National Park Service
U.S. Department of the Interior

Capitol Reef National Park
Utah

FINDING OF NO SIGNIFICANT IMPACT
Livestock Grazing and Trailing Management Plan

Recommended:

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an environmental assessment (EA) to examine alternative actions for and environmental impacts of a livestock grazing and trailing management plan (LGTMP) at Capitol Reef National Park (the park). The LGTMP is needed because the park lacks a comprehensive, collaborative approach for managing legislatively mandated livestock grazing and trailing in the park in a manner that minimizes the potential impacts on natural and cultural resources.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA and the associated decision file. To the extent necessary, relevant sections of the EA, which is available at http://parkplanning.nps.gov/care_lgtmp_ea, are incorporated by reference below.

SELECTED ACTION AND RATIONALE FOR THE DECISION

The National Park Service has selected Alternative 2 (the preferred alternative) from the EA as the LGTMP for the park. See Chapter 2 of the EA for a full description of the selected action; also note the two minor modifications to the action, which are explained below.

Grazing Management

Under the selected action the National Park Service will issue permits for livestock grazing in the Sandy 3 allotment using a two-pasture rotation system, which will require the construction of a pasture fence (see Table 2.2 for the proposed pasture rotation system). One minor change to Alternative 2 is the need to extend the pasture fence to the west of the proposed pasture boundary to keep cattle from entering a drainage and going around the fence. This will result in less than 0.1 mile of additional fence and will not change the conclusions in the EA regarding the impacts of this fencing (see also **Attachment 2**, Errata to the EA for updates to Figure 2.3 depicting the fence). In addition, five stock ponds will be refurbished and maintained to improve cattle distribution within the two pastures (see updated Figure 2.3 in Attachment 2).

Initially, stocking rates (82 cows), season of use (November 1 to March 31), and forage allocation in animal unit months (AUMs; 410) in the Sandy 3 allotment will not change from current management. After implementation of the plan, both short- and long-term monitoring data will be collected (see Chapter 2 and Appendix C of the EA). These data will be compared to quantitative metrics for desired conditions/thresholds for vegetation, soils, and threatened and endangered species, as well as other variables like weather, drought, and forage production/utilization. Adaptive management actions will be coordinated with permit holders if monitoring data indicate that livestock grazing is impacting resources and rangelands such that they are not moving towards or meeting desired conditions, and/or if drought conditions and forage production/utilization warrant adjustments to management. Adaptive management may include adjustments to stocking rates, changes in season of use, actions to better distribute livestock, or other actions to improve the overall range and natural resource conditions. If monitoring indicates that range conditions are such that additional livestock or season of use could be tolerated, adjustments could be made to increase AUMs to the maximum allowed (410) in legislation for the park.

Trailing Management

Currently used trailing routes will remain available for use by current permit holders under the selected action. Trailing permits will also be issued for two routes within the recently retired Hartnet allotment to the former grazing permit holder to move livestock between allotments located outside of the park (see Table 2.1, Table 2.3, and Figure 2.4 of the EA). The season of trailing (fall and spring) and number of cattle trailed will be determined before issuing permits and could be adjusted to provide increased flexibility to permit holders. Any other applications for trailing permits and applications to transfer existing permits, change the season of use, and/or change the number of livestock trailed will be considered on a case-by-case basis.

On all trails, permit holders will be required to use riders to move livestock through the park in an efficient manner, especially in areas with sensitive resources (e.g., trails along riparian areas and trails that pass through habitat for populations of threatened or endangered plants and animals). The National Park Service will work with permit holders to develop other, trail-specific best management practices (e.g., number of livestock trailed on a given day, modifications to route alignments, and keeping livestock on defined trails versus allowing them to stray and graze). Controls will be implemented on the Pleasant Creek route so that livestock could spend the night near the park's eastern boundary, while minimizing the impacts on natural and cultural resources.

The National Park Service will use experienced staff to actively monitor trailing activities to ensure compliance with permit terms and conditions, as described in Chapter 2 and Appendix C of the EA. The National Park Service will also monitor riparian areas and damage/disturbance to threatened and endangered plants. If riparian areas, including those that support foraging Mexican spotted owls, are not moving towards/meeting desired conditions (e.g., proper functioning condition and 4 to 6 inches of grass stubble height), or if thresholds for impacts on threatened and endangered plants have been reached, adaptive management actions will be implemented. Per discussions with the US Fish and Wildlife Service, the disturbance thresholds in the EA have been updated to be equal to or greater than 15% for Wright fishhook cactus; and equal to or greater than 5% for Winkler cactus and Last Chance townsendia (see also Attachment 2, Errata to the EA, for updates). These revised disturbance thresholds do not change the conclusions in the EA regarding the effects of trailing on listed plants. Adaptive management actions could include fencing sensitive resources, requiring more riders/staff to keep livestock out of sensitive areas, and/or using alternative trailing routes (e.g., Dry Bench instead of Oak Creek).

General Administration of Grazing and Trailing

The selected action includes comprehensive guidance for coordination with other agencies and permit holders, unauthorized livestock or other livestock use, staffing/range management activities, range construction project design criteria (e.g., guidelines for construction and maintenance of fences and stock ponds), and education and interpretation. Details can be found in Appendix C of the EA.

Rationale

Despite the costs associated with implementation, Alternative 2 was selected as the LGTMP for the park because it is the only alternative analyzed that meets the purpose and need and balances the legislative mandate to allow livestock grazing and trailing at Capitol Reef with the NPS mission to protect park resources. This alternative will provide the park and permit holders

tools and guidance necessary for a comprehensive, collaborative approach to grazing and trailing management that promotes the shared conservation and stewardship of, and minimizes impacts on, the natural resources, ecological processes, and cultural resources of Capitol Reef National Park. This includes a robust monitoring and adaptive management program that will be responsive to changing resource and rangeland conditions.

MITIGATION MEASURES

No mitigation measures beyond the design of the selected action (see Chapter 2 and Appendix C of the EA) were identified.

FINDING OF NO SIGNIFICANT IMPACT

As described in Chapter 1 and Appendix D of the EA, the following resource topics were carried forward for detailed analysis: soils, upland and riparian vegetation communities, water resources, special status species, migratory and resident birds, wilderness, and permittee traditional uses and socioeconomics. The potential for significant adverse impacts on these resources has been analyzed, taking into account context and the relevant considerations from 40 CFR 1508.27(b), as follows:

- Impacts that may be both beneficial and adverse. A significant impact may exist even if the federal agency believes that on balance the effect will be beneficial
- Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas
- The degree to which the potential impacts are highly uncertain or involve unique or unknown risks
- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts

Taking these considerations into account, as described below, the National Park Service has determined there will be no significant adverse direct, indirect, or cumulative impacts for any of the resources.

Soils, Upland and Riparian Vegetation Communities, Water Resources, and Migratory and Resident Birds

As described in detail in Chapter 4 of the EA, implementing a rest-rotation system in the Sandy 3 allotment, refurbishing stock ponds, improving trailing management, and using monitoring and adaptive management to meet desired conditions described in Appendix C of the EA will result in beneficial impacts from:

- A decrease in bare ground, an increase in biological soil crust, a reduction in susceptibility of soil to and soil loss from wind and water erosion, and an increase in the ability of soils to infiltrate and retain moisture and nutrients

- Increases in abundance of native cool-season grasses, plant cover and reproductive success of upland and riparian vegetation, and recruitment of trees and shrubs in riparian areas
- Improved riparian function in Bitter Creek, Bitter Spring Creek, Oak Creek, and Pleasant Creek from stabilizing soils, increased cover and abundance of riparian vegetation, improvements in wildlife habitat, and increased shading that cools water temperatures
- Improved hiding cover for nests, habitat for prey, and stopover habitat for resident and/or migratory birds as a result of increased vegetation and structural diversity, and improved riparian function

Although there is some uncertainty in how much the integrity of these resources will improve and how long it will take, compared to the affected environment, the selected action will improve conditions on 11,600 acres throughout the Sandy 3 allotment and along currently permitted trailing routes.

Issuing two new trailing permits, constructing range improvements, and having refurbished stock ponds will adversely affect approximately 1,490 acres of soils, upland and riparian vegetation, and bird habitat, as well as known park water resources. Impacts will include:

- Increased bare ground, decreased biological soil crust, increased susceptibility of soil to and soil loss from wind and water erosion, and decreased ability of soils to infiltrate and retain moisture and nutrients as a result of trampling during trailing
- Defoliation and loss of reproductive structures on individual plants, and loss of vegetation from livestock trampling and grazing during trailing, which also affects habitat for birds
- Clearing and trampling of vegetation for fencing and refurbishing stock ponds, which also affects habitat for birds
- Grazing and trampling of vegetation, disturbance to soil, and contribution of sediment and dung to the water channel in the riparian areas of Ackland Springs, Deep Creek Spring, Baker Post Seep, and Willow Canyon Seep, which also affects habitat for birds
- Trampling of resident or migratory bird nests and the temporary or permanent abandonment of breeding territories or nests as a result of human activity, horses, heavy equipment, and noise associated with these activities, and with pasture rotation and monitoring that occurs during the breeding season (January through August)

The 1,490 acres affected represent only 12% of soils, vegetation, and bird habitat in the planning area, and approximately 0.7% park-wide. As a result, the majority of these resources, including bird populations, in the planning area and park-wide will be unaffected or experience beneficial impacts, as described earlier. In addition, more than half of the acreage (830 acres) will be temporarily affected from trailing for 1 to 2 days every 5 to 12 months, which will provide the opportunity for soils, vegetation, water resources, and birds to recover between trailing events. The short duration of trailing, coupled with moving livestock more quickly through the park and adaptive management actions if desired conditions are not met (e.g., more control of livestock, fencing sensitive areas, including Deep Creek Spring; see Chapter 2 and Appendix C of the EA) will further minimize trailing impacts. Because of the temporary nature and short duration of trailing and its impacts, the beneficial effects of achieving desired conditions described above are still expected to be realized across the 830 acres affected by trailing in the recently retired Hartnet allotment, but at a slower rate.

Resources affected by construction-related impacts on 660 acres will be expected to recover in 1 to 5 years, and if construction were to occur outside the peak nesting season (April through July), most breeding birds will be protected. Also, as described in Chapter 4 of the EA, there will be no impacts on water resources from activities associated with constructing fences, refurbishing stock ponds, or removing tamarisk from Little Lake Mead.

Because livestock will be removed from the Sandy 3 allotment by April 1, most ground- and shrub-nesting birds will not be subject to the impacts noted above, as they will occur outside of the main nesting season for bird species (April through July). In addition, areas that experience little to no grazing comprise approximately 32% of the Sandy 3 allotment and will continue to provide suitable nesting and foraging habitat for all birds, including those displaced from grazing and its management.

Special Status Species

As described in Chapter 3 of the EA, there are no special status plant or animal species in the Sandy 3 allotment. All of Sandy 3 allotment is within Mexican spotted owl designated critical habitat. However, based on a habitat suitability model for Mexican spotted owl, only the western Waterpocket Fold area in the southern part of the allotment contains suitable habitat. This suitable habitat is more than 3 miles from the nearest Protected Activity Center and has little to no cattle use. Therefore, implementation of grazing management actions under the selected action will not impact special status species or their habitat.

However, occupied habitat for three plant species listed under the Endangered Species Act occur along the following three livestock trails: Cathedral-Grey Bench trail (Wright fishhook cactus), Hartnet trail (Wright fishhook cactus, Winkler cactus, and Last Chance townsendia), and Lower South Desert trail (Wright fishhook cactus and Winkler cactus). In addition, the Oak Creek and Pleasant Creek trails pass through riparian habitat that is important foraging habitat for Mexican spotted owls occupying protected activity centers less than 2 miles away. Therefore, the following analysis focuses on the effects of livestock trailing on these special status species.

Special Status Plants. As described in Chapter 4 of the EA, studies have shown that habitat degradation by cattle grazing is a primary source of adverse impacts on all three federally listed plant species in the planning area. These impacts can include decreased soil stability, increased erosion, an increase in invasive plant species, and damage and disturbance to individual listed plants, resulting in mortality or reduced reproduction.

However, in this case, these plants and their habitat will only be temporarily subjected to such impacts for 1 to 2 days every 5 to 12 months during trailing. Most trailing events through listed species habitat will occur in the fall outside the reproductive season and when Winkler cacti are typically at or below the ground surface, so they may be somewhat protected from livestock trampling. Therefore, the short duration, low frequency, and timing of the trailing events will result in substantially reduced impacts compared with several months of grazing each year, which most of the studies cited in the EA are based upon.

In addition, as shown in Table 1, livestock trailing will affect less than 1% of habitat within the occupied distribution for Wright fishhook cactus and Winkler cactus, approximately 16% of the occupied habitat for Last Chance townsendia, and approximately 1% to 4% of known individuals of each plant (see also Table 4.5 and 4.6 of the EA). Therefore, the selected action will not affect the vast majority of listed plants and occupied habitat.

Table 1. Special Status Plant Habitat / Known Special Status Plants in the Planning Area

Species	Acres of Habitat Along Trailing Routes / Number Known in the Planning Area[1]	Percentage of Habitat Potentially Affected within Occupied Distribution / Percentage of Known Population of Species Affected Rangewide
Wright fishhook cactus	2,554 acres / 402 known plants	0.40% (based on 696,100 acres) / 2.7% (based on 14,761 known individuals)
Winkler cactus	1,280 acres / 258 known plants	0.70% (based on 189,000 acres) / 4.3% (based on 5,944 known individuals)
Last Chance townsendia	1,404 acres / 86 known plants	15.6% (based on 9,000 acres) / 1.3% (based on 6,848 known individuals)

[1]Not all habitat along the trails has been surveyed so numbers should be considered minimum numbers.

Per discussions with the US Fish and Wildlife Service, the disturbance thresholds in the EA have been updated to be equal to or greater than 15% for Wright fishhook cactus; and equal to or greater than 5% for Winkler cactus and Last Chance townsendia (see also Attachment 2, Errata to the EA, for updates). These revised disturbance thresholds do not change the conclusions in the EA regarding the effects of trailing on listed plants. The National Park Service will survey listed plants after each trailing event and, if these thresholds are exceeded, will work with permit holders to adjust trailing operations (e.g., modifying trail alignments, using temporary fencing, employing more riders/staff, and moving livestock more quickly through the park) to minimize future impacts.

Mexican Spotted Owls. As described in detail in Chapters 3 and 4 of the EA, in 2014 and 2016 Pleasant Creek was rated as being in proper functioning condition. This indicates that historic and continued fall trailing through Pleasant Creek in a single day will not be sufficient to degrade the system. The area will continue to provide biological and physical features necessary to ensure conservation of the owl, such as adequate levels of plant cover to maintain fruits and seeds and allow plant regeneration. While Oak Creek has been rated as nonfunctional in past surveys, moving cattle more quickly along this route and Pleasant Creek and more proactively addressing unauthorized livestock use in Oak Creek will benefit Mexican spotted owls and their habitat by reducing the amount of time livestock, horses, and humans are in the park, and the amount of riparian habitat subject to livestock trampling, grazing, and browsing.

In addition, the National Park Service worked with the US Fish and Wildlife Service to identify desired conditions for Oak Creek and Pleasant Creek (e.g., proper functioning condition and stubble height of 4 to 6 inches for grasses) that will support primary constituent elements for foraging Mexican spotted owl habitat. Assessments and monitoring of riparian areas, monitoring of trailing activities to ensure livestock do not linger in the park, and adaptive management, including the potential to shift trailing from Oak Creek to Dry Bench if desired conditions are not met (see selected action description, and Chapter 2 and Appendix C of the EA), will help ensure Pleasant Creek remains in, and Oak Creek moves toward, proper functioning condition. Although there is some uncertainty in how much foraging habitat will improve and how long it will take, this will result in benefits to Mexican spotted owls compared to current conditions.

Wilderness

As described in detail in Chapter 4 of the EA and as noted above, the selected action will benefit soils, upland and riparian vegetation, water resources, special status species, and migratory and resident birds by improving the natural quality of approximately 9,400 acres of recommended wilderness in the Sandy 3 allotment and along currently used trailing routes. In addition, there could be some increases in opportunities for solitude and primitive and unconfined recreation as a result of the rest rotation grazing system in the Sandy 3 allotment.

However, livestock grazing and trailing management also have the potential to adversely affect the natural, untrammeled, and undeveloped qualities of wilderness, as well as opportunities for solitude and primitive and unconfined recreation as a result of the following:

- Adverse impacts on vegetation and wildlife habitat associated with issuing trailing permits, constructing fences, and refurbishing stock ponds (natural quality)
- Adverse impacts on sensitive plant habitat and individual sensitive plants (natural quality)
- Intentional manipulation of the biophysical environment from fence construction, herbicide use for invasive plant control, refurbishing stock ponds, and increased human presence to manage and move livestock (untrammeled quality and opportunities for solitude and primitive and unconfined recreation)
- Increasing developments in wilderness such as fences and refurbished stock ponds (undeveloped quality and opportunities for solitude and primitive and unconfined recreation)

While these impacts will affect the character of approximately 9,800 acres of recommended wilderness within the Sandy 3 allotment and along some trailing routes, this represents approximately 5% of the total recommended wilderness in the park. As a result, most of the recommended wilderness in the park will be unaffected or will experience beneficial impacts, as described earlier. In addition, some impacts on wilderness character will be temporary and infrequent, such as increased human presence and impacts from trailing for 1 to 6 days every 5 to 12 months, and 1 to 2 days of moving livestock between pastures every 12 months, and increased human presence, equipment noise, and ground disturbance associated with construction of fences and refurbishment of stock ponds. In addition, construction-related impacts on the natural quality of wilderness will be expected to recover in 1 to 5 years.

Permit Holder Traditional Uses and Socioeconomics

As described in detail in Chapter 4 and Appendix E of the EA, initially the selected action will have limited effects on permit holder traditional uses and socioeconomics, as follows:

- The Sandy 3 allotment grazing permit holder will see gross income potential reduced by about 6% (from $60,000 to $56,700) as a result of the need to move livestock in a two-pasture rotation system.
- Costs for trailing could be on the higher end of the $1,000 to $3,000 range estimated in the analysis as a result of the potential need to hire more ranch hands to move livestock through the park more quickly.
- Costs for the former Hartnet allotment grazing permit holder will be reduced from $10,400 to $8,700 (a difference of $1,700) as a result of receiving two permits for trailing along the Hartnet and Lower South Desert trails, which will eliminate the need for trucking livestock between pastures outside the park.

- The need to move livestock in the pasture rotation system and to move livestock more quickly along trails could also require additional ranch hands and will therefore support jobs that contribute to the traditional ranching lifestyle.

