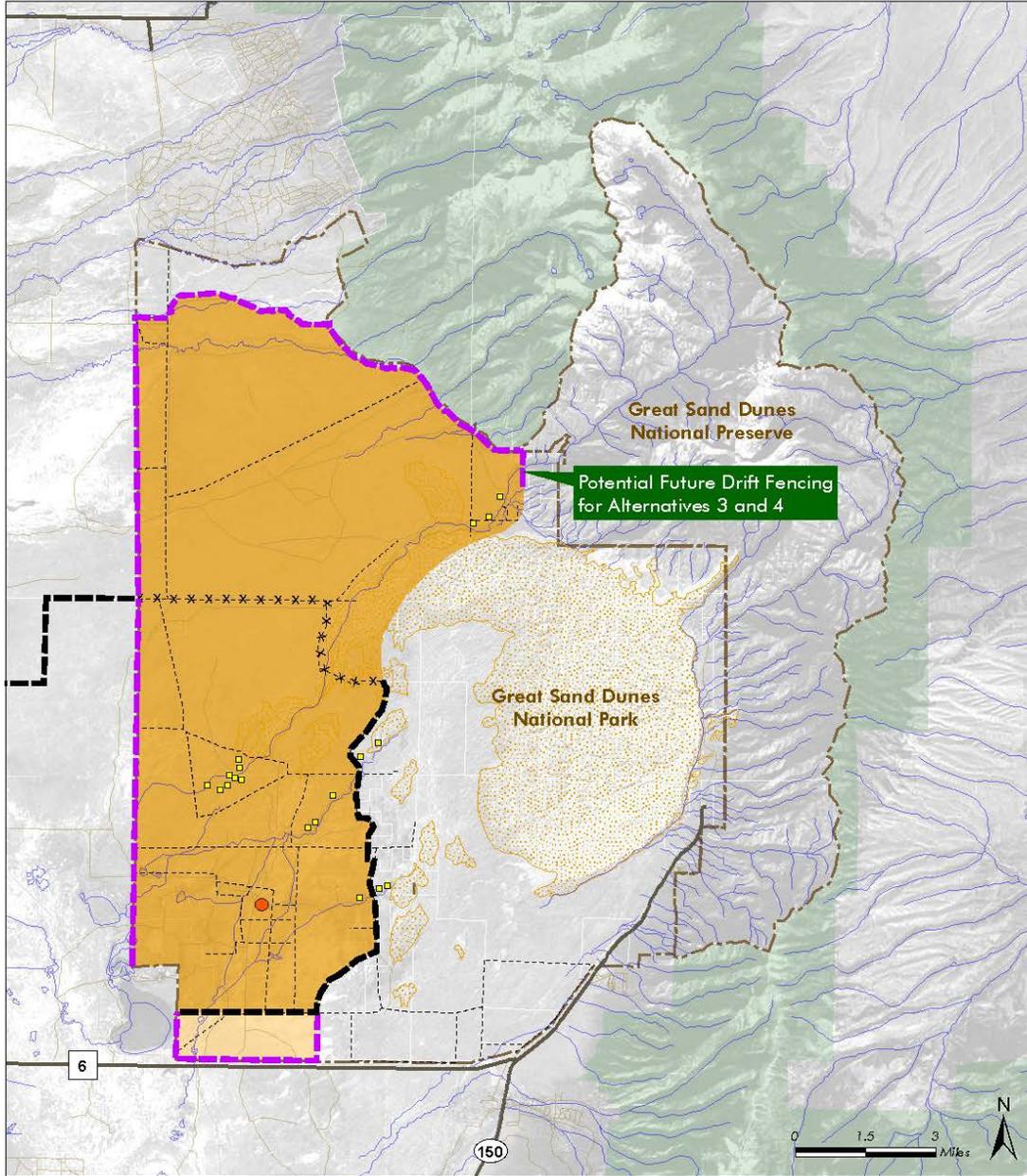
**Page 48, Alternative 3, Education and Coordination, first and second sentences** – the text is revised to read “Alternative 3 would provide *an opportunity for the NPS to interpret and educate the public about bison conservation and management. Once the Medano Ranch is acquired, the NPS could consider how to provide these interpretive and educational opportunities at the ranch headquarters area, consistent with recommendations in the GRSA GMP.*”

**Page 48, Alternative 4, second sentence** – the text is revised to read “Under Alternative 4, *the existing bison conservation herd* would be removed from the landscape prior to NPS acquisition of the Medano Ranch. *After 5-7 years of rest,* the NPS would re-establish and manage a “low-density” *bison conservation herd* on the Park.”

**Page 49, Alternative 4, Bison Management, first sentence** – the text is revised to read “Under Alternative 4, the NPS would make a programmatic decision that would result in TNC removing *the existing bison conservation herd* prior to NPS acquisition of the Medano Ranch. *After 5-7 years, the NPS would re-establish* (from another DOI bison conservation herd) and manage *a bison conservation herd in the Park* using the same tools and within the same density ranges described under Alternative 3 (0.001 and 0.01 bison per acre in the Park).”

