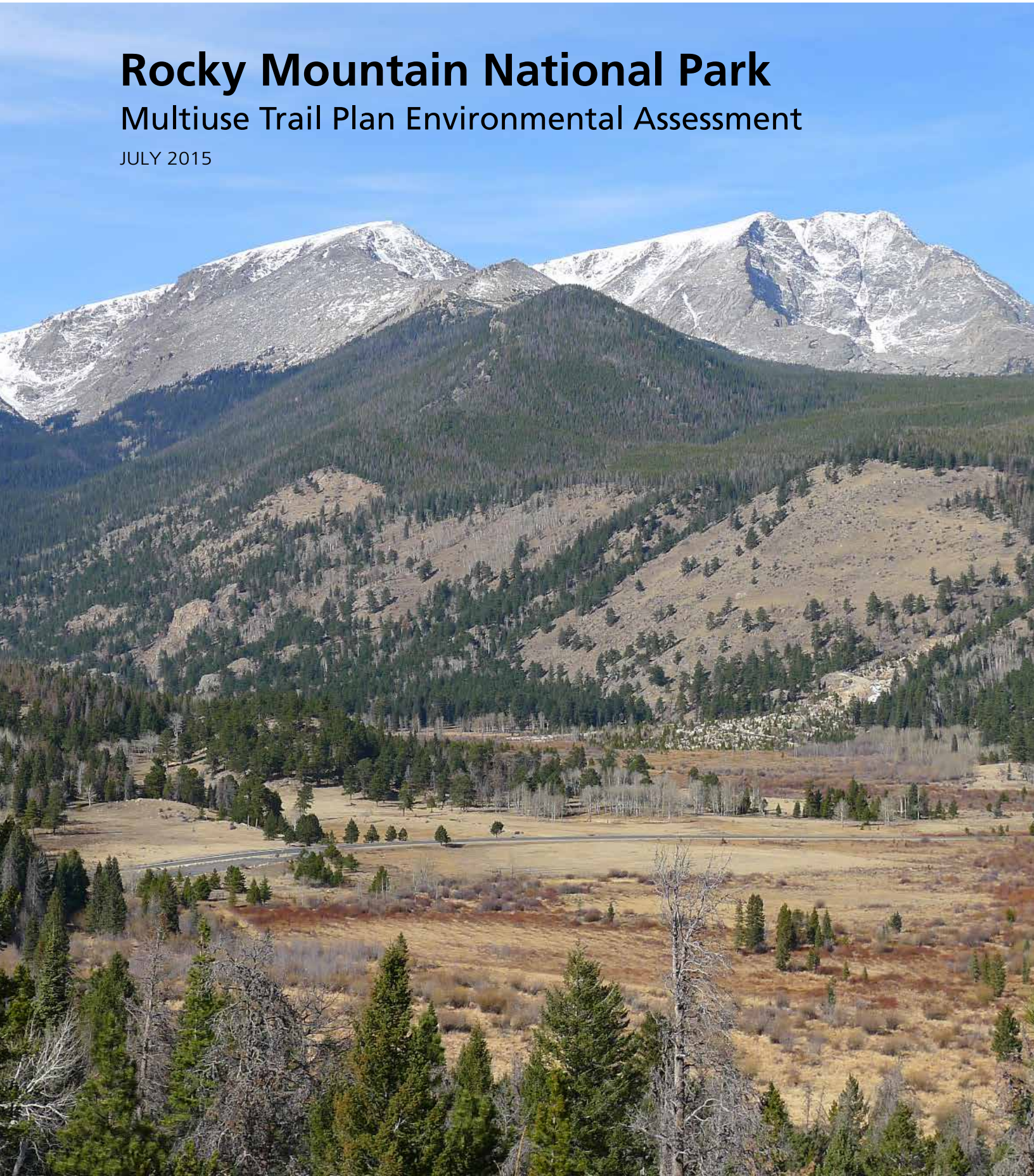
National Park Service
U.S. Department of the Interior

Rocky Mountain National Park
Colorado

Rocky Mountain National Park

Multiuse Trail Plan Environmental Assessment

JULY 2015



United States Department of the Interior
National Park Service

Rocky Mountain National Park
Estes Park, Colorado

Multiuse Trail Plan
Environmental Assessment

July 2015

Located 65 miles northwest of Denver, Colorado and occupying more than 265,000 acres at the intersection of Boulder, Larimer, and Grand Counties, Rocky Mountain National Park (the park) was established in 1915 as one of the first conservation efforts in the U.S. The park was established to preserve the natural conditions and scenic beauties, conserve the natural and historic objects and wild life, and provide the freest recreational use and enjoyment for the people of the U.S. The purpose of Rocky Mountain National Park is to preserve the high elevation ecosystems and wilderness character of the southern Rocky Mountains within its borders, and to provide the freest recreation use of and access to the park's scenic beauties, wild life, natural features and processes, and cultural objects. The park is managed by the National Park Service, an agency within the Department of the Interior.

The National Park Service is exploring options for providing a multiuse trail system along the developed corridor of roads on the east side of the park. The purpose of this trail system is to connect with proposed multiuse trail systems in the Estes Valley and enhance multimodal connections to existing visitor use areas in the park, and provide connections to the seasonal shuttle system within and outside of the park.

This document examines three alternatives: a no-action alternative (alternative A) and two action alternatives (alternatives B and C). The National Park Service has identified alternative A as the environmentally preferable alternative that least damages the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources.

The action alternatives would have very similar impacts on park resources. Both action alternatives would result in short- and long-term adverse impacts on soils, topography, and geology; wetlands and other waters of the U.S.; vegetation; wildlife and wildlife habitat; historic structures, historic districts, and cultural landscapes; site access and circulation; visitor use and experience; park operations; and socioeconomic resources and gateway communities. Short-term adverse impacts would be associated with construction activities, and long-term impacts would be associated with the new multiuse trail as well as revegetation efforts after construction. Both action alternatives also would result in long-term beneficial impacts on site access and circulation; visitor use and experience; and socioeconomic resources and gateway communities.

Note to Reviewers and Respondents:
If you wish to comment on this Environmental Assessment, please provide comments by September 10, 2015, at http://parkplanning.nps.gov/romo or by mailing to the name and address below. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Requests for further information can be directed to the address below:

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EXECUTIVE SUMMARY

PURPOSE OF AND NEED FOR THE PROJECT

Access to the park is provided at three main entrance stations: Fall River and Beaver Meadows on the east side and Grand Lake on the west side. A majority of park visitors (over 80%) enter the park from Estes Park via the Beaver Meadows entrance on U.S. Highway 36 (U.S. 36) and the Fall River entrance on U.S. Highway 34 (U.S. 34) (NPS 2013d). Most visitors access the park in private vehicles; however, the park also offers opportunities for alternate forms of access to and within the park such as hiking, road bicycling, and use of a seasonal shuttle system. The purpose of Rocky Mountain National Park, in part, is to provide the freest recreational use of and access to the park's scenic beauties, wildlife, natural features and process, and cultural objects (NPS 2013b). Further, the National Park Service (NPS) seeks to promote health and well-being in support of national initiatives such as America's Great Outdoors and Let's Move Outside, as well as NPS efforts such as A Call to Action, and Healthy Parks–Healthy People.

In order to meet these goals, the National Park Service is exploring options for providing a multiuse trail system along the developed corridor of roads on the east side of the park. The purpose of this trail system is to connect with proposed multiuse trail systems in the Estes Valley and enhance multimodal connections to existing visitor use areas in the park, and provide connections to the seasonal shuttle system within and outside of the park.

OBJECTIVES

Objectives for the proposed action include:

- explore potential multiuse trail connections to other recreational opportunities
- expand recreational opportunities for self-propelled transportation
- provide an alternate means of transportation within the park's developed eastern side
- provide connections to the park's shuttle bus system
- provide for spatial dispersal of visitors
- provide for new visitor experiences within the park
- minimize conflicts among visitors
- provide a safe multiuse trail system
- promote health and well-being in support of national initiatives

ALTERNATIVES

This document examines three alternatives: a no-action alternative (alternative A) and two action alternatives (alternatives B and C). Under alternative A, the roadways and trails within the project corridor would remain as they are and no new multiuse trail would be constructed. The National Park Service has identified alternative A as the environmentally preferable alternative that least damages the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources, though it would not meet the objectives of the proposed plan. Alternatives B and C would create new multiuse trails, connecting to existing points of interest throughout the project corridor, including to existing shuttle bus stops located inside the park, in order to meet the objectives of the plan.

Table ES-1 provides a brief summary and comparison of the key components of the no-action alternative and each of the two action alternatives. For details, see alternatives descriptions in chapter 2.

TABLE ES-1: CONDENSED SUMMARY OF ALTERNATIVES

	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
General Concept	No multiuse trail would be constructed. Project corridor would remain accessible primarily by vehicular transport and seasonal shuttle service.	Approximately 15.3 miles of multiuse trail would be constructed. Trail alignment predominantly following the road corridors of U.S. 34, U.S. 36, and Bear Lake Road. Users can gain access to the trail by vehicular transport, self-propelled transport, and seasonal shuttle service.	Approximately 14.2 miles of multiuse trail would be constructed. Trail alignment generally following the road corridors of U.S. 34, U.S. 36, and Bear Lake Road with sections of overland trail near Horseshoe Park and Beaver Meadows. Users can gain access to the trail by vehicular transport, self-propelled transport, and seasonal shuttle service.
New connections	No additional connections would be created.	The multiuse trail would connect self-propelled visitors to: ■ 4 visitor facilities ■ 3 campgrounds ■ 2 overlooks ■ 7 shuttle stops	The multiuse trail would connect self-propelled visitors to: ■ 4 visitor facilities ■ 3 campgrounds ■ 7 shuttle stops
Detached Trails	No multiuse trail would be constructed.	The majority of the multiuse trail would be detached and offset from the road in various segments for a total of 14.6 miles of detached trails, including 1.1 miles of overland trails.	The majority of the multiuse trail would be detached and offset from the road in various segments for a total of 12.5 miles of detached trails, including 4.1 miles of overland trails (3.6 miles more than alternative B).

	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
Attached Trails	No multiuse trail would be constructed.	For a limited length the multiuse trail would have attached trails that run alongside the existing road in various segments and run for a total of 1.3 miles of attached trails.	Same as alternative B.
Roadway Crossings	No defined crossings exist. Pedestrian and on-road bicyclists cross the road at intersecting roads, drives, and visitor facilities.	7 total at-grade multiuse trail roadway crossings.	6 total at-grade multiuse trail roadway crossings.
Stream Crossings	No multiuse trail would be constructed.	9 total multiuse trail stream crossings.	9 total multiuse trail stream crossings.

ENVIRONMENTAL IMPACTS

The action alternatives would have very similar impacts on park resources. Short-term adverse impacts would be associated with construction activities, and long-term impacts would be associated with the new multiuse trail as well as revegetation efforts after construction.

Both action alternatives would result in short- and long-term adverse impacts on the following topics:

- soils
- topography and geology
- wetlands and other waters of the US
- vegetation
- wildlife and wildlife habitat
- historic structures, historic districts, and cultural landscapes
- site access and circulation
- visitor use and experience
- park operations
- socioeconomic resources and gateway communities

Both action alternatives also would result in long-term beneficial impacts on the following topics:

- site access and circulation
- visitor use and experience
- socioeconomic resources and gateway communities

Table ES-2 below summarizes the impacts of each alternative on the impact topics selected for analysis in this EA. These impacts are described in greater detail under their respective headings in chapter 4.

TABLE ES-2. CONDENSED SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Resource	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
Soils, Topography, and Geology	No new impacts. Impacts to soils adjacent to roadways and parking areas would continue from parking and trampling. Cumulative impact: None	Approximately 74 acres of soils would be impacted. Cumulative impact: Contributes a noticeable adverse increment to the overall long-term adverse impact	Approximately 69 acres of soils would be impacted. Cumulative impact: Contributes a noticeable adverse increment to the overall long-term adverse impact
Vegetation	No new impacts. Impacts to vegetation (individual plants) adjacent to roadways and parking areas would continue from parking and trampling. Cumulative impact: None	Construction of the 15.3-mile trail would impact approximately 69 acres of vegetation in the project corridor. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts	Construction of the 14.2-mile trail would impact approximately 67 acres of vegetation in the project corridor. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts
Wildlife and Wildlife Habitat	No new impacts. Roadway corridors would continue to fragment wildlife habitat and influence wildlife movement and activity. Cumulative impact: None	Approximately 69 acres of wildlife habitat would be removed for construction, with 50 acres revegetated and restored after construction. Cumulative impact: Contributes a noticeable adverse increment and an imperceptible beneficial increment to the overall adverse and beneficial long-term impacts	Approximately 67 acres of wildlife habitat would be removed for construction, with 50 acres revegetated and restored after construction. The overland segments would be expected to cause more wildlife habitat fragmentation than alternative B. Cumulative impact: Contributes a noticeable adverse increment and an imperceptible beneficial increment to the overall adverse and beneficial long-term impacts
Wetlands and Other Waters of the U.S.	No impacts. Cumulative impact: None	Wetland/stream crossings would impact approximately ▪ 0.64 acres of wetlands and ▪ 347 linear feet of stream channel. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts	Wetland/stream crossings would impact approximately ▪ 0.09 acres of wetlands and ▪ 321 linear feet of stream channel. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts

Resource	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
Historic Structures, Historic Districts, and Cultural Landscapes	No new impacts. Increasing visitation and the presence of additional vehicles would continue to intrude on historic structures, historic districts, and cultural landscapes. Cumulative impact: Contributes an imperceptible adverse increment to the overall adverse and beneficial long-term impacts	The presence of the new trail, signs, and crosswalk markings would have slight visual intrusions on the historic structures, historic districts, and cultural landscapes in the project corridor. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts	Same as alternative B except where the overland routes diverge from roadway corridors and near the William Allen White cabin. Trail use would have less visual impact where it leaves the existing road corridor but would be more noticeable from the William Allen White cabin. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts
Site Access and Circulation	Adverse impacts would continue to intensify as visitation increases with no increase in means of access. Cumulative impact: Contributes an imperceptible adverse increment to the overall adverse and beneficial long-term impacts	The new 15.3-mile trail would slightly reduce congestion along major roadways and would provide an additional means of accessing scenic routes within the park. The trail would provide multimodal access throughout major areas of the park. Cumulative impact: Contributes a noticeable beneficial increment to the overall adverse and beneficial long-term impacts	Same as alternative B except the trail would be 14.2 miles and would diverge from scenic routes at two locations. Cumulative impact: Contributes a noticeable beneficial increment to the overall adverse and beneficial long-term impacts
Visitor Use and Experience	Congestion and shared roadways would continue to detract from visitor use and experience along major roadways. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts	The new 15.3-mile trail would provide an additional way to experience scenic routes, provide for spatial and temporal dispersal of visitors along the corridor, thereby reducing the potential for roadway congestion. Cumulative impact: Contributes noticeable beneficial and adverse increment to the overall adverse and beneficial long-term impacts	Same as alternative B except the trail would be 14.2 miles and would diverge from scenic routes at two locations. Cumulative impact: Contributes a noticeable beneficial and adverse increment to the overall adverse and beneficial long-term impacts

Resource	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
Park Operations	No new impacts. Cumulative impact: None	The new 15.3 mile trail would require additional maintenance. Park staff and volunteers would have to inspect the trail for damage each spring. Cumulative impact: Contributes noticeable increment and an imperceptible beneficial increment to the overall adverse long-term impacts	The new 14.2 mile trail would require additional maintenance. Park staff and volunteers would have to inspect the trail for damage each spring. Cumulative impact: Contributes noticeable increment and an imperceptible beneficial increment to the overall adverse long-term impacts
Socioeconomic Resources and Gateway Communities	No new impacts. Cumulative impact: None	The new trail could increase the length of visits, and the possible connections to Estes Park could encourage more bicycling between the park and the town. Bicycle rentals in town may also increase. Cumulative impact: Contributes and imperceptible beneficial increment to the overall long-term beneficial impact	Same as alternative B.

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ACRONYMS AND ABBREVIATIONS

CFR – Code of Federal Regulations
EA – Environmental Assessment
DO – Director's Order
National Register – National Register of Historic Places
NEPA – National Environmental Policy Act
NPS – National Park Service
the park – Rocky Mountain National Park
PEPC – Planning, Environment and Public Comment website
U.S. – United States
U.S. 34 – U.S. Highway 34
U.S. 36 – U.S. Highway 36

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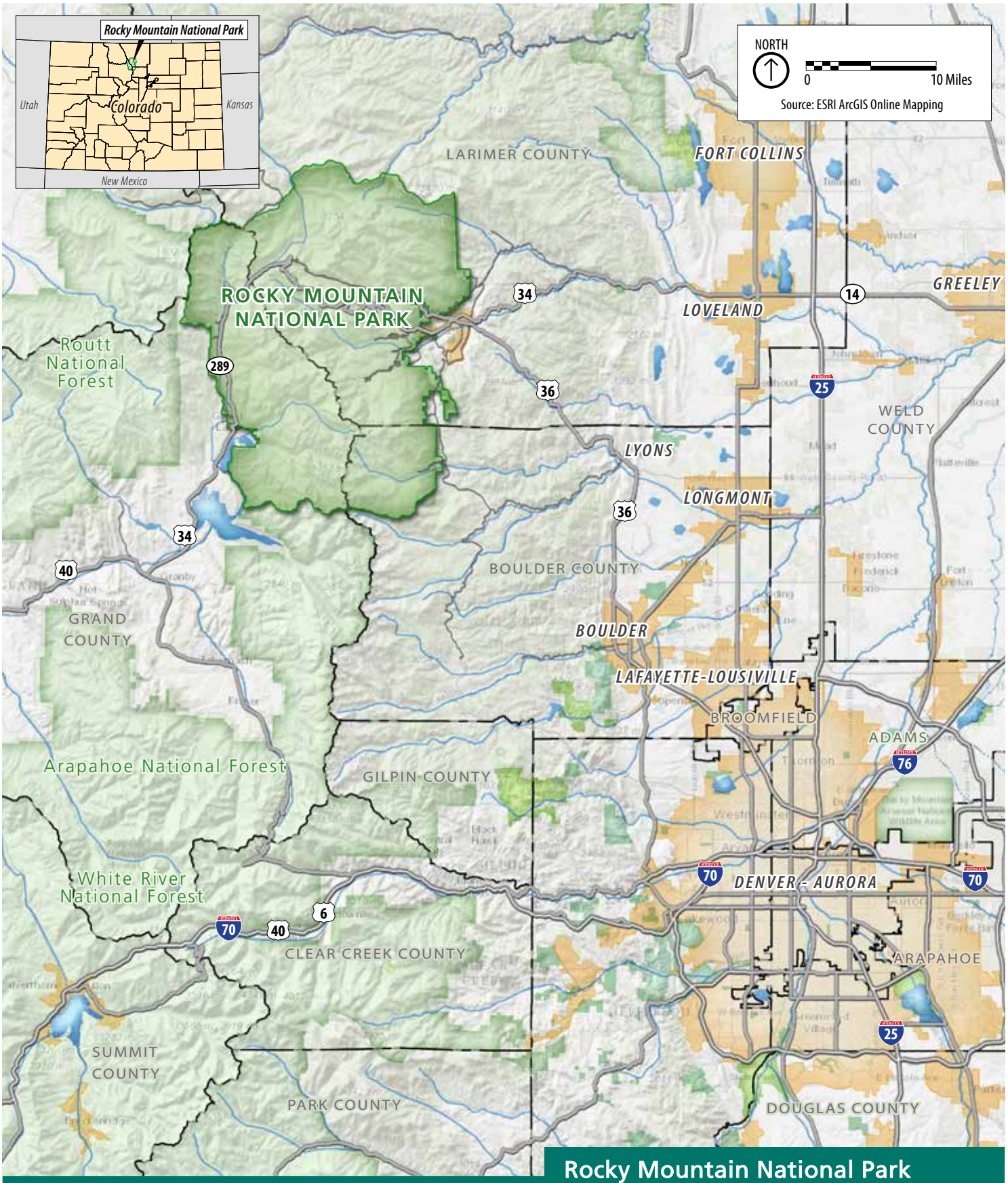
PURPOSE AND NEED

INTRODUCTION

Located 65 miles northwest of Denver, Colorado and occupying more than 265,000 acres at the intersection of Boulder, Larimer, and Grand Counties, Rocky Mountain National Park (the park) was established in 1915 as one of the first conservation efforts in the U.S. The purpose of Rocky Mountain National Park is to preserve the high elevation ecosystems and wilderness character of the southern Rocky Mountains within its borders, and to provide the freest recreation use of and access to the park's scenic beauties, wild life, natural features and processes, and cultural objects. Figure 1 shows the park's location in relation to Denver and to other Front Range communities such as Fort Collins, Loveland, Longmont, and Boulder.

Access to the park is provided at three main entrance stations: Fall River and Beaver Meadows on the east side and Grand Lake on the west side. A majority of park visitors (over 80%) enter the park from Estes Park via the Beaver Meadows entrance on U.S. Highway 36 (U.S. 36) and the Fall River entrance on U.S. Highway 34 (U.S. 34) (NPS 2013d). Most visitors access the park in private vehicles; however, the park also offers opportunities for alternate forms of access to and within the park such as hiking, road bicycling, and use of a seasonal shuttle system. The purpose of Rocky Mountain National Park, in part, is to provide the freest recreational use of and access to the park's scenic beauties, wildlife, natural features and process, and cultural objects (NPS 2013b). Further, the National Park Service (NPS) seeks to promote health and well-being in support of national initiatives such as America's Great Outdoors and Let's Move Outside, as well as NPS efforts such as A Call to Action, and Healthy Parks–Healthy People.

In order to meet these goals, the National Park Service is exploring options for providing a multiuse trail system along the developed corridor of roads on the east side of the park. The purpose of this trail system is to connect with proposed multiuse trail systems in the Estes Valley and enhance multimodal connections to existing visitor use areas in the park, and provide connections to the seasonal shuttle system within and outside of the park.



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Colorado

FIGURE 1

Regional Overview

This environmental assessment (EA) evaluates three alternatives, including one no-action alternative and two action alternatives. The EA analyzes the potential impacts these alternatives would have on the natural, cultural, and human environment. This document has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA); regulations of the Council on Environmental Quality (40 CFR 1508.9); and NPS Director's Order (DO) 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*. An assessment of effect will be prepared concurrently with but separately from this EA to comply with section 106 of the National Historic Preservation Act of 1966, as amended. A statement of findings for wetlands as called for by NPS Procedural Manual 77-1 also has been completed and is attached in appendix A.

This EA has also been prepared in compliance with the revised National Park Service Bike Rule, 36 CFR 4.30, which places greater emphasis on an individual park planning document that incorporates environmental compliance procedures and input from the public to decide whether or not bicycle use is appropriate on a trail in a unit of the National Park System. This EA serves as the planning document for the multiuse trail and has considered and evaluated the cost of construction and life cycle maintenance costs of the trail, has prescribed a sustainable design for construction of the trail, and has considered safety, strategies to prevent or minimize user conflicts, methods of protecting natural and cultural resources, and integration with alternative transportation systems. The National Park Service will be required to promulgate a special regulation to authorize use of the trail by bicyclists.