Additional impacts on traditional uses and socioeconomics could occur if adaptive management actions are needed in response to monitoring results that indicate resources and rangeland health are not moving toward desired conditions (see Chapter 2 and Appendix C of the EA). Such adaptive management actions could include adjustments to AUMs and stocking rates or use of the Dry Bench instead of Oak Creek trailing route. However, the National Park Service does not know if and when such adjustments may be needed. Conversely, if it is subsequently determined through monitoring that AUMs and stocking rates can be increased (up to the maximum of 410 AUMs allowed by legislation), or permits could be issued along Oak Creek again, this lost income potential will largely be restored, minimizing the economic effects.

As noted in the EA, there is some uncertainty in the impacts analysis for permit holder traditional uses and socioeconomics as a result of the limited information provided by permit holders on their operations, and the fact that grazing and trailing is occurring on public lands and will be adaptively managed to balance these uses with resource management mandates of the National Park Service. However, the National Park Service relied on what was provided, other available information, including studies from the Bureau of Land Management, and best professional judgment to analyze the potential effects (see Chapter 3, Chapter 4, and Appendix E of the EA). Additionally, there is uncertainty associated with the adaptive management of grazing and trailing on all public lands, not just at Capitol Reef. Any business decisions made in response to this uncertainty (e.g., decisions to change stocking rates or truck livestock instead of trail them), as well as any related economic, social, and cultural impacts, are at the discretion of the permit holder. Given the availability of other federal, state, and private lands, including base property, the National Park Service assumes the permit holders will be able to sustain their operations and ranching lifestyle. Therefore, the direct and indirect adverse impacts of the selected action will not be significant.

Cumulative Impacts for All Resources

As described in detail in Chapter 4 of the EA and summarized above, while the selected action will have some adverse impacts, when combined with the collective beneficial effects of other cumulative actions (which for natural resource topics are driven by the recent retirement of the Hartnet allotment from grazing), overall cumulative effects will be beneficial. Therefore, there will be no significant adverse cumulative effects for any resources.

CONCLUSION

As described above, the selected action does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected action will not have a significant effect on the human environment in accordance with Section 102(2)(C) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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- Attachment 1: Non-impairment Determination
- Attachment 2: Errata to the EA
- Attachment 3: Response to Substantive Public Comments

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Attachment 1: Nonimpairment Determination

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the US Department of the Interior and the National Park Service to manage units "to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 USC 100101). NPS Management Policies 2006, Section 1.4.4, explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment, the National Park Service must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts." An impact on any park resource or value may constitute impairment, but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance (NPS 2006, Section 1.4.5).

The significance and importance of each resource, based on the foundation document and general management plan for Capitol Reef National Park (the park), is discussed under the analyzed resource sections below.

The resource impact topics carried forward and analyzed for the NPS selected action in the environmental assessment and for which an impairment determination is contained in this attachment are soils, upland and riparian vegetation communities, water resources, special status plant species, Mexican spotted owl, and migratory and resident birds. A nonimpairment determination is not made for wilderness or permit holder traditional uses and socioeconomics because these are not considered to be a park resource or value subject to the nonimpairment standard established by the Organic Act and clarified further in Section 1.4.6 of NPS Management Policies 2006. Each resource or value for which nonimpairment is assessed and the reasons why impairment will not occur is described below. This nonimpairment determination has been prepared for the selected action, as described in the Finding of No Significant Impact for the Livestock Grazing and Trailing Management Plan EA.

Soils

Soils are included in the spectrum of geologic processes necessary for the park to fulfill its purpose. Soils are fundamental to the creation and survival of ecosystems in the park, including in the grazing allotment and along trailing routes. Soils in or near a reference condition promote ecosystem health through biological soil crusts, delivery of nutrients, absorption and infiltration of water, and other benefits. Soils in good condition support robust ecological processes.

Fence construction, monitoring or sensitive resource exclosure construction, stock pond refurbishment, and tamarisk removal and burning at Little Lake Mead in the Sandy 3 allotment will result in the disturbance of approximately 36.5 acres of the 10,200 acres of soils in the allotment (approximately 0.4%) and 199,700 acres of soil park-wide (approximately 0.01%). While the construction-related impacts will not persist beyond approximately 1 to 5 years, the soils exposed to concentrated livestock use around the five existing stock ponds to be refurbished will result in approximately 625 acres of ongoing impacts to soils from concentrated livestock use in these areas. However, this will only affect 5% of the soils in the planning area and less than 0.3% of soils park-wide.

Potential impacts on soil in the grazed portion of the Sandy 3 allotment and along trailing routes will include loss of soil, loss of biological soil crust, and reduced capacity for infiltration of moisture. However, implementation of a rest-rotation pasture system will reduce the length of time soils will be exposed to trampling, biological soil crust disturbance, and protective vegetation loss. Permit holder riders moving livestock along trails and other best management practices will reduce the time livestock are in the park and minimize the distance livestock stray from the trail, thereby reducing exposure of soil to livestock impacts.

Implementing these actions with monitoring and adaptive management to meet desired conditions will stabilize soil degradation and improve soil integrity on 11,600 acres throughout the allotment and along the currently permitted trailing routes analyzed under this alternative. This will result in a decrease in bare ground, an increase in biological soil crust, an increase in resistance to wind and water erosion, and an increase in the ability of soils to infiltrate and retain moisture and nutrients.

Soils will be affected by livestock during trailing events in the recently retired Hartnet allotment, which will last for 1 to 2 days every 5 to 12 months. The short duration of trailing, coupled with moving livestock more quickly through the park and adaptive management actions if desired conditions are not met, will minimize trailing impacts along the 830 acres of proposed trailing routes in the recently retired Hartnet allotment. Soil conditions will likely move toward desired conditions due to the cumulative effect of retiring the Hartnet allotment from grazing, but at a slower rate compared with other areas where trailing will not occur.

When considering cumulative impacts, soil recovery across 19,000 acres in the recently retired Hartnet allotment will drive an overall beneficial cumulative effect on park soils as a result of the stabilization of soils through the reestablishment of biological soil crusts, improved carbon and nitrogen cycling, and improved vegetation recruitment. The National Park Service recognizes uncertainty in the processes that drive soil recovery and that it occurs on the scale of decades to centuries; however, the effects described will improve soil contributions to ecosystem function. Implementation of a monitoring and adaptive management program intended to achieve the desired conditions described in Appendix C will result in soil stabilization and improvements that will contribute further to an overall cumulative beneficial impact on soils. These benefits will support the park's fundamental resources and values regarding the geologic process and assemblages of ecosystems as compared to current conditions. Ecosystem health

depends on various features of soils, such as biological soil crust, infiltration and retention of moisture, nutrients for vegetation, and erosion minimization. Increasing temperatures associated with uncertain climate change will have negative impacts on soils; however, management actions are expected to increase resiliency of park soils to the impacts of climate change.

Therefore, while the selected action will result in some limited adverse impacts, it is expected that soil integrity in the majority of the planning area and park will be unaffected or experience beneficial effects. As a result, soils will continue to be present in the park for the enjoyment of future generations, and there will be no impairment of park soils.

Upland and Riparian Vegetation Communities

A fundamental resource of Capitol Reef National Park is the assemblage of ecosystems. The park's foundation document states, "The varied landscape and environmental conditions of Capitol Reef National Park allow for a wide-range of intact ecosystems and habitats supporting a diversity of plant and animal communities" (NPS 2017b). The plant communities described in Chapter 3 of the EA are a critical part of these ecosystems.

Fence construction, monitoring or sensitive resource exclosure construction, stock pond refurbishment, and tamarisk removal at Little Lake Mead will disturb approximately 36.5 acres of vegetation (approximately 0.4% of vegetation in the allotment, and 0.02% of vegetation park-wide). While the construction-related impacts will not persist beyond approximately 1 to 5 years, the approximately 625 acres of vegetation exposed to concentrated livestock use around the five existing stock ponds to be refurbished will experience increased defoliation and trampling compared with elsewhere in the allotment. These impacts will occur across 5% of the planning area and less than 0.3% park-wide, will be limited to individual plants, and will not change overall plant community composition or ecosystem function.

Under the selected action, the National Park Service will implement a rest-rotation pasture system in the Sandy 3 allotment. When coupled with improved distribution from the refurbishment of stock ponds, as well as trailing best management practices to reduce the amount of time it takes for livestock to move through the park along routes where permits are currently issued, these actions are expected to move upland and riparian vegetation communities in the Sandy 3 allotment and along existing trailing routes towards desired conditions. This will result in improvements across 11,600 acres of plant communities (approximately 5% of the vegetated areas of the park) when compared with current conditions, as a result of increases in:

- Plant cover and reproductive success
- Abundance of native cool-season grasses at a community level
- Plant cover and recruitment of trees and shrubs in riparian areas
- Control of invasive species

Issuing two new permits for livestock trailing in the recently retired Hartnet allotment will affect approximately 830 acres of vegetation 1 to 2 days every 5 to 12 months. However, the short duration of trailing, coupled with moving livestock more quickly through the park and adaptive management actions if desired conditions are not met, will minimize the associated impacts. Vegetation conditions along these trails are expected to still move toward desired conditions,

but at a slower rate compared to other areas in the retired allotment where trailing does not occur.

In Oak Creek, improved monitoring, adaptive management, and control of unauthorized livestock will reduce the amount of time livestock are in this riparian system, minimizing current impacts and moving it towards proper functioning condition. Since there are a small number of perennial waterways in the park, this will be a substantial benefit to park riparian areas.

When considering cumulative impacts, vegetation recovery across 19,000 acres in the recently retired Hartnet allotment will drive an overall beneficial cumulative effect on park vegetation because of the critical role vegetation plays in ecosystem function, the relatively quick recovery of rested areas, and the expected increase in desirable, native, cool-season grasses and critical riparian ecosystems. The National Park Service recognizes there is uncertainty in how much upland and riparian vegetation will improve and how long it will take, given factors such as drought or disturbance that also play a role in structuring plant communities, and that some areas may never fully recover from the effects of more than 100 years of livestock grazing. However, implementation of a monitoring and adaptive management program intended to achieve the desired conditions described in Appendix C of the EA under the selected action will further contribute to overall cumulative benefits on upland and riparian vegetation.

Therefore, while the selected action will result in some limited adverse impacts, it is expected that upland and riparian vegetation communities in the rest of the planning area and park will be unaffected or experience beneficial effects. As a result, upland and riparian vegetation communities will still be present in the park for the enjoyment of future generations, and there will be no impairment of these vegetation communities.

Water Resources

Fence construction, stock pond refurbishment and construction, and tamarisk removal and burning at Little Lake Mead in the Sandy 3 allotment will not occur in proximity to and therefore have minimal potential to affect known park water resources.

Implementing the proposed pasture rotation system under the selected action in the Sandy 3 allotment, where each pasture will be grazed in succession and the pattern will change each year, Bitter Creek and Bitter Spring Creek will be affected by livestock for fewer days than current conditions. When coupled with refurbished stock ponds, which will better distribute livestock and provide alternative water sources to riparian areas, this will result in recovery of plants and seed banks in the riparian communities, which will stabilize soil, provide improved wildlife habitat, and cool water through shading. As soils stabilize, sediment loading to streams should decrease, and as springs recover, the ability of these reaches to dissipate energy during large flows will improve. Finally, when a pasture is rested, water quality will improve because of reduced nutrient and bacterial loading. All of this will help move Bitter Creek and Bitter Spring Creek toward proper functioning conditions.

Oak Creek is expected to benefit from livestock being moved quickly through the riparian corridor and more actions being taken to reduce the incidence of trespass livestock, which will result in increased cover of native riparian species, increased stabilization of soils, and reduced sediment/nutrient loading. As described above, this will help move Oak Creek toward proper functioning condition. Pleasant Creek, which is currently in proper functioning condition, will be expected to retain that condition due to implementation of best management practices described for Oak Creek. Impacts on Ackland Springs, Deep Creek Spring, Baker Post Seep, and Willow Canyon Seep are possible as a result of issuing two new trailing permits. This

includes grazing and trampling of vegetation, disturbance to soil, and contribution of sediment and dung to the water channel in the riparian areas. However, such impacts will be short lived (up to several hours or one night) and will only occur 1 to 2 times per year, providing time for known park water resources to recover prior to the next trailing event.

When considering cumulative impacts, the recent retirement of the Hartnet allotment will drive an overall beneficial cumulative effect on known water resources. This is because 50% of known park water resources (Ackland Springs, South Desert Spring, Ringwater Spring, Bull Spring, Deep Creek Spring, Notch Water Spring, Willow Canyon Seep, and Baker Post Seep; Hartnet Draw, Polk Creek, and Deep Creek) will be rested and see the same improvements noted above. The National Park Service recognizes there is uncertainty in how much water resources will improve and how long it will take, given additional factors such as drought and climate change that also play a role in structuring plant communities, and that some areas may never fully recover from the effects of more than 100 years of livestock grazing. Implementation of a monitoring and adaptive management program intended to achieve the desired conditions described in Appendix C will result in improvements to water resources that will contribute further to an overall cumulative beneficial impact. These benefits will support the park's fundamental resources and values as a result of the critical role riparian areas and water sources play in ecosystem function.

Therefore, while the selected action will result in some limited adverse impacts, it is expected that known park water resources will be unaffected or experience beneficial effects. As a result, known park water resources will continue to be present in the park for the enjoyment of future generations, and there will be no impairment of known park water resources.

Special Status Plant Species

As described in Chapter 3 of the EA, there are no special status plant or animal species in the Sandy 3 allotment. All of Sandy 3 allotment is within Mexican spotted owl designated critical habitat. However, based on a habitat suitability model for Mexican spotted owl only the western Waterpocket Fold area in the southern part of the allotment contains suitable habitat. This suitable habitat is more than 3 miles from the nearest Protected Activity Center and has little to no cattle use. Therefore, implementation of grazing management actions under the selected action will not impact special status species or their habitat.

The selected action will result in potential habitat disturbance to 2,554 acres for Wright fishhook cactus, 1,280 acres for Winkler cactus, and 1,404 acres for Last Chance townsendia. This is less than 1% of the occupied habitat for Wright fishhook cactus and Winkler cactus, and nearly 16% of the occupied habitat for Last Chance townsendia. The selected action will result in approximately 402 Wright fishhook cacti, 258 Winkler cacti, and 86 Last Chance townsendia potentially being exposed to livestock activities for 1 to 2 days, once or twice each year. These are documented individuals and since not all habitat has been surveyed along the trails, these should be considered minimum numbers. The number of individuals of each species affected ranges from 1% to 4% of the species rangewide populations.

Habitat degradation by livestock is described as a primary adverse impact on all three federally listed plant species in the planning area (USFWS 2008b, 2013a, 2015b; Spector 2013). Although trailing livestock as proposed under the selected action will have adverse impacts on listed plant species and their habitat, the short duration and low frequency of the trailing events will result in substantially reduced impacts compared with several months of grazing each year, which most of the studies cited previously are based upon. Also, most trailing events through

listed species habitat will occur in the fall outside the reproductive season and when Winkler cacti are typically at or below the ground surface, so they may be somewhat protected from livestock trampling. In addition, riders will be used to move livestock steadily along the Gray Bench-Cathedral Valley trail, the Hartnet trail, and the upper part of the Lower South Desert trail, which will reduce the time livestock are in the park, encourage livestock to trail in a line rather than in a bunch to minimize the distance livestock stray from the trail, and reduce exposure of listed plants and their habitat to livestock. These practices are expected to minimize adverse impacts on listed plant species along the trailing routes.

Also, if monitoring indicates thresholds for damage/disturbance to listed plants are exceeded, adaptive management actions will be implemented, such as temporary fencing to contain livestock overnight or to designate trail corridors, modifying alignments of existing trailing routes, and fencing known localities of listed plants or their habitat. This will help reduce impacts on listed plants and their habitat along the trailing routes and facilitate meeting desired conditions.

When the impacts of other cumulative actions are combined with the impacts under the selected action, the cumulative impact on the three listed plant species will be beneficial, largely driven by the recovery of listed plants and their habitat in the recently retired Hartnet grazing allotment. The National Park Service recognizes there is uncertainty in how much habitat and populations of listed plants will improve and how long it will take, given factors such as drought or disturbance that also play a role, and that some areas may never fully recover from the effects of more than 100 years of livestock grazing. Although the selected action will adversely affect approximately 2,500 acres of habitat and 746 individual listed plants, the recent retirement of the Hartnet allotment will result in the recovery of 19,000 acres of listed plant species habitat and will protect approximately 4,500 individuals from direct damage and disturbance by livestock. Therefore, the overall cumulative impacts will continue to be beneficial.

While the selected action will result in some adverse impacts where livestock directly trample special status plants and their habitat, it is expected that special status plants and their habitat in the rest of the planning area and park, particularly in the recently retired Hartnet allotment, will be unaffected or experience beneficial effects. Therefore, special status plant species will continue to be present in the park for the enjoyment of future generations, and there will be no impairment of special status plant species or their habitat.

Mexican Spotted Owl

Best management practices proposed under the selected action will result in livestock trailing more quickly through, and fewer livestock being left behind to loiter and graze in, the riparian areas along Oak Creek and Pleasant Creek trails, which provide important foraging habitat for Mexican spotted owls. This will reduce the amount of time livestock are in the riparian areas, the area of disturbance, and the time that foraging owls are displaced due to trailing. Applying penalties for unauthorized livestock will provide incentive for their prompt removal.

Coupled with setting 4- to 6-inch residual vegetation stubble heights, the selected action will move the Oak Creek riparian area toward meeting the proper functioning condition, and therefore the physical and biological features that are associated with maintaining adequate prey species for Mexican spotted owls. These features include residual vegetation to maintain fruits and seeds for plant regeneration, and a diversity of plant species with a wide range of size and age classes. This will result in improved reproductive success for owls foraging in Oak Creek.

Additional benefits to owl foraging habitat could be realized any time a permit holder uses the Dry Bench trailing route as an alternative to Oak Creek. Having all or a portion of the approximately 1,100 livestock that currently trail Oak Creek each spring and fall use the Dry Bench trail instead will help improve the riparian conditions and foraging habitat for spotted owls. It also will reduce disturbance to foraging owls from trailing activities.

During the 2014 and 2016 riparian condition assessments, Pleasant Creek was rated as being in proper functioning condition (Martin and Wagner 2015; Capitol Reef National Park 2016); therefore, fall trailing of up to 300 livestock down this corridor, 50 more than under current management, is not expected to affect owl foraging habitat. Under the selected action, Capitol Reef National Park will coordinate with the permit holder to develop adequate control of livestock held overnight at the park's eastern boundary to restrict livestock from moving back upstream and degrading habitat by grazing and trampling vegetation. Because there is an occupied Mexican spotted owl Protected Activity Center within 0.3 miles of Pleasant Creek, it is critical to maintain the riparian habitat in proper functioning condition to provide suitable foraging habitat for spotted owls.