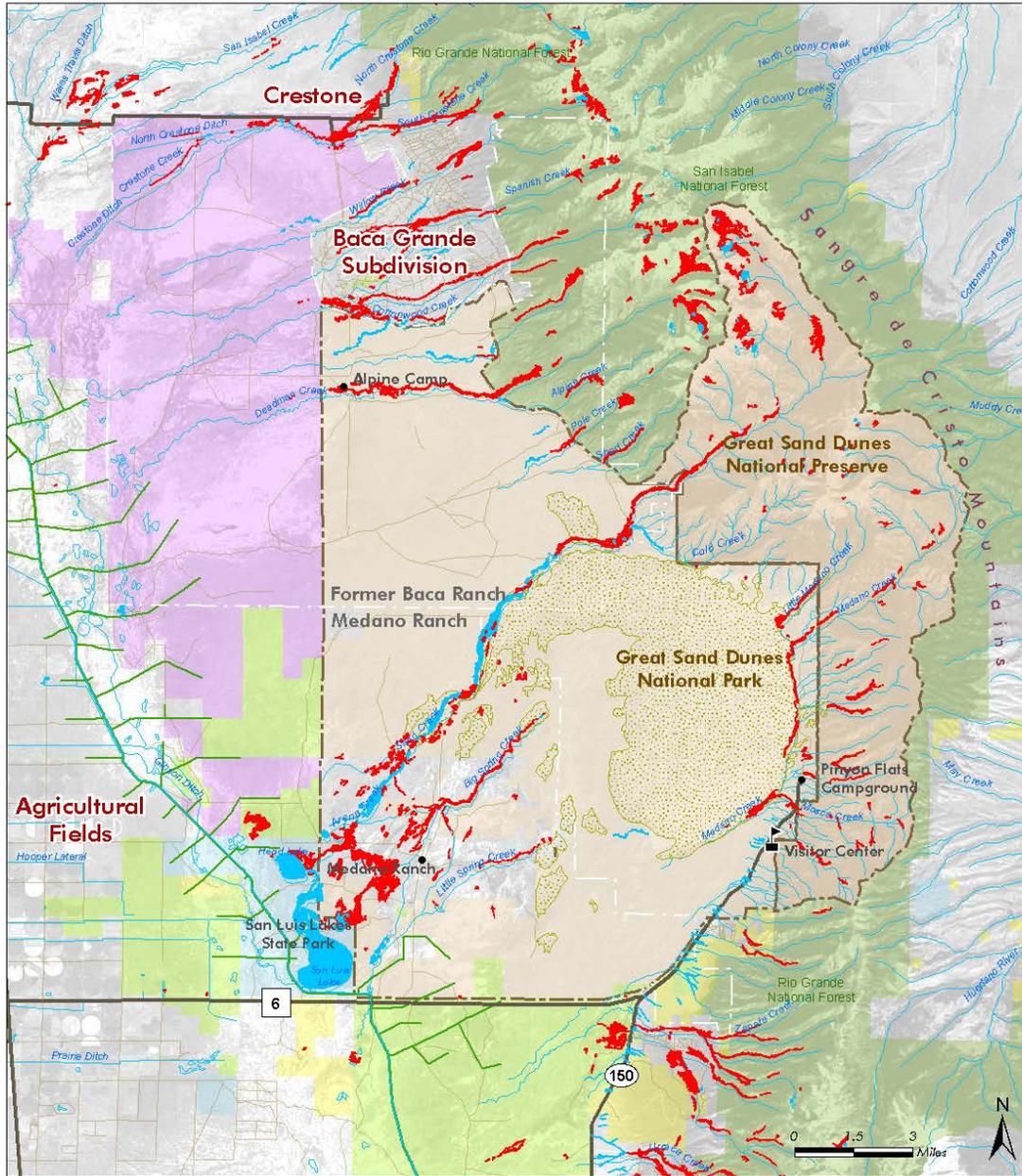
**Page 49, Alternative 4, Bison Management, third sentence** – the text is revised to read *“Initially, the NPS would soft release a small number of bison in the existing corrals before releasing them into the existing fence. In time, the NPS would consider allowing bison to expand their range to a larger area in the Park, or to adjacent USFWS lands as part of a research study proposed on Baca NWR (USFWS 2015). Applying the upper limit of the density range noted previously to this expanded acreage means the NPS could eventually manage between 80 and 580 bison in the Park (i.e., 0.01 bison per acre across 58,000 acres). Bison would be contained by new fencing, topography, dunefield, and the availability of suitable habitat. Expansion beyond the current bison fence would hinge on many variables, including but not limited to, future funding for construction and maintenance of new fencing, ability to appropriately monitor outside of the existing fence.”*

**Page 50, Public Hunting in the National Park, second paragraph, last sentence** – this sentence is deleted.



- Great Sand Dunes National Park and Preserve Ungulate Management Plan
- Existing TNC Bison Fence
  - Bison Fence Proposed for Alternatives 3 and 4
  - x x x Fence Section removed for Alternatives 2, 3, and 4
  - Existing Fencing within Park Boundary
  - TNC Bison Handling Facility
  - USGS Closure Site
  - Alternatives 3 and 4 Expanded Bison Range
  - Potential Future Bison Expansion
  - National Park Service Boundary
  - Dune Field
  - USFS