PURPOSE OF AND NEED FOR ACTION

The purpose of this trail system is to connect with proposed multiuse trail systems in the Estes Valley and enhance multimodal connections to existing visitor use areas in the park, and to provide connections to the seasonal shuttle system within and outside of the park. Multiuse in a national park setting is defined as self-propelled transportation, which may include bicycling, walking/running, use of baby strollers, snowshoeing, and/or cross-country skiing.

The purpose of Rocky Mountain National Park, in part, is to provide the freest recreational use of and access to the park's scenic beauties, wildlife, natural features and process, and cultural objects (NPS 2013b). The park provides a number of hiking trails that branch off of the existing roadway system, and the seasonal hiker shuttle provides an alternate method for visitors to access these trails. A vast majority of visitors (95% in the summer and 96% in the winter) consider trails as "Very Important" or "Extremely Important" visitor facilities (Blotkamp et al. 2010; Papadogiannaki, Le, and Hollenhorst 2011). Visitors wishing to bicycle along park roadways (paved and unpaved) are allowed access; however, the roads do not provide bicycle-specific accommodations. Additionally, bicycles are currently not permitted on trails within the park (with the exception of a 2-mile segment of the East Shore Trail, which is currently being considered for bike use). Because of very limited off-road opportunities and lack of on-road accommodations, use of the park by bicyclists is limited to "strong and fearless" bicyclists, which comprise a very small proportion of bicyclists (Dill and McNeil 2012). There are no accommodations for less experienced and less confident bicyclists on the eastern side of the park. Therefore, the project would provide additional recreational opportunities and access to the park's resources, consistent with the park's purpose.

The park serves as a destination both for the population local to Colorado's Front Range as well as for visitors travelling from afar. The majority of Colorado residents regularly participate in walking, running, hiking, bicycling, horseback riding, and other trail-based activities. Bicycling is a popular recreational activity for both residents and visitors in Colorado. The creation and maintenance of multiuse trail infrastructure is considered a top priority on the Front Range of Colorado, and Colorado residents report that recreational trails are integral to their quality of life. The Front Range towns of Boulder and Fort Collins were recently ranked as platinum-level bicycle friendly cities by the League of American Bicyclists (League of American Bicyclists 2014). Outdoor recreation is increasingly popular across the country (NPS 2009b), and current recreation planning emphasizes recreational activities that are healthy, safe, and accessible to a diverse population. Therefore, the project would help to meet the projected increase in demand for access to recreational opportunities within the park.

In addition to providing recreational opportunities for bicyclists who do not wish to ride along the road, the proposed multiuse trail would enhance the park's transportation system by providing an additional mode of transportation between areas of high visitor use from the Fall River entrance station to Sprague Lake. Additionally, visitors staying in Estes Park would be able to connect to the multiuse trail using the town's seasonal free shuttle service, thereby providing a new way to experience the park without using a personal vehicle.

The proposed project would also promote health and well-being in support of national initiatives such as America's Great Outdoors and Let's Move Outside, as well as NPS efforts such as A Call to Action, and Healthy Parks–Healthy People. The proposed project would provide the opportunity for a variety of nonmotorized activities for visitors and residents of nearby communities, including walking, jogging, cycling, and cross-country skiing in the winter. The National Park Service would comply with guidelines for sustainable and accessible trail design. The trail would supply options for visitors with mobility impairments along certain segments. Signs would be posted at major trail access points giving information about the trail to allow users to judge how well the trail suits their individual needs and limitations. In addition, the proposed project would encourage economic development in the surrounding region by creating opportunities for associated commercial services.

Objectives for the proposed action include:

- explore potential multiuse trail connections to other recreational opportunities in the area such as campgrounds and other multiuse trails such as those managed by the Town of Estes Park and the Estes Valley Recreation and Parks District
- expand recreational opportunities for self-propelled transportation
- provide an alternate means of transportation within the park's developed eastern side
- provide connections to the seasonal shuttle systems in the park and Estes Valley
- provide for spatial dispersal of visitors
- provide for new visitor experiences within the park
- minimize conflicts among visitors
- provide a safe multiuse trail system
- promote health and well-being in support of national initiatives such as America's Great Outdoors and Let's Move Outside, as well as NPS efforts such as A Call to Action and Healthy Parks–Healthy People

- balance the addition of these facilities with protection of the park's natural and cultural resources, minimizing adverse impacts to the extent practicable

PROJECT CORRIDOR DESCRIPTION

Rocky Mountain National Park is located at the intersection of Boulder, Larimer, and Grand Counties, Estes Park is the gateway community on the east side of the park, a distance of approximately 1 hour, 30 minutes from Denver, Colorado. The full extent of the trail corridor under consideration is approximately 15 miles long and would provide access along the following key corridors, as outlined in figure 2:

- U.S. 34 corridor from the Fall River entrance to Deer Ridge Junction
- U.S. 36 corridor from Beaver Point to Deer Ridge Junction
- Bear Lake Road corridor (from U.S. 36 to Sprague Lake)
- Fern Lake Road corridor from Bear Lake Road to Moraine Park Campground

Along this length, the proposed multiuse trail would provide access to existing park amenities such as the Aspenglen, Moraine Park, and Glacier Basin campgrounds; many miles of hiking trails; and numerous stops along the shuttle system. Trails users would also have easy access to the park's Fall River Visitor Center, Beaver Meadows Visitor Center, and Moraine Park Discovery Center. Therefore, these amenities are all considered to be within the project corridor considered within this EA.

PROJECT BACKGROUND

Previous and related planning studies have been completed for the park, as well as specific plans for trail-related improvements. These plans were reviewed to provide additional information and guidance for the proposed action. In addition, internal scoping with park staff and public scoping was undertaken to allow agencies and interested parties to provide additional information regarding specific portions of the proposed action. The studies used and scoping efforts undertaken are summarized below.

PREVIOUS AND RELATED PLANNING STUDIES

A number of plans and studies have informed and contributed to the development of alternatives for this EA. These include the *Rocky Mountain National Park Final Master Plan* (NPS 1976), the *Rocky Mountain National Park Transportation Study* (Parsons Brinkerhoff Quade & Douglas, Inc. 2000), *Environmental Assessment for the Bear Lake Road Improvement Project* (NPS 2001), the *Bear Lake Road Phase 2 Improvement Project Environmental Assessment* (NPS 2009a), and the *Rocky Mountain National Park Multi-Use Trail Feasibility Study* (NPS 2009b).

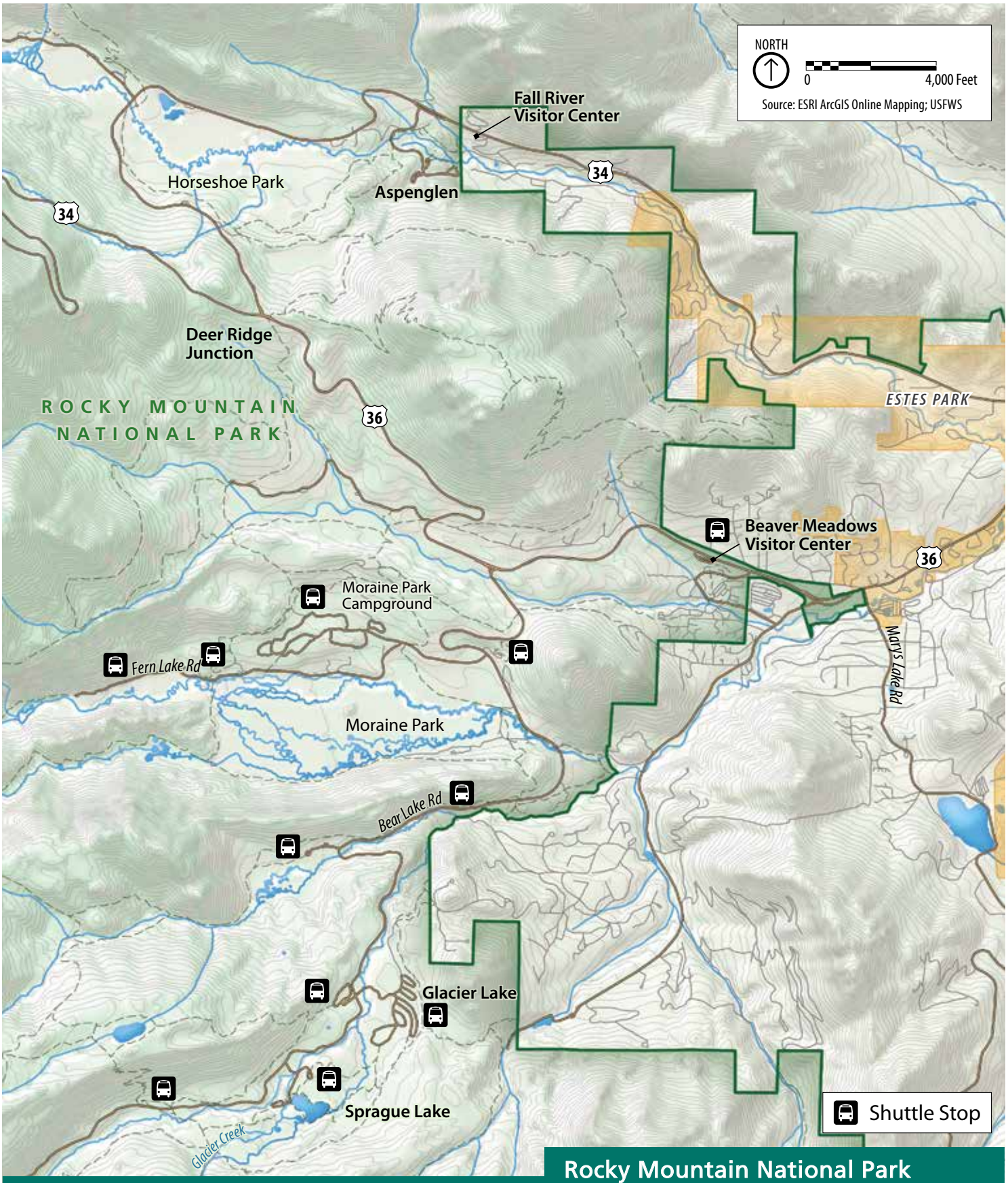

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FIGURE 2

Project Location Map

The ***Rocky Mountain National Park Final Master Plan*** (NPS 1976) provides guidelines for the park's use, preservation, management, and development. This plan calls for the road network to be retained and augmented with a transportation system during the peak visitor-use period. One of the management objectives listed under the category of visitor use is to increase visitor enjoyment of heavily used areas by improvement of circulation and methods of transportation (NPS 1976). Establishment of a multiuse trail following the developed road corridors in the park's eastern portion would further supplement the existing road network and shuttle system, especially during periods of peak visitation.

The ***Rocky Mountain National Park Transportation Study*** (Parsons Brinckerhoff Quade & Douglas, Inc. 2000) was conducted to identify the major transportation issues in the park, to recommend possible transportation strategies that would provide all park visitors with access to the park despite ongoing heavy visitation, and to provide visitors with a safe and enjoyable experience as they travel through the park while preserving the park's natural and cultural resources. One of the primary objectives that stemmed from this study included encouraging alternative mode uses (i.e., shuttles, walking, and bicycling). To this end, the study recommends expansion of the park's shuttle system and establishment of several bicycle/pedestrian links. The proposed multiuse trail could serve as some of the bicycle/pedestrian links recommended in this study.

The ***Environmental Assessment for the Bear Lake Road Improvement Project*** (NPS 2001), the ***Bear Lake Road Phase 2 Improvement Project Environmental Assessment*** (NPS 2009a) provided the compliance for the realignment and improvements to Bear Lake Road. As part of this improvement, the park identified a segment of abandoned roadway corridor that would be well suited for a multiuse trail. The identification of this segment served as the genesis for the creation of a larger multiuse trail system to connect to a growing trail network within the Estes Valley.

The ***Rocky Mountain National Park Multi-Use Trail Feasibility Study*** (NPS 2009b) assessed road corridors in the east side of the park for potential to accommodate a multiuse trail network. Factors in the study include sustainability, costs, visitor demand, and potential decrease in on-road traffic. The study concluded that a multiuse trail system is feasible. This EA further refines the alignment developed in the feasibility study and evaluates the potential environmental impacts associated with such a network.

SCOPING

The scoping process is initiated at the beginning of a NEPA project to identify the range of issues, resources, and alternatives to address in the EA. Typically, both internal and public scoping is conducted to address these elements. Public scoping includes any interested agency, or agency with jurisdiction by law or expertise, and interested members of the general public to obtain early input. The planning process for a potential multiuse trail was initiated during the drafting of the 2009 *Multi-Use Trail Feasibility Study*. The planning team coordinated with 18 stakeholders from 14 organizations during this preliminary stage of planning to determine the feasibility of a multiuse trail system. For the full list of stakeholders, see "Chapter 5: Consultation and Coordination."

Following a determination that a multiuse trail in the park's eastern developed corridors is feasible (NPS 2009b), the NPS began formal scoping for this EA in November 2012. The NPS hosted a public open house the evening of February 19, 2013 at the Hondius Room of the Estes Valley Library. This public

open house took place during a public comment period from February 12, 2013 to March 21, 2013. The NPS also provided the public with an opportunity to comment on the proposed alternatives between July 23, 1013 and August 23, 2013. During these comment periods, the NPS solicited public input on the NPS Planning, Environment, and Public Comment website (PEPC).

As part of this scoping effort, several agencies were contacted, including the Colorado State Historic Preservation Officer; the Tribal Historic Preservation Officers for the Northern Arapaho Tribe, the Southern Ute Indian Tribe, the Ute Indian Tribe, and the Ute Mountain Ute Tribe; and the U.S. Fish and Wildlife Service. For further scoping and public participation information, see "Chapter 5: Consultation and Coordination" and "Appendix B: Relevant Correspondence."

COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

Based on discussions with NPS staff and planning team members, construction and use of the multiuse trail should not require any changes to existing legislation or management policies. According to 36 CFR 4.30, bicycle use within national parks is limited to park roads unless otherwise specified. Designating new trails for bicycle use outside of specifically designated developed areas requires that the park carefully consider the impacts of adding bicycle use to the trail, obtain the approval of the Regional Director, and promulgate a special regulation authorizing bicycle use. Although the proposed trail travels through a relatively developed area of the park, none of the park's planning documents designate this area for development; therefore, 36 CFR section 4.30(e)(2) applies, as described above. In accordance with this rule, this EA considers and evaluates

- suitability of the trail surface and soil conditions for accommodating bicycle use,
- life cycle maintenance costs,
- safety considerations,
- strategies to prevent or minimize user conflicts,
- methods of protecting natural and cultural resources, and
- integration with commercial services and alternative transportation systems.

Prior to the implementation of the proposed action, the NPS would need to obtain appropriate local, state, and federal approval for the proposed activities, where appropriate. A list of permits, approvals, and regulatory requirements associated with the proposed trail would depend on the final trail design and potential phasing of proposed actions; however, the following is a list of those items that may be required:

- approved Erosion and Sedimentation Control Plan
- National Pollution Discharge Elimination System permit
- concurrence from the State Historic Preservation Officer per Section 106 of the National Historic Preservation Act
- concurrence from the U.S. Fish and Wildlife Service per Section 7 of the Endangered Species Act
- U.S. Army Corps of Engineers permit per the Clean Water Act
- Statement of Findings for Wetlands (Appendix A of this document)

These are described further in "Chapter 5: Consultation and Coordination."

PLANNING ISSUES AND CONCERNS

During the scoping process, specific considerations and concerns were identified as critical to consider during evaluation of the proposed multiuse trail. The following issues and concerns were identified as part of the planning process: protecting the park's natural and cultural resources, planning uses to capitalize on existing infrastructure, and trail maintenance and law enforcement. Along with the purpose and need for the proposed action, these topics guided the development of alternatives and contributed to the selection of impact topics, as identified in the next section.

Protecting the park's natural resources. The purpose of Rocky Mountain National Park is to preserve the high elevation ecosystems and wilderness character of the southern Rocky Mountains within its borders, and to provide the freest recreation use of and access to the park's scenic beauties, wild life, natural features and processes, and cultural objects. Part of maintaining a positive visitor experience is conservation of the resources that visitors seek to enjoy. Therefore, any proposals made in this plan should seek to protect the park's natural resources.

Protecting the park's cultural resources. The park is home to a rich collection of cultural resources, including archeological resources, historic buildings and structures, cultural landscapes, and traditional cultural properties (TCPs). Many of these resources are listed in or eligible for listing in the National Register of Historic Places (otherwise known simply as the National Register). The cultural landscapes of the park comprise views and vistas, vegetation, and buildings and structures as character-defining features, all of which the park strives to protect to the greatest extent possible. Therefore, any proposals made in this plan should seek to protect the park's cultural resources.

Planning uses to capitalize on existing infrastructure. The park provides visitors with a number of amenities at existing park facilities. Amenities include parking, restrooms, and informational signs at facilities such as the Beaver Meadows Visitor Center. Rather than developing additional infrastructure, the park would prefer to use existing facilities. This goal is consistent with previous park plans. Therefore, any proposals made in this plan should seek to capitalize on existing infrastructure.

Maintenance and law enforcement. As infrastructure increases and additional access to and circulation through the park is provided to accommodate a steady increase in park visitation, increased demands are placed upon the park's maintenance and law enforcement staff. The park has limited resources to commit to maintenance of park facilities and enforcement of park rules and regulations. Therefore, any proposals made in this plan should consider the burden that would be placed on park maintenance and law enforcement resources.

IMPACT TOPICS RETAINED FOR ANALYSIS

Impact topics are resources of concern within the project corridor that could be affected, either beneficially or adversely, by the range of alternatives presented in this EA. They were identified based on the following:

- issues raised during scoping
- site conditions
- federal laws, regulations, Executive Orders, NPS *Management Policies 2006* (NPS 2006), and Director's Orders
- staff knowledge of the park's resources

Impact topics identified and analyzed in this environmental assessment are listed below along with a brief rationale for the selection of each impact topic. They include soils, topography, and geology; vegetation; wildlife and wildlife habitat; wetlands and other waters of the U.S.; floodplains; historic structures, historic districts, and cultural landscapes; site access and circulation; visitor use and experience; socioeconomic resources and gateway communities; and park operations. Each impact topic is further described in "Chapter 3: Affected Environment" of this EA.

Soils, Topography, and Geology. NPS policy is to protect the natural abundance and diversity of all naturally occurring communities. NPS *Management Policies 2006* and other NPS and park policies provide general direction for the protection of soils and geologic resources. The topography of the project corridor is mountainous, with the elevation ranging from 7,500 to 9,000 feet and with slopes varying between 0% and 60%. The soils within the area of proposed improvements vary, with dominant types including isolation gravelly sandy loam, Rofork-Chasmfalls complex, and Nanita very gravelly sandy loam (NRCS 2013). The proposed action would alter the existing topography and soil characteristics through grading and compaction in the project corridor. There is also the potential for some excavation of geologic resources. Therefore, the impact topic of soils, topography, and geology is retained for further analysis.

Vegetation. The NPS *Management Policies 2006* and other NPS and park policies provide general direction for the protection of vegetation. Vegetative communities along the proposed trail corridor are dominated by ponderosa pine and grass/shrubland habitat. Construction and maintenance of the proposed trail would result in vegetation removal and displacement. Therefore, the impact topic of vegetation is retained for further analysis.

Wildlife and Wildlife Habitat. NPS policy is to protect the natural abundance and diversity of all naturally occurring wildlife communities. The NPS *Management Policies 2006*, NPS DO- 77: *Natural Resources Management*, and other NPS policies provide general direction for the protection of wildlife and wildlife habitat. The project corridor contains a variety of species, many of which are adapted to the existing fragmentation and human presence within the project corridor; however, the addition of a new trail in some areas may cause a slight change in habitat use patterns by large ungulates such as bighorn sheep, mule deer, and elk. Therefore, the impact topic of wildlife and wildlife habitat is retained for further analysis.

Wetlands and Other Waters of the U.S. Executive Order 11990 "Protection of Wetlands" requires federal agencies to avoid, where possible, adversely impacting wetlands. NPS *Management Policies 2006* and Director's Order 77-1: *Wetland Protection* mandate that the NPS will strive to prevent the loss or

degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Wetlands generally include swamps, marshes, bogs and other similar areas (NPS 2006). While the proposed trail would avoid wetlands to the extent possible, some alignments may require some small impacts on wetland resources. Therefore, the impact topic of wetlands is retained for further analysis. A statement of findings for wetlands as called for by NPS Procedural Manual 77-1 also has been completed and is attached in appendix A.

Historic Structures, Historic Districts, and Cultural Landscapes. According to the NPS's *Cultural Resource Management Guideline* (DO-28), a cultural landscape is "a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions" (NPS 2002). A historic structure is defined by the NPS as "a constructed work, usually immovable by nature or design, consciously created to serve some human act" (NPS 2002). To be listed in or eligible for listing in the National Register, a site, structure, object or district must possess historic integrity of those features necessary to convey its significance, particularly with respect to location, setting, design, feeling, association, workmanship, and materials. The project corridor travels past a number of structures, and through a number of districts and landscapes that are listed or eligible for listing on the National Register. The proposed action has the potential to impact views and vistas, vegetation, and buildings and structures that are character-defining features. Therefore, the impact topic of historic structures, historic districts, and cultural landscapes is retained for further analysis.

Site Access and Circulation. Safe and efficient access and circulation of all visitors at Rocky Mountain National Park is important to an enjoyable visitor experience. The proposed action would introduce a new mode of access and circulation through the project corridor. Therefore, the impact topic of site access and circulation is retained for further analysis.

Visitor Use and Experience. Enjoyment of park resources and values by the people of the U.S. is part of the fundamental purpose of all parks (NPS 2006). The NPS strives to provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the natural and cultural resources found in parks. The proposed action is meant to enhance the visitor experience, which encompasses interpretation, understanding, and enjoyment of the park as well as providing for safety, circulation, and accessibility within the park. Because the proposed action would result in changes to the visitor experience and the range of uses available, the impact topic of visitor use and experience is retained for further analysis.

Park Operations. Park staff play a crucial role in providing a quality experience for those visitors to and users of the national park system. The proposed action could result in changes to park operations within the project corridor. Therefore, the impact topic of park operations is retained for further analysis.

Socioeconomic Resources and Gateway Communities. NPS *Management Policies 2006* requires the NPS to identify any impact to socioeconomic resources when determining the feasibility of a proposed action. The proposed action could result in temporary and long-term changes to the economics of the local gateway community of Estes Park. Therefore, the impact topic of socioeconomic resources and gateway communities is retained for further analysis.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

Floodplains. Executive Order 11988, "Floodplain Management," and NPS DO-77-2: *Floodplain Management*, require an examination of impacts on floodplains and potential risk involved in placing facilities within floodplains. Where the proposed trail crosses streams and rivers, the trail would traverse floodplains associated with these areas; however, the addition of trail infrastructure within the floodplain would not noticeably alter the natural values of the floodplain. Therefore, the impact topic of floodplains was considered but dismissed from further analysis.