While some past, present, and reasonably foreseeable future actions have resulted in beneficial cumulative impacts on Mexican spotted owls, decades of livestock trailing, as well as repeated unauthorized livestock use, has impacted foraging habitat for Mexican spotted owls along the Oak Creek trail such that the quality of foraging habitat for Mexican spotted owls has been degraded. However, implementation of a monitoring and adaptive management program intended to achieve the desired conditions described in Appendix C of the EA will provide for continued and improved protection and recovery of Mexican spotted owl habitat along the Pleasant Creek and Oak Creek livestock trails. Capitol Reef National Park will work with the US Fish and Wildlife Service to develop conservation measures and monitoring protocols to ensure that riparian conditions in Pleasant Creek are maintained and that in Oak Creek they are moving toward desired conditions, including proper functioning condition. This will improve foraging habitat for spotted owls, and overall, despite the minimal impacts of the selected action and adaptive management actions, there will be a cumulative beneficial impact on Mexican spotted owls and their designated critical habitat.

The benefits to Mexican spotted owls and their habitat under the selected action will support the park's fundamental resources and values for preserving a healthy assemblage of intact park ecosystems (NPS 2017b) and the requirements in NPS Management Policies 2006 and the Endangered Species Act to protect and recover Mexican spotted owl-designated critical habitat. Therefore, Mexican spotted owls and their habitat will continue to be present in the park for the enjoyment of future generations, and there will be no impairment of Mexican spotted owl or its designated critical habitat.

Migratory and Resident Birds

Fence construction, stock pond refurbishment, and tamarisk removal at Little Lake Mead will disturb approximately 36.5 acres of vegetation and bird habitat in the allotment. Vegetation will be expected to recover within 1 to 5 years of these activities, and removal of invasive vegetation that may establish in the disturbed areas will be critical to the recovery of suitable bird habitat. The infrastructure projects could also have localized negative impacts on birds, such as displacement, nest damage, habitat loss, or degradation. Implementation of these projects outside the songbird and raptor breeding season of January through August will protect birds and their nests from damage or displacement. In addition, increasing the visibility of the fences

after construction by using markers on the wires will reduce, but not eliminate, fence-related bird mortality and injury.

While some benefits arise with increased water resources, such as increased prey species for predatory birds and additional water sources during migration, approximately 625 acres of bird habitat will be degraded in the Sandy 3 allotment due to concentrated use by livestock within a quarter-mile of the five existing stock ponds to be refurbished.

Implementation of the following management actions when combined with range monitoring and adaptive management (including desired conditions listed in Appendix C of the EA) will substantially improve suitable habitat for wintering, breeding, and migratory birds, including raptors and species of conservation concern, in the Sandy 3 allotment and along livestock trails used by current permit holders. This will be accomplished by the following:

- Using rotating pastures, which allows each pasture to be rested during the bird breeding season (January – August) every other year in the Sandy 3 allotment
- Refurbishing stock ponds to improve livestock distribution
- Conducting rangeland monitoring and adaptive management to ensure that rangelands in the planning area make progress toward meeting desired conditions
- During trailing, moving livestock quickly through the park to minimize straying and grazing

Using rotating pastures will result in increased human activities and higher density of livestock in each pasture that could result in disturbances to birds, particularly raptors, and livestock grazing and trampling vegetation in bird habitat that had not previously experienced these impacts. However, the extent of these impacts, while concentrated, will be reduced because grazing in the Sandy 3 allotment occurs outside the peak breeding season (April – July) for most songbird species.

Because raptors can begin the breeding season in January, human disturbance when moving livestock between pastures and implementing infrastructure projects could affect individual raptors nesting in the planning area. Overall, the population of raptors in the planning area is not expected to be affected because suitable prey habitat exists outside of grazed areas where human disturbance is also limited. Vegetation is expected to recover as a result of rest provided by the pasture rotation system, improving nesting habitat for songbirds and habitat for raptor prey species. In addition, areas that currently experience little to no grazing comprise approximately 32% of the Sandy 3 allotment, and suitable nesting and foraging habitat will continue to be provided for all birds.

Moving livestock along trails more quickly will reduce the time livestock are in the park and the distance they stray from the trail. This will reduce the exposure of bird nests and habitat to livestock impacts. These actions, along with applying penalties to unauthorized livestock use to encourage their prompt removal, will facilitate Oak Creek moving toward desired conditions, including a proper functioning riparian area. This will benefit songbirds, raptors, and their habitat.

Issuing two new permits for livestock trailing in the recently retired Hartnet allotment will affect approximately 830 acres of bird habitat, and birds along these trails, 1 to 2 days every 5 to 12 months. However, the short duration of trailing coupled with moving livestock more quickly through the park and adaptive management actions if desired conditions are not met will

minimize the associated impacts. Also, both trails would typically be used in the fall, so nesting birds would not be impacted; in some years, the Hartnet trail may be used in early June. Bird habitat along these trails is expected to still move toward desired conditions, although at a slower rate compared to other areas in the retired allotment where trailing does not occur.

When considering cumulative impacts, recovery of bird habitat across 19,000 acres in the recently retired Hartnet allotment will drive a beneficial cumulative effect. The National Park Service recognizes there is uncertainty in how much upland and riparian vegetation will improve and how long it will take, given factors such as drought or disturbance that also play a role in structuring plant communities and that some areas may never fully recover from the effects of more than 100 years of livestock grazing. However, implementation of a monitoring and adaptive management program intended to achieve the desired conditions described in Appendix C of the EA under the selected action will also have beneficial impacts, further contributing to overall cumulative benefits on resident and migratory birds in the park.

Therefore, while species diversity and abundance of birds will be affected in the grazed areas of the Sandy 3 allotment and along trails, population-level impacts in the planning area are not expected for any of the species. It is expected that migratory and resident birds in the rest of the planning area and park will be unaffected or experience beneficial effects. While the response, measured in species diversity and abundance, will likely be delayed due to the time it takes for the land to recover and vegetation to regenerate, these benefits to birds will support the park's fundamental resources and values of preserving a healthy assemblage of intact park ecosystems (NPS 2017b). As a result, migratory and resident birds will continue to be present in the park for the enjoyment of future generations, and there will be no impairment of migratory and resident birds.

Conclusion

The National Park Service has determined that implementation of the selected action will not constitute an impairment of the resources or values of Capitol Reef National Park. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies 2006.

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Attachment 2: Errata to the EA

Chapter 1: Purpose of and Need for Action

Page 1-1, Purpose and Need, beginning of the last paragraph – the following text has been added: "The National Park Service also recognizes the need to address the potential impacts on traditional uses and socioeconomics associated with the management of grazing and trailing at the park."

Page 1-2, Livestock Grazing and Trailing in Capitol Reef, paragraph 6 (sixth full paragraph) – the following text has been added: "Pursuant to its existing authority under Public Law 92-207, the National Park Service has the authority to deny permits and to subject new and existing permits to appropriate management actions, including imposing fines, for non-compliance with permit terms and conditions."

Chapter 2: Alternatives

Page 2-2, Figure 2.1: Sandy 3 Allotment – **Alternative 1** – the figure was revised to show the correct area that is actively grazed in the Sandy 3 allotment with respect to the northwest corner, which should not extend north beyond the fence line. See the end of this errata for revised figure.

Page 2-3, Livestock Trailing, Currently Permitted Routes, paragraph 2 – the following text has been added to the beginning of this paragraph: "Permit holders using the Gray Bench-Cathedral Valley trail would be required to continue using the wash south of the trail to avoid large concentrations of listed plants."

Page 2-7, Figure 2.3: Sandy 3 Allotment – Alternative 2 – the figure was revised to show the correct area that is actively grazed in the Sandy 3 allotment with respect to the northwest corner, which should not extend north beyond the fence line. The pasture boundary fence was also adjusted to the north and to the west to cover an area where livestock travel up a wash. See the end of this errata for revised figure.

Page 2-9, **Monitoring and Adaptive Management, Sandy 3 Allotment Range Monitoring and Assessment** – the following text has been added: "Monitoring and adaptive management in the Sandy 3 allotment would address the relationships between duration, timing, and intensity of grazing and rangeland conditions. Monitoring and evaluation of grazing impacts would be based on desired conditions described in Appendix C, including appropriate indicators for rangelands, riparian areas, and federally listed species. Weather conditions and drought, and their impact on available forage, will also be evaluated on an annual basis."

Page 2-11, Table 2.4, Sandy 3 Rangeland Monitoring Schedule, Range Infrastructure Maintenance – the following footnote has been added: "The National Park Service currently monitors and repairs known problem areas in boundary fences (i.e., wash crossings) each fall. This practice will continue with fencing in other areas being monitored a minimum of every 3 years."

Page 2-11, Table 2.4 – the following footnote has been added: "Note: stocking rate could be assessed annually if warranted based on drought conditions or other natural disturbances."

Page 2-11, Sandy 3 Allotment Adaptive Management Actions, paragraph 1 – the first sentence has been revised to read as follows: "Adaptive management actions would be implemented if monitoring indicates the desired conditions are not being achieved, are not making progress towards being achieved, or if range conditions are such that additional livestock or season of use could be tolerated to the maximum AUMs established for the allotment."

Page 2-11, Sandy 3 Allotment Adaptive Management Actions, paragraph 1 – the following text has been added: "Adaptive management actions would be implemented if monitoring indicates that range conditions will not support the current AUMs (e.g., due to drought), desired conditions are not being achieved, or if conditions are such that additional livestock or season of use could be tolerated to the maximum AUMs established for each allotment."

Page 2-11, Sandy 3 Allotment Adaptive Management Actions, Forage Availability or Changing Range Conditions – the following text has been added: "Adjustments to stocking rates are enforceable under Public Law 92-207."

Page 2-11, Sandy 3 Allotment Adaptive Management Actions, Distribution of Livestock – the following text has been added after the last bullet: "If stock ponds in the upper Sandy 3 pasture do not retain water while this pasture is being used, the National Park Service would consider leaving the cross fence between the upper and lower Sandy 3 pastures open so livestock can reach perennial water sources in the lower Sandy 3 pasture. Decisions to leave this fence open would be made considering availability of forage and water in the lower Sandy 3 pasture; if sufficient forage and/or water are not available in the lower pasture, AUMs may need to be reduced or livestock removed completely from the park."

Page 2-12, Trail Monitoring and Assessment, Threatened and Endangered Species – the second sentence has been revised to read: "If the percentage of plants damaged or disturbed exceeds established thresholds at a locality (i.e., a systematically surveyed area with one or more individuals), the USFWS would be contacted to discuss potential adaptive management actions. The damage threshold is equal to or greater than 5% for all three species. The disturbance threshold is equal to or greater than 15% for Wright fishhook cactus and equal to or greater than 5% for Winkler cactus and Last Chance townsendia."

Page 2-12, Trailing Adaptive Management Actions, General – the first sentence has been revised to read as follows: "Adaptive management actions would be implemented if monitoring indicates that the percentage of listed plant species damaged or disturbed by livestock at select localities exceeds the thresholds, or if progress toward desired conditions for residual vegetation stubble height and proper functioning condition in riparian areas along trailing corridors is not being made or these desired conditions are not met due to livestock activities."

Page 2-13, Trailing Adaptive Management Actions, bullet 4 at the top of the page – this text has been deleted.

Page 2-13, Oak Creek – the parenthetical has been revised to read as follows: "e.g., due to proper functioning assessment ratings that do not meet or make progress towards meeting proper functioning condition due to livestock grazing and that affect the MSO foraging habitat, or a natural event that prevents its use."

Page 2-13, Deep Creek Spring – the parenthetical has been revised to read as follows: "i.e., if assessments show that the spring is not meeting or making progress towards meeting PFC due to livestock grazing."

Chapter 3: Affected Environment

Page 3-6, Figure 3.1: Sandy 3 Allotment – Dominant Vegetation Communities – the figure was revised to show the correct area that is actively grazed in the Sandy 3 allotment with respect to the northwest corner, which should not extend north beyond the fence line. The pasture boundary fence was also adjusted to the north and to the west to cover an area where livestock travel up a wash. See the end of this errata for revised figure.

Page 3-21, Wright Fishhook Cactus, paragraph 2 (second full paragraph) – the following text has been added: "Because the permit holders have been re-routing livestock into that wash since 2016, and will continue to do so, this is the alignment that is analyzed in the EA."

Page 3-35, Figure 3.8: Recommended Wilderness – the figure was revised to show the correct area that is actively grazed in the Sandy 3 allotment with respect to the northwest corner, which should not extend north beyond the fence line. See the end of this errata for revised figure.

Chapter 4: Environmental Consequences

Page 4-2, Table 4.1, Past Present and Reasonably Foreseeable Actions, Reservoir Development Upstream of Oak Creek – the following text has been added to the "Description" column in the table: "During periods of limited precipitation, if the water levels in these reservoirs drop too low, water may no longer be diverted to Oak Creek."

Page 4-5, Soils, Impacts Under Alternative 1, Cumulative Impacts, paragraph 1 – the text in the first sentence has been revised to read as follows: "Reservoir development upstream of Oak Creek has some contribution to the overall development of riparian soils along this route. When water from the reservoirs upstream of Oak Creek cannot be diverted to the creek, it has the potential to adversely affect these riparian soils. In addition, as described in Chapter 3 and above, decades of livestock grazing and trailing have impacted soils in the Sandy 3 allotment and along trailing routes, including Oak Creek."

Page 4-7, Soils, Impacts Under Alternative 1, Conclusions, paragraph 1 (first full paragraph) – the following text has been added to the end of this paragraph: "Continued degradation of these soils would be inconsistent with NPS Management Policies 2006, which calls for restoring disturbed areas to natural conditions and processes; minimizing human impacts on the processes that sustain native plants, animals, and ecosystems; and the prevention or minimization of adverse impacts to soils."

Page 4-11, Soils, Impacts Under Alternative 2, Conclusions, paragraph 3 – the following text has been added to the end of this paragraph: "Improving soil integrity would be consistent with NPS Management Policies 2006, which calls for restoring disturbed areas to natural conditions and processes; minimizing human impacts on the processes that sustain native plants, animals, and ecosystems; and the prevention or minimization of adverse impacts to soils."

Page 4-11, Soils, Conclusions, Impacts Under Alternative 2, paragraph 4 – the text has been revised from 0.6% to 5%.

Page 4-17, Upland and Riparian Vegetation Associations, Impacts under Alternative 1, Grazing Systems and Vegetation, Livestock Trailing, paragraph 4 – the following text has been added: "Assuming trailing takes place over 1 to 12 days, impacts on upland vegetation would be minimal under Alternative 1 and would result in little change to plant community composition or species abundance in upland associations."

Page 4-18, Upland and Riparian Vegetation Associations, Impacts under Alternative 1, Cumulative Impacts, paragraph 1 – the first sentence has been revised to read as follows: "Reservoir development upstream of Oak Creek has some contribution to the overall development of riparian vegetation along this route. When water from the reservoirs upstream of Oak Creek cannot be diverted to the creek, it has the potential to adversely affect riparian vegetation. In addition, as described in Chapter 3 and above, decades of livestock grazing and trailing have impacted upland and riparian vegetation in the Sandy 3 allotment and along trailing routes, including Oak Creek."

Page 4-19, Impacts under Alternative 1, Conclusions, paragraph 2 – the text has been revised from 6% to 5%.

Page 4-20, Upland and Riparian Vegetation Associations, Impacts under Alternative 2, Sandy 3 allotment, paragraph 2 – An additional sentence has been inserted after the first sentence: "While livestock would graze in a smaller area for a shorter period of time, there is a benefit to implementing such a system."

Page 4-20, Upland and Riparian Vegetation Associations, Impacts under Alternative 1, Conclusions, paragraph 3 (third full paragraph) – the following text has been added: "Continued degradation of upland and riparian vegetation would be inconsistent with NPS Management Policies 2006, which calls for restoring disturbed areas to natural conditions and processes; minimizing human impacts on plants; and protecting, recovering, and preventing detrimental effects to listed species."

Page 4-24, Impacts under Alternative 2, Conclusions, paragraph 2 – the text has been revised from 4% to 5%.

Page 4-25, Upland and Riparian Vegetation Associations, Impacts under Alternative 2, Conclusions, paragraph 3 (third full paragraph) – the following text has been added to the end of this paragraph: "Improving the condition of upland and riparian vegetation would be consistent with NPS Management Policies 2006, which calls for restoring disturbed areas to

natural conditions and processes; minimizing human impacts on plants; and protecting, recovering, and preventing detrimental effects to listed species." The text has also been revised from 0.6% to 5%.

Page 4-27, Water Resources, Impacts under Alternative 1, Cumulative Impacts, paragraph 1 – the first sentence has been revised to read as follows: "Reservoir development upstream of Oak Creek has some contribution to the overall flow of this creek. When water from the reservoirs upstream of Oak Creek cannot be diverted to the creek, it has the potential to dry up the creek so that it does not flow. In addition, as described in Chapter 3 and above, decades of livestock grazing and trailing have impacted this and other water resources in the analysis area."

Page 4-28, Water Resources, Impacts under Alternative 1, Conclusions, paragraph 3 – the following text has been added to the end of this paragraph: "Continued degradation of 20% of the park's water resources would be inconsistent with NPS Management Policies 2006 and Director's Order 77-1 and 77-2, which call for restoring disturbed areas to natural conditions and processes; minimizing human impacts on the processes that sustain native plants, animals, and ecosystems; perpetuating surface waters and minimizing the pollution of park waters; improving conditions of wetlands; and protecting, recovering, and preventing detrimental effects to listed species."

Page 4-31, Water Resources, Impacts under Alternative 2, Conclusions, paragraph 2 – the following text has been added to the end of this paragraph: "Improving the condition of these water resources would be consistent with NPS Management Policies 2006 and Director's Order 77-1 and 77-2, which call for restoring disturbed areas to natural conditions and processes; minimizing human impacts on the processes that sustain native plants, animals, and ecosystems; perpetuating surface waters and minimizing the pollution of park waters; improving conditions of wetlands; and protecting, recovering, and preventing detrimental effects to listed species."

Page 4-36, Special Status Species, Special Status Plants, Impacts under Alternative 1, Conclusions, paragraph 3 – the following text has been added to the end of this paragraph: "The damage and disturbance to listed plants would be inconsistent with NPS Management Policies 2006, which calls for restoring disturbed areas to natural conditions and processes; minimizing human impacts on plants; and protecting, recovering, and preventing detrimental effects to listed species."

Page 4-39, Livestock Trailing, Table 4.5, Number and Percentage of Individuals Rangewide Potentially Affected Under Alternative 2 for Each of the Three Federally Listed Plant Species – the number of known Wright fishhook cactus has been revised to read 14,761.

Page 4-40, Range Monitoring and Adaptive Management – the second sentence has been revised to read as follows: "If the threshold of damage or disturbance to listed plants is exceeded (> 5% damaged for all three species or >15% disturbed for Wright fishhook cactus or >5% disturbed for Winkler cactus and Last Chance townsendia), actions would be taken to reduce the impacts."