Figure 7. Fencing, closures, and infrastructure



Great Sand Dunes National Park and Preserve Ungulate Management Plan



Figure 10. Sensitive vegetation in relation to residential and agricultural lands

## Chapter 3: Affected Environment

**Page 58, Current Vegetation Status and the Role of Ungulates, first sentence** – the text is revised to read “Ungulate habitat use ~~becomes a disturbance~~ *can result in degradation* when it surpasses a level where positive effects from grazing or browse (i.e., stimulating production) are exceeded by negative impacts from how and when ungulates use habitat. These ~~disturbances~~ *impacts* include removal of select plant species, erosion and soil compaction caused from hoof punching, wallows or trails, and introduction of invasive species (Schweiger et al. 2017).”

**Page 58, Current Vegetation Status and the Role of Ungulates, second paragraph, last sentence** – the text is revised to read “This ungulate use metric takes into account the ~~disturbances~~ *impacts* listed above: removal of select plant species, erosion and soil compactions cause from hoof punching, wallows or trails, and introduction of invasive species.”

**Page 69, Bison, Species Background, first paragraph, last sentence** – the text is revised to read “Of those, approximately 19,000 are distributed across 54 conservation herds, which are managed by government agencies or conservation organizations, *including the existing bison conservation herd managed by TNC on the Medano Ranch (USGS 2015).*”

**Page 70, Bison, Local Bison Population, first paragraph, first sentence** – the text is revised to read “As stated in Chapter 1, *a bison conservation herd* ranging in size from 1,200 to 2,000 animals ranges freely in the 39,784-acre Medano Ranch (Wockner et al. 2015), ~~and is the only bison herd in the San Luis Valley.~~”

**Page 70, Bison, Local Bison Population, last paragraph, first sentence** – the text is revised to read “Location data shows that *the TNC bison conservation herd* uses all habitat types to some degree throughout the year, but demonstrates a strong multi-seasonal selection for marsh and wet meadow habitats, as well as a strong winter selection for riparian habitats (Schoeneker et al. 2015).”

**Page 73, Figure 21** – Figure 21 has been revised to show the correct boundaries of the Rio Grande National Forest (see page A-12).

## Chapter 4: Environmental Consequences

**Page 84, Impacts to Wetland Vegetation, Alternative 1, first paragraph, first sentence** – the text is revised to read “Under this alternative, TNC would continue to graze bison as a *conservation* herd on the Medano Ranch until government acquisition, at which time the bison herd would be removed by TNC as a condition of land purchase.”

**Page 84, Impacts to Wetland Vegetation, Alternative 1, second paragraph, fifth sentence** – the text is revised to read “These improvements might not be fully realized, as the NPS would not have tools to manage elk overconcentration under this alternative *until a standalone elk management plan could be developed and implemented.*”

**Page 85, Impacts to Wetland Vegetation, Alternative 1, first paragraph, first sentence** – the text is revised to read “The desired condition is ecologically healthy ~~and minimally disturbed~~ wetland communities.”

**Page 85, Impacts to Wetland Vegetation, Alternative 1, first paragraph, third sentence** – the text is revised to read “Impacts to wetland vegetation communities are important as they are integral to the maintenance of ecologically healthy ~~and minimally disturbed~~ wetlands that are

considered an invaluable Park resource. ~~and a~~ A decline in wetland condition because of ungulate overuse would threaten the continued existence of this resource.”

**Page 86, Impacts to Wetland Vegetation, Alternative 2, first paragraph, first sentence** – the text is revised to read “Under Alternative 2, TNC would continue to graze bison as a *conservation* herd on the Medano Ranch until government acquisition, at which time the bison herd would be removed by TNC as a condition of land purchase.”

**Page 87, Impacts to Wetland Vegetation, Alternative 2, first paragraph, second sentence** – the text is revised to read “The intent of the exclosures would be to protect wetland communities being impacted by *excessive* ungulate disturbance.”

**Page 87, Impacts to Wetland Vegetation, Alternative 2, third paragraph, seventh sentence** – the text is revised to read “Impacts resulting from the frequency and duration of management actions would be limited to the timeframe of up to twice per week over one to four hours, avoiding the calving season (late May through early July) and severe winter (January through ~~March~~ *February*).”

**Page 88, Impacts to Wetland Vegetation, Alternative 3, first paragraph, first sentence** – the text is revised to read “Under this alternative, TNC would continue to graze bison as a *conservation* herd on the Medano Ranch until government acquisition, at which time management of the bison herd would likely continue by TNC for 5-7 years under the same scenario.”