Prime and Unique Farmland. Prime farmland is one of several designations made by the U.S. Department of Agriculture to identify important farmlands in the U.S. It is important because it contributes to the nation's short- and long-range needs for food and fiber. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, few to no rocks, and permeable soils (designated as prime farmland soils). There are no prime or unique farmland soils within the project corridor. Therefore, the impact topic of prime and unique farmland was considered but dismissed from further analysis.

Wilderness. The Wilderness Act (Public Law 88-577) defines wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor and does not remain." The intent of the act is to "secure for the American people of present and future generations the benefits of an enduring resource of wilderness." The Rocky Mountain National Park Wilderness Area protects nearly 250,000 acres. The five qualities used to describe the condition of wilderness character are the degree to which it is untrammeled, natural, undeveloped, provides solitude or a primitive and unconfined type of recreation, and other features of value. Mechanical forms of transportation, such as bicycles, are prohibited in designated wilderness. As such, the proposed trail would not enter designated wilderness areas. While the proposed addition of a multiuse trail near some portions of the park's vast wilderness, the trail would follow the current road alignment. Use of motor vehicles along the roadway already diminishes the wilderness character indirectly in this area. The addition of trail users is not expected to diminish the qualities of wilderness character noticeably given the existing conditions. Therefore, the impact topic of wilderness was considered but dismissed from further analysis.

Special Status Species. The Endangered Species Act mandates that all federal agencies consider the potential impacts of their actions on species listed as threatened or endangered in order to protect the species and preserve their habitats. Although a number of special status species are found within the park, no federally listed threatened or endangered species or their critical habitat are known to exist within the area of proposed improvements. The U.S. Fish and Wildlife Service provided concurrence with the park's determinations of effect on the Mexican spotted owl (*Strix occidentalis lucida*), Canada lynx (*Lynx canadensis*), and the North American wolverine (*Gula gula luscus*). For all these species, the determination was that the proposed project may affect, but is not likely to adversely affect these species. Although it would be unexpected, if these or any other federally listed threatened or endangered species was encountered during construction activities, work would cease and consultation with the U.S. Fish and Wildlife Service would resume. The impact topic of special status species was considered but dismissed from further analysis.

Archeological Resources. Archeological resources are the material remains of past human activity. The archeological resources at the park are physically and historically associated with the nationally significant historic structures and cultural resources. Most of the project corridor has been subject to archeological investigation. The trail would be designed to avoid any particular features of concern. Following future design phases, the park would conduct an archeological survey in those areas not previously surveyed prior to construction. Due to the steep slope in the areas not previously surveyed, no archeological resources would be expected; however, if any were encountered, the NPS would consult with the Colorado State Historic Preservation Officers regarding treatment. Therefore, the impact topic of archeological resources was considered but dismissed from further analysis.

In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001) would be followed.

Ethnographic Resources and Sacred Sites. An ethnographic resource is defined as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS 2002). Studies on ethnographic resources within the park, such as *Native American Oral History and Cultural Interpretation in Rocky Mountain National Park* (McBeth 2007) and *Ethnographic Assessment and Documentation of Rocky Mountain National Park* (Brett 2003), were referenced to understand any potential impacts in the project corridor. Based on this review, there are no known ethnographic resources, including sacred sites, within the project corridor. Therefore, the impact topic of ethnographic resources and sacred sites was considered but dismissed from further analysis.

Indian Trust Resources. Secretarial Order 3175 requires that any anticipated impacts on Indian Trust resources from a proposed project or action by U.S. Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian Trust responsibility is a legally enforceable obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal laws with respect to Native American tribes. There are no known Indian Trust resources in the project corridor, and the lands comprising the park are not held in trust by the secretary of the interior for the benefit of Indians due to their status as Indians. Therefore, the impact topic of Indian Trust resources was considered but dismissed from further analysis.

Museum Collections. A museum collection is an assemblage of objects, works of art, historic documents, and/or natural history specimens collected according to a rational scheme and maintained so that they can be preserved, studied, and interpreted for public benefit. The proposed action would not impact any museum collections in the project corridor. Therefore, the impact topic of museum collections was considered but dismissed from further analysis.

Air Quality. The park is located within the 8-hour ozone nonattainment (2008 standards) area comprising the developed Front Range area (EPA 2014). There would be a slight temporary increase in vehicle emissions related to the proposed action during the construction period and could be quickly dissipated by the windy conditions that are common in this area. Emissions are not expected to be at a level that would contribute noticeably to greenhouse gasses on a wider scale. Potential use of the trail could reduce future emissions as visitors take advantage of alternate forms of transportation, but such a change would also

likely be imperceptible on a regional scale. Therefore, the impact topic of air quality was considered but dismissed from further analysis.

Soundscapes. The NPS strives to maintain or reduce existing noise impacts within the park, so as to preserve to the greatest extent practicable the natural sounds of the park. The area of proposed improvements is developed and subject to regular noise emissions from cars and visitor voices. During construction activities, there may be a temporary increase in noise generation due to the use of heavy equipment; however, overall, the soundscape of the project corridor would not be noticeably altered. Therefore, the impact topic of soundscapes was considered but dismissed from further analysis. The impacts of the existing soundscape on visitor use and experience are discussed under that impact topic.

Lightscapes. In accordance with NPS *Management Policies 2006* (NPS 2006), the NPS strives to preserve natural ambient lightscapes and other values that exist in the absence of man-made light. The park would continue to strive to limit the use of artificial outdoor lighting to that which is necessary for basic safety requirements. While it is possible that lighting such as rapidly flashing beacons could be added to areas where the multiuse trail crosses roadways, such lighting would likely be activated by trail users. In this way, the beacons would only be lighted when trail users are present and would not contribute artificial lighting to the ambient lightscape when they are not needed. Therefore, the impact topic of lightscapes was considered but dismissed from further analysis.

Energy Requirements and Conservation Potential. The Council on Environmental Quality guidelines for implementing the National Environmental Policy Act require an examination of energy requirements and conservation potential as a possible impact topic in environmental documents. The park strives to incorporate the principles of sustainable design and development into all facilities and operations. The objectives of sustainability are to design structures to minimize adverse impacts on natural and cultural values; to reflect their environmental setting; to maintain and encourage biodiversity; to construct and retrofit facilities using energy efficient materials and building techniques; to operate and maintain facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through sustainable design and ecologically sensitive use. Essentially, sustainability is living within the environment with the least impact on the environment.

The proposed action would not result in noticeable changes to energy requirements or the ability to conserve energy resources. Although an increased use of the shuttle system and self-propelled modes of travel could result in long-term energy conservation, the energy required to construct and maintain the trail is likely to balance such conservation. Consequently, any impacts relating to energy use, availability, or conservation would be negligible. Therefore, the impact topic of energy requirements and conservation potential was considered but dismissed from further analysis.

Environmental Justice. Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low income populations and communities. According to the Environmental Protection Agency, environmental justice is the "…fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a

racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."

The goal of "fair treatment" is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts. Environmental justice was considered but dismissed from further analysis for the following reasons:

- The park staff and planning team solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors.
- Implementation of the proposed action would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect adverse impacts on any minority or low-income population.
- The impacts associated with implementation of the proposed action would not disproportionately affect any minority or low-income population or community.
- Implementation of the proposed action would not result in any identified effects that would be specific to any minority or low-income community.

DECISION PROCESS

The proposed multiuse trail must be considered under the "New Trails" section of 36 CFR 4.30, which is also known as the NPS Bicycle Rule. Relevant sections of 36 CFR 4.30 that apply to the multiuse trail read as follows:

(e) New trails. This paragraph applies to new trails that do not exist on the ground and therefore would require trail construction activities (such as clearing brush, cutting trees, excavation, or surface treatment). New trails shall be developed and constructed in accordance with appropriate NPS sustainable trail design principles and guidelines. The superintendent may develop, construct, and authorize new trails for bicycle use after:

(1) The superintendent must complete a park planning document that addresses bicycle use on the specific trail and that includes an evaluation of:

(i) The suitability of the trail surface and soil conditions for accommodating bicycle use. The evaluation must include any maintenance, minor rehabilitation or armoring that is necessary to upgrade the trail to sustainable condition; and

(ii) Life cycle maintenance costs, safety considerations, methods to prevent or minimize user conflict, methods to protect natural and cultural resources and mitigate impacts, and integration with commercial services and alternative transportation systems (if applicable).

(2) The superintendent must complete either an environmental assessment (EA) or an environmental impact statement (EIS) evaluating the effects of bicycle use in the park and on the specific trail. The superintendent must provide the public with notice of the availability of the EA and at least 30 days to review and comment on an EA completed under this section.

> (3) The superintendent must complete a written determination stating that the addition of bicycle use is consistent with the protection of the park area's natural, scenic and aesthetic values, safety considerations and management objectives, and will not disturb wildlife or park resources.
> (4) Obtains the Regional Director's written approval of the determination required by paragraph (3) of this section; and promulgates a special regulation authorizing the bicycle use."

This environmental assessment has been prepared in accordance with paragraphs (1) and (2), above. At the conclusion of the environmental assessment process, a decision document will be prepared which must be signed by the Regional Director. The decision could include building none, some, or all of the proposed trail. If the Regional Director determines that the addition of bicycle use on the multiuse trail is consistent with the protection of the park area's natural, scenic and aesthetic values, safety considerations and management objectives, and would not disturb wildlife or park resources, then a special regulation would be promulgated that authorizes the bicycle use. The process for promulgating a special regulation is called "rulemaking." The rulemaking process would take several months to accomplish. Because funding for trail construction has not been identified, it would likely be many years before segments of the trail could be built.

In accordance with 36 CFR 4.30, if the Regional Director does not provide written approval of the determination (see paragraph (4), above), then a concise written statement would be included in the project files that states that bicycle use cannot be authorized on the proposed multiuse trail.

2

ALTERNATIVES

This EA examines three alternatives: No-action Alternative (alternative A); Roadside Trail Alternative (alternative B); and Roadside and Overland Alternative (alternative C). This chapter describes the two action alternatives for the development of a multiuse trail system in the eastern portion of Rocky Mountain National Park and summarizes the no-action alternative, as well. The two action alternatives propose connections that would extend from the park boundary at the Fall River Entrance and Beaver Point to Sprague Lake, with links to proposed multiuse trail systems within the Estes Valley, park visitor use areas, and numerous park hiker shuttle stops. The action alternatives were designed to provide a safe trail system that manages demand while creating new self-propelled (i.e., bicycle, foot, baby stroller, snowshoe, cross-country skiing) visitor experiences within the east side of the park.

DEVELOPMENT OF ALTERNATIVES

The multiuse trail alternatives in this EA build upon those presented in the 2009 Rocky Mountain National Park Multiuse Trail Feasibility Study (feasibility study). The feasibility study identified approximately 15.5 miles of potential multiuse trails that generally follow the alignment of existing roads from the Fall River Visitor Center, to Deer Ridge Junction, down to Beaver Meadows Visitor Center, Moraine Park, and finally to Sprague Lake in the south.

This EA examines the trail alignments laid out in the feasibility study in further detail, proposing new potential alignments and alternative routing options. The trail alignments in this EA were further refined based on information gathered during on-site analysis of environmental constraints and based on consideration of public and internal comments and concerns expressed during the scoping process.

The NPS initiated the development of this EA with an internal scoping meeting at the park on November 14, 2012. The public was invited to contribute their ideas and opinions during an initial public scoping period from February 12, 2013 to March 21, 2013, which included a public meeting on February 19, 2013. The planning team conducted an on-site analysis the week of May 13, 2013. During this site visit, members of the planning team walked the proposed alternative trail alignments to collect resource data for each alignment, which included wetlands, endangered, threatened and rare species, vegetation, and topography. Additionally, the planning team suggested modifications to the trail alignments as necessary to reduce impacts on the natural resources, and to ensure a successful and sustainable trail design. The NPS hosted a second public meeting at the Estes Park Museum on

August 6, 2013 to present the preliminary draft alternatives and gather feedback on the proposed action alternatives. A second public scoping period was held from July 23, 2013 to August 23, 2013. The NPS considered public input and additional internal scoping comments before final refinement of the alternatives presented in this EA.

ALTERNATIVE A: NO-ACTION ALTERNATIVE

As part of the guiding principles of NEPA, the alternatives under consideration must include a "no action" alternative as prescribed by the regulations found in 40 CFR 1502.14. This no action alternative represents one viable and feasible choice within the range of management options.

Under this alternative, the roadways and trails within the project corridor would remain as they are. The multiuse trail would not be constructed in this alternative and the project corridor would remain unchanged, with many areas accessible exclusively by vehicular transport or road cycling. The project corridors of U.S. 34, U.S. 36, and Bear Lake Road would continue to be two lanes, one in each direction that is 12 to 14 feet wide with paved shoulders that range from 1 to 4 feet wide.

Visitor access within the eastern portion of the park would be via private vehicle, tour bus, road cycling, on foot, horseback riding, and the free shuttle bus. Shuttle stops in the project corridor include Beaver Meadows Visitor Center, Moraine Park Discovery Center, Moraine Park Campground, Tuxedo Park, Glacier Basin Campground, and the Park and Ride parking lot. Bicycling and pedestrian use (e.g., running and jogging) would be allowed along the park roadways with no changes. Bicycles would continue to be permitted only on established roadways within the park.

ELEMENTS COMMON TO BOTH ACTION ALTERNATIVES

As previously stated, this EA evaluates the no-action alternative described above, as well as two action alternatives. The elements described below would be common to both action alternatives.

As defined in chapter 1, a multiuse trail is meant for use by self-propelled means of transportation. Therefore, this multiuse trail network would be designed for bicycling, walking/running, use of baby strollers, snowshoeing, and/or cross-country skiing. The trail would generally vary between 8 and 10 feet wide (although some modifications may be required where physical constraints exist). In high use areas, the width of the path may also widen to accommodate increased use, improve safety, and reduce the potential for user conflicts. Throughout this document, the trail surface is referred to as "hardened"; however, the surface material to be used along the trail would be determined at a later date and could vary by location.

It is assumed that the trail would result in disturbance along a 100-acre corridor, generally following the existing roads along the developed eastern corridor of the park. This includes the 8-10 foot path as well an average of 15 feet needed on both sides of the trail for grading. The exact area to be affected by the project may change during future design phases; however, if future phases required that the trail leave the alignment in a way that would affect resources differently than described in this document, additional environmental compliance would be required.

Integration of sustainable practices would be employed to the maximum extent practicable to reduce environmental impacts from the construction process. In some areas, such as those that traverse a cultural landscape, surface materials may vary to incorporate treatments that are consistent with historic character. Design and construction techniques such as retaining walls and rolling contours would help manage stormwater and prevent excessive erosion or site disturbance. In addition to building retaining walls and implementing erosion control measures, path construction activities would include clearing, grading, drainage, surfacing, signage, pavement marking where pavement exists, and traffic control.

The National Park Service would comply with guidelines for sustainable and accessible trail design. Signs would be posted at major trail access points providing information about the trail (to allow users to judge how well the trail suits their individual needs and limitations). These signs would also educate users as to appropriate trail etiquette to avoid user conflicts to the extent possible. Where needed, other signs such as warnings for pedestrian and vehicle crossings would be placed along the trail and intersecting roads and trails to minimize potential conflicts at intersections. Wayfinding and interpretive signs along the path would maintain a consistent look while also meeting NPS guidelines. To the extent possible, regulatory signs and other trail markings would be coordinated to meet the intent of the Manual on Uniform Traffic Control Devices and American Association of State High and Transportation Officials Guidelines while also complying with the NPS UniGuide sign system.

Access points for emergency response and future maintenance of the trail would be identified and developed. Routine maintenance of the proposed project could include restriping, resurfacing, repairing retaining walls, stabilizing slopes, and cleaning culverts.

Lastly, the trail would integrate with the park's shuttle system by connecting to seven of the existing shuttle stops located inside the park: Beaver Meadows Visitor Center, Moraine Park Discovery Center, Moraine Park Campground, Tuxedo Park, Glacier Basin Campground, the Park and Ride parking lot, and Sprague Lake.

ALTERNATIVE B: ROADSIDE TRAIL

Under this alternative, the multiuse trail predominantly would follow U.S. 34, U.S. 36, and Bear Lake Road in the eastern portion of the park, directly connecting at the Fall River Entrance and Beaver Point. Figure 3 shows the approximate alignment of the proposed trail, which follows the landscape contours on existing grade benches, old trail corridors, road alignments, and flatter ground with appropriate slopes. The overall length of the multiuse trail under alternative B is 15.3 miles with the majority of its length detached from the road (14.6 miles).

Where the trail is detached from the road, it is offset from the edge of pavement by a minimum of 10 feet, with further separation by grade changes where there are higher slope differentials. This offset distance provides a separation between the trail and vehicles on the road. Although the action alternatives in this EA describe location and lengths of detached and attached trail segments, these measurements are approximate and may change during future design phases. Table 1 summarizes the length of the trail segments, each of which are described in further detail in the sections that follow.

TABLE 1. ALTERNATIVE B TRAIL SEGMENT LENGTHS

Segment	Miles
Fall River Visitor Center to Deer Ridge Junction	3.9
Deer Ridge Junction to Beaver Meadows Trail	1.9
Beaver Meadows Trail to Beaver Meadows Visitor Center and Beaver Point	2.5
Bear Lake Road	5.8
Moraine Park Campground Connector	0.5
Moraine Park Discovery Center Connector	0.2
Spur 66 Connector (pending further landowner coordination)	0.5
Total	15.3

Due to slopes and a desire to limit road crossings, the trail would switch from one side of the road to the other at strategically selected points. Road crossings would be well-indicated by signage and pavement markings to alert drivers of potential pedestrians/bicyclists ahead. Under alternative B, there would be a total of seven at-grade road crossings, located at the following locations: Upper Beaver Meadows Trail access road; Bear Lake Road/U.S. 36; Beaver Meadows Entrance Station; west of Beaver Meadows Discovery Center; south of Moraine Park Discover Center; at Glacier Basin Campground; and just north of Sprague Lake. These road crossings are indicated on figure 3 and do not include the box culvert underpass at Deer Ridge Junction.

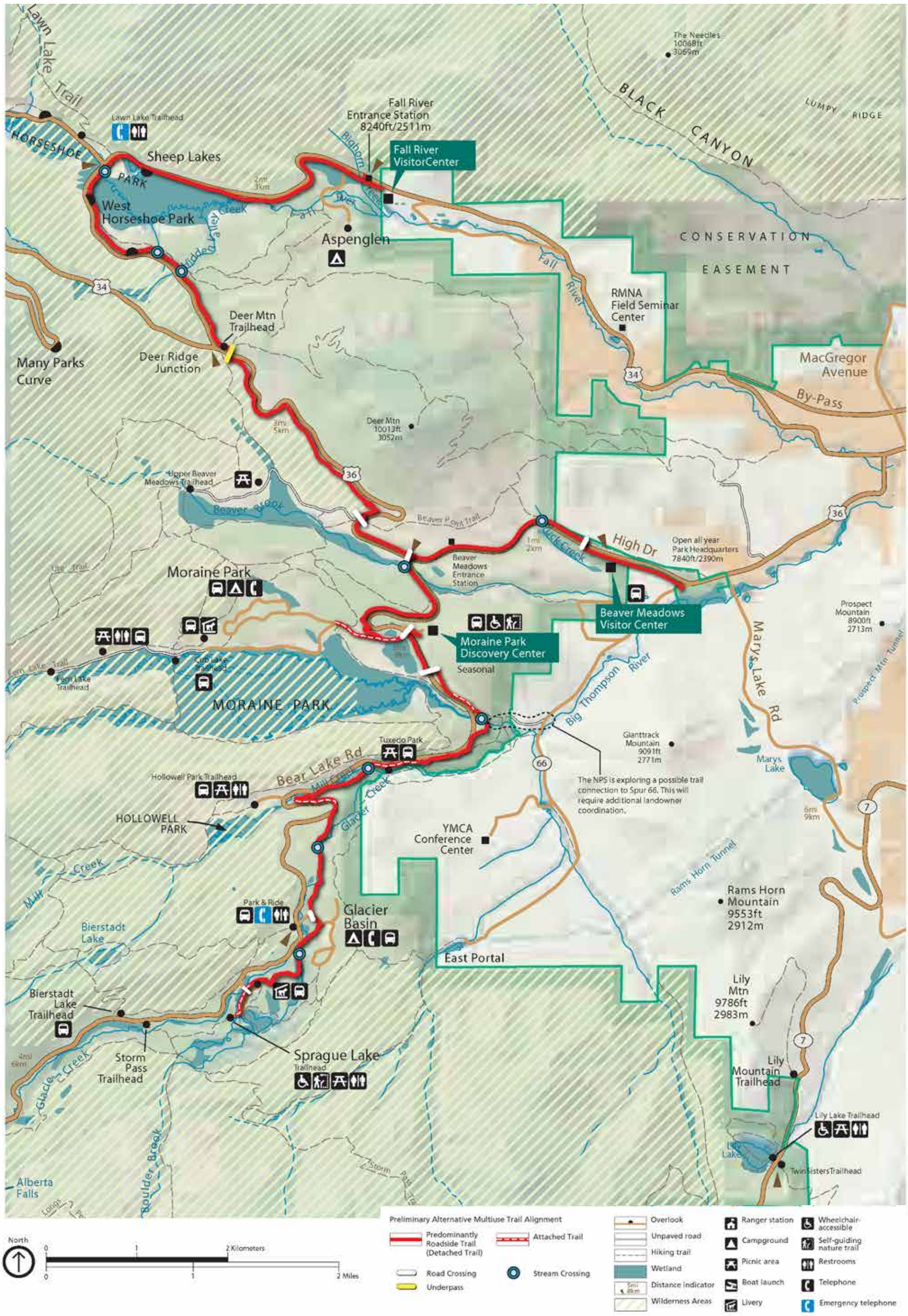
Stream crossings would be necessary in areas where the proposed multiuse trail intersects a stream or river. In alternative B, there would be a total of nine stream crossings throughout the length of the trail (indicated by blue circles on figure 3). One stream crossing is located in an area where the trail would be attached to the road along Bear Lake Road, which would require improvements to an existing bridge to accommodate the width of the trail. In the other areas, the detached trail would likely require the installation of a new separate trail bridge to cross over rivers and streams. The design of new bridges would be context-sensitive and compatible with park-specific design guidelines.

FALL RIVER ENTRANCE/ASPENGLEN CAMPGROUND AREA

Under alternative B, the multiuse trail would be on the south side of U.S. 34 for 1 mile, set back from the road by 10 feet or more and connecting the future Estes Park trail system and the Fall River Visitor Center to Horseshoe Park. Multiuse trail users would be able to access the Aspenglen Campground along the existing campground access road.

HORSESHOE PARK AREA

At Horseshoe Park there are steep slopes on the north side, so the detached multiuse trail would be on the southern and eastern sides of U.S. 34 for 1.5 miles. The trail would access Sheep Lakes and Horseshoe Park overlooks. There would be at least one new stream crossing at Fall River. The trail would climb to Deer Ridge Junction along the eastern side of U.S. 34 for 1.4 miles. At Deer River Junction the trail would cross under U.S. 36, near the Deer Mountain trailhead, through a concrete tunnel/box culvert approximately 100 feet in length and 16 feet wide.