Page 4-41, Special Status Species, Special Status Plants, Impacts under Alternative 2, Conclusions – paragraph 3 (third full paragraph) **–** the following text has been added to the end of this paragraph: "The damage and disturbance to listed plants would be inconsistent with NPS Management Policies 2006, which calls for restoring disturbed areas to natural conditions and processes; minimizing human impacts on plants; and protecting, recovering, and preventing detrimental effects to listed species."

Page 4-45, Special Status Species, Mexican Spotted Owls, Impacts under Alternative 1, Cumulative Impacts, paragraph 1 – the first sentence has been replaced with the following text: "Reservoir development upstream of Oak Creek has some contribution to the riparian conditions important for foraging MSOs along this route. When water from the reservoirs upstream of Oak Creek cannot be diverted to the creek, it has the potential to adversely affect these riparian conditions. In addition, as described in Chapter 3 and above, decades of livestock grazing and trailing has impacted foraging habitat for MSOs along the Oak Creek Trail."

Page 4-55, Migratory and Resident Birds, Impacts under Alternative 1, Cumulative Impacts, paragraph 1 – the first and second sentences have been replaced with the following text: "Reservoir development upstream of Oak Creek has some contribution to the development of riparian habitat important to birds along this route. When water from the reservoirs upstream of Oak Creek cannot be diverted to the creek, it has the potential to adversely affect riparian vegetation by reducing cover and density, altering species composition, and introducing invasive plants. In addition, as described in Chapter 3 and above, decades of livestock grazing and trailing have degraded rangeland conditions, resulting in reduced vegetation cover and density, altered species composition with incursion of invasive plants, decreased plant vigor and vegetation complexity, and lack of vegetation recruitment in the Sandy 3 allotment and along trailing routes, including Oak Creek."

Page 4-57, Migratory and Resident Birds, Impacts under Alternative 1, Conclusions, paragraph 5 – the following text has been added to the end of this paragraph: "The damage and disturbance to bird habitat and birds would be inconsistent with NPS Management Policies 2006, which call for restoring disturbed areas to natural conditions and processes and minimizing human impacts on animals, including migratory birds, and their habitats."

Page 4-66, Wilderness, Impacts under Alternative 1, Conclusions, paragraph 2 – the last sentence of this paragraph has been revised to read as follows: "The impacts on wilderness character under Alternative 1 represent a slight impact on wilderness values, based on the above analysis, and would be inconsistent with NPS Management Policies 2006 and Director's Order 41 related to the preservation of wilderness resources."

Page 4-69, Wilderness, Impacts under Alternative 2, Conclusions, paragraph 2 – the following text has been added: "The degradation of the untrammeled and undeveloped qualities of wilderness would be inconsistent with NPS Management Policies 2006 and Director's Order 41 related to the preservation of wilderness resources. However, this represents a tradeoff necessary to improve the natural quality of wilderness and opportunities for solitude or primitive and unconfined recreation, which would be consistent with these policies."

Appendix B: Rangeland Condition Assessments

Page B-21, Figure B-20: Sandy 3 Allotment – IIRH Indicator Ratings – the figure has been updated to change the one plot shown as "extreme to total" departure from reference condition to "none to slight" departure from reference condition. The figure was revised to show the correct area that is actively grazed in the Sandy 3 allotment with respect to the northwest corner, which should not extend north beyond the fence line. The pasture boundary fence was also adjusted to the north and to the west to cover an area where livestock travel up a wash. See the end of this errata for revised figure.

Appendix C: Monitoring and Adaptive Management, and General Administration of Livestock Grazing and Trailing

Page C-4, Table C.2, Rangeland Monitoring Schedule, Range Infrastructure Maintenance– the following footnote has been added: "The National Park Service currently monitors and repairs known problem areas in boundary fences (i.e., wash crossings) each fall. This practice will continue with fencing in other areas being monitored every 3 years."

Page C-4, Table C.2, **Rangeland Monitoring Schedule** – the following footnote has been added: "Note: stocking rate could be assessed annually if warranted based on drought conditions or other natural disturbances."

Page C-6, Range Monitoring and Adaptive Management, Desired Conditions for Federally Listed Species, Sandy 3 Allotment Rage Monitoring and Assessment, Stocking Rates – the following text has been added: "If annual monitoring of weather conditions and drought (C-4) indicates that any portion of the Sandy 3 allotment is in any level of drought status according to the US Drought Monitor (Abnormally Dry to Exceptional Drought), additional monitoring of annual forage production will be initiated. The severity of drought along with determination of available forage will be used to reevaluate the stocking rate, using a 25% to 30% utilization level."

Page C-7, Trail Monitoring and Assessment, paragraph 3 – the fourth and fifth sentences have been revised to read: "If the percentage of plants damaged at a locality is greater than or equal to 5%, or if the percent disturbed is greater than or equal to 5% for Winkler cactus and Last Chance townsendia, and 15% for Wright fishhook, the FWS would be contacted to discuss potential adaptive management actions. These damage and disturbance thresholds are consistent with the specific management objectives identified for the cactus species in the park's 2013 cactus monitoring plan (NPS 2013d)." The last sentence of this paragraph has been revised to read: "If at other localities damage and disturbance to listed plants are consistently lower than the established thresholds stated above, frequency of monitoring could be decreased to every 3 years."

Appendix D: Issues and Impact Topics Identified Through Scoping

Page D-2, Issues and Impact Topics Not Carried Forward for Analysis, Visitor Use and Experience, paragraph 1 – the text has been revised to read as follows: "**Visitor use and experience.** Most park visitors come to see and experience the features of the Waterpocket

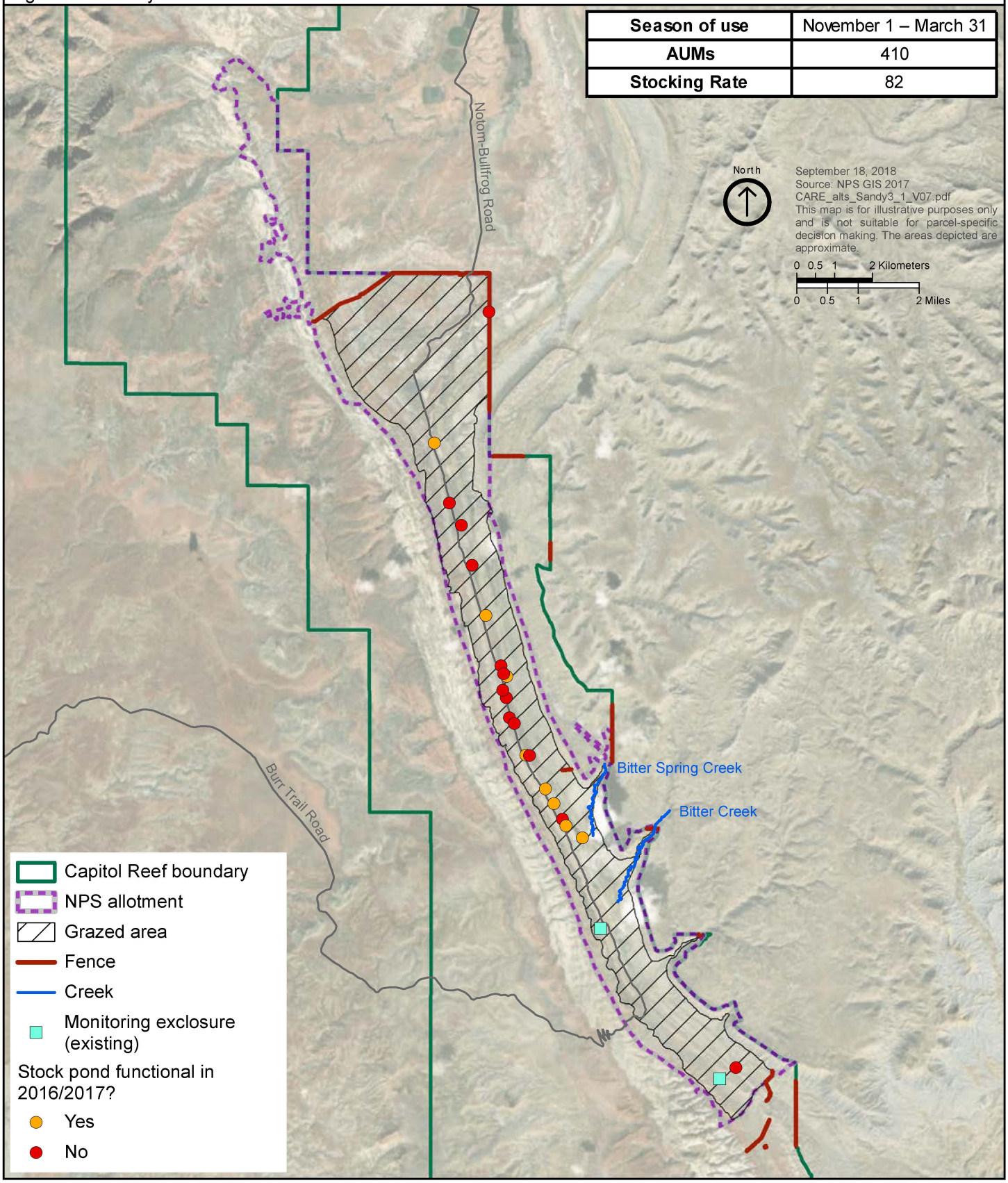
Fold and the Fruita Rural Historic District. Some go to the low desert areas of the Sandy 3 allotment, and some have expressed questions or concerns to park personnel about grazing and trailing in the park. Livestock grazing and trailing could affect visitor use and experience from encounters with livestock, poor water quality, and odors from livestock and their feces. Range developments, such as fences and stock ponds, could also detract from the visual aesthetics for visitors. Livestock grazing and trailing would result in noises from livestock and operations that many people would consider unnatural in the context of a national park. The potential for an increase in the number of livestock trailing through the park along the Pleasant Creek, Highway 24, Divide Canyon, Lower South Desert, and Hartnet trails could increase interactions with livestock during trailing events. However, these events occur outside of areas where most park visits occur and are seasonal, and as noted below, some visitors would enjoy this experience, while others may not. Because park legislation allows for continued grazing and trailing, the potential for these relatively low-intensity effects would continue under any of the alternatives. Further, due to the retirement of the Hartnet allotment, visitor interaction with livestock and evidence of livestock is eliminated, except during trailing events."

Page D-15, Table D.7, Threatened, Endangered, Candidate/Proposed Species and Designated Critical Habitat with the Potential to Occur in the Planning Area – The Yellow-billed cuckoo has been revised to read HAB under the "Rationale for Exclusion" column.

Capitol Reef National Park
Livestock Grazing and Trailing Management Plan/EA

National Park Service
U.S. Department of the Interior

Figure 2.1: Sandy 3 Allotment - Alternative 1

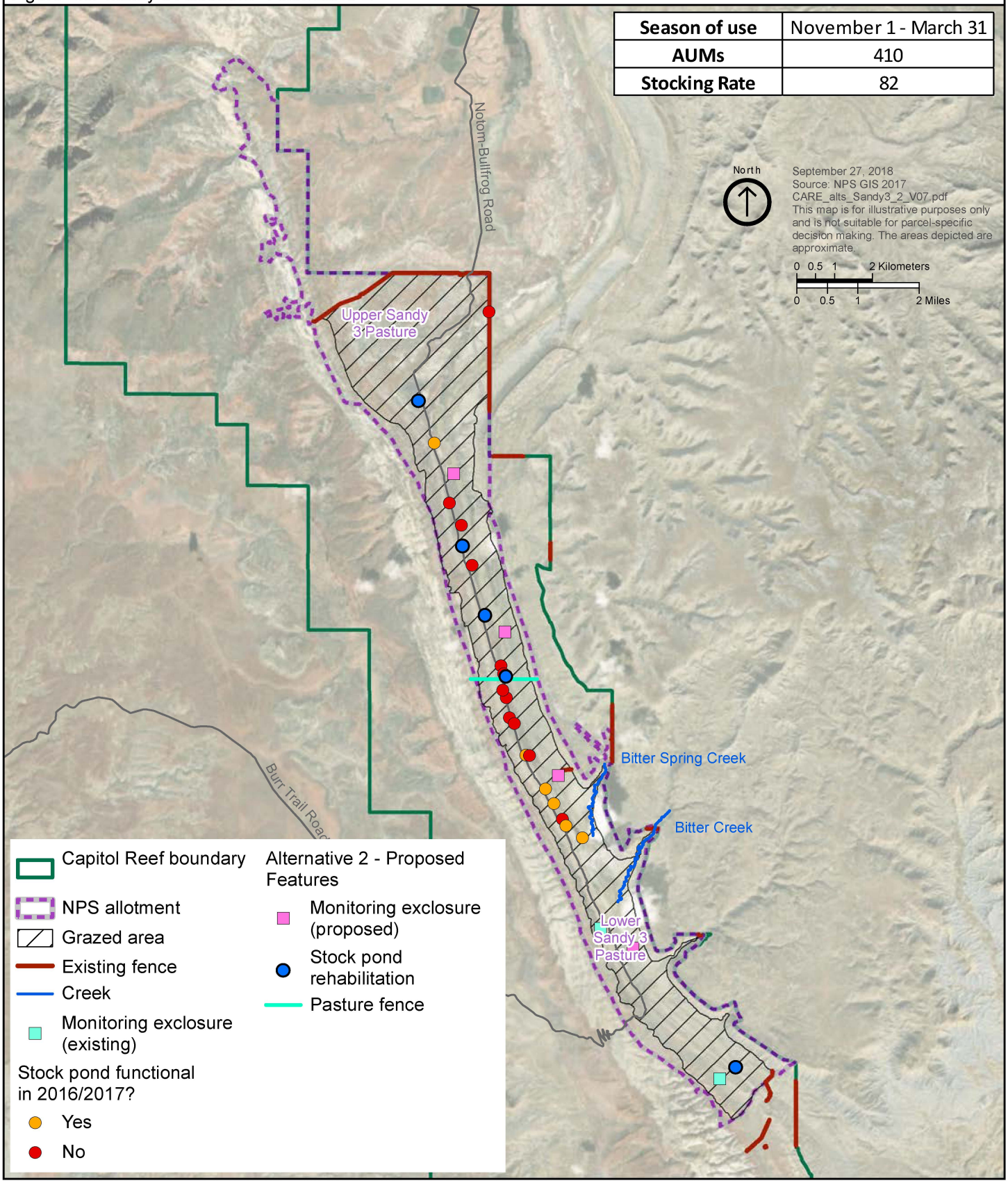


Capitol Reef National Park
Livestock Grazing and Trailing Management Plan/EA

National Park Service
U.S. Department of the Interior

Figure 2.3: Sandy 3 Allotment - Alternative 2

Season of use	November 1 - March 31
AUMs	410
Stocking Rate	82



Capitol Reef National Park
Livestock Grazing and Trailing Management Plan/EA

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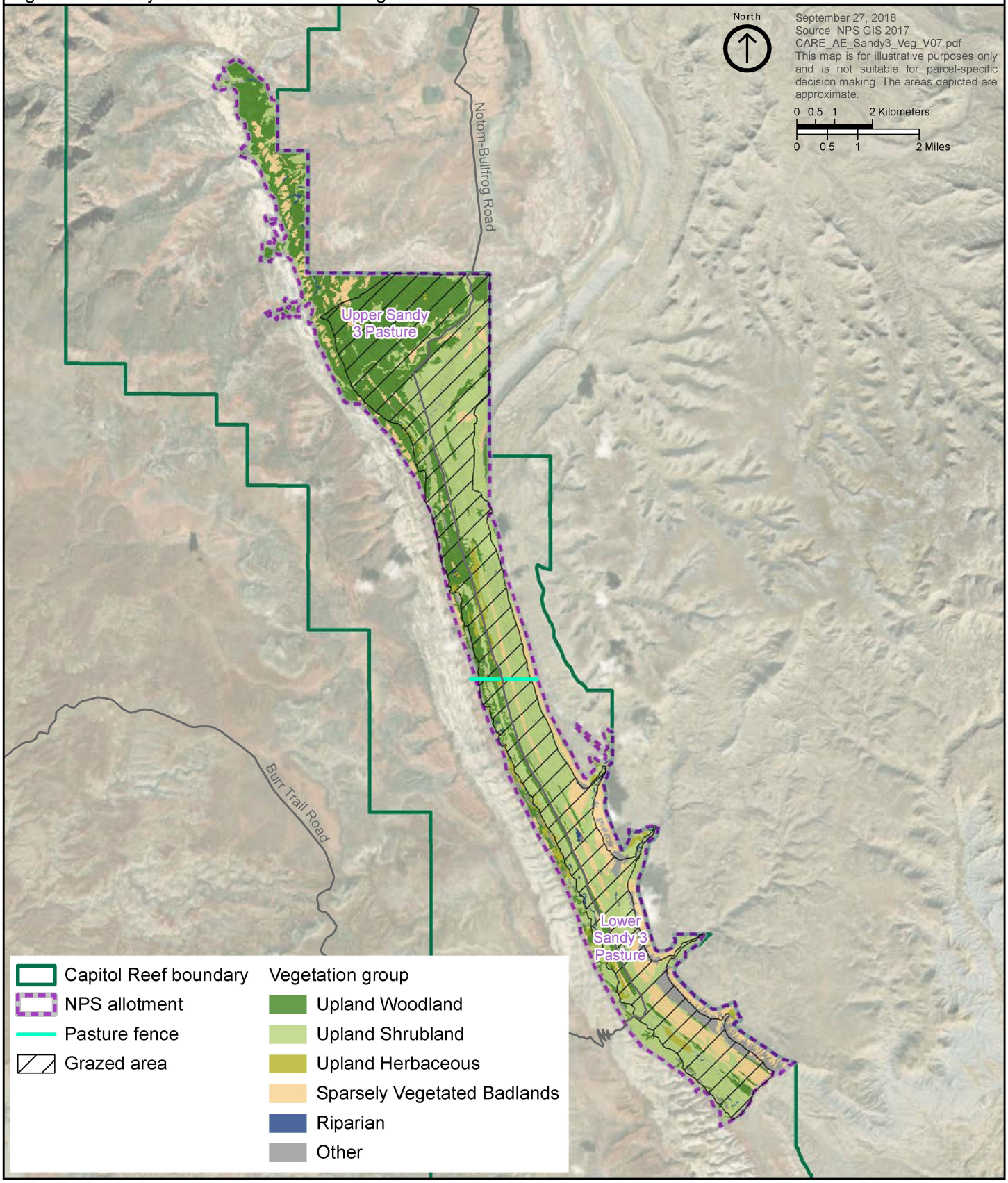
Figure 3.1: Sandy 3 Allotment - Dominant Vegetation Communities