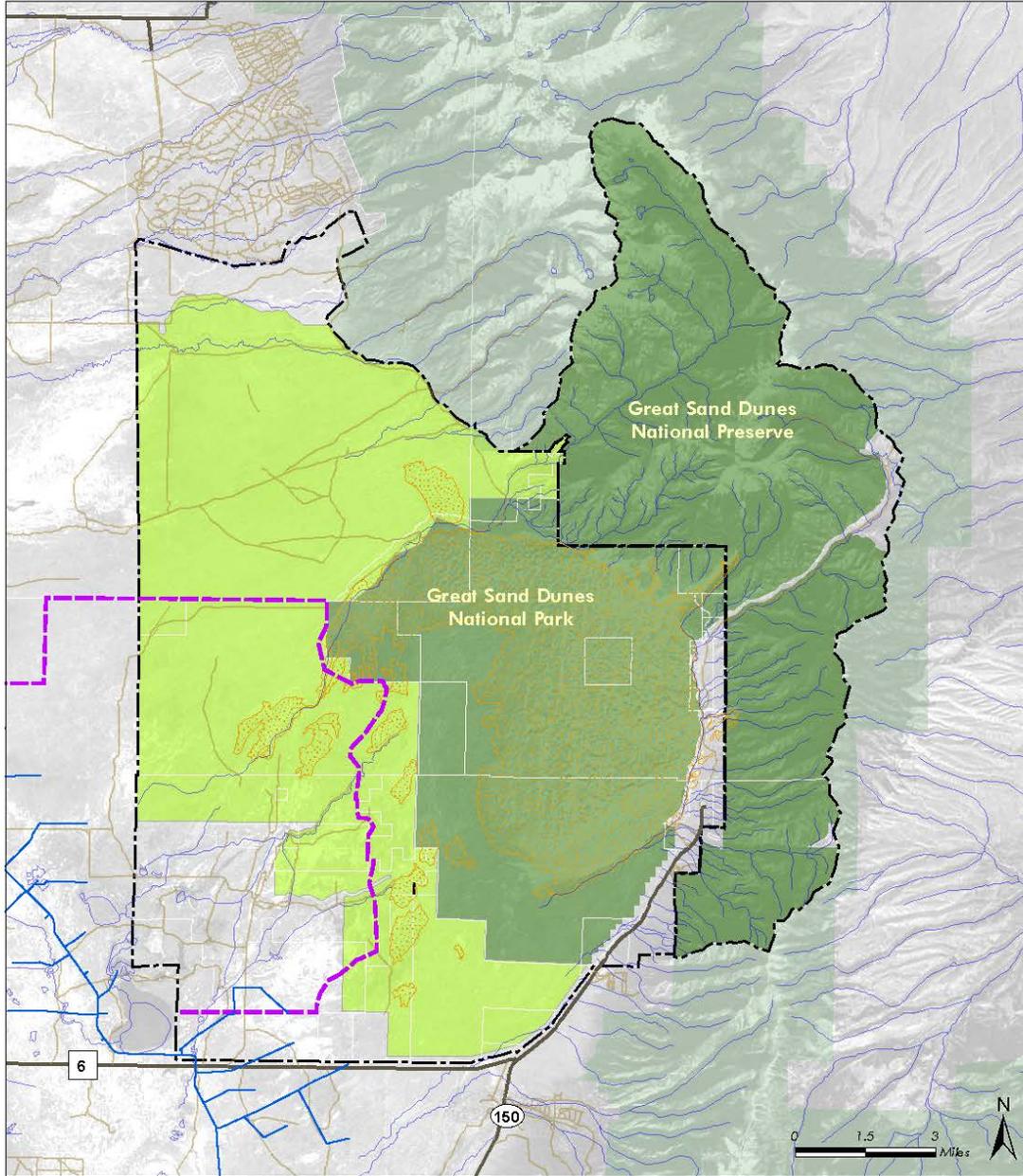
**Page 90, Impacts to Wetland Vegetation, Alternative 4, second paragraph, third sentence** –the text is revised to read “Data that would be collected during the initial phase while there are no bison on the landscape and over time would be coupled with longer-term data following the establishment of a low density bison herd *and a potentially higher number of bison over an expanded range*. The data would inform management actions as well as adjustment of bison density and abundance ranges so they support the goals for wetland vegetation communities.”

**Page 92, Impacts to Elk and Bison, first paragraph, last sentence** – the text is revised to read “The analysis assumes that bison would continue to be managed as a *conservation herd* (as currently managed) prior to NPS acquisition of the Medano Ranch for all alternatives.”

**Page 92, Impacts to Elk and Bison, Alternative 1, Elk, first paragraph, first sentence** – the text is revised to read “Under Alternative 1, there would be no active elk management by the NPS *until a standalone elk management plan could be developed and implemented* and, *during the interim*, no new actions would be applied to manage elk distribution in the Park.”

**Page 92, Impacts to Elk and Bison, Alternative 1, Elk, third paragraph, first sentence** – the text is revised to read “Under this alternative, TNC would continue to graze bison as a *conservation* herd on the Medano Ranch until government acquisition, at which time the bison herd would be removed by TNC as a condition of land purchase.”

**Page 93, Impacts to Elk and Bison, Alternative 1, Bison, first sentence** – the text is revised to read “Under Alternative 1, TNC would continue to manage *the existing bison conservation herd* until NPS acquires the Medano Ranch, at which point bison would be removed.”