Rocky Mountain National Park
Multiuse Trail Plan Environmental Assessment

National Park Service
U.S. Department of the Interior

Colorado

FIGURE 3

Alternative B - Roadside Trail Alternative

BEAVER MEADOWS AREA

From Deer Ridge Junction towards Beaver Meadows, the detached multiuse trail would run along the south slope of U.S. 36, crossing to the north side at Beaver Meadows Trail access road, and then crossing to the south side of U.S. 36 at the Beaver Meadows Visitor Center and U.S. 36/Spur 66. The length of the trail between Deer Ridge Junction and Beaver Point is 4.4 miles.

BEAR LAKE ROAD

The trail would be on the western side of Bear Lake Road to Moraine Park Discovery Center, with a 0.5 mile attached spur trail leading to the Moraine Park Campground and another very short spur leading to the Moraine Park Discovery Center. The spur to the Moraine Park Discovery Center would require crossing Bear Lake Road. The trail would continue on the west side of Bear Lake Road until just before the access road that leads to the cabins located on the south side of Moraine Park. The trail would cross Bear Lake Road at this point and then follow the east side of Bear Lake Road.

In the vicinity of the Big Thompson River, the NPS is exploring the potential of providing a spur of the multiuse trail for access to and from Spur 66. This spur trail would follow existing trails (official or unofficial) where possible and would be coordinated with adjacent landowners. The trail would use the existing Glacier Creek Bridge. This trail would be approximately 0.5 miles long. This trail is included as part of the network proposed in this plan but is not shown on maps due to the need for additional landowner coordination to determine the specific location.

The main multiuse trail would continue over the Big Thompson River on a new trail bridge, past the Mill Creek Ranger Station, along the recently abandoned Bear Lake Road roadbed, and south to Glacier Basin Campground and Sprague Lake. The length of the main multiuse trail south from U.S. 36 along Bear Lake Road is 5.8 miles. For most of this length, the trail would be detached; however, for a limited length along Bear Lake Road and the access road to the Moraine Park Campground, the multiuse trail would be attached to the road. See figure 3 for the areas where the trail would be attached.

ESTIMATED COSTS

The planning team developed rough costs for construction and life cycle maintenance of the trail based on the 2009 feasibility study for this trail, the trail's challenging terrain, and other similar multiuse trails recently designed at other units of the national park system. The net estimated construction cost in 2015 dollars is $24,021,046, with a maintenance cost of $3664/mile, or $56,059 for 15.3 miles. Trail construction may be implemented in phases; however, such a decision would be made during future stages of trail design. Implementation of high-priority segments (such as those connecting high-use areas such as the Fall River Visitor Center and the Aspenglen Campground or the Beaver Meadows Visitor Center and the Moraine Park Campground) could serve as pilot segments to confirm the anticipated demand for such a multiuse trail connections.

ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, the multiuse trail predominantly would follow U.S. 36 and Bear Lake Road, but unlike alternative B, it would include overland routes at the Fall River Entrance, through the east side of Horseshoe Park, and parallel to U.S. 36 on the Beaver Point Trail which ties into High Drive near the Beaver Meadows Entrance. This trail would cover a similar area within the eastern portion of the park as alternative B. The main differences are that, under alternative C, there would be overland routes bypassing the Sheep Lakes and West Horseshoe Park areas and the trail would use the existing Beaver Point Trail to travel overland until reaching High Drive in the vicinity of the Beaver Meadows Entrance.

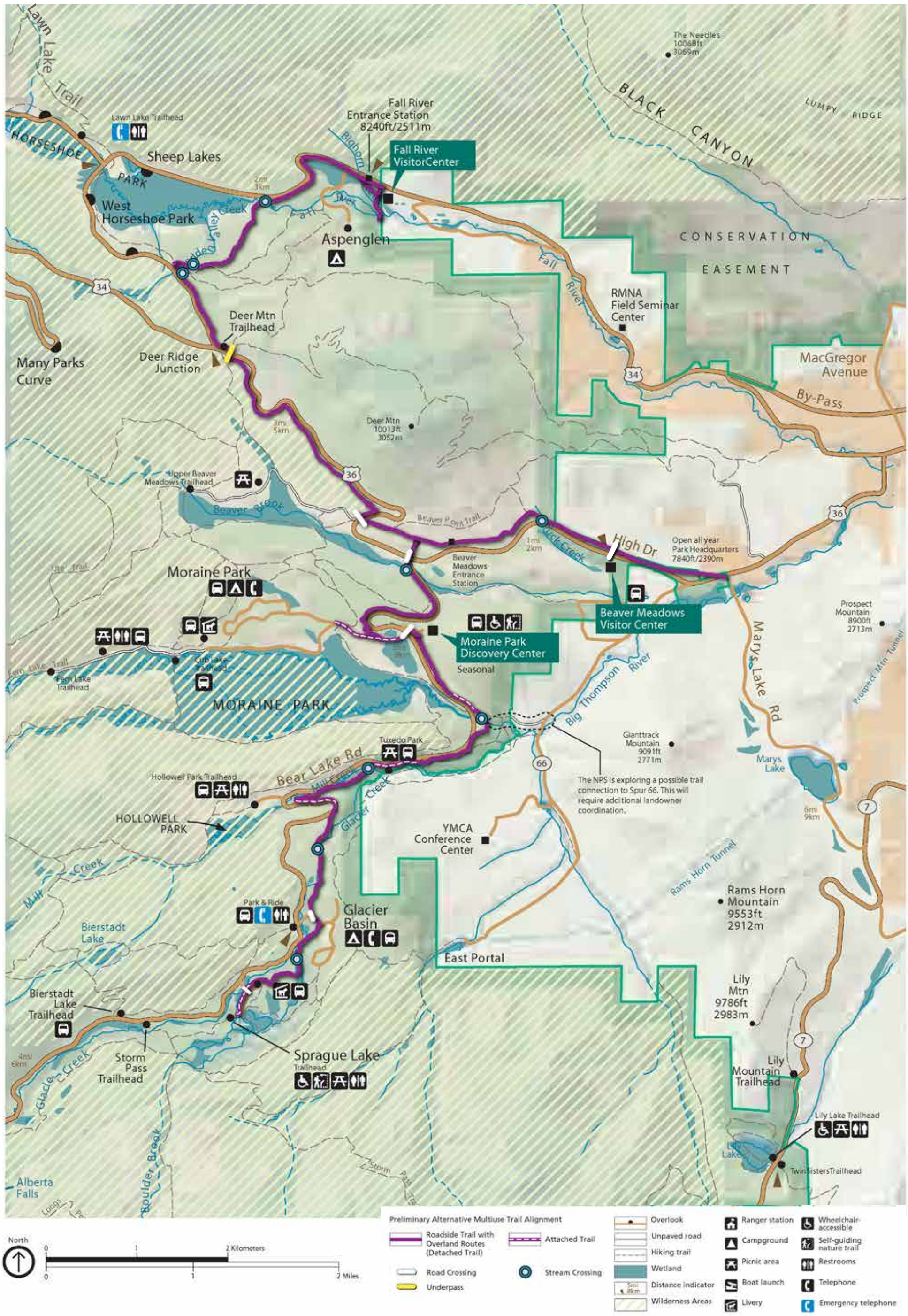
As under alternative B, some sections of trail would be attached to the roadway and some would be detached from the roadway. Under alternative C, some segments also would travel overland. Overland trails are a subset of detached trail where the trail travels a more substantial distance (generally over 30 feet) away from the road. The overall length of the alternative C multiuse trail is 14.2 miles, with the majority of its length (12.5 miles) detached from the road, some of which would travel overland. Figure 4 shows the approximate alignment of the trail. As under alternative B, location and lengths of trail segments are approximate and may change during future design phases. Table 2 summarizes the length of the trail segments, each of which are described in further detail in the sections that follow.

TABLE 2. ALTERNATIVE C TRAIL SEGMENT LENGTHS

Segment	Miles
Fall River Visitor Center to Horseshoe Park with Overland Segments	1.1
Horseshoe Park Overland Trail	1.0
Horseshoe Park Trail to Deer Ridge Junction	0.6
Deer Ridge Junction to Beaver Point Trail/High Drive Trail	1.9
Beaver Point Trail/High Drive Overland Trail to Beaver Meadows Visitor Center	2.6
Bear Lake Road	5.8
Moraine Park Campground Connector	0.5
Moraine Park Discovery Center Connector	0.2
Spur 66 Connector (pending further landowner coordination)	0.5
Total	14.2

As described under alternative B, road crossings would be necessary and would be well signed and marked. There would be a total of six at-grade road crossings. The crossing not necessary under this alternative is south of the Moraine Park Discovery Center. The crossing west of Beaver Meadows Visitor Center would be replaced by a connection between High Drive and the visitor center. All other crossings would be the same as described under alternative B. These road crossings are indicated on figure 4 and do not include the box culvert underpass at Deer Ridge Junction.

Stream crossings are also shown on figure 4, and would be the same as described under alternative B, except for the location of the Fall River crossing. There would be a total of nine stream crossings under this alternative. While this alternative would avoid the streams and wetlands in the West Horseshoe Park area, a new trail bridge would be needed to cross Fall River near Cascade Cottages, and bridges would be needed to make two stream crossings of Hidden Valley Creek in the vicinity of Little Horseshoe Park. As under alternative B, the design of new bridges would be context-sensitive and compatible with park-specific design guidelines.



Rocky Mountain National Park
Multiuse Trail Plan Environmental Assessment

National Park Service
U.S. Department of the Interior

Colorado

FIGURE 4

Alternative C - Roadside & Overland Trail Alternative

FALL RIVER ENTRANCE/ASPENGLEN CAMPGROUND AREA

Under alternative C, the multiuse trail would be on the south side of U.S. 34 for 1.1 miles, set back from the road by 10 feet or more and connecting the future Estes Park trail system and the Fall River Visitor Center to Horseshoe Park. The alignment would stay west of the Bighorn Creek to utilize an existing culvert crossing. An additional 0.5 miles of overland trails would connect the Aspenglen Campground to the roadside trail without traveling along the road.

HORSESHOE PARK AREA

Under this alternative, the trail alignment would differ from alternative B by diverging from the roadside near Cascade Cottages and traveling overland for 1 mile through the eastern part of Horseshoe Park instead of continuing west along U.S. 34 towards Sheep Lakes and West Horseshoe Park. The trail would rejoin U.S. 34 about 0.5 miles north of Deer Ridge Junction, then continue south to the intersection of U.S. 34 and U.S. 36 at Deer Ridge Junction.

The multiuse trail at Deer Ridge Junction would receive the same treatment under alternative C as it would under alternative B. At Deer River Junction the trail would cross under U.S. 36, near the Deer Mountain trailhead, through a concrete tunnel/box culvert approximately 100 feet in length and 16 feet wide. The multiuse path would travel along the south side of the road for 1.9 miles to the Beaver Point Trail.

BEAVER MEADOWS AREA

Under this alternative, the trail alignment would differ from alternative B by following the Beaver Point Trail and connecting to High Drive with connections to Bear Lake Road, Beaver Meadows Entrance Station, Beaver Meadows Visitor Center, and to U.S. 36/Spur 66 intersection instead of traveling on the north side of U.S. 36 at Beaver Meadows. The total distance of this segment is 2.6 miles.

BEAR LAKE ROAD

Similar to alternative B, the trail would be on the western side of Bear Lake Rd to Moraine Park Discovery Center, with a 0.5 mile attached spur trail leading to the Moraine Park Campground and another spur leading to the Moraine Park Discovery Center. Under this alternative, trail alignment would differ from alternative B by crossing over to the east side of Bear Lake Road at the Moraine Park Discovery Center. The multiuse trail would continue over the Big Thompson River on a new trail bridge. The same spur trail to Spur 66 as described under alternative B (approximately 0.5 miles long) would be explored with additional landowner coordination.

The main multiuse trail would continue over the Big Thompson River on a new trail bridge, past Mill Creek Ranger Station, along the recently abandoned Bear Lake Road roadbed, and south to Glacier Basin Campground and Sprague Lake. The length of the main multiuse trail south from U.S. 36 along Bear Lake Road is 5.8 miles. For most of this length, the trail would be detached; however, for a limited length along Bear Lake Road and the access road to the Moraine Park Campground, the multiuse trail would be attached to the road. See figure 4 for the areas where the trail would be attached.

ESTIMATED COSTS

The planning team developed rough costs for construction and life cycle maintenance of the trail based on the 2009 feasibility study for this trail, the trail's challenging terrain, and other similar multiuse trails recently designed at other units of the national park system. The net estimated construction cost in 2015 dollars is $22,294,043 with a maintenance cost of $3,664/mile, or $52,029 for 14.2 miles. As under alternative B, trail construction may be implemented in phases; however, such a decision would be made during future stages of trail design.

MATRIX OF OBJECTIVES

Table 3 provides a summary of how each alternative meets the project objectives. All action alternatives selected for analysis must broadly satisfy all of the objectives listed in the purpose and needs of the project.

TABLE 3. MATRIX OF OBJECTIVES

Objective	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
Explore potential multiuse trail connections to other recreational opportunities in the area such as campgrounds and other multiuse trails such as those managed by the Town of Estes Park and the Estes Valley Recreation and Parks District	Alternative A would not satisfy this objective because no new trails would be constructed that would provide additional connections to recreational areas and opportunities.	Alternative B would meet this objective because new trails would provide improved access and connections to visitor facilities and recreational areas.	Alternative C would meet this objective because new trails would provide improved access and connections to visitor facilities and recreational areas.
Expand recreational opportunities for self-propelled transportation	Alternative A would not meet this objective because no new trails would be constructed to facilitate self-propelled transportation.	Alternative B would meet this objective because new trails would provide improved facilities for self-propelled transportation.	Alternative C would meet this objective because new trails would provide improved facilities for self-propelled transportation.
Provide an alternate means of transportation within the park's developed eastern side	Alternative A would not meet this objective because no new trails would be constructed to create an alternate means of transportation.	Alternative B would meet this objective because new trails would provide an alternative means of transportation within the eastern side of the park.	Alternative C would meet this objective because new trails would provide an alternative means of transportation within the eastern side of the park.
Provide new connections to the park's shuttle bus system	Alternative A would not meet this objective because no new trails would be constructed to provide connections to the shuttle bus system.	Alternative B would meet this objective because new trails would provide connections to the shuttle bus stops at: Beaver Meadows Visitor Center, Moraine Park Discovery Center, Moraine Park Campground, Tuxedo Park, Hollowell Park, and Glacier Basin Campground.	Alternative C would meet this objective because new trails would provide connections to the shuttle bus stops at: Beaver Meadows Visitor Center, Moraine Park Discovery Center, Moraine Park Campground, Tuxedo Park, Hollowell Park, and Glacier Basin Campground.
Better manage visitor demand	Alternative A would not meet this objective because no new trails would be constructed to help with the temporal and/or spatial dispersal of visitors.	Alternative B would meet this objective because the multiuse trail would offer new self-propelled access, which is spatially separated from vehicular access.	Alternative C would meet this objective because new trails would offer new self-propelled access, which is spatially separated from vehicular access.

Provide for new visitor experiences within the park	Alternative A would not meet this objective because no new trails would be constructed to provide new visitor experiences within the park.	Alternative B would meet this objective because new trails would provide new visitor experiences within the park.	Alternative C would meet this objective because new trails would provide new visitor experiences within the park. This alternative would provide an additional experience to use a multiuse path along an overland route to the east of Horseshoe Park when compared to the mostly roadside routes of alternative B.
Provide a safe multiuse trail system	Not applicable. Under Alternative A no multiuse trail system would be developed.	Alternative B meets this objective because multiuse trail users would be physically separated from vehicular traffic and safety measures would be incorporated into trail design.	Alternative C meets this objective because multiuse trail users would be physically separated from vehicular traffic and safety measures would be incorporated into trail design. This alternative has one less road crossing than alternative B, which reduces the potential for conflicts with vehicular traffic. However, the overland trail route east of Horseshoe park travels farther from the road which could slow the response of emergency services, if needed.

SUMMARY OF THE ALTERNATIVES

Table 4 provides a brief summary and comparison of the key components of the No-action Alternative and each of the two action alternatives.

TABLE 4: SUMMARY OF ALTERNATIVES

	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
General Concept	No multiuse trail would be constructed. Project corridor would remain accessible primarily by vehicular transport and seasonal shuttle service.	Approximately 15.3 miles of multiuse trail would be constructed. Trail alignment predominantly following the road corridors of U.S. 34, U.S. 36, and Bear Lake Road. Users can gain access to the trail by vehicular transport, self-propelled transport, and seasonal shuttle service.	Approximately 14.2 miles of multiuse trail would be constructed. Trail alignment generally following the road corridors of U.S. 34, U.S. 36, and Bear Lake Road with sections of overland trail near Horseshoe Park and Beaver Meadows. Users can gain access to the trail by vehicular transport, self-propelled transport, and seasonal shuttle service.
Visitor Facilities	Existing roadways would provide direct vehicular access to: ■ Fall River Visitor Center ■ Beaver Meadows Visitor Center ■ Moraine Park Discovery Center ■ Sprague Lake	Same as alternative A, plus the multiuse trail would directly connect self-propelled visitors to: ■ Fall River Visitor Center ■ Beaver Meadows Visitor Center ■ Moraine Park Discovery Center ■ Sprague Lake	Same as alternative A, plus the multiuse trail would directly connect self-propelled visitors to: ■ Fall River Visitor Center (same as alternative B) ■ Moraine Park Discovery Center (same as alternative B) ■ Sprague Lake (same as alternative B) ■ With linkages to: ■ Beaver Meadows Visitor Center
Campgrounds	Existing roadways would provide direct vehicular access to: ■ Moraine Park Campground ■ Aspenglen Campground ■ Glacier Basin Campground	Same as alternative A, plus the multiuse trail would directly connect self-propelled visitors to: ■ Moraine Park Campground With linkages to: ■ Aspenglen Campground ■ Glacier Basin Campground	Same as alternative A, plus the multiuse trail would directly connect self-propelled visitors to: ■ Moraine Park Campground With linkages to: ■ Aspenglen Campground ■ Glacier Basin Campground

	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
Overlooks	Existing roadways would provide direct vehicular access within the project corridor to: ■ Sheep Lakes ■ Horseshoe Park ■ Baker Curve	Same as alternative A, plus the multiuse trail would directly connect self-propelled visitors to: ■ Sheep Lakes ■ Horseshoe Park	The multiuse trail would not connect to any park overlooks.
Shuttle Stops	Existing roadways would provide vehicular parking and access to all shuttle stops.	The multiuse trail would provide self-propelled access to shuttle stops at: ■ Beaver Meadows Visitor Center ■ Moraine Park Discovery Center ■ Moraine Park Campground ■ Tuxedo Park ■ Park and Ride parking lot ■ Glacier Basin Campground ■ Sprague Lake	Same as alternative B
Detached Trails	No multiuse trail would be constructed.	The majority of the multiuse trail would be detached from the road and offset from the edge of pavement by 10 feet or more and could be further separated by grade changes. The detached trails would run for: ■ 3.9 miles along U.S. 34 ■ 4.4 miles along U.S. 36 ■ 6.3 miles along Bear Lake Road	The majority of the multiuse trail would be detached from the road and offset from the edge of pavement by 10 feet or more and could be separated by grade changes. The detached trail would run for 1.7 miles along U.S. 34, with 1.0 miles as an overland route bypassing the West Horseshoe Park area. The detached trails would run for: ■ 1.9 miles along U.S. 36 ■ 2.6 miles along High Drive ■ 6.3 miles along Bear Lake Road
Attached Trails	No multiuse trail would be constructed.	For a limited length the multiuse trail would have attached trails that run alongside the existing road, offset by three to 10 feet with a green buffer or other type of buffer from the edge of pavement. The attached trails would run for: ■ 0.8 mile along Bear Lake Road ■ 0.5 mile along the Moraine Park Campground connection	Same as alternative B.

	Alternative A: No Action	Alternative B: Roadside Trail	Alternative C: Roadside and Overland Trail
Overland Trails	No multiuse trail would be constructed.	The multiuse trail diverts from the roadside and travels overland for approximately: ■ 0.6 mile along old Bear Lake Road ■ 0.5 mile to Spur 66	The multiuse trail diverts from the roadside and travels overland for approximately: ■ 0.5 mile around Fall River Visitor Center to connect Aspenglen Campground ■ 1.0 mile through the eastern edge of Horseshoe Park ■ 1.5 mile along the Beaver Meadows Trail and connect to High Drive ■ 0.6 mile along old Bear Lake Road (same as alternative B) ■ 0.5 mile to Spur 66 (same as alternative B)
Roadway Crossings	No defined crossings exist. Pedestrian and on-road bicyclists cross the road at intersecting roads, drives, and visitor facilities.	The multiuse trail crosses the road at: ■ Beaver Point Trail ■ Bear Lake Road/U.S. 36 ■ High Drive (Beaver Meadows Visitor Center) ■ Moraine Park Discovery Center ■ South of Moraine Park Discovery Center ■ Glacier Basin Campground Drive ■ Sprague Lake Trailhead Drive	Same as alternative B except for one less crossing south of Moraine Park Discovery Center
Stream Crossings	No multiuse trail would be constructed.	9 total multiuse trail stream crossings Fall River, Hidden Valley Creek twice, Buck Creek, Beaver Brook, Big Thompson River, Glacier Creek, Boulder Brook, Mill Creek	9 total multiuse trail stream crossings Fall River larger structure, Hidden Valley Creek twice, Buck Creek, Beaver Brook, Big Thompson River, Glacier Creek, Boulder Brook, Mill Creek

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 5 below summarizes the impacts of each alternative on the impact topics selected for analysis in this EA. These impacts are described in greater detail under their respective headings in chapter 4.