Capitol Reef National Park
Livestock Grazing and Trailing Management Plan/EA

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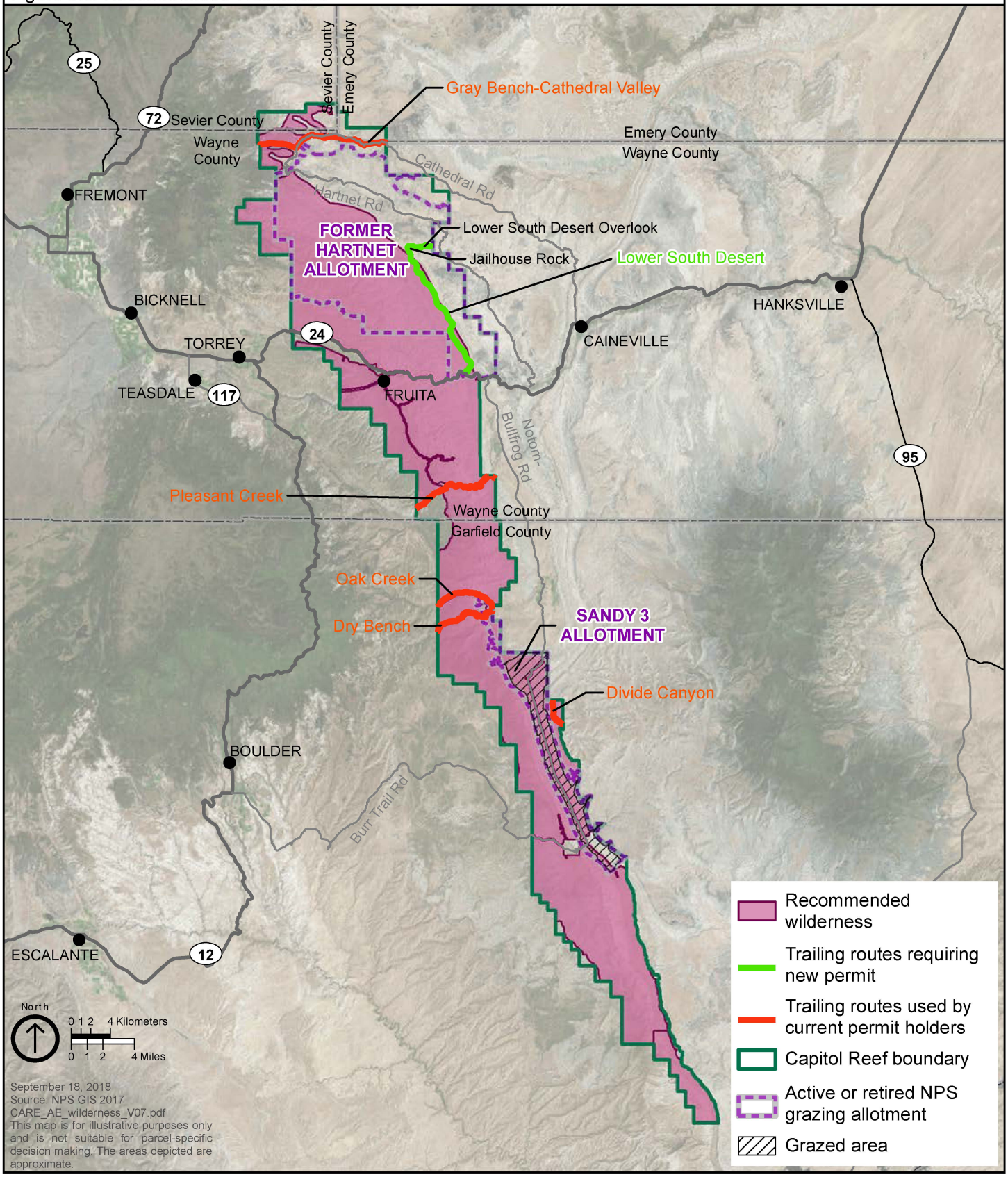
Figure 3.8: Recommended Wilderness



September 18, 2018
Source: NPS GIS 2017
CARE_AE_wilderness_V07.pdf
This map is for illustrative purposes only and is not suitable for parcel-specific decision making. The areas depicted are approximate.

Capitol Reef National Park
Livestock Grazing and Trailing Management Plan/EA

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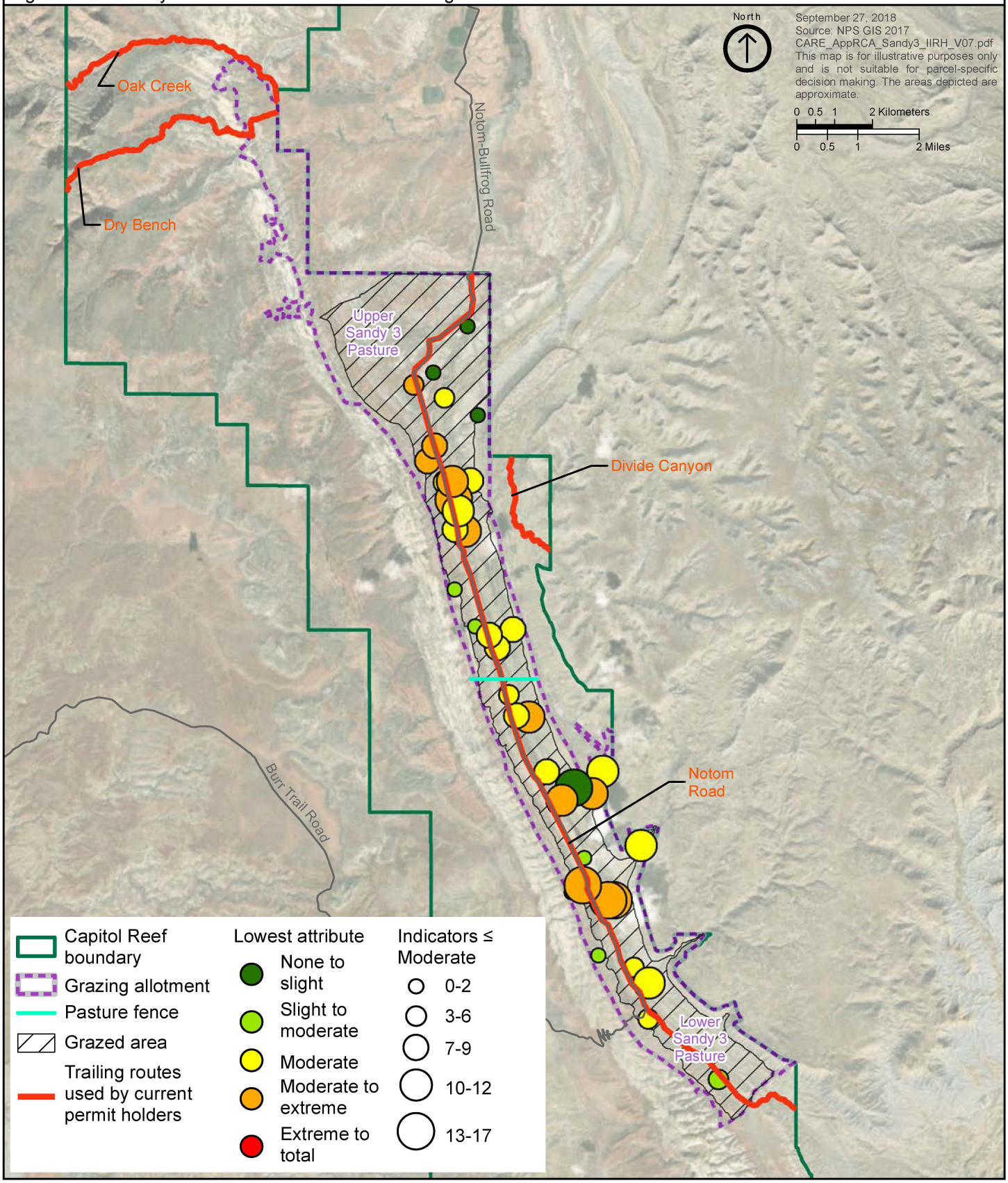
Figure B.20: Sandy 3 Allotment - IIRH Indicator Ratings



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Attachment 3: Response to Substantive Public Comments

Relationship to Laws, Policy, and Guidance

Concern 1. One commenter felt that that the purpose, need, and preferred alternative in the EA were not developed in accordance with NPS laws, policies, and guidance, such as the Organic Act and Redwoods Act; Management Policies 2006 found in Section 1.4, 2.3, 4.1, 4.4, 8.1, 8.6; and Reference Manual 53. The commenter also asserted the preferred alternative was not developed to meet requirements of the Endangered Species Act (ESA) or US Fish and Wildlife Service recovery plans for the following federally listed species potentially affected by grazing and trailing: Mexican spotted owls and Winkler cactus.

Response. The commenter provided no specifics regarding elements of the Organic Act or Redwoods Act that the National Park Service has not considered. The National Park Service reviewed other relevant laws, policies, guidance, and recovery plans cited by the commenter, and believes the LGTMP is consistent with those that are applicable to livestock grazing and trailing management.

Concern 2. One commenter felt the EA does not properly recognize state and local laws and plans regarding the Sandy 3 allotment as a grazing commodity zone.

Response. The National Park Service recognizes the importance of the state and county's grazing commodity zone designation. After review of the relevant portions of the specifically cited Garfield County Resource Management Plan, the National Park Service believes the actions proposed for livestock grazing management in the Sandy 3 allotment are consistent with the concept to the extent possible under federal law, regulation, and policy. Such disclosure is not required in an EA, and therefore no changes were made.

Concern 3. One commenter felt that the National Park Service did not adequately identify, analyze, and disclose the nature of RS 2477 and "other potential rights," particularly where they introduce uncertainty that may affect the management considered in the EA.

Response. None of the livestock trails through Capitol Reef are adjudicated RS 2477 routes, and the National Park Service is not aware of any formal efforts to assert such rights on any of the livestock trails. In addition, the commenter did not provide any specifics on how RS 2477 or other rights would have bearing on the analysis, including uncertainty, in the EA. Therefore, the National Park Service believes that addressing RS 2477 and "other potential rights" (none of which were detailed in the comment) is beyond the scope of this NEPA analysis, as these rights are established through legal processes; any related concerns about how these rights could affect the alternatives or impacts analyzed in the EA are speculative.

Concern 4. One commenter felt the EA does not comply with NPS guidance that indicates an EA can include sufficient information to serve as a biological assessment for consultation under Section 7 of the ESA or, if a separate biological assessment is prepared, to make it part of the

EA. This commenter also requested that the National Park Service share a copy of the US Fish and Wildlife Service biological opinion, if one has been prepared.

Response. The National Park Service has prepared a separate biological assessment for the LGTMP, and the EA was not intended to serve this function. Regarding the guidance the commenter cited about making the biological assessment part of the EA, that guidance has been replaced as of 2015, and now states, "If a separate biological assessment is prepared, it should be included or referenced in the NEPA document." (See p. 77 of the 2015 NPS NEPA Handbook). The National Park Service has referenced the biological assessment on page 5-1 of the EA. Regarding the biological opinion, it is the responsibility of the US Fish and Wildlife Service to release it, as appropriate, once completed.

Purpose and Need

Concern 1. One commenter suggested the Purpose and Need statement should recognize livestock grazing and trailing as an ethnographic resource to be protected and enhanced. This commenter also suggested the National Park Service add additional information and analysis about the economic, historical, and cultural significance of livestock grazing to the State of Utah and Garfield County throughout the EA.

Response. Consistent with the NPS view that grazing and trailing are traditional uses rather than ethnographic resources, the National Park Service has updated the Purpose and Need section in response to this comment (see **Attachment 2**: Errata to the EA). Beyond that, however, the National Park Service feels the EA includes an appropriate level of detail for the analysis, as guided by Council on Environmental Quality (CEQ) and Department of the Interior (DOI) NEPA regulations; and CEQ, DOI, and NPS guidance, including DOI NEPA streamlining initiatives.

Concern 2. One commenter suggested Chapter 1 of the EA should address the potential to deny permits.

Response. The National Park Service does have the authority to deny permits pursuant to its authority under Public Law 92-207, which subjects grazing and trailing permits to appropriate NPS management actions. This clarification of the National Park Service's authority has been added to the EA (see **Attachment 2**: Errata to the EA).

Planning Area

Concern 1. Commenters requested that the EA identify why only 10,200 of 15,000 available acres are currently being grazed in the Sandy 3 allotment.

Response. Page 1-5 of the EA explains why only 10,200 of 15,000 available acres are currently being grazed. More specifically, of the 4,800 acres in the allotment that are ungrazed, the majority are inaccessible to livestock due to topography, including the steep, slickrock slopes on the west that are part of the Waterpocket Fold and the cliffs of Swap and Tarantula Mesas on the east. Approximately 1,830 acres of the Sandy 3 allotment are excluded from grazing by a fence near the northern boundary of the allotment. This fence was constructed in the late 1980s

to preclude unauthorized livestock from adjacent Bureau of Land Management (BLM) and private lands from entering the Sandy 3 allotment. The location chosen was the most feasible area to construct a fence due to the difficult terrain in that portion of the allotment. The area precluded from use is composed of pinyon-juniper woodlands with sparse forage and steep, barren slopes.

Alternatives: No Action

Concern 1. One commenter suggested the National Park Service mischaracterized alternative 1 as the "No Action Alternative" because it includes continued permitting of grazing and trailing, which is an action.

Response. Consistent with guidance in CEQ's 40 Most Asked Questions (Question 3) and definitions in DOI NEPA regulations (43 CFR 46.30), the National Park Service has characterized the No Action Alternative as a continuation of current grazing and trailing management practices, including issuance of permits for these activities to current permit holders. Additionally, CEQ guidance notes that in situations involving developing land management plans where existing programs are in place, constructing an alternative that is based on no management at all (as recommended by the commenter) would be a useless academic exercise.

Alternatives: Trailing Management

Concern 1. Several commenters asserted that the EA did not provide adequate evidence that the Hartnet and Lower South Desert trails were traditionally used prior to establishment of the park, and therefore issuing new trailing permits along these routes was a violation of the enabling legislation.

Response. Because the park lacked documentation of which ranchers were actively trailing livestock through the park at the time the park was established, in 1980 the park Superintendent sent requests to ranchers asking for information to update stock trailing permits. Based upon the response, ranchers indicated that they had been using what is known as the Hartnet trail in the EA prior to the establishment of the park.

In addition, the Lower South Desert and Hartnet trails have both been used for decades by the former permit holder of the Hartnet allotment to move livestock to the BLM portion of the allotment. From at least the 1960s through the spring of 2018, this permit holder had been permitted to graze livestock in the Hartnet allotment; under that authority the permit holder could also trail livestock through the allotment (i.e., because the Lower South Desert and Hartnet trails were within their existing grazing allotment, a trailing permit was not required). Although they are no longer authorized to graze livestock in the park, relinquishment of the grazing permit does not preclude their right to continue trailing along the Lower South Desert and Hartnet trails. However, without a grazing permit, they must now be issued a Special Use Permit to authorize their continued use of these trails.

Concern 2. Several commenters asserted that the enabling legislation envisioned a phase out of trailing through the park by restricting the issuance of trailing permits to only those who owned or operated livestock herds prior to establishment of the park.

Response. While the park's enabling legislation is clear regarding the phase out of grazing within Capitol Reef, it does not include similar language for trailing. If the intent was to phase out trailing, it seems that such language would have been included with the phase out of grazing in Section 3 of the enabling legislation. The Legislative History for Public Law 92-207 (i.e., the enabling legislation) specifically acknowledges that there are very few places along the Waterpocket Fold within the park where animals can cross. In referring to the park and its legislation, the history states "Since it bisects two complete counties, it is extremely important to residents of the area to be able to continue to use established crossings. The bill, as amended, provides that the Secretary of the Interior may regulate the use of such trailways and driveways in order to reasonably protect park values." Therefore, denying permits to new applicants would run counter to the concerns Congress was attempting to address.

Concern 3. Several commenters asserted that, due to the degraded conditions of Ackland Springs, Deep Spring, and Notch Water Spring, the National Park Service should eliminate the potential for livestock impacts on these resources rather than issue permits for trailing that could affect them.

Response. Regarding Ackland Spring, the National Park Service would monitor the area after each trailing event. If progress is not being made toward desired conditions, or desired conditions are not being met, the National Park Service would require riders or temporary fencing be used to keep livestock out of the area. The National Park Service believes this is sufficient to reduce impacts on Ackland Springs.

Regarding Deep Creek and Notch Water springs, alternatives to the Lower South Desert trail were considered. However, there are no alternatives to issuing the permits as requested. See Concern 4 and Response (below) for an explanation of why those alternatives were dismissed.

Concern 4. Several commenters asserted that the National Park Service should consider and analyze the impacts of alternatives to issuing permits for the Hartnet and Lower South Desert trailing routes, including issuing a permit for another trail to the north of the Hartnet Road, issuing a permit for another trail to the east of the park boundary, and trucking livestock instead of trailing.

Response. The enabling legislation of the park allows for trailing, preferably along traditional routes, and subject to reasonable regulation, such as those provided for in the LGTMP, as well as permits for trailing and grazing. An alternative that requires trucking, rather than trailing, would be contrary to Congress' intent to allow trailing in the park. Consequently, the National Park Service has determined that considering and analyzing the potential of trucking livestock is not warranted.

Regarding alternatives to the Lower South Desert trail, under one alternative, livestock would be trailed from Torrey to the river ford in one day, approximately 25 miles. This alternative was eliminated from detailed consideration because the current 20-mile route is the upper limit of

what the livestock and riders can do in a single day. It also requires trailing through private property and the Blue Flats area on BLM-administered land. Livestock trailing through Blue Flats is difficult because once the livestock get water at the well, riders are not able to push them over the bentonite hills into the upper portion of the allotment due to terrain and because livestock keep drifting back to the well. Another alternative, through the Notch, was also considered but eliminated from detailed analysis. There is a 2- to 3-foot jump in the Notch that is difficult to get livestock down. If the jump were fixed, it is still not very feasible to take all 150 to 200 head of livestock through in a single file. Finally, once livestock get to water at the well, it would be difficult to get them to leave the area and trail over the bentonite hills.

Use of the Gray Bench-Cathedral Valley would nearly triple the distance that the permittee is currently trailing. It would also require trailing through Wright fishhook cactus habitat on BLM-administered lands, which would be a greater impact compared to using the Hartnet trail.

Concern 5. Several commenters asserted that the National Park Service failed to consider alternatives to allowing livestock to spread up from the southern end of the Lower South Desert trail for 1 night and then trail through the area the next day.

Response. It is unknown where the livestock overnighting in the Lower South Desert may spread and if containing them would even be necessary. Therefore, to address these unknowns, as described on pages 2-13 and C-8, the National Park Service has identified the following adaptive management action should monitoring indicate overnighting is exceeding damage/disturbance thresholds, and/or precluding riparian areas from attaining proper functioning condition: “For the Lower South Desert trail, contain livestock overnight rather than allowing them to drift up the Lower South Desert.”

If monitoring indicates this adaptive management action is needed, the National Park Service would work with permit holders to identify appropriate containment strategies that will have the least impact on park resources and would conduct compliance, as needed, for these actions at that time (see also response to Concern 6, below).