Great Sand Dunes National Park and Preserve Ungulate Management Plan

Prepared for: NPS  
 File: 4413 Wilderness Status.mxd [djh]  
 August 23, 2018

- Existing Bison Fencing
- National Park Service Boundary
- Dune Field
- Designated Wilderness
- Proposed Wilderness
- USFS

**Figure 21. Designated and proposed wilderness in GRSA**

**Page 94 - 95, Impacts to Elk and Bison, Alternative 3, Elk, last to first sentence** – the text is revised to read “Lethal removal would be used predominantly during hunting seasons in an effort to disperse elk from the Park and onto adjacent lands, but could occur anytime starting in late ~~July~~ *August* through late December.”

**Page 95, Impacts to Elk and Bison, Alternative 2, Bison, first paragraph, first sentence** – the text is revised to read “Alternative 2 involves a continuation of current management for bison until NPS acquisition of the Medano Ranch, at which time TNC would remove the *existing bison conservation herd* as a condition of the purchase.”

**Page 95, Impacts to Elk and Bison, Alternative 2, Bison, first paragraph, first sentence** – the text is revised to read “Hazing would not be used during calving season and while the calves are still very young or during severe winter (January through ~~March~~ *February*) to minimize animal welfare issues.”

**Page 96, Impacts to Elk and Bison, Alternative 2, Cumulative Impacts, Bison, first paragraph, last sentence** – the text is revised to read “However, agricultural activities irrigate meadows for the intended purpose to increase forage for the existing *bison conservation herd*.”

**Page 98, Impacts to Elk and Bison, Alternative 3, Bison, first paragraph, second sentence** – the text is revised to read “Following a 5-7 year period after NPS acquisition of the Medano Ranch, GRSA would work with a partner to reduce *the existing bison conservation herd* from approximately 1,700 to less than 50 (e.g., 25-50), representing the lower end of the density range within the existing bison fence (i.e., 0.001 bison per acre across 26,000 acres).”

**Page 98, Impacts to Elk and Bison, Alternative 3, Bison, second paragraph, first sentence** – the text is revised to read “Following the 5–7 year transition period, the NPS *ultimately* plans to re-establish (~~from another DOI bison conservation herd~~) and manage a bison herd of 2580–260 bison in the existing fence

**Page 101, Impacts to Elk and Bison, Alternative 4, Elk, first paragraph, second sentence** – the text is revised to read “As described for Alternative 2, hazing and monitoring activities would not be used during calving season and while the calves are still very young (late May through July) or during severe winter (January through ~~March~~ *February*) to minimize animal welfare issues.”

**Page 102, Impacts to Elk and Bison, Alternative 4, Bison, first paragraph, first sentence** – the text is revised to read “Alternative 4 involves a continuation of current management for bison until NPS acquisition of the Medano Ranch, at which time TNC would remove the *existing bison conservation herd* as a condition of the purchase.”

**Page 102, Impacts to Elk and Bison, Alternative 4, Bison, first paragraph, last sentence** – the text is revised to read “Roundup and lethal removal would only be implemented when ROMN WEI monitoring indicates that vegetation condition in the Park is declining due to *excessive* ungulate disturbances.”

**Page 103, Impacts to Wilderness Character, Alternative 1, first paragraph, fifth sentence** – the text is revised to read “However, continued lack of elk management *while a standalone elk management plan could be developed and implemented* and overconcentration of elk in certain areas (Figure 14) would result in continued degradation of native habitat and wetland vegetation communities within wilderness (15 of the 33 wetland sites monitored by ROMN that are in less

than reference condition [as depicted on Figure 16], occur in wilderness), which would adversely impact the natural quality of wilderness character in those areas over the long term.”

**Page 105, Impacts to Wilderness Character, Alternative 2, second paragraph, fourth sentence** – the text is revised to read “In general, these disturbances would be temporary, occurring up to twice per week for up to a period of five months (~~late July~~ *August* to late December).”

**Page 109, Impacts to Archeological Resources, Alternative 1, first sentence** – the text is revised to read “Under the no-action alternative, no active elk management would occur in the Park *until a standalone elk management plan could be developed and implemented*, and no bison would remain on the Medano Ranch following NPS acquisition.”

## **Chapter 5: Consultation and Coordination**

**Page 123** – added “*Pueblo of Tesuque*”

## **Acronyms and Abbreviations**

**Page 127** – added “*HPP Habitat Partnership Program*”

## ATTACHMENT B: RESPONSE TO SUBSTANTIVE COMMENTS

### Elk

**Concern 1:** Commenters advocated for an overall reduction of the number of elk rather than redistribution to reduce the density in the Park.

**Response:** Though the primary intent is redistribution, lethal removal of up to 200 elk per year will also reduce the size of the elk population. Additionally, if monitoring shows the overall elk population density and abundance in the Park remains too high following the initial management phase, the NPS would likely use similar tools as described in the UMP/EIS to affect a larger reduction in the number of elk in the Park.