TABLE 5. SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Resource	Alternative A: No Action	Alternative B: Roadside Trail Alternative	Alternative C: Roadside and Overland Trail Alternative
Soils, Topography, and Geology	No new impacts. Impacts to soils adjacent to roadways and parking areas would continue from parking and trampling. Cumulative impact: None	Construction of the 15.3-mile trail would require excavation of existing soils, creation of embankments, and construction of retaining walls. These activities would only slightly modify existing landforms. Mitigation measures and the placement of the trail along existing roadway corridors, where resources have been impacted by road construction, utilities, and infrastructure, would lessen the intensity of the impacts. Approximately 74 acres of soils would be impacted. ■ 68 acres of soils in the project corridor have moderate to severe erosion hazard. ■ 50 acres of soils in the project corridor have moderate to high frost action. ■ The trail would be installed within 19 acres. Cumulative impact: Contributes a noticeable adverse increment to the overall long-term adverse impact	Similar to alternative B, except the 14.2-mile trail would impact 69 acres of soils. ■ 69 acres of soils in the project corridor have moderate to severe erosion hazard. ■ 34 acres of soils in the project corridor have moderate to high frost action. ■ The trail would be installed within 17 acres, of which 4 acres would be associated with the overland segments of the trail. Cumulative impact: Contributes a noticeable adverse increment to the overall long-term adverse impact

Resource	Alternative A: No Action	Alternative B: Roadside Trail Alternative	Alternative C: Roadside and Overland Trail Alternative
Vegetation	No new impacts. Impacts to vegetation (individual plants) adjacent to roadways and parking areas would continue from parking and trampling. Cumulative impact: None	Construction of the 15.3-mile trail would remove approximately 69 acres of vegetation in the project corridor including ■ 21 of existing forest habitat, ■ 22 acres of the ponderosa pine grassland community, ■ 10 acres of shrub habitat, and ■ 16 acres of road-side grassland/barren areas. The removal of 69 acres of vegetation would be a long-term impact, and 19 of the total acreage impacted would be displaced for the life of the trail. The other impacted areas would be revegetated. Direct long-term impacts would include reduction of vegetative community functions such as provision of wildlife habitat, retention of surface water runoff, and visual aesthetics. Adverse indirect impacts would include damage to the plants adjacent to the proposed trail, including nutrient loss, root damage, and exposure. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts	Same as alternative B except construction of the 14.2-mile trail would impact 67 acres of vegetation in the project corridor including ■ 22 of existing forest habitat, ■ 22 acres of the ponderosa pine grassland community, ■ 10 acres of shrub habitat, and ■ 13 acres of road-side grassland/barren areas. The removal of 67 acres of vegetation would be long-term impacts, and 17 of the total acreage impacted would be displaced for the life of the trail. The other impacted areas would be revegetated. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts

Resource	Alternative A: No Action	Alternative B: Roadside Trail Alternative	Alternative C: Roadside and Overland Trail Alternative
Wildlife and Wildlife Habitat	No new impacts. Roadway corridors would continue to fragment wildlife habitat and influence wildlife movement and activity. Cumulative impact: None	Approximately 69 acres of wildlife habitat would be removed for construction. ■ 50 acres would be revegetated after construction, and wildlife habitat would be restored. ■ 19 acres of wildlife habitat would be displaced for the life of the trail. The proposed trail would result in increased wildlife habitat fragmentation, noise and visual disturbances, and an increased risk of human-wildlife collisions. Wildlife would avoid the project corridor during construction but is expected to return. Ungulates would be minimally disturbed by the proposed trail and would be slightly impacted by the presence of humans. Cavity-nesting species of birds could be displaced by the clearing of tree habitats, whereas songbirds may benefit from forest clearing. Shading of wetland habitat and streams could impact amphibians and aquatic species. Cumulative impact: Contributes a noticeable adverse increment and an imperceptible beneficial increment to the overall adverse and beneficial long-term impacts	Similar to alternative B except 67 acres of wildlife habitat would be removed for construction. ■ 50 acres would be revegetated after construction, and wildlife habitat would be restored. ■ 17 acres of wildlife habitat would be displaced for the life of the trail. The two overland segments would be expected to cause more wildlife habitat fragmentation than alternative B. Cumulative impact: Contributes a noticeable adverse increment and an imperceptible beneficial increment to the overall adverse and beneficial long-term impacts

Resource	Alternative A: No Action	Alternative B: Roadside Trail Alternative	Alternative C: Roadside and Overland Trail Alternative
Wetlands and Other Waters of the U.S.	No impacts. Cumulative impact: None	Wetland/stream crossings would impact approximately ■ 0.64 acres of wetlands and ■ 347 linear feet of stream channel. Mitigation measures would minimize the short-term impacts of increased turbidity from increased sedimentation and surface scour from overland runoff. Long-term impacts from the shading of wetlands and stream resources for the life of the trail could slightly reduce the quality of some functions and values, but impacts would remain on a local scale. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts	Same impacts as alternative B but on a smaller scale. Wetland/stream crossings would impact approximately ■ 0.09 acres of wetlands and ■ 321 linear feet of stream channel. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts
Historic Structures, Historic Districts, and Cultural Landscapes	No new impacts. Ongoing heavy visitation and the presence of additional vehicles would continue to intrude on historic structures, historic districts, and cultural landscapes. Cumulative impact: Contributes an imperceptible adverse increment to the overall adverse and beneficial long-term impacts	The presence of the new trail, signs, and crosswalk markings would have slight visual intrusions on the historic structures, historic districts, and cultural landscapes in the project corridor. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts	Same as alternative B except where the overland routes diverge from roadway corridors and near the William Allen White cabin. Trail use would have less visual impact where it leaves the existing road corridor but would be more noticeable from the William Allen White cabin. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts

Resource	Alternative A: No Action	Alternative B: Roadside Trail Alternative	Alternative C: Roadside and Overland Trail Alternative
Site Access and Circulation	Adverse impacts would continue to intensify as visitation increases with no increase in means of access. Cumulative impact: Contributes an imperceptible adverse increment to the overall adverse and beneficial long-term impacts	The new 15.3-mile trail would provide an additional means of accessing scenic routes within the park. The trail would provide multimodal circulation throughout major areas of the park. Short-term impacts would result from construction activities. Cumulative impact: Contributes a noticeable beneficial increment to the overall adverse and beneficial long-term impacts	Same as alternative B except the trail would be 14.2 miles and would diverge from scenic routes at two locations. Cumulative impact: Contributes a noticeable beneficial increment to the overall adverse and beneficial long-term impacts
Visitor Use and Experience	Concentration of visitors along popular overlooks would continue to detract from visitor use and experience along major roadways due to crowding. Cumulative impact: Contributes a noticeable adverse increment to the overall adverse and beneficial long-term impacts	The new 15.3-mile trail would provide an additional way to experience scenic routes, provide for spatial and temporal dispersal of visitors along the corridor, thereby reducing the potential for roadway congestion. Potential conflicts at road crossings and between trail users could arise, causing safety concerns. Construction activities would result in short-term adverse impacts. Cumulative impact: Contributes noticeable beneficial and adverse increment to the overall adverse and beneficial long-term impacts	Same as alternative B except the trail would be 14.2 miles and would diverge from scenic routes at two locations. Cumulative impact: Contributes a noticeable beneficial and adverse increment to the overall adverse and beneficial long-term impacts

Resource	Alternative A: No Action	Alternative B: Roadside Trail Alternative	Alternative C: Roadside and Overland Trail Alternative
Park Operations	No new impacts. Cumulative impact: None	Park staff would need to maintain the new 15.3 mile trail. Park staff would also monitor and manage vegetation along the trail (monitoring revegetation and invasive plants following construction and undertaking regular hazard tree removal along the trail). Park staff would also provide law enforcement patrols and emergency response, as needed. Cumulative impact: Contributes noticeable increment and an imperceptible beneficial increment to the overall adverse long-term impacts	Park staff would need to maintain the new 14.2 mile trail. Resource monitoring and management and law enforcement impacts would be similar to alternative B. Overland trail segments would be slightly more difficult to access when emergency response is required Cumulative impact: Contributes noticeable increment and an imperceptible beneficial increment to the overall adverse long-term impacts
Socioeconomic Resources and Gateway Communities	No new impacts. Cumulative impact: None	The new trail could increase the length of visits, and the possible connections to Estes Park could encourage more bicycling between the park and the town. Bicycle rentals in town may also increase. Construction could provide temporary jobs to local residents and support local companies. Cumulative impact: Contributes and imperceptible beneficial increment to the overall long-term beneficial impact	Same as alternative B.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

Alternative A, the no-action alternative, would not require the clearing of vegetation; crossing of streams, river, and wetlands; nor grading of soils. Although it would not meet the project's objectives for providing a new multiuse trail through the park's eastern developed portion, it would result in the least disturbance to the park's existing resources. Therefore, alternative A was identified as the environmentally preferable alternative that least damages the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources.

3

AFFECTED ENVIRONMENT

The "Affected Environment" chapter describes the project corridor environment; relevant physical and biological processes within the project corridor; and the existing conditions for those elements of the natural, cultural, and social environment that could be affected by the implementation of the actions considered in this environmental assessment. The impact topics addressed in this environmental assessment include soils, topography, and geology; vegetation; wildlife and wildlife habitat; wetlands and other waters of the U.S.; floodplains; historic structures, historic districts, and cultural landscapes; visitor use and experience, park operations; and socioeconomic resources and gateway communities. Impacts for these impact topics are analyzed in "Chapter 4: Environmental Consequences."

SOILS, TOPOGRAPHY, AND GEOLOGY

Rocky Mountain National Park is located in a mountainous region with a range of climates and distinct topographic characteristics. Elevation ranges from approximately 7,500 feet to 14,000 feet (Longs Peak), and nearly one-third of the park lies at an elevation of over 11,500 feet in the alpine tundra zone, where precipitation falls as snow for about nine months of the year (NPS 2003). The park is bisected by the Continental Divide, which results in western and eastern slopes having unique characteristics present along the entire range. The project corridor is on the eastern slope of the Continental Divide which is characterized by steep cliffs with U-shaped valleys that were altered by episodes of localized Pleistocene glaciations (NPS 2003). The topography of the project corridor is typical of montane and subalpine landscapes, with the elevation ranging from 7,500 to 9,000 feet and slopes varying between 0% and 60% (NRCS 2013).

As in many areas of the park, soil and substrate characteristics within the project corridor are complex due to substantial changes in soil forming factors (i.e. parent material, climate, topography, and vegetation) over very short distances. In general, soils within the park are poorly developed, slightly acidic, coarse-textured, and can have a high composition of rock. Soils are often "shallow" atop restrictive layers, due to the steep topography and natural erosion that provide insufficient time for deeper soils to develop. Shallow soils are often associated with moist and dry upland slopes, where surface water runoff is rapid due to the low rate of water infiltration into the substrate. Concave landforms, such as floodplains and

drainageways, can have hydric soil conditions with a lower water runoff potential and greater infiltration rates. These landforms have deeper soils with an increased content of organic material that allows greater water movement down through the soil. Figure 5 below depicts the NRCS soil map units found in and around the project corridor, and table 6 describes several of the soil properties for each of these soil types.

TABLE 6. SOIL TYPES WITHIN THE PROJECT CORRIDOR

Map Unit (#)	Drainage Class	Parent Material	Location	Slope (%)
Isolation gravelly sandy loam (16)	Somewhat excessively drained	Granite rocks, gneiss, and schist	Moraines, south facing slopes	5 to 35
Kawuneeche loam (17)	Poorly drained	Alluvium over glaciofluvial deposits	Floodplains	0 to 1
Kawuneeche mucky peat (19)	Poorly drained	Alluvium over glaciofluvial deposits	Floodplains	0 to 4
Legault very gravelly sandy loam (21)	Well drained	Slope alluvium, colluviums, and residuum	Mountain slopes, ridges	15 to 45
Lumpyridge gravelly coarse sandy loam (22)	Well drained	Alluvium derived from granite, gneiss, and schist	Fans	1 to 6
Lumpyridge-Rofork complex (23)	Well drained	Alluvium derived from granite, gneiss, and schist	Fans	3 to 15
Nanita very gravelly sandy loam (27)	Somewhat excessively drained	Colluvium and till from granite rocks, gneiss, and schist	Moraines and glaciated mountain slopes	1 to 15
Nanita very gravelly sandy loam (28)	Somewhat excessively drained	Colluvium and till from granite rocks, gneiss, and schist	Moraines and glaciated mountain slopes	10 to 60
Rofork-Chasmfalls complex (35)	Somewhat excessively drained	Slope alluvium, colluviums, and residuum	Mountain slopes and structural benches	5 to 35
Venable loam (44)	Poorly drained	Alluvium	Alluvial valley floors, low terraces, floodplains, and drainageways	0 to 1

Source: NRCS 2013

The most prevalent soil series found in the project corridor include: Isolation gravelly sandy loam (16), Kawuneeche loam (17), Kawuneeche mucky peat (19), Legault very gravelly sandy loam (21), Nanita very gravelly sandy loam (28), and Rofork-Chasmfalls complex (35).

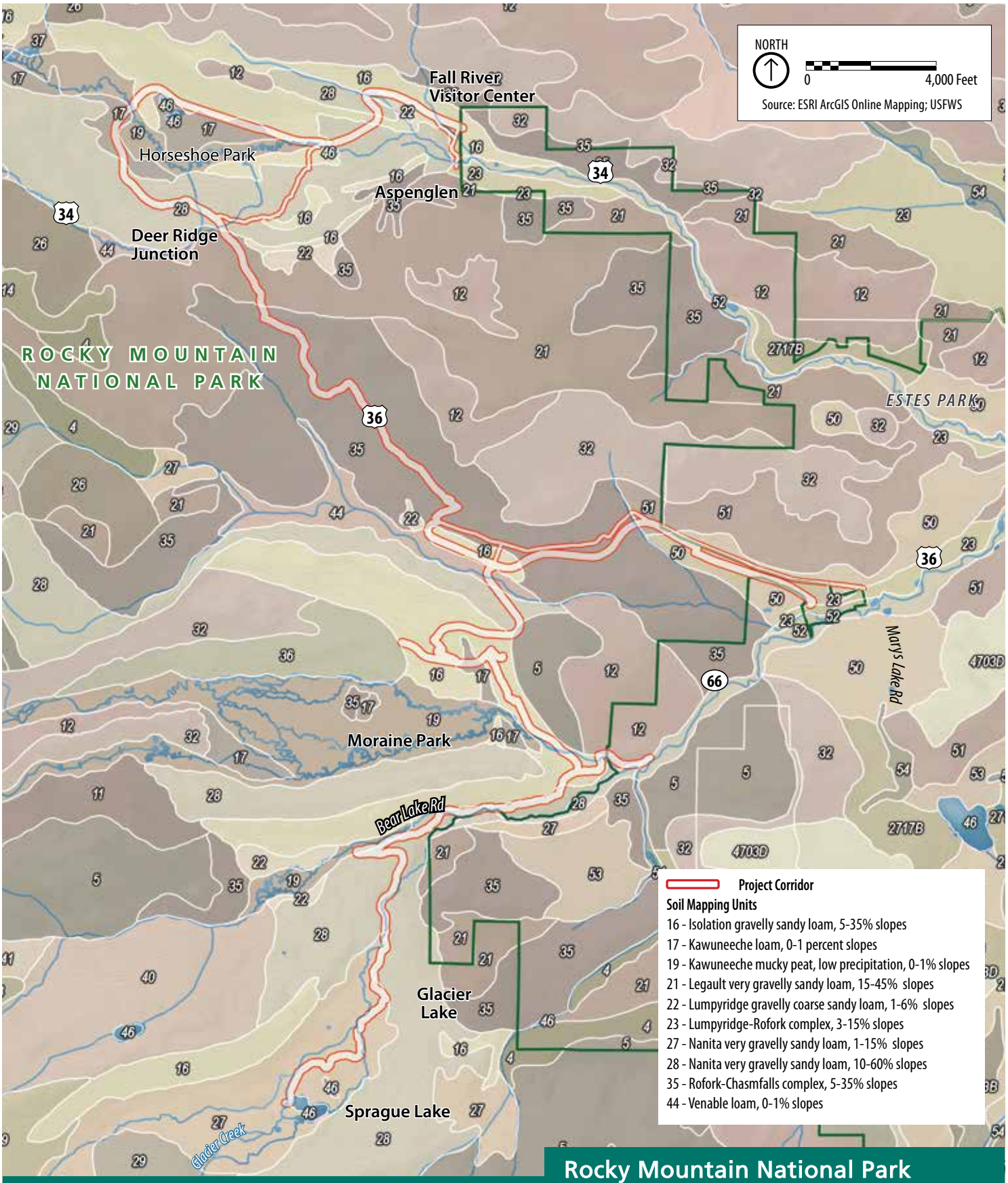


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FIGURE 5
NRCS Soils Map

Three of these soil types are more commonly found in upland portions of the project corridor along moderate to steep slopes above floodplains and drainageways. These upland, higher elevation soil types have parent material derived from schist, granite, gneiss (or a combination of the three) and are somewhat excessively drained due to topography and soil composition. Isolation gravelly sandy loam is found on 5 to 35 percent slopes where elevation is between 8,000 and 9,000 feet and the frost-free period is 70 to100 days. The soil composition includes sandy and gravelly till and the soils receive an annual precipitation of 16 to 22 inches. Nanita very gravelly sandy loam (28) is found on 10 to 60 percent slopes where elevation is generally between 8,200 and 10,000 feet and the frost-free period is 50 to 70 days. Nanita soils are composed in part of sandy and gravelly till and they receive an annual precipitation of 16 to 20 inches. Rofork-Chasmfalls complex (35) is found on 5 to 35 percent slopes where elevation is between 7,700 and 9,000 feet and the frost-free period is 70 to 90 days. The soil composition includes gravelly slope alluvium and/or residuum and they receive mean annual precipitation of 16 to 22 inches (NRCS 2013). Table 7 presents a summary of some important properties of upland soils in the project corridor.

TABLE 7. PROPERTIES OF UPLAND SOIL TYPES WITHIN THE PROJECT CORRIDOR

Map Unit (#)	Erosion Hazard	Frost Action	Depth to Restrictive Layer (in.)	Topsoil Suitability
Isolation gravelly sandy loam (16)	Moderate	Moderate	>80	Poor
Legault very gravelly sandy loam (21)	Severe	Moderate	12	Poor
Lumpyridge gravelly coarse sandy loam (22)	Moderate	Moderate	>80	Poor
Lumpyridge-Rofork complex (23)	Moderate	Moderate	>80	Poor
Nanita very gravelly sandy loam (27)	Moderate	Low	>80	Poor
Nanita very gravelly sandy loam (28)	Severe	Low	>80	Poor
Rofork-Chasmfalls complex (35)	Severe	Moderate	14.4	Poor

Source: NRCS 2013

Soils located in wetlands within the project corridor, such as Kawuneeche loam and Kawuneeche mucky peat, often have a high composition of organic material. For instance, the palustrine forested wetlands located along the northeast side of U.S. 34 (as the road ascends to Deer Ridge Junction) have a soil texture ranging from mucky peat to peat, indicating a prevalence of organic material within the soil profile. These soils have an unconsolidated soil material where the organic matter is slowly decomposing due to constant anaerobic conditions, and has greatly reduced soil structure. Wetland soils in other parts of the project corridor, as well as most upland areas, are composed of mineral substrates with little organic content and have textures such as loam, clay loam, and clay. Organic material is reduced due to higher rates of decomposition associated with periods of both aerobic and anaerobic soil conditions. As a

result, these soils have increased consolidation and structure. Table 8 presents a summary of some important properties of wetland soils in the project corridor.

TABLE 8. PROPERTIES OF WETLAND SOIL TYPES WITHIN THE PROJECT CORRIDOR

Map Unit (#)	Erosion Hazard	Frost Action	Depth to Restrictive Layer (in.)	Topsoil Suitability
Kawuneeche loam (17)	Slight	High	>80	Poor
Kawuneeche mucky peat (19)	Slight	High	>80	Poor
Venable loam (44)	Slight	High	32	Poor

Source: NRCS 2013

VEGETATION

Rocky Mountain National Park is an environment rich in floral diversity as many unique vegetation communities exist resulting from variable elevation, soil, and climate. The park is comprised of approximately 60% forest, 13% alpine tundra, 18% exposed rock, and 9% mixture of vegetative habitats (NPS 2003). Approximately 1,025 vascular plants have been identified within the park. Non-vascular plants and plant-like organisms are also a prevalent part of the park's other vegetation communities, and include a variety of bryophyte and algae species. In general, the plants of the park are representative of typical southern Rocky Mountain flora (NPS 2013c). A map of vegetation types within the project corridor is presented below in figure 6.

Elevation and climate have a primary influence on vegetation patterns within the park, creating vegetation zones that differ in species diversity, composition, and density. Vegetation zones within the project corridor are characterized by both the montane and subalpine ecosystems, depending on elevation. The montane ecosystem is found at lower elevations, ranging from approximately 5,500 to 9,000 feet. The lower montane zone ranges to approximately 7,700 feet in elevation, and vegetative communities differ slightly from that of the upper montane zone. Vegetation in the lower montane zone is comprised of open forests of conifers interrupted by open grasslands. The dominant trees in the lower montane are usually ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziessii*). Slope aspect has a dramatic effect on tree density due to variability in soil moisture and exposure to the sun. North-facing slopes have higher soil moisture and support dense forests. South-facing slopes have lower soil moisture that result in more open communities of ponderosa pine, and a lower composition of Douglas-fir. The most common forest type on drier sites is open ponderosa pine woodlands, which are interspersed with grasslands and shrubs such as wax currant (*Ribes cereum*), Woods' rose (*Rosa woodsii*), sagebrush (*Artemisia* sp.), and antelope bitterbrush (*Purshia tridentata*).

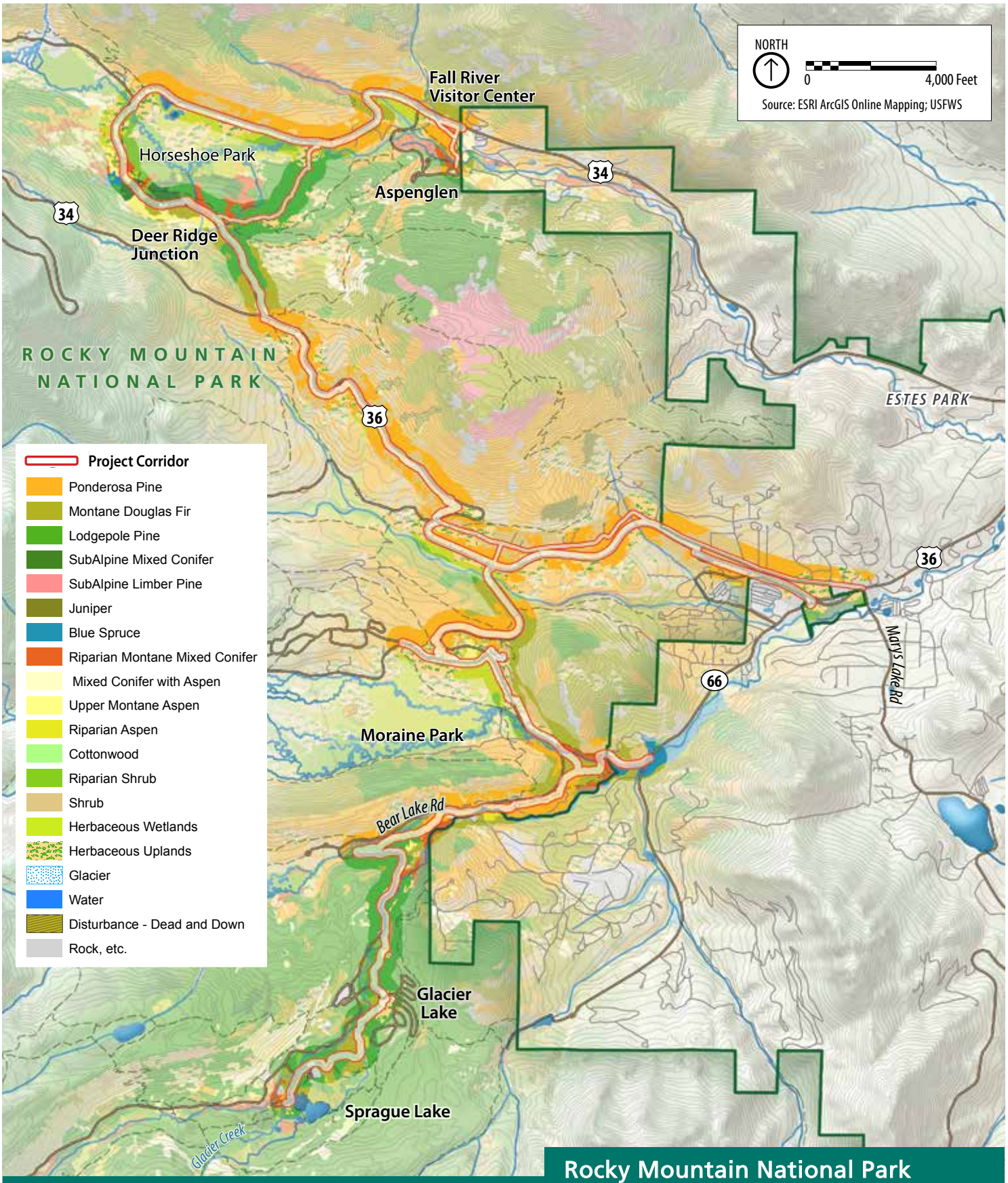

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FIGURE 6

Vegetation Map

Higher elevation upper montane communities transition from lower elevation open woodlands to closed forests of ponderosa pine and Douglas-fir, with a gradual increase in other tree species such as aspen (*Populus tremuloides*) and lodgepole pine (*Pinus contorta*). Mesic sites in the upper montane zone can have pure stands of Douglas-fir, and limber pine (*Pinus flexilis*) can occur in mixed stands with other conifers where there are shallow, rocky soils or exposure to strong winds. Aspen is sometimes found on mesic sites in the upper montane zone, or bordering lower elevation wet meadows within valleys. Such valleys often have wetter, hydric conditions that change the vegetative composition dramatically. For example, the U-shaped valleys found at Horseshoe Park and Moraine Park contain broad meadows formed by sediments and meltwater from the dissipation of glaciers. Rivers in these valleys meander through the landscape, forming floodplains dominated by species such as willow (*Salix* spp.) and sedges (*Carex* spp.).