Concern 6. One commenter requested that the National Park Service evaluate and identify locations for temporary holding corrals to be used by trailing permit holders who may overnight their livestock in the park, especially in the spring growing season. Another commenter asserted that livestock should not be allowed to overnight within park boundaries.

Response. Only those trailing permit holders who use the Lower South Desert and Pleasant Creek trail will need to overnight their livestock for one night each year. As these trails are only used in the fall, such corrals are not needed to protect vegetation during the spring growing season.

For the Lower South Desert trail, as noted in response to Concern 5 above, it is unknown where the livestock overnighting in the Lower South Desert may spread and if containment, including temporary corralling, would even be necessary. Therefore, as noted above, if monitoring indicates that containing livestock overnight is necessary, and if temporary corralling of livestock is deemed the appropriate strategy for doing so, the park will work with permit holders to identify areas that will have the least impact on park resources, especially Wright fishhook cactus

habitat. The National Park Service would conduct compliance, as needed, for these actions at that time.

Additionally, options for overnighting livestock outside of the park for the Lower South Desert trail would be limited to BLM-administered lands east of the where the trail intersects Highway 24. On the first day of trailing, this would require permit holders trail their livestock approximately 3 more miles after already trailing approximately 20 miles earlier that day from Torrey. The next day, the permit holder would have to trail their livestock back the same distance before beginning the approximately 12-mile trip through the Lower South Desert to BLM-administered land. Permit holders have expressed concerns for the safety and welfare of both the livestock and riders by extending the distance trailed and trailing a longer distance along the highway would exacerbate safety concerns raised by the Utah Department of Transportation (see Concern 10 under this heading). Finally, overnighting livestock outside the park would require approval from the Bureau of Land Management and is not a decision the National Park Service can make. Therefore, if the need ever arises to overnight livestock outside the park, the National Park Service would work with the permit holder and the Bureau of Land Management to explore the option of constructing a temporary or permanent corral on BLM-administered lands at that time.

Regarding Pleasant Creek, livestock have traditionally been held overnight in the park by fencing near the east boundary. If not contained within the park, the permit holder is concerned that livestock would scatter overnight on a BLM allotment used by other permit holders, which would require the rancher to gather their livestock prior to continuing to trail the herd towards BLM allotments further east. As a result, as the EA notes on page 2-8, park staff will work with the permit holder to develop options for containing their livestock inside the park. If strategies to contain livestock in the park are not effective in maintaining the proper functioning condition of Pleasant Creek, the National Park Service could work with the permit holder and the Bureau of Land Management to explore the option of constructing a temporary or permanent corral on BLM lands just outside the park boundary. However, it is unknown if such an action would ever be required, and as it would be an action taken outside park lands, it would require approval by the Bureau of Land Management.

Concern 7. One commenter suggested NPS staff ride along during all trailing activities to facilitate the development and refinement of best management practices from year to year and that range infrastructure should be monitored annually rather than every third year.

Response. If the park is successful in recruiting a Range Specialist, that person may ride with the permit holders. Otherwise, park staff will observe and monitor trailing from a vehicle or another observation point (see **Attachment 2**: Errata to the EA).

The National Park Service currently monitors known problem areas in boundary fences (i.e., wash crossings) on an annual basis. Any breaks in fence lines are repaired each fall, at a minimum, prior to the grazing season to exclude unauthorized livestock from entering the park. This practice will continue annually with fencing in other areas being monitored every 3 years. The National Park Service will prioritize trails with sensitive resources for monitoring, particularly the Oak Creek, Pleasant Creek, Gray Bench-Cathedral Valley, Hartnet, and Lower South Desert trailing routes. However, nothing in the LGTMP precludes the National Park Service from

monitoring other trailing routes or activities if concerns arise with resource impacts or permit violations. We also do not believe that riding is required, and that park staff could observe trailing activities in vehicles or another observation point as appropriate.

Concern 8. One commenter asserted that the EA did not adequately address mitigation of potential impacts on endangered plant species, including impacts from dust, soil compaction, and changes in soil hydrology from trailing; impacts on germination and establishment; impacts on pollinators; and impacts from increases in predators. This commenter also asserted that the National Park Service should consider immediately implementing the following mitigation measures: moving livestock through sensitive habitats with trucks; rerouting trails through areas unoccupied by sensitive plants; and temporary fencing. Another commenter noted that the EA does not mention the possibility that impacts on listed plants along the Gray Bench-Cathedral Valley trailing route could be avoided by using alternative washes located farther south.

Response. Dust can be a concern for plants during the active growing and flowering season. However, the Hartnet trail is the only one that may be used during the spring growing season. Since trailing occurs for a very short duration, we do not believe impacts from dust to growth and reproduction for the three listed plant species along the trail is a significant issue that warrants analysis and/or specific mitigation in the EA.

Impacts from predation are acknowledged on page 3-19, 3-20, 4-23, 4-34, and 4-37, and the National Park Service believes the effects have been considered at an appropriate level of detail for an EA. Also, while we acknowledge these impacts, we believe the plan is appropriately focused on mitigating the effects of livestock grazing and trailing. Because the LGTMP is not dependent on managing predators, and managing predators is not dependent on the LGTMP, any efforts to mitigate impacts from predation or other stressors does not need to be addressed in this EA.

Soil compaction and soil hydrology are addressed on pages 4-35 and 4-38 of the EA. These impacts, as well as those on pollinators (addressed on page 4-33) and germination, are expected to decrease throughout the actively grazed areas of the retired Hartnet allotment as lands recover from 7.5 months of grazing each year that occurred for decades. The National Park Service feels the infrequency and short duration of trailing, as well as other best/adaptive management practices, will mitigate impacts during trailing, and soil conditions and pollinator habitat along the Hartnet and Lower South Desert trails are therefore expected to improve. Also, most of the three livestock trails within occupied habitat follow dirt roads or washes minimizing soil impacts. As a result of the preceding, we believe the level of detail in the EA is appropriate, and these issues do not warrant further analysis/additional mitigation.

Permit holders using the Grey Bench-Cathedral Valley trail began using an alignment in 2016 that goes through a wash and avoids large concentrations of cacti. Under the selected alternative, permit holders will continue to follow the dirt roads and washes along this and other trails. This will minimize potential impacts on listed plants along this route, as well as along the Hartnet and Lower South Desert trails. Given the other trailing best management practices that will be required (e.g., using riders to keep livestock moving and to keep them from straying during trailing) and the monitoring and adaptive management under the selected alternative

(including the potential for future fencing), the National Park Service does not believe adjustments to trail alignments or temporary fencing are necessary at this time.

Additionally, the text of the EA regarding the use of an alternative alignment along the Gray Bench-Cathedral Valley trail has been clarified in response to this comment (see **Attachment 2**: Errata to the EA).

Concern 9. One commenter requested that the National Park Service include an alternative that limits trailing to only those routes used by permit holders when the park was established and caps the number of livestock that can trail through the park. Commenters also suggested the NPS preferred alternative should require that permittees trailing in Oak Creek use the Dry Bench as an alternative route immediately and until conditions improve.

Response. All of the routes considered in the EA are traditional routes that were used before the establishment of the park. This includes the Hartnet and Lower South Desert trails as described in response to Concern 1 under *Alternatives: Trailing Management*. Regarding a "cap" on the number of livestock that can be trailed, the enabling legislation of the park does not address maximum numbers for trailing, as it did when establishing maximum AUMs for grazing allotments. Therefore, setting a hard cap would seem to be contrary to Congress' intent. However, the National Park Service has the ability to adjust the number of livestock trailed through the park if progress toward desired conditions for resources along trails is not occurring or if desired conditions are not being met (see Chapter 2 and Appendix C of the EA). In response to the comment about immediately shifting trailing from Oak Creek to Dry Bench, while the desired condition along Oak Creek (proper functioning condition of the riparian area) has not been met, the National Park Service has not been able to assess proper functioning condition in the absence of trespass livestock. Therefore, we cannot definitively state that the degraded conditions are due to trailing activities. However, under the LGTMP we are anticipating better control of trespassing livestock, and monitoring will provide a clearer understanding of whether trailing activities are precluding a rating of proper functioning condition, and whether a switch to Dry Bench is warranted.

Concern 10. One commenter recommended the National Park Service move the Highway 24 trailing route off the actual road to minimize traffic conflicts and improve safety during trailing events. This commenter also asked that the National Park Service include mitigation measures at the intersection of the Lower South Desert trail and SR-24 to prevent livestock from accessing the roadway during trailing events.

Response. The National Park Service understands the concerns about traffic and safety conflicts during trailing events along Highway 24, and at the intersection with the Lower South Desert trail. While the permittee currently uses vehicles with warning flags to minimize these issues, the National Park Service is open to working with the Utah Department of Transportation to develop additional mitigation measures. However, the National Park Service is concerned about the impacts and feasibility of keeping up to 200 livestock on the road shoulders. For example, building fences along the road could adversely affect cultural resources, including historic cabins and the Fruita Rural Historic District. Using additional riders to keep livestock off the road might minimize the potential for livestock to wander onto the roadbed, but the presence of additional riders would create similar traffic conflicts and safety issues as livestock. Regarding

the intersection of Highway 24 and the Lower South Desert trail, it is important to note that permittees would be moving their livestock from the road onto the trail in the fall, and that livestock would not be coming off the trail and gathering at the intersection. In addition, the National Park Service expects the permit holder would use similar controls as they do today to minimize traffic conflicts and safety issues.

Concern 11. Commenters suggested trailing permits for Highway 24 are currently issued in spring and fall, and therefore, the EA should also analyze the use of Highway 24 as a trailing route in the spring, not just fall. Commenters also requested the National Park Service consider spring trailing along Pleasant Creek to provide more flexibility to the permit holder.

Response. There has been little demand for spring trailing on Highway 24 or Pleasant Creek, and no recent requests by current permit holders to do so. For example, spring trailing on Highway 24 has not occurred in 25 years, and Pleasant Creek was last trailed in the spring 6 years ago, but not by the current permit holder. As result, the National Park Service does not believe trailing in the spring along these routes is reasonably foreseeable, and due to the speculative nature of spring trailing along these routes, it is not analyzed in the EA. Requests for spring trailing along these routes could be considered in the future and environmental review would occur, as appropriate, including the possibility to tier the analysis off of this EA.

Alternatives: Grazing Management

Concern 1. Commenters asserted that the Grand Canyon Trust Sustainable Grazing Alternative is a reasonable alternative with considerable differences from the preferred alternative that should not have been dismissed from detailed analysis. Elements of this alternative that commenters suggested should be analyzed in detail include the use of more conservative forage utilization standards for the Sandy 3 allotment (e.g., 30%); setting desired conditions at 80% of conditions in ungrazed reference areas in upland and riparian vegetation communities; allowing for public involvement in monitoring and management of grazing and trailing; and requiring permittees to fund fence construction and maintenance. Other commenters also suggested that the National Park Service consider more conservative utilization rates (e.g., 25-30%).

Response. The National Park Service agrees that the Grand Canyon Trust and Great Old Broads for Wilderness (GCT/GOBW) alternative that was dismissed from detailed analysis does provide some specific recommendations, including those related to the elements described in the concern statement. However, many of the recommendations included in the alternative are administrative in nature, not subject to NEPA analysis, and/or do not require analysis in an EA. This includes suggestions for public transparency and engagement, which the National Park Service is open to considering further, but need not be detailed in an EA because it has no bearing on the on-the ground environmental impacts.

In addition, while the GCT/GBOW alternative proposed a list of ‘grazing arrangements’ and other management actions the National Park Service should consider, they did not provide any site-specific information for how these actions would be implemented at Capitol Reef to meet their proposed objectives. And, as the EA notes, many of these actions are part of Alternative 2, which has been selected as the LGTMP (e.g., range improvements, including fences; rest-

rotation systems; adaptive management of time, timing, and intensity of grazing; and reducing use, suspending use, identifying non-use areas, and closing areas). In the absence of these details, the National Park Service could not carry this alternative forward for analysis.

Regarding the recommendation to set desired conditions at 80% of conditions in ungrazed reference sites, the proposed alternative did not include any rationale for using this percentage. Therefore, the National Park Service could not evaluate if this was a reasonable suggestion. Instead, the National Park Service has relied on Natural Resources Conservation Service Ecological Site Descriptions because they provide site-specific information on potential plant cover and soil stability, which allows for measurable comparisons to widely accepted standards.

As far as utilization targets are concerned, there are a number of considerations in determining stocking rates that include target utilization levels but also season of use, range condition, distribution of water, and type of grazing system. Holechek et al. (2011) and references therein provide a range of recommendations for utilization level that vary depending on the above considerations. Under the selected alternative, the Sandy 3 allotment will operate on a winter grazing model with pasture rotation and improved distribution, which can withstand higher levels of utilization than year-round continuous grazing. With implementation of the LGTMP, the National Park Service will have the ability to better understand whether actual utilization matches the target level and if this is effective in moving rangelands toward desired conditions, through the monitoring and assessment methods described in Appendix C of the EA.

The National Park Service also considered having permittees fund range management infrastructure. However, consistent with NPS Management Policies 2006 (Section 8.6.8.2.2), because these actions would have a direct benefit to the protection of park resources, the National Park Service plans to pay for the construction and maintenance of range management infrastructure.

Concern 2. Commenters suggested the National Park Service must analyze forage production before setting AUMs, including maximum AUMs, for the Sandy 3 grazing allotment.

Response. Stocking rates were calculated based on potential forage production for the unique soil map units in the Sandy 3 allotment. The Natural Resources Conservation Service has detailed information available (https://websoilsurvey.sc.egov.usda.gov) on plant species present in each soil map unit and their production in a normal year. By calculating the amount of potential production in each soil map unit and extrapolating to the actively grazed area of the Sandy 3 allotment, the National Park Service was able to verify that 410 AUMs is an appropriate forage allocation. While this was the best available information at the time of writing the EA, future monitoring includes annual production. These data will be used to reassess stocking rates and forage allocation in the future and to make adjustments, where necessary, in years of low or high forage production.

Concern 3. Commenters requested further clarification regarding the National Park Service's authority to enforce new stocking rates/fines if AUMs are exceeded.

Response. Adjustments to stocking rates and AUMs are enforceable through permit terms and conditions. If terms and conditions are violated, the National Park Service has the authority to

enforce fines pursuant to its authority under Public Law 92-207, which subjects grazing and trailing permits to appropriate NPS management actions (see **Attachment 2**: Errata to the EA).

Concern 4. Commenters asserted that the EA should evaluate the temporary suspension of grazing in the Sandy 3 allotment in light of the currently degraded conditions. Other commenters questioned why grazing must occur during the spring in the Sandy 3 allotment, and why an alternative that eliminates spring grazing was not considered. One commenter suggested that the EA include another alternative that switches between fall and spring grazing or change the dates on the proposed alternative to allow for more management flexibility.

Response. The EA analyzed the impacts that would occur from issuing grazing and trailing permits as requested by the permit holders, by applying the guidance and tools described under the selected alternative. Therefore, the National Park Service analyzed the season of use traditionally requested by the permit holder (November 1 to March 31) which complements the permit holders season of use on adjacent federal lands and allows them to maintain their yearlong cow/calf operations. Therefore, considering alternatives for fall grazing only or that preclude grazing in the spring (i.e., livestock are removed before March when the spring growing season starts) would not meet the needs of the permit holder, and could be considered as a de facto elimination of grazing from the park, which would not be consistent with Congress' intent.

However, it is important to note that while the EA provides the compliance necessary to issue permits, it does not actually authorize any grazing or trailing activities. Once the LGTMP is in place, decisions on whether to issue permits, season of use, AUMs, and the like will be made in collaboration with permit holders on a case-by-case basis and will take into account the results of short- and long-term monitoring (described in Chapter 2 and Appendix C of the EA), as well as compliance with permit terms and conditions.

Also, the selected alternative contemplates a season of use (November 1 to March 31) for the Sandy 3 allotment that initially overlaps the spring growing season (March through June) for only one month. It also includes a pasture rotation system in which each pasture will be rested after January 15 every other year. This is consistent with the recommendation to consider an alternative that 'switches' between spring and fall grazing. And, if monitoring indicates that this season of use is precluding resources from moving toward desired conditions, the National Park Service will work with the permittee to make adjustments.

Concern 5. One commenter suggested that the EA should include additional pasture fencing directly to the east and west of the proposed fence line for the Sandy 3 allotment and analyze the impacts of the fencing. Other commenters suggested this fence be specifically designed to prevent bison movement.

Response. The National Park Service agrees that the additional fencing is warranted and will continue to work with the permit holder to finalize plans and alignments prior to construction. The National Park Service also feels the effects of the additional fencing (less than 0.1 mile) is captured by the impacts analyzed and does not materially affect the EA (see **Attachment 2**: Errata to the EA).

Regarding bison, the National Park Service will continue to work with the Utah Division of Wildlife Resources to find solutions to keep bison out of the park. Also, the park will continue to maintain the current fences in Swap Canyon, Bitter Spring Creek Canyon, and Bitter Creek Canyon, and if larger, more substantial bison fencing is warranted, it would likely be constructed in these locations to help keep bison out of the park. Separate planning and compliance will be performed if more substantial fencing is warranted.

Concern 6. Some commenters suggested the National Park Service immediately fence unprotected springs and degraded riparian areas, including Deep Creek, instead of using this as an adaptive management tool. One commenter recommended that the National Park Service actively remove tamarisk and Russian olive as part of these efforts.

Response. At this time, the National Park Service does not believe the investment required to fence all springs and degraded riparian areas (e.g., Oak Creek, Ackland Springs), and the impact this fencing would have, is warranted. The National Park Service believes springs will be protected and degraded riparian areas will move toward desired conditions with implementation of the pasture rotation and stock pond refurbishment in the Sandy 3 allotment, trailing best management practices, efforts to address trespass livestock in Oak Creek, and the cumulative effect of the relinquishment of grazing rights in the Hartnet allotment. Additionally, the park will monitor trailing activities as well as impacts on springs and degraded riparian areas along the trails and in the Sandy 3 allotment and will have a variety of adaptive management tools to address impacts, including fencing (see Chapter 2 and Appendix C of the EA). Regarding the control of tamarisk and Russian olive, this is addressed in Chapter 2 (page 2-13) and Appendix C of the EA.

Concern 7. Commenters pointed out that Chapter 2 of the EA incorrectly includes opening the pasture fence in the Sandy 3 allotment (when there is insufficient water in the upper Sandy 3 pasture) as an adaptive management tool in the section on trailing. Another commenter asserted that this adaptive management tool would reverse any benefits of pasture rotation, and instead recommended that livestock be removed from the park for the remainder of the grazing season when there is a lack of water in a pasture. This commenter also suggested that the economic effects of removing livestock should be analyzed.