**Concern 2:** Commenters advocated against the use of non-lethal hazing tools as a means for dispersal.

**Response:** Hazing to disperse elk is an additional tool that might be used in circumstances where elk dispersal by lethal removal is not feasible. Even though non-lethal hazing is not as effective in the long term as lethal removal dispersal techniques; it is still a viable tool to meet short-term goals such as moving elk short distances to areas off the park where hunting is allowed or to move an elk herd away from bison so that lethal removal for dispersal is possible. In addition, these hazing techniques can be employed in conjunction with lethal removal to increase the distance that elk move during a dispersal activity, enhancing the effects of lethal removal.

**Concern 3:** One Commenter requested that the UMP/EIS be corrected for the biologically appropriate season for hazing and lethal removal of elk to be changed to August-February with consideration given to the severity of the winter on an annual basis for the months of January and February.

**Response:** This change has been made in numerous locations throughout the EIS (see Attachment A, Errata to the UMP/DEIS).

### Bison

**Concern 4:** Some Commenters advocated for replacing the existing bison herd with DOI bison because of cattle introgression in the existing bison herd and the implications for future bison management. Alternatively, other commenters advocated for keeping the current bison herd rather than replacing with other DOI bison, and for clarifying use of the term 'conservation herd' when referring to the existing TNC bison on the landscape.

**Response:** At this time, the NPS anticipates it would replace any TNC bison remaining on the landscape at the end of the 5–7 year transition with bison from another DOI source herd. Doing so would allow GRSA to support DOI and NPS efforts to conserve genetically pure bison and maximize the role GRSA could play in the metapopulation management model noted in response to Concern 5. However, this would be a decision subject to future planning and compliance, as appropriate. Additionally, the NPS agrees that the TNC herd does meet the definition of a 'conservation herd' used for the purposes of this UMP/EIS. As such, text has been updated through the UMP/EIS (see Attachment A, Errata to the Draft UMP/EIS). However,

it is important to note that there is no universally accepted definition of what it means to be a “conservation herd.” The International Union for Conservation of Nature (IUCN, 2010) offered a definition that looks to the mission of the managing organization as the determining factor. Others would emphasize bison behavior, landscape ecology, or herd size considerations; some would focus solely on genetic issues and the prospect of a given herd contributing to maintenance of bison genetic diversity. The NPS anticipates that in 2019, the DOI Bison Working Group will coordinate input to define the characteristics of a bison conservation herd for those managed by DOI bureaus. It would be expected that this definition would generally be compatible with the conservation objectives of non-governmental and tribal bison managers, but will necessarily be focused on the legal and policy authorities that enable and constrain DOI bison management. This definition will speak to the principle DOI interests of maximizing bison genetic diversity and integrity over the long-term and restoring, where possible, the ecological

**Concern 5:** Commenters advocated for a larger herd size to maintain genetic viability.

**Response:** GRSA anticipates that bison in the Park would be managed in the context of a larger DOI bison metapopulation management approach. This approach would allow for management of smaller bison populations through the exchange of bison between DOI bison herds to facilitate a functioning metapopulation that is not geographically connected. Any such bison movements would be prescribed by a strategy informed by current science and developed by experts in the field. Thus, a lower density of bison in the Park, managed and augmented as part of this larger metapopulation, can achieve multiple conservation goals, including those related to bison genetics.

**Concern 6:** Commenters did not agree with the assumptions and literature cited to support a theory of historically lower numbers of bison in the San Luis Valley. Commenters advocated for larger numbers based on information from Espinosa 1939 and for the NPS to use a forage allocation approach for continuing to manage a bison herd size similar to that managed today by TNC.

**Response:** The NPS believes the use of Meany and Van Vuren 1993 is appropriate. Meany and Van Vuren (1993) did not find evidence supporting perennial high bison densities, but does not exclude the possibility of infrequent higher bison density events noted in Espinosa 1939. The NPS believes managing bison within the density and abundance range identified in the UMP/EIS would be consistent with these findings. Regarding Espinosa 1939, while the NPS values historic observations in providing a point-in-time context and have referenced archeological evidence to frame a range of options, the NPS does not view these observations as a prescription for a particular bison herd size or density.

Regarding use of a forage allocation model and continuation of recent bison stocking rates, this would require an intensive management style more aligned with and focused on economic maximization of assets (forage) that may not “maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance diversity, and the genetic and ecological integrity of the plant and animal species native to those ecosystems” (NPS Management Policies 2006). The NPS would have to create a grazing allotment strategy that would be inconsistent with NPS conservation principles for wildlife management. Rather, the NPS proposes to balance bison on the landscape with other ecological services and functions through an adaptive management approach based on indicators and thresholds for wetland ecological integrity, rather than adopting a management objective to maximize bison numbers based on available forage.

**Concern 7:** Commenters advocated for lower numbers of bison during the 5–7 year transition period.

**Response:** The herd size that TNC maintains during the transition to NPS management is being addressed through the Medano Ranch acquisition process. Taking into account the economics of managing the bison herd on behalf of the NPS, it is expected that TNC would continue to manage the herd size at existing levels during this time.