The subalpine zone begins near the upper elevations of the project corridor. It spans between 9,000 feet and 11,500 feet in elevation. It includes mesic and xeric forests with lodgepole pine dominated stands at lower elevations and Engelmann spruce (*Picea engelmanni*)/subalpine fir (*Abies lasciocarpa*) dominated stands at higher elevations. In addition, aspen and limber pine become more characteristic at subalpine elevations. Young post-fire stands are often dense with aspen and lodgepole pine regeneration communities. Understory species are generally sparsely distributed within dominant tree stands and include species such as common juniper (*Juniperus communis*), blueberry (*Vaccinium* spp.), and kinnikinnik (*Arctostaphylos uva-ursi*). While the subalpine zone has limited areas of level, poorly drained terrain, these areas often contain open bog forests with water-logged soils and thick accumulations of organic material. These communities support hydrophytic species such as balsam poplar (*Populus balsamifera*), alder (*Alnus* spp.), various sedges, and other graminoid species. Wet-spruce forests are also found in poorly drained areas, where soils are typically composed of mineral substrates with less organic matter.

In addition to the native vegetation discussed above, all vegetation zones within the park are affected by non-native invasive plant species. Many of these non-native plants are considered to be "exotic" species by the National Park Service, and are defined as "those that occur in a given place as a result of direct or indirect, deliberate, or accidental actions by humans" (NPS 2013c). Exotic plants species can cause concern to natural resource managers due to the plants' ability to change a visual landscape, eliminate native plant species, or be detrimental to wildlife populations. Examples of common exotic species within the park include amaranth (*Amaranthus retroflexus*), fiddleneck (*Amsinckia menziesii*), smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), musk thistle (*Carduus nutans*), knapweeds (*Centaurea diffusa* and *C. maculosa*) Canada thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esula*), orange hawkweed (*Hieracium aurantiacum*), toadflaxes (*Linaria vulgaris* and *L. dalmatica*), Kentucky bluegrass (*Poa pratense*), Russian thistle (*Salsola tragus*), dandelion (*Taraxacum officinale*), and great mullein (*Verbascum thapsus*) (NPS 2013c).

WILDLIFE AND WILDLIFE HABITAT

The diverse ecosystems and large tracts of land associated with the Rocky Mountains provide ample habitat for a variety of animals. Elk (*Cervis elaphus*) are perhaps the most well-known mammal found within the park, with a winter population fluctuating between 200 and 800 individuals. These large members of the deer family (Cervidae) are often abundant within the project corridor, especially in the

vicinity of the montane meadows of Horseshoe Park and Moraine Park. Elk inhabit these areas in high numbers during the fall mating season and throughout the winter, and their behavior is readily observed from the vistas around Horseshoe Park and Moraine Park.

Elk also share the habitat of Horseshoe Park with Bighorn sheep (*Ovis canadensis*), a large sheep species which descends from higher altitudes in the spring and summer months. Approximately 60 bighorn sheep comprise the eastside herd in the park and are often found within the project corridor. The sheep graze on meadow vegetation near the Sheep Lakes area in Horseshoe Park and readily consume minerals that are present within the soil, providing nutrition lost during the harsh winter season. Bighorn sheep spend their time at lower elevations during the winter. Ewes ascend to higher altitude to give birth in the spring and then return to the mineral lick in late spring/early summer before heading to higher environments for the late summer and fall as snow melts (NPS 2013c).

Moose (*Alces alces*) are the largest mammal found within the park, but are only occasionally found on the east side of the park. Other large mammals include black bear (*Ursus americanus*) and mountain lion (*Puma concolor*), and while habitat for these species is found in the project corridor, individuals or groups of these mammals typically favor more secluded environments at a greater distance from roadway corridors. Elk are the primary prey of mountain lions, and mountain lion kills are not unusual in the project corridor, especially in the winter. Another large mammal, the mule deer (*Odocoileus hemionus*), is common in the project corridor and often found foraging in small herds in open meadows near roadside locations. Smaller deer can be preyed upon by coyotes (*Canis latrans*) and bobcats (*Lynx rufus*). Other mammals found within the project corridor include red fox (*Vulpes vulpes*), several species of chipmunks and squirrels, and the American badger (*Taxidea taxus*), which is frequently sighted in roadside ditches (NPS 2013c).

Rocky Mountain National Park also has an abundance of bird species, many of which are unique to the mountainous habitats found within the southern Rocky Mountains. The park was designated as a Globally Important Bird Area by the American Bird Conservancy in 2000, recognizing the important role the park has for major bird populations. A list of birds observed by park biologists contains 263 different species, including spring and fall migrants, summer residents, summer and winter visitors, and year-round residents that have breeding populations within the park. Types of birds include waterfowl (geese and ducks), neotropical songbirds, raptors, and waterbirds like herons and egrets (NPS 2013c).

Birds easily observed from roadway corridors within the project corridor include larger raptors such as turkey vultures (*Cathartes aura*), red-tailed hawks (*Buteo jamaicensis*), and goshawks (*Accipiter gentilis*) often found flying above Horseshoe Park. Merriam's wild turkeys (*Melagris gallopavo merriami*) are also within the forested landscape surrounding the project corridor, and can be seen crossing the roadway corridors, especially during the spring mating season. Smaller bird species are abundant near the project corridor. Ruby-throated hummingbirds (*Archilochus colubris*), chickadees (*Poecile* spp.), American robins (*Turdus migratorius*), tree swallows (*Tachycineta bicolor*), warblers (*Dendroica* spp.), red-winged blackbirds (*Agelaius phoeniceus*), black-billed magpies (*Pica pica*), Stellar's Jay (*Cyanocitta cristata*), and juncos (*Junco* spp.) can often be observed foraging in wetlands, open meadows, and woodland habitats close to the road. Other birds found within the park include cavity-nesting species such as woodpeckers, swallows, wrens, nuthatches, and owls, among others. While cavity-nesting species are not always easily observed, presence of the birds is often indicated by cavities (circular holes) excavated in dead or deteriorating trees (snags). Snags are common within the

project corridor and can be found in forested wetlands along U.S. 34, and in several other areas where trees have been impacted by pine beetle infestation.

Amphibian species in the park include the boreal toad (*Bufo boreas boreas*), a state endangered species which is occasionally sighted in the wetlands in Horseshoe Park. Historically the boreal toad was found in Sprague Lake and Glacier Basin and the associated wetlands, and the leopard frog (*Lithobates pipiens*) resided in Horseshoe Park, but it was last documented in 1974. Chorus frogs (*Pseudacris triceriata*) are common throughout the project corridor. The common garter snake (*Thamnophis siralis*) is a reptile also commonly found in the area.

WETLANDS AND OTHER WATERS OF THE U.S.

The identification of wetlands and other waters of the U.S. within the project corridor commenced in 2001 with an investigation of the Bear Lake Road corridor spanning from Bear Lake down to the intersection with U.S. 36. The methodology used to complete the study was based on the 1987 Corps of Engineers Wetland Delineation Manual (USACE 1987). This study identified multiple wetlands and streams associated with the floodplain and riparian zone of Big Thompson River, Glacier Creek, and Mill Creek. Based on the investigation and classification of the water resources using Cowardin (1979) classification, prominent wetland types identified included palustrine (non-tidal, freshwater wetlands) forested wetlands, palustrine scrub-shrub forested wetlands, palustrine emergent wetlands, and various stream channels classified under the riverine (wetlands contained within a channel) system (ERO 2001). The majority of the wetlands and stream identified in the project corridor are within close proximity to Bear Lake Road, and some flow under the road through various culverts. Portions of the 2001 study area were investigated again in 2005, applying the same wetland delineation methodology, but within a different portion of the current project corridor. The 2005 investigation also identified water resources within several alternate alignments for the proposed trail, as well as an area for the proposed realignment of Bear Lake Road. This investigation identified multiple wetlands and streams associated with the floodplain and riparian zone of Glacier Creek and Mill Creek, many of which were originally identified during the 2001 study (ERO 2006).

An additional study area was then investigated in 2013 along the existing roadway corridor between Beaver Meadows Visitor Center and Fall River Visitor Center in order to complete the comprehensive identification of wetland and waters of the U.S. for the entire project corridor. The 2013 study included approximately 8 miles of variable width roadway corridor along U.S. 34 and U.S. 36. Wetland and waters of the U.S. delineation fieldwork was conducted from May 13 to May 17, 2013 using the technical criteria and procedures outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valley, and Coast Region (Version 2.0)* and associated guidance to identify jurisdictional boundaries within the project corridor (USACE 2010). Wetland classification followed the "Cowardin System" in accordance with NPS Procedural Manual #77-1 (NPS 2012). As part of this study, a wetland functions and values assessment was prepared for all wetland resources following the *New England Highway Methodology* developed by the USACE (USACE 1993).

Wetlands and waters of the U.S. within the portion of the project corridor investigated in 2013 include wetlands, streams, and several open water bodies (VHB 2013) as outlined in figure 7. Many of the wetlands and streams identified in the 8 mile portion of the project corridor are within close proximity to U.S. 34 and U.S. 36, and some flow under the road through various culverts.

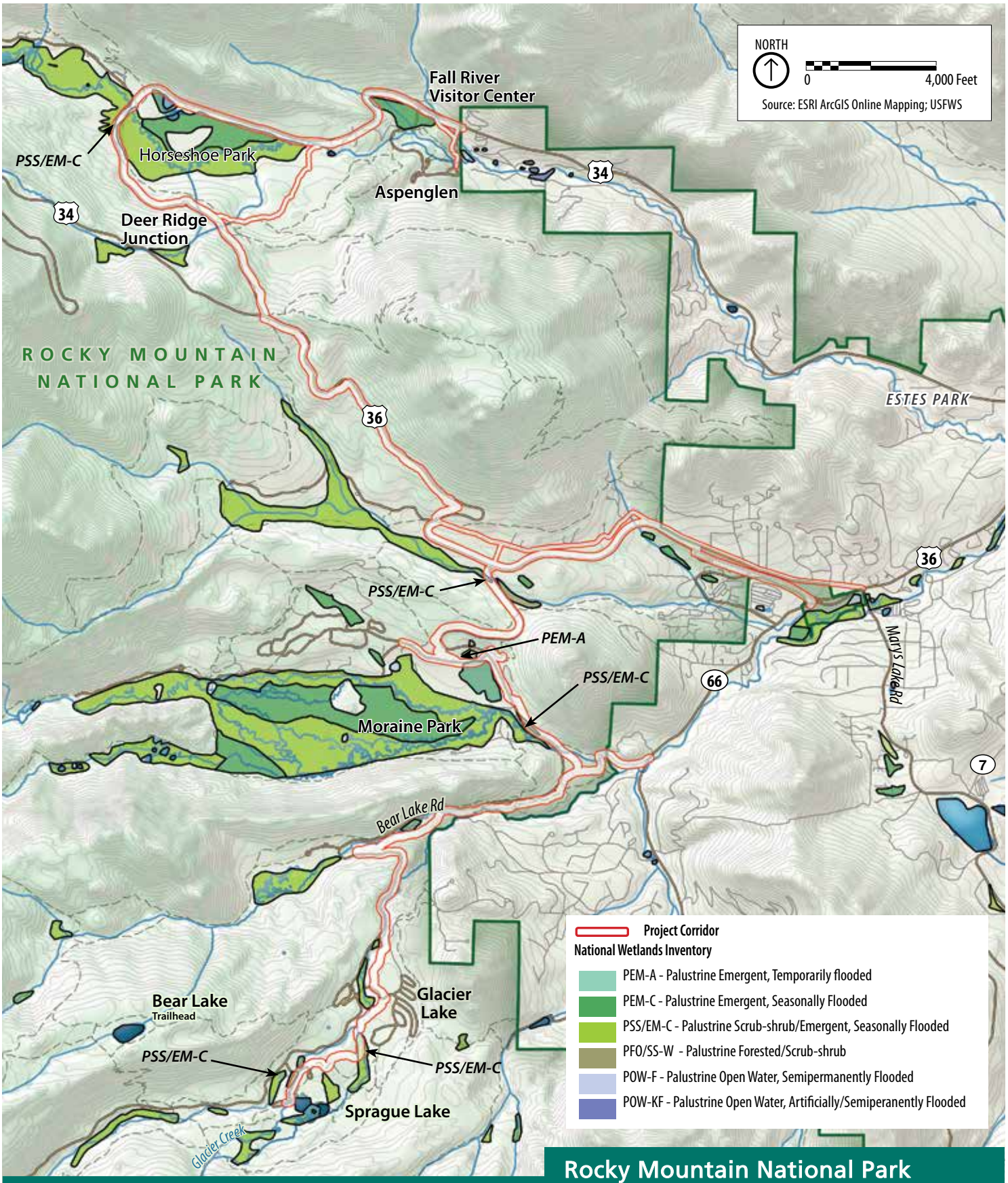

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FIGURE 7

Wetland Overview Map

Based on wetland classification following the "Cowardin System" (Cowardin et al. 1979), seven different types of wetlands and streams were identified within the project corridor. The wetlands are classified by Cowardin (1979) as part of the palustine system (non-tidal, freshwater wetlands) and include forested wetlands, scrub shrub wetlands, emergent wetlands, and open water wetlands. Streams are classified by Cowardin (1979) under the riverine system (wetlands contained with a channel) and include lower perennial stream channel, upper perennial stream channel, and intermittent stream channel (VHB 2013). An overview of all wetlands identified within the approximate 15 mile project corridor is shown in figure 7. It should be noted that all wetlands were surveyed prior to the severe flooding event that took place in September of 2013. Although this flooding caused extensive damage in many wetland areas within the park, the resources within the project corridor sustained relatively minor changes as a result of the flooding.

Of the major wetlands and waters of the U.S. identified within the project corridor, many were found in association with Fall River and Big Thompson River, where the rivers meander through U-shaped valleys with broad floodplains. In Horseshoe Park, Fall River crosses into the project corridor under the U.S. 34 bridge just west of the Sheep Lakes area (figure 4). The river may be categorized as R2UB1 (System-Riverine; Subsystem-Lower Perennial; Class-Unconsolidated Bottom; and Subclass-Cobble Gravel) according to Cowardin et al. (1979). The river channel is approximately 15 to 25 feet wide and is defined by a clear ordinary high water mark. Immediately beyond the river banks, PSS1C (System-Palustrine; Class-Scrub Shrub; Subclass-Broadleaved Deciduous; and Water Regime-Seasonally Flooded) floodplain wetlands are dominated by shrub-sized willow (*Salix* spp.) species, which then transition to PEM1C (System-Palustrine; Class-Emergent; Subclass-Persistent; and Water Regime-Seasonally Flooded) wetlands along the outer boundary of the Fall River floodplain, where elk browsing has stunted plant growth (VHB 2013).

FIGURE 8. OVERVIEW OF WETLANDS AND OTHER WATERS OF THE U.S. NEAR HORSESHOE PARK

Similar palustrine and riverine wetlands are found in Moraine Park in association with the Big Thompson River, just west of the river's crossing with Bear Lake Road. The wetlands and waters of the U.S. resources found in Horseshoe Park and Moraine Park are high in quality, with significant functions and

values for groundwater recharge/discharge, flood flow alteration, sediment/toxicant filtration, nutrient retention, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, and visual quality/aesthetics (ERO 2001, VHB 2013).

Important wetland features within the project corridor are also found in the Sheep Lakes area of Horseshoe Park. The Sheep Lakes wetlands do not consist of true lakes as classified by Cowardin et al. (1979), which generally include deepwater habitats greater than 20 acres in size. Wetlands in the Sheep Lakes area are smaller in size and are only covered by a few feet of water at their deepest point. As a result, they fall under the Cowardin et al. (1979) classification of POW (System-Palustrine and Class-Open Water) wetlands and have a variable width fringe of PEM1C (System-Palustrine; Class-Emergent; Subclass-Persistent; and Water Regime-Seasonally Flooded) wetlands dominated by hydrophytic rushes (*Juncus* spp.) and sedges (*Carex* spp.). While these wetlands are geographically isolated from the larger area of contiguous Fall River floodplain wetlands, they are connected hydrologically due to seasonal hydrologic surface water connections which occur due to the minimal change in elevation across this area of Horseshoe Park. Therefore, significant functions and values of the Sheep Lakes wetlands include groundwater discharge, floodflow alteration, nutrient removal, production export, sediment stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, and visual quality/aesthetics (VHB 2013).

Other major wetlands and waters of the U.S. also include palustrine forested seepage wetlands located east of U.S. 34 as the road approaches Deer Ridge Junction, and palustrine forested riparian wetlands located along Bear Lake Road in association with Glacier Creek and Mill Creek. Most of these wetlands may be categorized as PFO1B (System-Palustrine; Class-Forested; Subclass-Broadleaved Deciduous; and Water Regime-Saturated) according to Cowardin et al. (1979). Streams within the seepage wetlands flow intermittently (occasionally drying up during the year) and may be categorized as R4SB1 (System-Riverine; Subsystem-Intermittent; Class-Streambed; and Subclass-Bedrock). Hydrology in seepage wetlands is provided by high levels of groundwater outflow, expressed within concave hillslopes and microtopography, and dominant vegetation includes Balsam poplar (*Populus balsamifera*), alder (*Alnus* spp.), birch (*Betula* spp.), and sedges (*Carex* spp.). Streams within the riparian wetlands are perennial (flowing year round) and may be categorized as R3SB1 (System-Riverine; Subsystem-Upper Perennial; Class-Streambed; and Subclass-Bedrock). Hydrology in riparian wetlands is provided by groundwater and high levels of overbank flooding from the Glacier Creek and Mill Creek, and dominant vegetation includes alder and willow species. Significant functions and/or values in palutrine forested wetlands within the project corridor include groundwater recharge/discharge, floodflow alteration, sediment/toxicant filtration, nutrient retention, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, and visual quality/aesthetics (ERO 2001, ERO 2006, VHB 2013).

As indicated above, the major wetlands and waters of the U.S. identified within the project corridor are high in quality and have a high level of functional capacity (ERO 2001, ERO 2006, VHB 2013). However, multiple wetlands that were identified within the project corridor have a reduced functional capacity, due to factors such as small size, location in the watershed, limited amount of vegetative cover, poor substrate conditions, etc. For example, several small PEM1C (System-Palustrine; Class-Emergent; Subclass-Persistent; and Water Regime-Seasonally Flooded) wetlands along the northern edge of the Fall River floodplain in Horseshoe Park have reduced wetland hydrology from overbank flooding, and have vegetation reduced by elk browsing (VHB 2013). This results in a reduced functional capacity of these

wetlands within the project corridor. Similarly, wetlands identified near some roadside locations exist in small depressions or narrow drainageways that receive overland runoff from relatively small catchments. Other wetlands and waters of the U.S. with a reduced functional capacity include small ephemeral or intermittent streams with no wetland floodplain (VHB 2013).

HISTORIC STRUCTURES, HISTORIC DISTRICTS, AND CULTURAL LANDSCAPES

The project corridor contains a number of cultural resources, including historic structures, historic districts, and cultural landscapes, as listed below in table 9 and shown on figure 9. Several are listed or determined eligible for the National Register as either historic districts or individual properties, while some have been evaluated for their potential as eligible cultural landscapes. A 1988 Multiple Resource nomination for the park noted 82 resources that were considered contributing resources to the park. The cultural resources are described in the order listed in this section's title, ending with cultural landscapes.

TABLE 9. HISTORIC AND CULTURAL RESOURCES WITH POTENTIAL TO BE AFFECTED

Resource Type	Resource Name
Historic Structures	Beaver Meadows Visitor Center National Historic Landmark
	Trail Ridge Road
	Glacier Basin Ranger Station
	Bear Lake Road
Historic Districts	Fall River Entrance Historic District
	Moraine Park Museum and Amphitheater Historic District
	William Allen White Cabin/Studio Historic District
Cultural Landscapes	Old High Drive Area
	Glacier Basin Campground Area
	Tuxedo Park Residences Area
	Mill Creek Ranger Station and Residence Area

LISTED OR DETERMINED ELIGIBLE HISTORIC STRUCTURES

There are three historic structures that are listed individually in the National Register and one that has been determined eligible by the Keeper of the National Register, the National Park Service individual responsible for final determination of eligibility of properties to the National Register. The Beaver Meadows Visitor Center is a National Historic Landmark that was listed in 2001 as an individual building (NPS 2000). Trail Ridge Road was listed in 1984 (NPS 1983) and also included as part of the 1988 Multiple Resource nomination for the park (NPS 1987). Glacier Basin Ranger Station was listed as an individual building as part of the same Multiple Resource nomination for the park. Bear Lake Road was determined eligible by the Keeper of the National Register on June 13, 2001 (NPS 2015).