Response. The text of the EA has been moved from the section on trailing adaptive management actions to the section on Sandy 3 adaptive management actions. The text has also been updated to indicate that the pasture fence would only be opened if there is sufficient water and forage to support livestock in the lower pasture, and if not, livestock numbers may need to be reduced or livestock may need to be removed from the park (see **Attachment 2**: Errata to the EA, for details of these changes). The economic impacts of reducing/removing AUMs are already analyzed in Chapter 4 and Appendix D of the EA.

Concern 8. Commenters recommended that the National Park Service restore more nonfunctional water sources or install new water sources in the Sandy 3 allotment if it would improve access to the additional 4,800 acres of the allotment that are currently unused. They asserted this could reduce grazing pressure on the 10,200 acres that are currently grazed and are preferred by livestock, including riparian areas, and result in better grazing distribution and better rangeland health.

Response. As noted in the response to Concern 1 under *Planning Area*, of the approximately 4,800 acres that are not actively grazed in the Sandy 3 allotment, approximately 1,800 acres are excluded from grazing by a fence (see revised **Figure 2.3** in **Attachment 2**: Errata to the EA). This area, as well as the remaining areas that are not actively grazed, include a mix of pinyon-juniper plant communities and steep barren slopes. Therefore, the National Park Service does not believe refurbishing/developing additional water sources in these unused areas would reduce impacts on the actively grazed areas, as these areas are physically inaccessible and/or offer little to no forage.

Concern 9. One commenter asserted that the EA neglects to address standards for livestock grazing in occupied bighorn sheep habitat.

Response. As noted on page D-16 in Appendix D of the EA, there is very little potential for interaction between livestock and bighorn sheep in the park. There is no known overlap between areas actively grazed by livestock in the Sandy 3 allotment in the park and occupied bighorn sheep habitat. Bighorn sheep do use the Oak Creek and Pleasant Creek riparian areas; however, livestock use of these areas during trailing events is of relatively short duration and infrequent. As the commenter mentions, livestock tend to displace bighorn sheep, which is expected to occur during trailing events when there is an increase in human and livestock activity. This is expected to keep bighorn sheep away from livestock, which will reduce potential disease transmission. Therefore, the National Park Service feels that the standards for livestock grazing in bighorn sheep habitat are not needed.

Concern 10. Commenters requested specifics of how the National Park Service would determine drought conditions, described in Appendix C of the EA as one trigger for adaptive management, and suggested that the National Park Service did not include any actions in response to drought conditions.

Response. As described in Appendix C (page C-4) of the EA, weather conditions will be monitored continuously throughout the year to determine drought status. This will be done using the US Drought Monitor, which assesses various levels of drought. The National Park Service has updated the EA (see **Attachment 2**: Errata to the EA) to clarify that any level of drought (Abnormally Dry to Exceptional Drought) will trigger an assessment of available forage, and if annual forage production is determined to be reduced due to drought, this will trigger adaptive management actions. For example, stocking rates will be based on a 25-30% utilization in drought years (page C-5 of the EA), and the National Park Service will work with permittees to determine actions that will limit impacts on permittee operations while ensuring appropriate levels of forage utilization. Potential management actions include:

- Adjustment of AUMs
- Change in dates of season of use
- Change in pasture move dates

Desired Conditions/Adaptive Management, Thresholds, Interpreting Indicators of Rangeland Health (IIRH), and Proper Functioning Condition (PFC)

Concern 1. One commenter suggested the National Park Service should not use proper functioning condition as a desired condition for riparian areas, especially those that support Mexican spotted owl habitat, as it is a qualitative metric. Instead the commenter asserted the National Park Service should identify a target level of residual vegetation as described on page 289 and 290 of the MSO recovery plan.

Response. Managing for proper functioning condition is a guideline specified for MSO recovery in the Final Recovery Plan for the Mexican Spotted Owl (USFWS 2012a). The recovery plan and guidelines therein do not differentiate requirements based on agency mission.

The National Park Service already incorporates quantitative methods into the proper functioning condition determination by implementing the rapid stream riparian assessment protocols (Stacey et al. 2006). The rapid stream riparian assessment is a method developed for assessing the functional condition of stream-riparian ecosystems of the American Southwest. See Appendix C of the EA, page C-5: “Riparian condition, including stubble height—In the Sandy 3 allotment, riparian conditions of Bitter Spring Creek and Bitter Creek, including vegetation stubble height, would be evaluated every 2 to 3 years, using PFC methods (Technical Reference 1737-15; Stacey et al. 2006). PFC and rapid stream riparian assessment are tools that provide a consistent approach for considering hydrology, vegetation, and erosion and deposition attributes and processes to evaluate the condition of riparian-wetland areas along creeks and streams. The rapid stream-riparian assessment protocol provides quantitative data to support the PFC determination.” Therefore, the National Park Service does not feel that any further quantitative methods are warranted to determine proper functioning condition at this time.

The EA already contains a target level of residual vegetation of a stubble height of 10 to 15 centimeters (4-6 inches), which will be monitored to determine if utilization standards are being met. Additionally, the EA states that monitoring in accordance with the MSO recovery plan (USFWS 2012) would continue. This data would inform land managers about issues related to unauthorized livestock trailing of Oak Creek and whether desired conditions for MSO habitat are being met. If, through monitoring, it is determined that desired conditions are not being met, the National Park Service would implement adaptive management intended to meet the desired conditions. Chapter 4, page 4-45. See also Appendix C, page C-3: “Mexican Spotted Owl (MSO) Desired Condition Indicators: Maintain 4 to 6 inches (10 to 15 centimeters) of stubble height of grasses, to support streambank stability and provide habitat for MSO prey species.”

Concern 2. One commenter suggested that the National Park Service should not use IIRH protocols for assessing rangeland health, as it is a qualitative assessment designed for use by BLM that does not account for legislation and policies of the National Park Service, and because IIRH uses Natural Resource Conservation Service Ecological Site Descriptions, which reflect degraded reference conditions. Additionally, this commenter suggested that the National Park Service should not have desired conditions for ‘moderate’ departures from reference condition based on IIRH protocols because this represents a degraded condition inconsistent with NPS biological resource management policies.

Response. The IIRH is a widely accepted method for rangeland assessment that combines qualitative and quantitative data to compare range conditions to a reference state and is in use by various agencies (Herrick et al. 2010; Pyke et al. 2002; Miller 2008). It is a well-developed and documented protocol, which allows for efficient implementation. Site-specific comparisons can be made using local reference conditions rather than an arbitrary standard. Further, because the IIRH is based on Natural Resources Conservation Service Ecological Site Descriptions and local reference areas, highly detailed information can be used for monitoring and comparison to potential conditions throughout the allotment. The reference areas and Ecological Site Descriptions do not reflect a degraded condition, but rather the site potential.

As described in Appendix B of the EA, much of the area in the Sandy 3 allotment is in a state of moderate or greater departure from reference conditions. The National Park Service acknowledges that in some cases, this may mean that the ecosystem is in an altered state that may not return to reference conditions. However, the LGTMP is intended to move resources toward reference conditions by recovering biological soil crusts, or increasing plant cover and restoring native seed banks. Therefore, even though desired conditions allow for moderate departure from reference condition in some areas, the National Park Service will manage for zero plots in moderate to extreme or extreme to total departure, and increasing the number of plots in none to slight or slight to moderate departures (as described in Appendix C of the EA).

Concern 3. One commenter suggested the National Park Service consider the Assessment Inventory and Monitoring (AIM) strategy to guide long-term monitoring.

Response. The National Park Service has considered and will continue to consider the AIM strategy in developing long-term monitoring protocols.

Concern 4. Commenters questioned whether the damage and disturbance thresholds for listed plants were sufficient to protect and recover these species in accordance with applicable law and policy. Another commenter suggested listed plant surveys should be conducted at appropriate times of the year and in suitable habitat along the entire length of relevant trailing routes prior to issuing trailing permits. This commenter was also concerned that surveys proposed after trailing were not adequate to document all plants present and potentially impacted, especially if the surveys are conducted outside of the flowering season; that documenting damage would not likely be statistically valid or feasible; and that it would be inappropriate to stop monitoring impacts if no damage/disturbance is documented after 3 years.

Response. The damage and disturbance thresholds are derived from interagency coordination (i.e., National Park Service, US Fish and Wildlife Service, and Bureau of Land Management) that began in 2010. This coordination resulted in the development of interagency monitoring plans for the two listed cactus species (2011 Monitoring plan for Wright Fishhook Cactus *(Sclerocactus wrightiae)* and 2011 Monitoring plan for Winkler Cactus *(Pediocactus winkleri)* written by botanists and biologists from Capitol Reef National Park, US Fish and Wildlife Service Utah Field Office, and Bureau of Land Management Richfield and Price Field Offices. Botanists from all three agencies, including those with extensive experience with these species, established these thresholds with the intention that they would be sufficient to alert biologists of impacts that required action to protect and recover the species. These same thresholds were incorporated into the park's updated 2013 monitoring plan for these species, entitled Monitoring

Plan for Wright Fishhook Cactus *(Sclerocactus wrightiae)* and Winkler Cactus, authored by the park's botanist and biologist. This document was accepted by the US Fish and Wildlife Service as providing monitoring and research protocols sufficient to protect and recover the species. Although the thresholds were developed for the two listed cacti species, the park and US Fish and Wildlife Service believe they are appropriate for Last Chance townsendia as well.

During coordination and discussions with the US Fish and Wildlife Service while developing the biological assessment for this action, they did not suggest that plant surveys be conducted along the length of the trails prior to issuing permits. Requiring the park to do so would be inconsistent with requirements made of other agencies. For example, the Bureau of Land Management is not required to do complete surveys of livestock grazing allotments with listed species or of livestock trails that cross listed species habitat. However, the park will be doing some surveys along the three trails in spring of 2019 when plants are in flower and most visible. We anticipate doing additional surveys along each trail annually either with park staff or volunteers.

The objective of the post-trailing plant surveys is not to document every plant in a locality, rather it is to sample a sufficient number of plants at each locality to determine the percent damaged or disturbed to evaluate against the established thresholds. Robust statistical methods are not required, as no hypothesis is being tested. The methods simply involve calculating percentages. This same sampling method was used by the park and the Bureau of Land Management during initial and repeat visits to known cactus localities beginning in 2011. These methods are described in the two monitoring plans cited above. Doing the surveys soon after trailing occurs is most appropriate because wind and rain can obliterate livestock tracks, making it difficult to discern disturbance from livestock, which would under-represent the true level of disturbance. As mentioned on page C-7 of the EA, if Winkler cacti are below ground when the surveys are conducted, three 15-meter-long disturbance transects will be randomly established at each locality to document frequency of livestock tracks in the area. A habitat disturbance index will be used to predict the probability of cactus disturbance based on frequency of livestock tracks documented (see Clark, D. J. 2016 Final Report: Monitoring Cattle Impacts on Two Federally Listed Cacti Species in Capitol Reef National Park. National Park Service unpublished document. Capitol Reef National Park, Torrey, Utah).

In the past, trailing along the two routes in the Hartnet allotment occurred at the same time that livestock were grazing in the allotments. Trailing was not monitored, and paths created by trailing livestock were obscured by tracks of grazing livestock. Therefore, the exact trailing route, especially in the Lower South Desert, which follows a wash rather than a road, is not known. For this reason, it is possible that some of the localities selected by the park and US Fish and Wildlife Service for monitoring are not along the path that livestock will ultimately be trailed along. Three years of data is expected to be sufficient to show this. If livestock are not passing by the locality there is no reason for surveyors to walk through the area, potentially causing damage and disturbance to rare plants and their habitat.

Concern 5. A commenter requested that pages 2-11 to 2-13 be edited to clarify that adaptive management actions would be implemented if progress toward desired conditions is not being made.

Response. The National Park Service has made the requested changes to pages 2-11 through 2-13 of the EA (see **Attachment 2**: Errata to the EA).

Concern 6. Commenters suggested that the National Park Service should have developed specific adaptive management actions for improving overall range and natural resource conditions as part of the LGTMP.

Response. As indicated in the Purpose and Need, the LGTMP is intended to provide guidance and tools to the National Park Service and permit holders for managing the potential impacts of grazing and trailing in the park. Therefore, the focus of the preferred alternative is on grazing and trailing management practices necessary to meet the desired conditions established by the LGTMP. If implementation of the guidance and tools from the LGTMP does not result in resources moving toward/meeting desired conditions, the National Park Service would consider implementing a variety of adaptive management actions. This could include actions for improving range and natural resource conditions, including but not limited to those identified on pages 2-11 and 2-12 of the EA. However, the need for such actions and details of how they would be implemented are speculative at this time, especially given expected changes in resource conditions in response to implementation of the LGTMP, and the cumulative effects of relinquishment of grazing rights in the Hartnet allotment. Additionally, as the LGTMP is not dependent on these actions, nor are these actions dependent on the LGTMP, they are not required to be considered in the same EA.

Affected Environment

Concern 1. One commenter questioned why Chapter 3 of the EA does not provide IIRH data on extreme to total departures from reference conditions.

Response. The full results of the IIRH assessments are reported in the EA and were reviewed in response to this comment. There were no instances of the three attributes of Soil and Site Stability, Hydrologic Function, or Biotic Integrity being in extreme to total departure from reference conditions; therefore, Table 3.2 of the EA and others are correct. However, in reviewing the IIRH data in response to this comment, the National Park Service noted that there was an error in Figure B.20 of the EA. It incorrectly labeled one plot as “extreme to total” departure from reference condition, instead of “none to slight.” This has been updated in **Attachment 2**: Errata to the EA.

Additionally, specific indicators (e.g., Bare Ground) that make up the attribute determinations may be in extreme to total departure from reference conditions in some instances. Any given attribute may have one or more indicators in extreme to total departure from reference condition, but if other indicators are in better condition, the overall attribute rating may still be less than extreme to total (Pellant et al. 2005). In response to Concern 2 under *Desired Conditions/Adaptive Management Thresholds, IIRH, PFC*, it is noted that reducing the number of plots in moderate to extreme or extreme to total departure from reference condition will move the Sandy 3 allotment toward reference conditions, even though the National Park Service acknowledges that some areas may not return to reference conditions

Concern 2. One commenter suggested the EA should address impacts on Bicknell's and Kaiparowits milkvetch, as they are rare plants found along some of the trailing routes.

Response. *Astragalus consobrinus* is addressed on page D-11 of the EA. Although *Astragalus malacoides* occurs in the park, it is not an NPS sensitive species. Capitol Reef defines NPS sensitive species as those species that have a NatureServe global ranking of G1 (critically imperiled) or G2 (imperiled), or a Utah State ranking of S1 (extremely high) or S2 (high). Therefore, this species has been a low priority for monitoring in the park compared to federally listed or NPS sensitive species. The park has no mapped locations of this species other than the herbarium specimen that was collected along the Notom Road. Impacts on this species would be similar to those described for upland vegetation, that is, possible tramping and habitat disturbance. The May 2016 issue of Calochortiana, the Research Journal of the Utah Native Plant Society, states the following about this species: "Threats mostly low, plants seem to be tolerant of some disturbance. Trends not known." Therefore, the National Park Service does not consider impacts on this plant a significant issue that needs to be addressed in the EA.

Impacts Analysis: Methodology and Assumptions

Concern 1. One commenter suggested the National Park Service mischaracterized the impacts of the preferred alternative as beneficial, asserting the impacts from livestock grazing and trailing would continue to be adverse, only slightly less so.

Response. As described in Section 4.4 of the 2015 NPS NEPA Handbook and NPS supplemental guidance on impact analysis, NEPA impact analysis is based on predicting either positive or negative changes to the existing condition of each resource at the time the analysis is prepared (i.e., the affected environment). While the impact analysis in Chapter 4 acknowledges that ongoing grazing and trailing impacts park resources and values, it also recognizes the positive changes in resource condition (when compared to the affected environment) expected with implementation of the pasture rotation and stock pond refurbishment in the Sandy 3 allotment; trailing best management practices; efforts to address trespass livestock in Oak Creek; and the cumulative effect of the retirement of the Hartnet allotment from grazing. Additionally, the LGTMP sets desired conditions for park resources, and the National Park Service will monitor and implement a variety of adaptive management tools to meet desired conditions (see Chapter 2 and Appendix C of the EA), which would be an improvement compared to current conditions. Therefore, the National Park Service believes the EA has appropriately characterized the positive changes expected as 'beneficial' impacts when compared to current conditions.

Concern 2. Some commenters asserted that the preferred alternative has the potential for significant adverse impacts on archeological resources, plants listed as threatened and endangered, and the threatened Mexican spotted owl. These commenters therefore requested that the National Park Service prepare an environmental impact statement for the LGTMP. One commenter felt that the National Park Service could not prepare an EA because the EIS for the Capitol Reef General Management Plan states in several locations that grazing causes "significant" impacts.

Response. Some commenters used descriptions of the current condition to assert their belief that grazing and trailing has significant impacts on listed species. However, as noted throughout Chapter 4 of the EA, and as described in response to previous concerns, the selected action is expected to result in improvements to the current conditions for listed plants and Mexican spotted owl as a result of implementing trailing best management practices; efforts to address trespass livestock in Oak Creek; setting desired conditions for resources, including damage/disturbance thresholds for listed plants and desired conditions for Mexican spotted owl habitat; implementing monitoring and adaptive management actions to meet desired conditions (e.g., changes to trail alignments and using alternative trails); and the cumulative effect of the recent retirement of the Hartnet allotment from grazing. Therefore, the National Park Service believes most impacts would be beneficial, and as described in the Finding of No Significant Impact, those activities that could negatively affect current conditions would not cause significant impacts.

Commenters who asserted there could be significant impacts on archeological resources cited a report entitled “Impacts of Domestic Livestock Grazing on Archeological Resources of Capitol Reef National Park” (Osborn et al. 1987) and the General Management Plan EIS analysis. The National Park Service agrees that livestock grazing and trailing impact archeological resources, as described in the cited report. However, as explained in Appendix D of the EA, the National Park Service consulted with the State Historic Preservation Office under Section 106 of the National Historic Preservation Act and reached the conclusion that livestock grazing and trailing does not significantly affect the character-defining features of eligible properties nor diminish the eligibility of properties for the National Register of Historic Places.

Regarding the conclusions in the General Management Plan EIS that impacts on resources would be significant, it is important to note there were more active grazing allotments at the time that analysis was conducted, including the Cathedral and Hartnet allotments. These two allotments in particular contained substantial habitat for/localities of listed plants that have since been relieved of grazing impacts due to the retirement of the allotments. Additionally, the General Management Plan EIS analysis is not based on implementation of a grazing and trailing management plan such as the one analyzed in the EA. As noted in the EA and in previous concerns, implementation of the LGTMP and the cumulative effects of the retirement of the Hartnet allotment from grazing are expected to result in positive changes when compared to current conditions, which are considered beneficial impacts in the context of NEPA. Additionally, even if the National Park Service had found the potential for significant adverse impacts from implementation of the LGTMP, DOI NEPA regulations (43 CFR 46.140(c)) allow for preparation of an EA and Finding of No Significant Impacts for a proposed action with significant effects if: 1) the EA is tiered to a broader EIS that analyzed the significant effects; and 2) any previously unanalyzed effects are not significant.