However, the NPS would work with TNC on an annual basis to review monitoring data and provide input into adjustments in bison herd size in response to things like impacts to resources and weather conditions (e.g., low precipitation, drought). Additionally, although a large number of bison would remain on the landscape for the majority of the 5–7 year transition period, elk would be redistributed and elk numbers in the Park would be reduced during that time. As a result, the monitoring conducted during this time would enhance understanding of the relative impacts of bison versus elk herbivory on the landscape, which is one objective of the plan (see Draft UMP/EIS page 5), and would provide a dataset that could be compared over the long term to the effects that result with smaller numbers of both bison and elk on the landscape.

**Concern 8:** Commenters expressed concerns about how the UMP/EIS addressed bison as an ethnographic resource and how tribes, including Plains tribes, were involved in the analysis. One commenter also suggested NPS management of a bison herd could provide tribes the opportunity to engage in traditional cultural practices important to their cultures.

**Response:** Great Sand Dunes National Park and Preserve has reached out to a number of tribes during several planning and research projects over the last decade, including during development of the GMP, the Ethnographic Overview and Assessment, the GRSA Traditional Use Study, and the UMP/EIS. This has included outreach to several Plains tribes that are affiliated with GRSA such as: Cheyenne and Arapaho Tribes of Oklahoma, Comanche Nation of Oklahoma, Kiowa Tribe of Oklahoma, Arapaho Tribe of the Wind River Reservation, Wyoming, and Northern Cheyenne Tribe, in Montana. Those tribes that have been involved support the establishment of an NPS-managed bison herd at GRSA and because bison are a key part of their culture, GRSA would continue to reach out to tribes to provide opportunities for them to engage in traditional cultural practices around bison. Text regarding engaging tribes in bison management has been added to Chapter 2 of the UMP/EIS in response to this comment and consultation with the State Historic Preservation Office under Section 106 of the National Historic Preservation Act (please see Attachment 2, Errata to the Draft EIS).

**Concern 9:** Commenters recommended NPS include a stronger commitment to a formal multi-jurisdictional bison management planning process that would include the USFWS and TNC.

**Response:** While the NPS has had some discussion with USFWS and TNC regarding the potential for future multi-jurisdictional bison management in the San Luis Valley, NPS only has decision-making authority for actions on NPS-administered land. Therefore, the NPS cannot commit USFWS, TNC, or any other potential partner to such a process in this UMP/EIS. In addition, any commitment to future planning, which at this point would be speculative, is not subject to National Environmental Policy Act (NEPA) analysis and therefore does not need to be detailed in the UMP/EIS.

## Public Education and Involvement

**Concern 10:** Commenters advocated for improved visibility of the bison herd and opportunities for increased public education.

**Response:** The details of any education program would be guided by the prescriptions and zoning in the GMP, which are intended to protect sensitive cultural resources in the vicinity of the Medano Ranch, and would be subject to additional planning once the NPS acquires the Medano Ranch, as noted on page 48 of the Draft UMP/EIS. Therefore, because the details of any education program are speculative at this time and they are unlikely to have potential environmental effects subject to NEPA analysis, there is no need to include them in the UMP/EIS.

## Desired Conditions

**Concern 11:** One commenter advocated for including objectives and desired conditions for bison in the EIS.

**Response:** As the Draft UMP/EIS notes in Chapter 1 and 2, the action alternatives included in the UMP/EIS take a higher level, “programmatic” look at potential options for the future of bison at GRSA, such as 1) whether or not to amend the GMP to allow for bison in the Park, and if so, how many bison might be appropriate; 2) when the NPS would assume bison management responsibilities; and 3) what management tools the NPS might use to manage bison abundance upon assuming bison management responsibilities. The NPS will conduct additional planning and compliance to address the specific objectives and desired conditions for managing a bison herd. Any future planning and compliance would be tiered from the UMP/EIS.

## Management Tools

**Concern 12:** A commenter expressed concerns regarding plans for future bison fencing at GRSA due to the costs of installing fencing and how fencing could create an impediment to eventually managing bison on a larger landscape including the Baca National Wildlife Refuge.

**Response:** As discussed in response to Concern 8, while the NPS has had some discussion with USFWS and TNC regarding the potential for future multi-jurisdictional bison management in the San Luis Valley, no commitments have been made. Therefore, the UMP/EIS can only address decisions currently facing the NPS regarding bison management on NPS-administered land, including fencing to restrict bison movement to the Park. Additionally, if the opportunity arises to collaborate with USFWS, TNC, and/or other partners on multi-jurisdictional bison management, this would require additional planning, compliance, and funding requests to implement, which would address any changes to fencing configuration needed to facilitate bison movement across a larger landscape.

## Access for Implementation of Management Actions

**Concern 13:** One commenter suggested the NPS should allow staff, authorized agents, and volunteers to use of all-terrain vehicles (ATVs) during lethal removal of elk.

**Response:** The UMP/EIS does not specifically prohibit the use of off-road vehicles but rather states that management tools in areas managed as wilderness would be subject to a minimum

requirements analysis to determine if they are the minimum tool necessary (Chapter 2 “Elements Common to All Action Alternatives”).