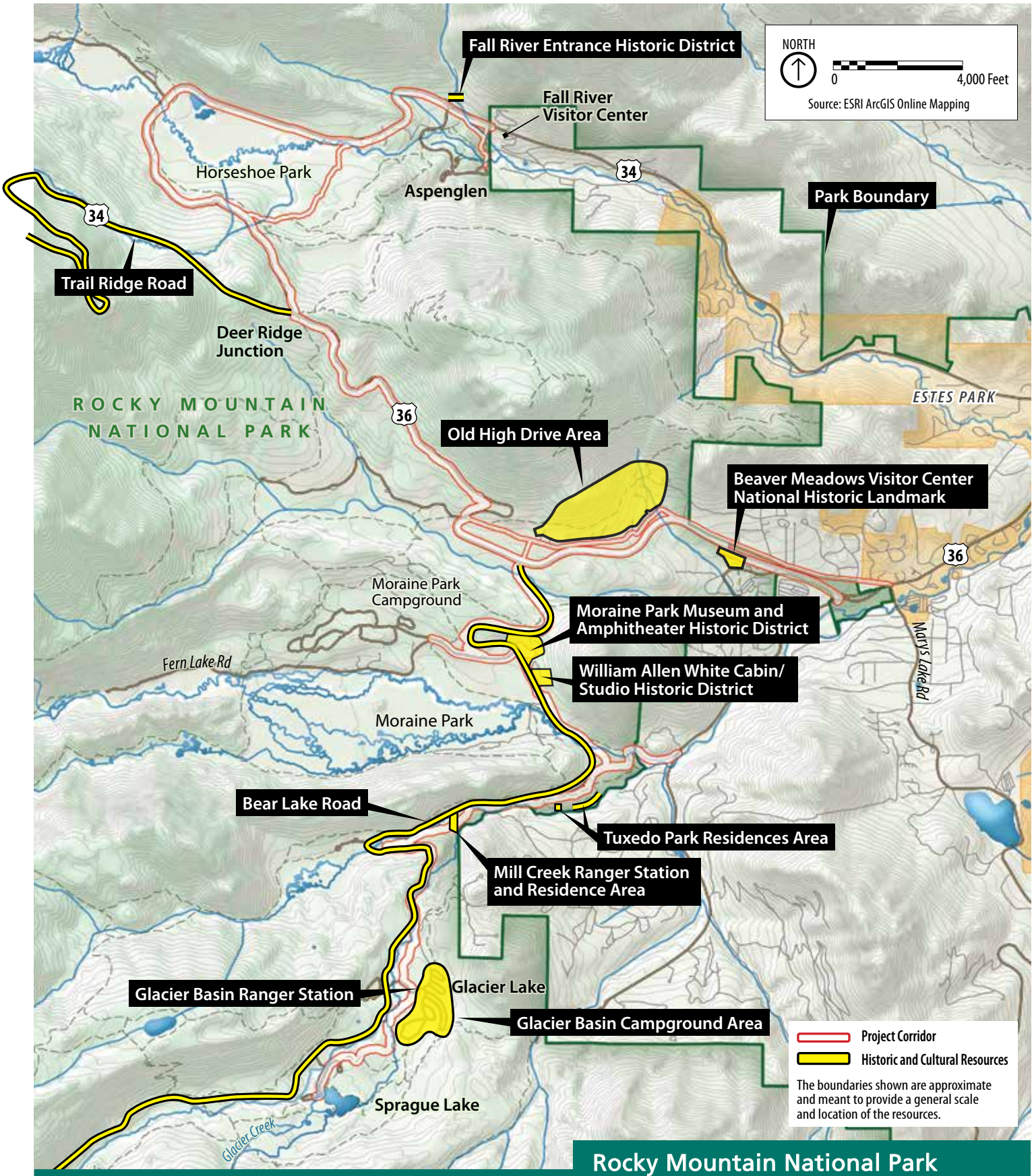

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FIGURE 9

Historic and Cultural Resources with Potential to be Affected

A number of other individual buildings or structures have been determined eligible in consensus findings between the National Park Service and the Colorado State Historic Preservation Office in both 1998, as a result of a comprehensive survey in 1997, and in 2006 (NPS 2015). All of these individual buildings and structures are components of areas that await evaluation as cultural landscapes. They are individually noted in the cultural landscapes section of this chapter.

Beaver Meadows Visitor Center National Historic Landmark (5LR9947)

Beaver Meadows Visitor Center (B-447) was built in 1965-1967 and was designed by Taliesin Associated Architects, the successor firm to Frank Lloyd Wright. The building is considered one of the four most significant and successful examples of the Mission 66-era visitor centers and one of the best examples of the National Park Service Modern style.

The visitor center is located on the south side of US 36, one mile from the park boundary at Beaver Point. Its location near the highway and major park entrance, with accommodations for private vehicles, was emblematic of this new building type. The building also typified other similar visitor centers with its siting within sloping topography to minimize its appearance and blend in with the landscape; unlike earlier park structures, it was not designed to be part of picturesque landscape composition. Plantings around the building, mainly native grasses, were chosen to blend in with the natural environment, and its main landscape components are its views to Longs Peak and groupings of Ponderosa pines.

The visitor center is bordered by an oval-shaped parking area with single-lane entry/exit from an access road off of US 36. A narrow area between the lot and the road is sparsely vegetated with native grasses.

Trail Ridge Road

The highest continuous paved highway in the United States, Trail Ridge Road is 37.9 miles in length from Deer Ridge Junction to the southwestern boundary of the park near Grand Lake. The Federal Highway Administration listed Trail Ridge Road as an All American Road, the highest designation of a National Scenic Byway. The boundaries of the listed structure extend 100 feet on each side of, and parallel to, the road's center line from Deer Ridge Junction to the park's southwestern boundary (NPS 1983). A Historic American Engineering Record report for the road states that contracts for the road actually included reconstruction of the Fall River Entrance to Horseshoe Park and a connector road from Horseshoe Park to Deer Ridge Junction (Quinn 1993).

Built from 1926-1949**,** the two-lane curving road is recognized for its engineering accomplishments and for its role in the development of national park roadways. It was one of the earliest park roads to both provide the public easier access to the park's important features and views of its spectacular scenery, with care taken to preserve natural features.

The asphalt-paved road winds past a changing series of natural scenery, including alpine and subalpine forests, wide meadows, and canyons at varying elevations. Stone and concrete culverts and stone retaining and guard walls, many of them original to the road's construction, line many sections of the road, including within the project area.

Glacier Basin Ranger Station

The Glacier Basin Ranger Station, built in 1930, is recognized as a significant example of the National Park Service rustic style and meets Criterion C (NPS 1987). The 1930 one-story log cabin has an L-shaped footprint on a concrete foundation with side gable roof covered in wood shingles. The logs are square-notched. A log addition to the rear has hog-trough corners. Fenestration consists of grouped windows with divided lights.

The boundaries of the listed property only include the cabin and a very small area around it that consists of native grasses and pine forests.

Bear Lake Road

Bear Lake Road, composed of a series of older roads which pre-date its official construction around 1929, is approximately 9.2 miles in length. The road begins at a junction with Trail Ridge Road to the north near the Beaver Meadows Entrance and ends to the south at Bear Lake.

Bear Lake Road is a winding scenic road through montane and subalpine forests. The scenic quality of forested areas varies from open park-like stands of ponderosa pine with grassland meadows to dense coniferous forest at higher elevations. Pullouts, picnic areas, campgrounds, and trailheads along Bear Lake Road allow visitors an opportunity for photography, wildlife viewing, and enjoyment of the scenic resources of the park. However, many alterations of the roadway during recent reconstruction of the aging road have resulted in diminished aspects of integrity to the historic road.

Bear Lake Road has been the subject of recent work to improve drainage and traffic safety.

LISTED HISTORIC DISTRICTS

Three National Register-listed historic districts are in the project corridor: Fall River Entrance Station Historic District, Moraine Park Visitor Center District and the William Allen White Cabin/Studio Historic District

Fall River Entrance Historic District

The Fall River Entrance was built in 1936 and listed in the National Register as a historic district as part of the Multiple Resource nomination in 1988 (NPS 1987). The Fall River Entrance is located on U.S. 36 about 550 feet east of the Bighorn Ranger Station. The entrance structures consist of three small fee collection stations adjacent to the roadway travel lanes with shallow-pitched gable roofs and wood bases, adjoined by a larger structure of similar form and materials. The two-lane road into the complex is bordered by Ponderosa Pines, highlighted by close mountain views.

The Bighorn Ranger Station (B-169), Residence (B-44), and Bighorn Storage Shed (B-168) were all built in 1936. All of log construction, the buildings reflect the rustic style design seen throughout the park.

The complex's setting beyond the entrance consists of Ponderosa Pine, native grasses and other vegetation which surround the closely-grouped buildings.

Moraine Park Museum and Amphitheater Historic District (5LR477)

The listed historic district includes a single building, the Moraine Park Visitor Center (B-217) (now called the Moraine Park Discovery Center), an amphitheater in a natural bowl setting, and the natural and man-made features that compose their setting and provide access and drainage functions (NPS 2005).

The Visitor Center, a large two and a half story log building on an immense stone foundation, was originally built in 1923 on the east side of Bear Lake Road on the edge of a Ponderosa pine forest on the hillside of a glacial moraine. It originally served as an assembly hall for the Moraine Park Lodge, a tourist lodge. In 1931 the park purchased the property and in 1936 remodeled it for use as a museum.

The Moraine Park Museum is part of the Moraine Park Museum and Amphitheater Historic District features views of Longs Peak, which dominate its setting.

As part of the new approach to interpretation the park also built an amphitheater. The amphitheater is built into a natural bowl with log seats and stone supports with three aisles, with most original features remaining. The district was originally placed in the National Register in 1976 and amended in 2005 to include the amphitheater and the greater landscape. The larger site of the building, a designed landscape containing trails, parking, amphitheater and plantings, was not recognized in early nominations, even though the site was planned as one entity during the rehabilitation of the Moraine Park Lodge by the Conservation Civilian Corps (CCC) in 1935.

The contributing resources to the district include the building, amphitheater, the parking lot (an elongated oval) and entry drive, paths to the amphitheater, and its native vegetation and trees.

William Allen White Cabin/Studio Historic District

This five-acre complex along the east side of Bear Lake Road is situated on the west slope of Eagle Cliff Mountain with access off of Bear Lake Road. The complex consists of the William Allen White house (B-719), a studio (B-720), an upper sleeping cabin (721), a lower sleeping cabin (B-722), and a pit privy (B-789). The buildings were originally placed in the National Register in 1973, but also listed as a historic district as part of the 1988 Multiple Resource nomination for the park (NPS 1987). Rocky Mountain National Park has adaptively reused the main William Allen White house as temporary quarters for its Artist in Residence program, which operates during the summer. The other buildings are currently not used.

Buildings are oriented to the views west of Moraine Park and the sloping topography. The circulation pattern within the historic district consists of an entrance road that is an alteration from the original access, although the buildings' spatial relationships are unchanged. Its undeveloped natural setting includes distant views of mountains and open meadows west and southwest, as well as a more recent pull-out in the foreground on the west side of Bear Lake Road. Circulation within the complex is mostly

formed by small informal unpaved paths and a set of stone-lined steps between the cabin and studio and some stone steps between the cabin and the Scottage House (privately owned to the north).

CULTURAL LANDSCAPES

Evaluation of cultural landscapes within Rocky Mountain National Park is not complete, although the evaluation process has been accomplished or is in process for several landscapes within the project corridor.

Two cultural landscapes – Beaver Meadows Visitor Center area and the Moraine Park Museum and Amphitheatre area – have previously been deemed to possess the potential as a cultural landscapes (Alex Hernandez, RMNP, 2014). Both properties are listed in the National Register. Both Trail Ridge Road and the William Allen White Cabin/Studio Historic District, both listed in the National Register, are the subject of draft cultural landscape evaluations that are not yet complete.

Six additional landscapes within the project corridor await evaluation as potential cultural landscapes. These landscapes are Bear Lake Road area and Fall River Road Entrance area, which are described above under Historic Structures and Historic Districts, respectively, Old High Drive Road area, Glacier Basin Campground area, the Tuxedo Park Residences area, and the Mill Creek Ranger Station area. The other landscapes either contain individually listed properties or have been subject to a consensus determination of eligibility in either 1998 or 2006.

Old High Drive Road Area

The individual buildings and the road itself within the Old High Drive Road area were determined eligible in 1998 in a consensus decision between the National Park Service and the Colorado State Historic Preservation Officer (NPS 2015). The complex is located northwest of the Beaver Meadows Visitor Center, accessed by High Drive Road, which is parallel to U.S. 36. The Old High Drive Road area includes the 1920 Hoffmeister Residence, 1930 Gillen Residence (altered 1952 and 1983) and its associated bunkhouse, and the 1930 Johnston Residence (altered 1982 and 1984), from west to east, which are all considered significant for their association with the development of the ranching and resort industries (criterion A) and rustic design (criterion C). Each property has a separate winding road that leads north from High Drive Road. Although relatively close to this older road, especially the Hoffmeister and Gillen residences, each is sheltered from open views of the road by groups of ponderosa pine. Wide views to the south of numerous mountains is a key aspect of these properties' settings.

The Glacier Basin Campground Area

The Glacier Basin Campground area includes the 1930 ranger station individually listed in the National Register in 1988, the campground quarters from 1937, which was determined eligible in a consensus decision with the Colorado State Historic Preservation Officer in 2006 (NPS 2015), and the 1939 fire hose house, determined eligible in a consensus decision with the Colorado State Historic Preservation Officer in 1998 (NPS 1997). All of the small, one-story buildings are representative of the NPS rustic style, executed either in log or wood siding with side gable or shed roofs.

The campground area is on a rise of land accessed from the west by Bear Lake Road, with Glacier Creek and a large swath of pine trees between the road and the campground. The campground's layout consists

of a series of looped paths aligned to a single long road. The immediate setting is composed of tall ponderosa pines and other native vegetation, with large boulders and smaller stones dotting the bare ground. The campground's view to the west encompasses views of large mountains, including Thatchtop, Flattop, and Notchtop Mountains, with a wide meadow in the foreground edged by pine trees.

Tuxedo Park Residences Area

The Tuxedo Park area contains three residences and one garage, which are of slightly later dates of construction than other areas in the park, but still bear a strong design association with the popular rustic style in the park. Rocky Mountain National Park is adaptively reusing these residences to house seasonal employees during the summer. The Tuxedo Park residences are located in a flat area accessed by a dirt road on the south side of Bear Lake Road and adjacent to Glacier Creek. The residences are fairly well hidden from Bear Lake Road by a pine-forested area. The buildings are surrounded by tall ponderosa pines and native understory vegetation amidst a boulder-studded landscape.

The Tuxedo Park area contains three residences and a garage within a heavily wooded setting.

The Norlin Residence (B-678) was built in 1953 and determined eligible for the National Register in 2006 in a consensus determination of eligibility with the Colorado State Historic Preservation Officer (NPS 2015). The Tinsley Residence (B-697), designed by architect V. F. Tinsley, was built in 1939 and determined eligible for the National Register in 1998 (NPS 1997). The Grosvenor Residence (B-716) and Garage (B-807), which both date to 1935, were also determined eligible in 1998 (NPS 1997) in a consensus decision with the Colorado State Historic Preservation Officer. All of the small one-story buildings continue the architectural tradition of the NPS rustic style more commonly seen earlier in the 20th century.

Mill Creek Ranger Station and Residence Area

Both the ranger station and residence are located amidst dense pine tree concentrations southeast of Bear Lake Road. The present Mill Creek Ranger Station (B-36), distinguished by its river rock base, series of front windows, and wide eaves was constructed in 1926 as a result of the 1926-1928 construction of Bear Lake Road, which consisted of the realignment of a series of older roadways. Both the station and the Mill Creek Residence, a similar log structure that was built in 1931, were both determined eligible in a consensus decision with the Colorado State Historic Preservation Officer in 1998 (NPS 1997). The area also includes the Mill Creek Garage (B-262), Mill Creek Garage (B-407), and the Mill Creek Woodshed (263); all of the buildings are actively used by the park. The Mill Creek Ranger Station and associated buildings, all one-story buildings of wood or log construction, reflect the predominant NPS rustic style of architecture.

SITE ACCESS AND CIRCULATION

Visitors use various means to access and circulate within the park. There are four visitor entrance stations in Rocky Mountain National Park that are staffed by park employees. Over 1 million vehicles were counted at the park's major visitor entrance stations during 2014 (NPS 2015d). Traffic is much higher during the summer months than during the rest of the year. Summertime motor vehicle traffic in the park varies by location. For example, average daily traffic on U.S. 34 just outside the Fall River Entrance is 2300 (2013). On U.S. 36 just outside the Beaver Meadows Entrance the average daily traffic is 11,000. In 2014 Rocky Mountain National Park recorded the following vehicle totals entering the park at the three main entrances.

- Beaver Meadows Entrance: 539,236
- Fall River Entrance: 273,139
- Grand Lake Entrance: 184,906

The majority of visitors access the park in personal or rental vehicles. Visitors can also hire private operators, including tour bus, taxi, private shuttle, and jeep tours to access the park. From May to October visitors can access and circulate through the park via a free shuttle service. Some visitors access the park on bicycles, which are allowed on roadways. Other visitors walk into the park along trails that connect to adjacent properties.

ROADWAY SYSTEM

There are approximately 92 miles of paved and 28 miles of unpaved roadway surface within the park. The key paved roadways included within the project corridor include U.S. 34 and U.S. 36, and Bear Lake Road. These roads have two through travel lanes (one travel lane in each direction), some segments include paved shoulders, and lane widths vary from 11 to 12 feet wide. Over most of U.S. 34 and U.S. 36 the speed limit is 35 miles per hour (mph). On Bear Lake Road the speed limit is generally 35 mph, slowing to 25 mph where there are steep grades and sharp curves.

Bicycles are permitted only on roadways within the park in accordance with 36 CFR 4. They are prohibited from traveling elsewhere in the park. There are no designated bicycle lanes along park roadways. However, Trail Ridge Road and Bear Lake Road are popular with road bicyclists.

TRAILS

The park currently has 355 miles of hiking trails which traverse the various topographic features of the mountainous park and cross park roads (NPS 2009b). Approximately a dozen hiking and equestrian trails traverse the project corridor. Trails that intersect or originate near the proposed multiuse trail include the livery trail from Gateway Stables, the trail that skirts the south edge of Horseshoe Park and leads to the Lawn Lake Trailhead, the Deer Mountain Trail, the Beaver Meadows to Deer Ridge trail, the Buck Creek Trail, the Beaver Meadows to Moraine Park complex (including the Beaver Point Trails), the Moraine Park to Tuxedo Park Trail, the Tuxedo Park to Hollowell Park Trail, and trails in the vicinity of Sprague Lake.

PARKING AND PULLOUTS

Overall, there are about 2,000 parking spaces distributed throughout numerous parking areas within the park. In the project corridor parking lots range in size from just a few spaces to 400 at the Park-and-Ride. Park staff has observed parking areas at some popular locations, such as Bear Lake and Glacier Gorge, often fill to capacity early in the day and stay full through mid-afternoon during the peak of the summer and early fall season.

Along Bear Lake Road, U.S. 34, and U.S. 36 there are numerous pullouts at scenic locations, popular fishing spots, and picnic areas. Most locations include just a few parking spaces that are parallel to the road. There are several notable exceptions where there are a larger number of parking spaces. Along U.S. 34 these are the Sheep Lakes overlook in Horseshoe Park, West Horseshoe Park, and at Deer Ridge Junction, which is a popular trailhead. Along U.S. 34 there are 89 parking spaces at the Beaver Meadows Visitor Center. Along Bear Lake Road, in addition to the 400-space park-and-ride, there are parking areas at the Moraine Park Discovery Center, at the Tuxedo Park picnic area, at Hollowell Park, and at Sprague Lake. Throughout the proposed multiuse trail corridor there are over 700 designated parking spaces in addition to numerous pullout parking areas. During the busiest days in the summer and early fall, these pullouts and parking areas often fill to capacity.

SHUTTLE SERVICE

A free shuttle service operates three routes – the Bear Lake Route, the Moraine Park Route, and the Hiker Shuttle – from late May through early October. The Bear Lake Route runs every 10 – 15 minutes from 7 a.m. to 7:00 p.m. The Moraine Park Route runs every 30 minutes from 7:00 a.m. to 7:00 p.m. The Hiker Shuttle Route, which transports hikers from Estes Park to the Beaver Meadows Visitor Center and the Park-and-Ride, operates from 6:30 a.m. to 7:30 p.m. The shuttle runs every hour between 6:30 a.m. and 10:00 a.m. and runs every 30 minutes between 10:00 a.m. and 6:00 p.m. The Hiker Shuttle runs on an hourly schedule after 6:00 p.m. The shuttle system does not currently accommodate bicycles (no racks are available, and bicycles are not allowed on board).

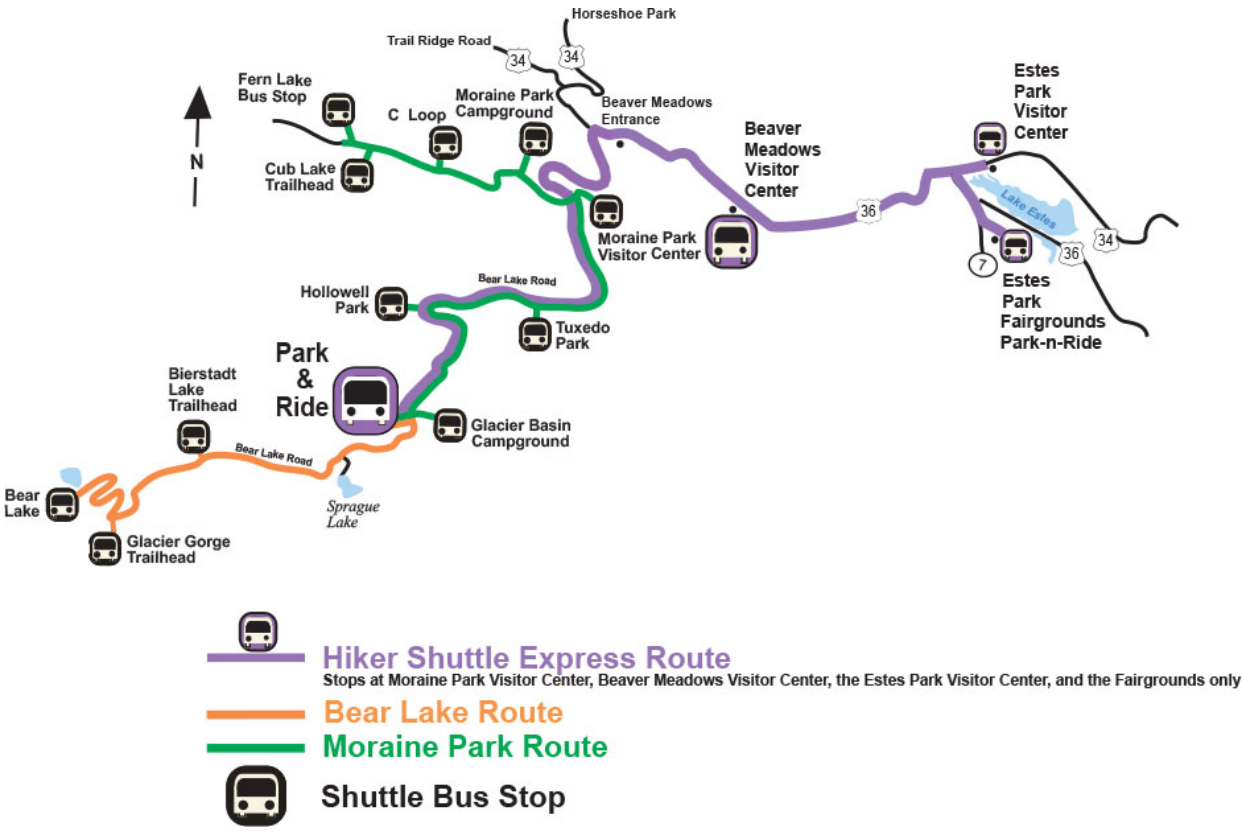

FIGURE 10. ROCKY MOUNTAIN NATIONAL PARK SHUTTLE SYSTEM

Visitors can choose to use the park's shuttle service to supplement travel through the project corridor. (Photo credit: NPS)

VISITOR USE AND EXPERIENCE

Rocky Mountain National Park was the fifth most visited national park in 2014 with 3,434,751 visitors (NPS 2015f). Visitation to the park has steadily increased over the past century, rising from about 15,000 visits in 1915 to over 3.4 million annual visits today. Annual visitation to the park has hovered around 3 million for the past 20 years. Visitors use various means to access and circulate within the park, as described under the previous section. There are four staffed visitor entrance stations in Rocky Mountain National Park. Over 1 million vehicles were counted at the park's visitor entrance stations during 2014 (NPS 2015d).