Concern 3. One commenter noted that the National Park Service did not assess impacts in the context of NPS Management Policies 2006, specifically Section 1.4.4 and 1.4.7 (related to impairment); Section 2.3.1.1 (Statutory Requirements for General Management Plans); Section 4.1.5 (Restoration of Natural Systems); Section 4.4.1 (General Principles for Managing Biological Resources); Section 8.1.2 (related to appropriate uses), Section 8.6.1.1 (Requests for Permits), and Section 8.6.8.2 (Managing Agricultural Grazing). The same commenter asserted

the National Park Service should have analyzed impacts in the context of Director's Order 77-1 and 77-2 related to wetland protection and floodplain management. Another commenter suggested the EA should include an unacceptable impacts analysis in accordance with NPS Management Policies 2006.

Response. As appropriate, the National Park Service has updated the conclusions for impacts analysis to include relevant policies as context for the importance of impacts (see **Attachment 2**: Errata to the EA). However, it should also be noted that some policies cited by the commenter do not apply to the LGTMP or the analysis in an EA:

- Chapter 1 of Management Policies 2006—Requires the National Park Service to consider the potential for proposed actions to impair park resources or have unacceptable impacts. However, these determinations are made outside of the NEPA process, based on the judgement of the responsible official, and in the case of impairment, through a written nonimpairment determination such as the one attached to the FONSI.
- Section 2.3.1.1 of Management Policies 2006—Specific to statutory requirements for general management plans and does not apply to the LGTMP or the EA.
- Section 8.6.1.1 of Management Policies 2006—Specific to review requirements for permits, this does not provide context for the EA analysis, and nothing in the LGTMP, which still requires permit reviews on a case-by-case basis, is inconsistent with this policy.
- Section 8.6.2.2 of Management Policies 2006—Specific to approaches for managing livestock, this does not provide context for the EA analysis. In addition, the LGTMP itself is consistent with applicable requirements.

Additionally, the National Park Service believes livestock grazing and trailing is an appropriate use authorized by the enabling legislation of the park, and the LGTMP is consistent with policy related to monitoring and minimizing impacts from appropriate uses.

Concern 4. Commenters requested that the EA state which actions the National Park Service could implement if additional funding is not received, and that the National Park Service analyze the resulting impacts of just those actions to each resource. Other commenters suggested that implementation of the preferred alternative is dependent on funding, and the National Park Service failed to address the fact that funding may not be received.

Response. Capitol Reef is committed to identifying funding and hiring staff to implement the plan. The park has no information indicating it is reasonably foreseeable that funding for implementation may be unavailable and expects to be able to fully implement the LGTMP. Even if funding became unavailable to implement elements of the plan, the National Park Service will have a monitoring program in place to assess rangeland conditions, and the LGTMP provides tools to work with permit holders to adjust grazing and trailing operations. In addition, the National Park Service has the authority to, if necessary, deny permits as a result of monitoring. Nonetheless, the potential for a lack of funding is in fact disclosed on page 4-1 of the EA.

Concern 5. One commenter questioned the National Park Service assumption that trailing livestock more quickly, or in smaller numbers over more days, through the park would change the impacts from this activity.

Response. A smaller number of animals with a "lead cow" is easier to manage and concentrate on trails. Additionally, moving animals at a steady pace will minimize animal weight loss and prevent animals from lingering, straying off trail, and grazing while trailing. These actions reduce the total amount of area, vegetation, and soils that livestock impact while trailing.

Concern 6. One commenter questioned the assumption that trailing only impacts a 200-foot corridor along trailing routes that are not associated with a road, especially as it relates to the Lower South Desert trail.

Response. The 100-foot buffer on each side of a trailing route that could be affected is based on park staff observations of the area affected by livestock during past trailing events. While the commenter asserts this is not a wide enough area, they did not offer a recommendation on what would be a more appropriate analysis area. In addition, as it relates to the Lower South Desert trail, the National Park Service considered a larger area of impact to include not only this corridor but also an area 0.25-miles from springs along the trail (see the soils and upland and riparian vegetation sections of Chapter 3 and 4 of the EA). Based on US Fish and Wildlife Service guidelines, a 300-foot buffer was used on each side of the three trails that pass through listed plant species habitat to evaluate impacts. Also, when analyzing impacts on Wright fishhook cactus inhabiting the Lower South Desert, all known individuals within the southern part of Lower South Desert were considered (see footnote to Table 4.5 of the EA).

Concern 7. One commenter believed that the analysis in the EA should address the potential that water from reservoirs upstream of Oak Creek could be shut off, resulting in no water in Oak Creek.

Response. In light of the fact that as of Fall 2018 there is insufficient water in the upstream reservoirs for diversions to Oak Creek, the National Park Service has updated the cumulative action scenario and the cumulative impacts analysis in the EA to address this comment (see **Attachment 2**: Errata to the EA).

Impacts Analysis: Natural Resource Impacts

Concern 1. One commenter questioned the National Park Service conclusion that continued trailing under Alternative 1 would not change plant community composition or species abundance in upland vegetation communities, in light of the currently degraded condition of vegetation along trailing routes.

Response. At Capitol Reef, upland vegetation has been monitored in the recently retired Hartnet allotment and Sandy 3 allotment with the IIRH assessments; however, as noted on page 3-8 of the EA, upland vegetation along trailing routes has not been specifically monitored. Rather, vegetation monitoring along trailing routes has focused on riparian vegetation where impacts are more severe. Observations of upland vegetation along trailing routes indicate that similar impacts on those in the allotments are taking place, including reduced reproductive

capability, decreased production, and increased abundance of invasive plants, but these changes have not been quantified. Regardless, the relatively short time frame of trailing means that impacts cannot be equated with those in allotments where grazing occurs for five months. However, the National Park Service acknowledges uncertainty in the probability of changes to upland plant community composition and species abundance along trailing routes and has altered the text accordingly.

Concern 2. Commenters felt that the EA does not provide scientific evidence that the proposed pasture rotation system for the Sandy 3 allotment would improve soil and vegetation. Some commenters suggested the preferred alternative should have relied more on riders and adjustments to stocking rates and AUMs than on fences. Commenters also expressed concern that the proposed pasture rotation system will just concentrate the same number of animals in smaller areas, leading to more intense impacts. Commenters also questioned how soils could improve if refurbishing stock ponds results in an expansion of grazing to areas which livestock did not use in the past.

Response. The LGTMP provides a comprehensive plan to address degraded conditions in the planning area and move them toward desired conditions, of which pasture rotation is one component. The National Park Service acknowledges concerns that pasture rotation alone may not achieve the desired results; however, in combination with improved livestock distribution, monitoring, and the flexibility to apply adaptive management based on monitoring results (including adjusting stocking rates, AUMs, and season of use), vegetation and soil resources are expected to move toward desired conditions.

The EA acknowledges that a pasture rotation system increases the intensity of livestock grazing for a certain period of time (see pages 4-7 and 4-58 of the EA). Additional text about this topic for upland and riparian vegetation associations is reflected in the errata (see **Attachment 2**: Errata to the EA). There is a body of scientific literature, as presented in the EA, that suggests that pasture rotation has beneficial outcomes. A large benefit of pasture rotation is that each pasture will be allowed to rest every other spring, leading to increased vegetation growth, seed production, and restocking of nutrient reserves. This may benefit perennial species specifically, which are better than annuals at stabilizing soils and increasing infiltration through deeper roots (Holechek et al. 2011). Without pasture rotation, livestock tend to congregate near water sources and create highly compacted soils with heavily grazed vegetation. The proposed pasture rotation, along with new water sources through refurbished stock ponds, should force livestock to use new areas, and take pressure off riparian areas. Additionally, adaptive management actions described in Appendix C of the EA allow for use of supplements or riders to help improve distribution. While this may result in impacts on new areas, the overall balance of soil compaction and disturbance, forage use, and impacts on natural water resources should be more evenly distributed across the landscape, resulting in fewer areas with moderate to extreme departure from reference conditions.

Commenters were correctly concerned that pasture rest during dry conditions may not allow for recovery. This is why adaptive management actions may be taken under drought conditions, and these actions may include adjustments to stocking rate, season of use, or pasture move dates (see response to Concern 10 under *Alternatives: Grazing Management*). Additionally, the

rangeland monitoring schedule (see pages 2-11 and C-4 of the EA) intends that forage production be evaluated every year and stocking rates be re-evaluated every second year, and has also been updated to indicate drought conditions or other natural disturbances could require a yearly assessment of stocking rates (see **Attachment 2**: Errata to the EA).

Concern 3. Commenters suggested the EA failed to evaluate how impacts on biological soil crusts affect soil and ecosystem function.

Response. The EA addresses the impacts of livestock grazing on biological soil crusts, and how these impacts can potentially affect soil and ecosystem function at pages 3-2, 3-24, 4-4 through 4-12, 4-22, 4-32, 4-36, 4-64. The National Park Service has reviewed this analysis and believes it sufficiently addresses the commenters' concern, and the level of detail is sufficient for an EA.

Concern 4. One commenter disagreed with the statement that Winkler cactus may be protected from impacts of livestock trailing because it will occur in the fall when the cacti are typically underground. The commenter noted that Clark et al. 2015 indicates livestock trampling of Winkler Cactus at any time of year affects the ability of the plants to produce offspring.

Response. The study cited (Clark et al. 2015) did not evaluate the impacts of livestock on Winkler cacti during different seasons. Rather, data were collected each year in the spring, typically in May. It would not be possible for the researchers to determine when a damaged or disturbed cactus found in May had been impacted. The study shows that cacti impacted in the spring have lower fecundity, but it does not show that livestock impacts on Winkler cactus at any time of year will result in lower fecundity. Fall trailing is expected to have less impact on Winkler cactus than spring trailing when plants and their reproductive structures are more likely to be aboveground. Compared to a Winkler cactus that is above ground, a cactus that is below ground is less likely to be unrooted and has less surface area exposed that could be impacted by a livestock hoof.

Concern 5. One commenter asserted that the National Park Service should revise and limit its analysis for Mexican spotted owl to impacts on areas currently occupied by Mexican spotted owls and associated with their protected activity centers.

Response. The National Park Service believes the analysis in the EA is already consistent with the commenters request; it is focused on Mexican spotted owls in Oak Creek and Pleasant Creek only because they are areas either known to be used by Mexican spotted owls or that provide suitable foraging habitat within 2 miles of a protected activity center.

Concern 6. One commenter asserted that the threshold of a 4-inch stubble height in riparian areas was not sufficient to provide for the optimal Mexican spotted owl prey habitat conditions, including seed production.

Response. The stated threshold is 4- to 6-inch stubble height of grasses (see page C-3 of the EA). This was discussed with the US Fish and Wildlife Service as an appropriate residual stubble height.

The Mexican spotted owls Recovery Plan does not specify stubble height values but does state that, "Resource managers should establish and enforce residual vegetation (e.g., residual leaf length or stubble height) targets during plant growth and dormant periods that are consistent with light to moderate grazing intensity within protected and recovery habitats." Clary and Webster (1989) state that 30% utilization level, which falls in the light to moderate grazing intensity, would result in our targeted 4 to 6 inches of stubble height remaining. Because trailing livestock are to be moved along at a steady pace, utilization levels are expected to be lower than 30%, resulting in higher stubble heights that would improve structural habitat for Mexican spotted owl prey.

In addition to stubble height, the desired conditions for Mexican spotted owls (pages C-3 and C-4) includes "Maintaining adequate levels of residual plant cover to maintain fruits and seeds and to allow plant regeneration." Vegetation in the Pleasant Creek and Oak Creek trailing corridors will be monitored to ensure that this desired condition is met.

Concern 7. One commenter suggested the EA did not adequately consider the impacts on listed plant species in the context of climate change. The same commenter suggested the National Park Service did not address the damage and disturbance thresholds, population trends, or modeling in the impact analysis for these species.

Response. The EA addresses the current and potential impacts on threatened and endangered plant species within the park from climate change in Chapter 3, pages 3-24 to 3-25 in a section titled "Threatened and Endangered Plants and Climate Change." In this section, the National Park Service evaluated the impacts of climate change on a variety of listed plant species. Additionally, the National Park Service identified climate change as a threat to both Wright fishhook cacti and Winkler cacti in the park (Chapter 3, pages 3-19 and 3-21). Climate change is addressed in Chapter 4 on pages 4-34 and 4-37. Therefore, the National Park Service has determined that the EA sufficiently analyzed climate change with an appropriate level of detail, and no further evaluation is required.

Appendix C of the EA discusses the damage and disturbance thresholds that would trigger adaptive management. The analysis in Chapter 4 discusses the impacts of being below the thresholds and acknowledges that if damage and disturbance thresholds are reached, adaptive management actions would be implemented in order to stay below the thresholds (see page 4-40). As described in Chapter 3, populations of Wright fishhook cactus, Winkler cactus, and Last Chance townsendia are decreasing. Population trends as they relate to livestock grazing are described in Chapter 4, beginning on page 4-32.

High levels of livestock use have not been documented in Last Chance townsendia occupied habitat. Negative population trends for this species at lower elevations are believed to be related to climatic conditions (USFWS 2013a).

Population modeling is described on page 4-34 and referenced to Clark and Clark 2010.

Concern 8. Commenters requested that the National Park Service provide scientific evidence regarding the efficacy of bringing livestock onto the Sandy 3 allotment in mid-October as a way to control cheatgrass.

Response. Cheatgrass provides good forage for the first 6 to 8 weeks of germination. Germination usually occurs early in the fall and spring. If livestock graze cheatgrass during this time period, it can prevent cheatgrass from going to seed, which can decrease the density. Fall consumption of cheatgrass can also reduce plant vigor during the spring growing season (Mosley and Roselle 2006). Livestock are present on the Sandy 3 allotment during both of these time frames, and the National Park Service expect livestock to consume cheatgrass. Cheatgrass is usually the first species to germinate in the spring and is one of the first species to germinate in the fall. Cheatgrass can utilize soil water moisture early in the year and reduces soil moisture availability for native plants. If cheatgrass can be suppressed, native plant species will have a better chance of germinating due to more soil moisture being available for seeds in the seed bank and for established native perennial species. Though targeted grazing of cheatgrass is not a "silver bullet" for eradication, literature supports that cheatgrass density can be reduced with targeted grazing (USDA 2014; Schmelzer et al. 2014).

Citations:

USDA. 2014. Field Guide for Managing Cheatgrass in the Southwest. Internet website: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5410110.pdf (accessed September 2018).

Mosley, J. C. and L. Roselle. 2006. Targeted livestock grazing to suppress invasive annual grasses. In 'Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement'. (Ed. K. Launchbaugh) pp. 68–77. American Sheep Industry Association: Denver, CO.

Schmelzer et al. 2014. Case Study: Reducing cheatgrass (Bromus tectorum L.) fuel loads using fall livestock grazing. The Professional Animal Scientist 30 (2):270 – 278.

Impacts Analysis: Miscellaneous Impacts

Concern 1. Several commenters suggested the EA should disclose who is responsible for paying for construction and maintenance of range improvements, and if it is the permit holders, those costs should be considered in the Permit Holder Traditional Uses and Socioeconomic analysis. Several commenters also suggested the EA must analyze the costs to the National Park Service, and therefore the public, of implementing all aspects of the preferred alternative.

Response. As noted in response to Concern 1 under *Alternatives: Grazing Management*, consistent with NPS Management Policies 2006 (Section 8.6.8.2.2), the National Park Service plans to pay for the construction and maintenance of range management infrastructure because it would have a direct benefit to the protection of park resources. Neither CEQ nor DOI regulations require an analysis of costs to the government in a NEPA document; therefore, they are not included. Instead, costs are one consideration when decision-makers identify a preferred alternative and/or select an action for implementation.

Concern 2. Commenters requested that the National Park Service fully evaluate the impacts of trailing more livestock through the park on recreational activities and visitors' experiences in the park, especially along the Hartnet and Lower South Desert trails.

Response. Additional text is added to Appendix D of the EA, pages D-2 to D-3 to address the potential for an increase in the number of livestock trailing through the park and of issuing trailing permits through the recently retired Hartnet allotment (see **Attachment 2**: Errata to the EA).

Impacts Analysis: Cumulative Impacts

Concern 1. One commenter questioned the National Park Service assumption in Table 4.1 that it is difficult to determine and quantify impacts on resources from grazing over the past 30 years, and indicated data are available to do so.

Response. The livestock exclosures that the park constructed in the early 1980s can be used to show how vegetation and soils, including biological soil crusts, have recovered in the past 30 years from 130 years or so of grazing. The differences in vegetation cover and composition, and biological soil crust cover, between the inside and outside of the exclosures is visually apparent. The Excel charts the commenter provided show that vegetation and biological crusts are greater inside the exclosures than outside, while bare ground is greater outside the exclosures. Although we believe this is evidence that in the absence of livestock, plant and biological crusts will recover, without showing similar data from when the exclosures were established this claim cannot be verified. More importantly in relation to the comment, the exclosures cannot be used to quantify what portion of impacts seen on the landscape today is attributable to historic versus more recent grazing. They can only capture the difference between conditions when the exclosures were constructed and now.

Concern 2. One commenter asserted that the National Park Service should not include the buy-out of the Hartnet allotment in the cumulative impacts analysis as it obscures the impacts of the preferred alternative.

Response. The 2015 NPS NEPA Handbook states, “A cumulative impact is an ‘impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions’ (1508.7). A cumulative impact analysis must consider the overall effects of the direct and indirect impacts of the proposed action, when added to the impacts of past, present, and reasonably foreseeable actions on a given resource” (see page 62 of the 2015 NPS NEPA Handbook). The buy-out of the Hartnet allotment meets this definition, and as NEPA requires analysis of cumulative impacts, the National Park Service is included this in the EA.

Concern 3. Commenters felt that the cumulative impacts assessment for listed plants needs to consider population trends and range-wide impacts. One commenter also asserted the EA does not list illegal cactus removal by cactus hunters as a threat to cactus within the trailing routes, and that this, along with impacts from rodents, insects, and climate, are cumulative impacts.

Response. As the 2015 NPS NEPA handbook explains, “It is important to note that past, present, and reasonably foreseeable future actions are limited to human actions, meaning they are attributable to specific individuals or entities. Naturally occurring incidents, such as storm events or floods, are not actions per se and therefore the effects of these types of incidents

should be considered as part of the affected environment rather than as part of a cumulative impact analysis."

Population trends, range-wide impacts, and the other stressors on listed plants identified by the commenter are not human actions attributable to specific individuals or entities. As a result, the National Park Service does not believe these threats should be considered in the cumulative impacts analysis, and that they are appropriately addressed already as part of the affected environment (Chapter 3). This specifically includes mention of illegal cactus collecting on pages 3-19 and 3-21 of the EA as a threat to both Wright fishhook cacti and Winkler cacti within the park.

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