## **Predators**

**Concern 14:** Commenter suggested NPS must consider an alternative that prohibits the unnecessary killing of mountain lions by trophy hunting and predator management because mountain lions are effective at controlling ungulate populations and therefore overgrazing. Further, the commenter expressed concerns that potential impacts to the local mountain lion population, as a result of cumulative impacts from CPW’s Upper Arkansas River Predator Management Plan, were not analyzed in the UMP/EIS.

**Response:** The NPS does not have jurisdiction for managing mountain lion hunting, and while Council on Environmental Quality NEPA regulations do suggest agencies can look at alternatives not within their jurisdiction, an alternative to prohibit mountain lion hunting is unlikely to affect the distribution of elk in the Park. This is because elk management in the UMP/EIS is focused on redistributing elk that over concentrate in wetlands and mesic meadow grasslands on the valley floor of the Park (see Figure 14), while prime habitat for mountain lions at GRSA likely exists in the shrub steppe-montane interface including pinion-juniper woodlands, especially where there is rugged topography (Laundre & Hernandez, 2003, Dennison et al. 2016). Additionally, a reduction in prey (elk) on the valley floor in habitats less favored by mountain lions would be minimal in relation to prey availability in preferred habitats, and would not be expected to have effects on mountain lion populations in GRSA. In fact, dispersal activities would likely move elk from wetlands, mesic meadow grasslands, and rabbitbrush shrub steppe to areas that are more likely occupied by mountain lions along the mountain-front, thereby increasing the availability of elk as prey for mountain lions in those areas (See Figure 12). The NPS does not believe these are significant issues for mountain lions which warrant detailed impact analysis, and therefore did not address the cumulative impacts of CPW’s Upper Arkansas River Predator Management Plan in the UMP/Abbreviated FEIS.

## **Fertility Control**

**Concern 15:** Some commenters suggested the NPS should not rule out the use of fertility control as it is possible that a viable option could become available in the future.

**Response:** The NPS has dismissed fertility control in this UMP/EIS for elk and bison as described in Chapter 2 of the UMP DEIS (see pages 52 and 53). However, as elk management at GRSA progresses and the NPS transitions to bison management, if a fertility control agent becomes available that meets management objectives and is feasible for NPS to implement without unintended consequences, the NPS can revisit this tool at that time.

## **Prescribed Fire**

**Concern 16:** A commenter suggested the NPS use prescribed fire as a bison management tool.

**Response:** As noted in response to Concern 11, the UMP/DEIS contemplates higher level, “programmatic” decisions for the future of bison at GRSA. Aside from fencing, the UMP/EIS does not discuss any other potential management tools for affecting bison movement and distribution at GRSA, as implementation would be speculative at this time. The NPS will consider the suggestion to use prescribed fire if the NPS prepares bison implementation plans in the future that address managing bison movement and distribution.

## Description of Alternatives

**Concern 17:** One commenter recommended that the description of Alternative 4 be clarified to reflect similar language as is included in the description of Alternative 3 related to the potential for managing bison across a larger landscape.

**Response:** The description of Alternative 4 has been updated to include the same language used in Alternative 3 to describe the potential for managing bison across a larger landscape (see Attachment 2, Errata to the Draft EIS).

## Water Resources

**Concern 18:** One commenter recommended that Colorado State 303(d) impairment listings be updated, if applicable, in the Final EIS.

**Response:** The Colorado Department of Public Health and Environment (CDPHE) lists Clean Water Act 303(d) waters on a two year cycle. The most recent cycle began in 2018 and no waterbodies within GRSA are listed as impaired for the 2018-2020 listing cycle. As such, no change is needed to the EIS.

## Affected Environment

**Concern 19:** One commenter noted Figure 10 on page 37 of the Draft EIS did not show the correct boundaries for the Rio Grande National Forest.

**Response:** Figure 10, along with Figure 1, has been revised to show the correct boundaries of the Rio Grande National Forest. In addition, as a result of this correction, Figures 1, 7, and 21 have also been revised (see Attachment 2, Errata to the Draft EIS).

## Ungulate Impacts

**Concern 20:** One commenter suggested the NPS has negatively characterized the current impacts of ungulates as 'degradation,' and should instead acknowledge the effects as 'disturbances' that are representative of the ecological processes expected on this landscape.

**Response:** "Degradation" occurs 18 times in the UMP/EIS. One use of the term refers to degradation from historical livestock use and another refers to degradation of wilderness character. For all the other occurrences of the term, the UMP/EIS includes some context, such as saying degradation occurs from over concentrations of elk, or excessive ungulate use, or high levels of herbivory. "Disturbance" is used relative to redistribution/lethal dispersal but sometimes used to describe ungulate habitat use. Further clarification added to the UMP/EIS: wherever "disturbance" is used to describe a situation where ungulates are over-concentrated or herbivory is excessive, it is changed to "degradation"; "both positive and negative" have been added when the UMP/EIS refers to the influence of ungulates. GRSA recognizes that some level of ungulate disturbance is appropriate, but is seeking to manage that disturbance so that wetlands are ecologically healthy. Therefore, "minimally disturbed" has been deleted such that only "ecologically healthy" wetlands remains.