The park protects natural, scenic, and cultural resources and provides visitor experiences that depend upon these resources. Visitors place the highest value on protection of native wildlife, natural scenery/undeveloped vistas, clean air (visibility), and clean water (Blotkamp et al. 2011; Papadogiannaki, Le, and Hollenhorst 2011). Items that have been noted as detracting from visitor experience within the park include crowding, noise from vehicle/trucks/motorcycles, and horse use of trails (Blotkamp et al. 2011).

In the park's developed eastern area (the location of this project) visitors engage in a variety of activities, including scenic drives, wildlife viewing, photography, picnicking hiking/backpacking, rock-climbing, camping in the campgrounds, backcountry camping, horseback riding, biking (on park roads), and fishing. Winter activities include cross-country skiing, snowshoeing, and tubing. The most common visitor activities include viewing scenery and wildlife viewing/bird watching (Blotkamp et al. 2011; Papadogiannaki, Le, and Hollenhorst 2011). In the summer, common activities also include driving Trail Ridge Road and day hiking (Blotkamp et al. 2011), and in the winter, snowshoeing (Papadogiannaki, Le, and Hollenhorst 2011). Trails support the park's most popular activities and allow visitors to set their own pace. A vast majority of visitors (95% in the summer and 96% in the winter) consider trails as "Very Important" or "Extremely Important" visitor facilities, and most consider the park's trails to be very good quality (Blotkamp et al. 2011; Papadogiannaki, Le, and Hollenhorst 2011).

Many visitors currently use the project corridor for a scenic drive or bicycle trip and stop at the various overlooks and pullouts along the route. In a recent survey, 74% of summertime visitors rated the roads as an "Extremely Important" visitor facility, 88% rated scenic overlooks as either "Very Important" or "Extremely Important" visitor facilities, and 82% ranked the quality of the park's scenic pullouts as above average (Blotkamp et al. 2011).

On U.S. 34, between the Fall River Entrance and Deer Ridge Junction, the project corridor provides access to three overlook areas and the West Horseshoe Park Trailhead. The overlooks provide an opportunity to view the wetland setting of the Fall River as it winds through Horseshoe Park. This area is also often used by bighorn sheep and elk; therefore, these overlooks are extremely popular for wildlife viewing during the summer and early fall.

Visitors gather to watch bighorn sheep cross U.S. 34 to travel between the mountains and Sheep Lakes in West Horseshoe Park. (Photo credit: NPS)

The intersection of U.S. 34 and U.S. 36 is known as Deer Ridge Junction. This area is heavily used by visitors for travel through the park and for parking along the road for access to the Deer Mountain Trailhead. There is a high volume of traffic during the peak season travelling to and from Trail Ridge Road (U.S. 34 as it continues towards the Continental Divide), and seven motor vehicle accidents have been recorded by park staff in the past five years (NPS 2013a).

Visitors entering the park along U.S. 36 pass the Beaver Meadows Visitor Center, where they have an opportunity to park and catch the Hiker Shuttle. Visitors who continue into the park in private vehicles enter the park through the Beaver Meadows Entrance Station and can either travel north towards Deer Ridge Junction (this route is another popular area for elk sightings) or south on Bear Lake Road.

Bear Lake Road has numerous parking and pullout areas and intersects with and provides access to several existing park trails. Approximately 1.25 miles south of U.S. 36, Moraine Park Discovery Center is located on the east side of the road, and Moraine Park Road branches off Bear Lake Road to the west, connecting to the Moraine Park Campground and shuttle stop. From Moraine Park, visitors are presented with panoramic views of the Continental Divide, and the meadow is another popular elk viewing area.

As visitors travel south, Bear Lake Road crosses the Big Thompson River and offers access to Tuxedo Park, which includes a picnic area and shuttle stop, and further south, Hollowell Park includes a picnic area, restrooms, and a shuttle stop. Visitors choosing to drive further south along Bear Lake Road can go to Glacier Basin Campground and Sprague Lake, which offers multiple trailheads, a livery, a picnic area, and restrooms. Visitors who choose to experience this area by shuttle can park at the shuttle park-and-ride lot along Bear Lake Road across from Glacier Basin to take the shuttle to other portions of the developed eastern area of the park.

Throughout the project corridor, bicycling is permitted on all park roadways unless otherwise posted or restricted due to seasonal closures. While bicycling is permitted on park roads, not all visitors are comfortable with sharing the road. Road shoulders vary in width from almost non-existent to 4 feet. Because of very limited off-road opportunities and lack of on-road accommodations, use of the park by bicyclists is limited to "strong and fearless" bicyclists, which comprise a very small proportion of bicyclists (Dill and McNeil 2012). In addition to the inherent and perceived risks of bicycling on road shoulders, the steep grades and elevations that range from 7,650 to 8,900 feet above sea level may discourage some visitors from bicycling altogether. Riding on park roadways may adversely affect the experience for others by requiring them to concentrate on traffic and their own safety rather than on the scenic views. Although rare, accidents have the potential to be serious. The park regularly receives complaints from motorists about bicycles on the roadways within the park. Some motorists view the activity as dangerous, and some are hesitant to pass bicyclists on the steep winding roads within the park.

Although there are no official, signed pedestrian crossings within the project corridor, pedestrians cross at many locations, primarily within developed activity areas. It is also not uncommon for people to randomly pull to the side of road, and cross the roadway on foot to view wildlife.

PARK OPERATIONS

At 415 square miles, Rocky Mountain National Park requires substantial manpower and resources to provide the numerous services, amenities, and opportunities made available to visitors. The park is open to visitors 24 hours a day year-round. While each visitor center's hours vary, they are all open daily for a time frame between 8am and 5pm with exceptions due to weather, Thanksgiving, and Christmas. The extensive operating hours of the park lead to closures of certain areas when maintenance is required.

The Facility Management Division maintains the physical facilities, such as roads, shuttle stops, parking areas, signage, and trails. Road and parking area maintenance includes paving, patching, and striping. These surfaces are also plowed and sanded during the winter. With oversight by the Federal Highway Administration, the park recently completed the reconstruction or overlay of all the paved roads within the park. The most notable road projects were the reconstruction of the south 4.3 miles of Bear Lake Road (completed in 2004) and the reconstruction of the north 5 miles of Bear Lake Road (completed in 2013).

The free shuttle service is currently provided under a contract for service for up to ten years. Under this performance-based contract, the contractor is responsible for developing and implementing a Quality Control Plan, and the park monitors the operations through a variety of service measures.

In order to help visitors plan a safe visit, park staff regularly update the trail conditions on the park website. Hikers are also warned about hazards such as falling trees, unstable slopes, areas that may be burning during wildland fires, and damaged trail structures. Numerous trails in the park sustained major damage during the fall 2013 flood. Park staff and volunteers maintain the trails. Forest fires lead to additional enforcement efforts from park staff including reminding visitors of existing fire restrictions and enforcing trail closures to ensure visitor safety. Staff in the Resource Protection and Visitor Management Division currently attends to and documents motor vehicle accidents. Since 2008, park staff documented seven incidents, none of which involved pedestrians or bicyclists. These park employees are also responsible for emergency medical services and search and rescue efforts.

As mentioned earlier, bicycles are permitted only on roadways within the park in accordance with 36 CFR 4. They are prohibited from traveling elsewhere in the park. Currently Rocky Mountain National Park expends less than 1% of its budget directly on the management of bicycles in the park, out of a Fiscal Year budget of approximately $20 million.

SOCIOECONOMIC RESOURCES AND GATEWAY COMMUNITIES

The park is one of the most popular tourist attractions in the State of Colorado, attracting more than 3.2 million visitors in 2012 (NPS 2013d). In 2010, the park's nearly 3 million visitors were likely the main contributor to the 174,202 overnight stays in Estes Park and more than $223 million in local spending (98 percent from non-local visitor spending) (NPS 2010). This spending supported 2,696 jobs, $79.1 million in labor income, and $132.1 million of value added to the community (NPS 2010). Non-local spending is primarily related to overnight accommodations and restaurants, totaling $87.4 million in 2010, or 60 percent of the overall direct spending in the region (NPS 2010).

The socioeconomic region of influence is a three county area encompassing Larimer, Boulder, and Grand counties in Colorado. The three-county area determination is based on the location of Rocky Mountain National Park and the inextricable linkages between visitors attracted to the park and the economic and social structures of these three counties. In recent years, visitation to Rocky Mountain National Park has averaged about 3 million recreational visits per year. About 80 percent of the annual visitation to the park occurs from May through September.

Estes Park, located in Larimer County, is the primary gateway community associated with the eastern entrances to the park. There are 128 lodging establishments in Estes Park, with a total of 2,938 rooms (Estes Park 2012). The community also offers 255 tent spaces and 731 RV spaces for overnight visitors (Estes Park 2012). Over time, the region's exceptional scenic, wildlife, and outdoor recreation opportunities have gained worldwide recognition and stimulated strong residential and commercial development. Such development has resulted in changes in the composition of the visitor and resident populations. In turn, those changes have fostered concerns regarding open space in Larimer and Boulder counties, and community interest in sustainable development, economic prosperity, and quality of life has grown. The population of the Estes Valley area, including Estes Park, was 8,691 in 2010. The population of the Town of Estes Park (5,858) was an 8 percent increase over the town's population in 2000, and an 84 percent increase since 1990. However, during the same time period, the population of Unincorporated Estes Valley increased dramatically (21.5 percent between 1990 and 2000) and then dropped back to approximately 1990 levels (2,833 persons) in 2010 (2,833 persons) (USCB 2010). It is believed that, due to Census questionnaire distribution methods, the area population was significantly undercounted in 1990 (Estes Park 1996), which accounts for the large increase in population between 1990 and 2000. The reason for the decline between 2000 and 2010 is unknown.

The average household size in Estes Park in 2010 was 2.08 persons, compared to a statewide average of 2.49 persons. The median age of Estes Park residents is 51.5, comparable to the statewide average of 52.7, but suggesting that many local residents are retirees (USCB 2010).

Tourism and recreation is the largest industry in the Estes Valley, evidenced by relative prominence of the retail, service, construction, and related economic sectors that benefit from visitors who vacation at Rocky Mountain National Park and in Estes Park. Direct tourism and recreation account for more than 40% of the Estes Valley economy (RMNP Elk and Vegetation Management Plan). Several amenities exist in the Estes Valley area, all of which draw visitors to come to and remain in the area. In addition to Rocky Mountain National Park, these recreational opportunities include Roosevelt National Forest; the shopping districts of the Town of Estes Park; YMCA of the Rockies; the facilities of the Estes Valley Recreation and Parks District, including two golf courses; and the Big Thompson River. Additionally, the Town of Estes Park holds events year-round that draw visitors, such as ethnic festivals, gallery tours, the Estes Park Wool Market, the Rooftop Rodeo, and Elk Fest, and the Longs Peak Scottish-Irish Highland Festival.

The gateway community west of the Continental Divide is the town of Grand Lake. While tourism also drives the Grand Lake economy, which is inextricably linked with Rocky Mountain National Park, because of its location west of the national park, it lies outside the sphere of potential economic influence of the proposed multiuse trail.

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ENVIRONMENTAL CONSEQUENCES

This "Environmental Consequences" chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this EA. This chapter also includes methods used to analyze direct, indirect, and cumulative impacts. A summary of the environmental consequences for each alternative is provided in table 5, which can be found in "Chapter 2: Alternatives." The resource topics presented in this chapter and the organization of the topics correspond to the resource discussions contained in "Chapter 3: Affected Environment."

GENERAL METHODOLOGY FOR ANALYZING IMPACTS

In accordance with the Council on Environmental Quality regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16) and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts are also described and incorporated into the evaluation of impacts. The specific methods used to assess impacts for each resource may vary; therefore, these methodologies are described under each impact topic.

GEOGRAPHIC AREA EVALUATED FOR IMPACTS

Unless otherwise specified for a particular impact topic, the geographic study area is generally defined as an area of approximately 100 acres including the area where the trail would be installed and the area surrounding and adjacent to the proposed multiuse trail alignment. This area is generically referred to as the project corridor.

DURATION OF IMPACT

The duration of an impact defines how long the impact may last following implementation of an action. Wherever possible, the analysis quantifies the actual length of the expected impact. Otherwise, impacts are defined as either short-term or long-term and are not generally both. The following terms are used for all impact topics to allow for easy summarization.

Short-term: Impacts that last a relatively brief time following an action and/or are temporary in nature. Short-term impacts typically are less than 1 year in duration.

Long-term: Impacts that last a relatively long time following an action and/or may be permanent. Long-term impacts typically are 1 year or longer in duration.

TYPE OF IMPACT

Impacts are discussed by type, as follows (the terms "impact" and "effect" are used interchangeably throughout this EA):

Direct: Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).

Indirect: Impacts that would occur as a result of the proposed action but later in time or farther in distance from the action (40 CFR 1508.8).

Adverse: An impact that causes an unfavorable result to the resource when compared to the existing conditions.

Beneficial: An impact that would result in a positive change to the resource when compared to the existing conditions.

ASSESSING IMPACTS USING COUNCIL ON ENVIRONMENTAL QUALITY CRITERIA

The impacts of the alternatives are assessed using the Council on Environmental Quality definition of "significantly" (1508.27), which requires consideration of both context and intensity:

(a) **Context** – This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) **Intensity** – This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect would be beneficial.

(2) The degree to which the proposed action affects public health or safety.

(3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetland, wild and scenic rivers, or ecologically critical areas.

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

(5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

(8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

(9) 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.

(10) Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

For each impact topic analyzed, an assessment of the potential significance of the impacts according to context and intensity is provided in the "Conclusion" section that follows the discussion of the impacts under each alternative. Resource-specific context is presented in the Methodologies section under each resource topic and applies across all alternatives. Intensity of the impacts is presented using the relevant factors from the list in (b) above. Intensity factors that do not apply to a given resource topic and/or alternative are not discussed.

CUMULATIVE IMPACT ANALYSIS METHODOLOGY

To determine the potential cumulative impacts, completed, existing, and anticipated future projects within the project corridor and in the surrounding area were identified. The projects and plans identified include Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, fire management, Estes Park trail plans, and reconstruction of the Fall River Entrance. In defining the contribution of each alternative to cumulative impacts, the following terminology is used:

Imperceptible: The incremental effect contributed by the alternative to the overall cumulative impact is such a small increment that it is impossible or extremely difficult to discern.

Noticeable: The incremental effect contributed by the alternative, while evident and observable, is still relatively small in proportion to the overall cumulative impact.

Appreciable: The incremental effect contributed by the alternative constitutes a large portion of the overall cumulative impact.

CUMULATIVE ACTIONS IDENTIFIED

Bear Lake Road Reconstruction

The *Rocky Mountain National Park Transportation Study* (Parsons Brinkerhoff Quade & Douglas, Inc. 2000) found that park roads required substantial work to repair and maintain them. During this study, Bear Lake Road was identified as a high priority project because of the deterioration of the pavement, safety concerns, and the need for improvements to accommodate existing and future expansion of shuttle bus service. After the initial EA (completed in 2001), approximately 4.3 miles of Bear Lake Road between the park and ride and Bear Lake were reconstructed in 2003 and 2004. An EA for phase 2 was subsequently published in 2009 and evaluated additional alternatives which considered realignment of a segment of the road away from Glacier Creek to prevent impacts on wetlands, riparian habitat, and water quality. Reconstruction of this 5.1-mile portion of Bear Lake Road, including the new segment to avoid Glacier Creek, was completed in 2013. The reconstruction of Bear Lake Road has the potential to impact soils, topography, and geology; wetlands and waters of the U.S.; vegetation; wildlife and wildlife habitat; historic structures, historic districts, and cultural landscapes; site access and circulation; visitor use and experience; and park operations.

Commercial and Personal Horse Use

The park has approximately 260 miles of trails which are open to commercial and private horse use. In 1993, the park published the *Commercial Horse Use Management Plan and Environmental Assessment* with the purpose of managing horse use in balance with the preservation of natural and cultural resources. Commercial and personal horse use has the potential to impact soils, topography, and geology; wetlands and waters of the U.S.; vegetation; wildlife and wildlife habitat; site access and circulation; visitor use and experience; park operations and socioeconomic resources and gateway communities.

Vegetation Management

The park has implemented a number of vegetation management practices and plans including the *Bark Beetle Management Plan Environmental Assessment*, the *Invasive Exotic Plant Management Plan and Environmental Assessment*, and the *Vegetation Restoration Management Plan, Version 2*. The *Bark Beetle Management Plan Environmental Assessment* proposes a proactive approach to manage two genera of native bark beetles and identifies strategies to protect high-value trees in developed areas of the park and to cooperate with private inholders within the park and adjacent landowners to accomplish common goals. Part of this plan includes identifying and removing infested trees and hazard trees, many of which are along roadsides or near picnic areas. The purpose of the *Invasive Exotic Plant Management Plan and Environmental Assessment* is to treat areas infested with invasive exotic plant species and to maintain biodiversity at the park. The *Vegetation Restoration Management Plan, Version 2* provides the means by which guidelines, procedures, and techniques can be developed, refined, and applied to vegetation restoration activities in the park. The goals of the plan are site stabilization, control of non-native species, and restoration of natural communities and steady-state ecosystems. Vegetation management efforts have the potential to impact soils, topography, and geology; wetlands and waters of the U.S.; vegetation; wildlife and wildlife habitat; historic structures, historic districts, and cultural landscapes; visitor use and experience; and park operations.

Fire Management

In accordance with Director's Order 18, *Wildland Fire Management*, the park published its *Fire Management Plan* in 2012. The park established six goals with the plan which include providing for the safety of employees and the public through all phases of fire management; protecting communities and infrastructure, as well as natural and cultural resources from the potential adverse impacts of unwanted wildfire; and restoring and maintaining fire-adapted ecosystems and implement strategies that use fire to the maximum extent possible, allowing park ecosystems to exhibit a high degree of resiliency. Fire management has the potential to impact soils, topography, and geology; wetlands and waters of the U.S.; vegetation; wildlife and wildlife habitat; historic structures, historic districts, and cultural landscapes; and park operations.

Estes Park Trail Plans

The Estes Valley Recreation and Parks District plans for several trails and trail segments to become part of the larger Estes Valley trail system. The Estes Valley Recreation and Parks District received a planning grant in 2013 from Great Outdoor to support development of a Comprehensive Trails Master Plan for the Estes Valley. The Estes Valley Recreation and Parks District will use this grant to work with the NPS's River, Trails, and Conservation Assistance Program to help connect the various trail networks in the Estes Valley. In addition the Estes Valley Recreation and Parks District invited the US Forest Service, Larimer County, the Town of Estes Park, YMCA of the Rockies, the Estes Valley Land Trust, Boulder Country Parks and Open Space, Colorado Department of Transportation, and Colorado Parks and Wildlife to participate in this planning effort. No town multiuse trails connect to the park because there are no park facilities to receive users. Future town trails could connect with park trails. The Estes Park trail plans have the potential to impact site access and circulation; visitor use and experience; park operations; and socioeconomic resources and gateway communities.

Reconstruction of Fall River Entrance

The park has plans to reconstruct the Fall River Entrance in the foreseeable future to better accommodate the number of visitors using that entrance. Reconstruction could include roadway widening which would require removal of vegetation and changes in topography in areas that could be impacted by the multiuse trail. Reconstruction of the Fall River Entrance has the potential to impact soils, topography, and geology; vegetation; historic structures, historic districts, and cultural landscapes; and park operations.

SOILS, TOPOGRAPHY, AND GEOLOGY

METHODOLOGY

Potential impacts on soils, topography, and geology are assessed based on the current descriptions presented in chapter 3 of this EA. Each of the soils, topography, and geology were compared with the alternatives described in chapter 2 to determine how each resource would be impacted. Resource-specific context for assessing impacts of the alternatives on soils, topography, and geology includes the following:

- Soil, topographic, and geologic features found within the project area include resources that commonly found with the park. Of the park's 266,825 total size in acres, approximately 16,131 acres (6%) are underlain by the soil types and complexes that occur within the project area
- Soil, topographic, and geologic features are a critical part of the ecological community. Direct impacts on these resources can also have secondary indirect impacts on other natural resources such as vegetation, hydrology, water quality, and wildlife, among others
- Impact intensity can vary considerably based on site-specific factors affecting the volume and frequency of disturbance, and the geographic breadth of the impact (i.e., local community or regional community).
- Duration of disturbance can affect the intensity of impacts to soil, topographic, and geologic features. However, despite duration, the use of effective best management practices can ensure that impact intensity will not result in significant impacts.
- NPS *Management Policies 2006* call for park managers to preserve geologic features (i.e. the products and physical components of geologic processes) as integral components of park natural systems (NPS 2006).
- NPS *Management Policies 2006* call for park managers to preserve soil resources, and to the extent possible, the park will prevent unnatural erosion, physical removal, or contamination of the soil or its contamination of other resources (NPS 2006).
- The park's 1976 master plan acknowledges that continuing use of the park by visitors with contemporary comfort standards are a growing threat to the resources but notes that designing corridors for use is one way of safeguarding the park's vital land processes (NPS 1976).

IMPACTS OF ALTERNATIVE A: NO ACTION

Under alternative A the multiuse trail would not be constructed. Without the multiuse trail, park visitation would continue to include heavy traffic during peak visitation, which could result in minimal impacts on soil resources near roadways and parking lots as low levels of soil disturbance may occur due to parking

outside formal parking areas (discouraged by park staff) and trampling along road shoulders. Outside of these areas, no new disturbance to soil resources would occur and the effects of soil disturbance from factors such as erosion and frost action would be unchanged from the existing conditions. Further, topography and geologic resources, including montane slopes and rock outcrop communities, would remain unchanged from the existing conditions.

Cumulative Impacts

Although past, present, and reasonably foreseeable future actions may and have affected soils, topography, and geology in the area, alternative A would have no impacts and therefore would not contribute to the effects of other actions. Consequently, there would be no cumulative impacts on soils, topography, and geology under alternative A.

Conclusion

Alternative A would result in continued minimal adverse impacts on soil resources for the foreseeable future, limited mainly to roadside areas in the project corridor where soil productivity is reduced and disturbance is already present to some extent. The multiuse trail would not be constructed, and the existing soil, topography, and geologic features within the project corridor would remain generally as they are. Consequently, there would be no cumulative impacts on soils, topography, and geology under alternative A. Park managers would continue to preserve soils and geologic features to the extent possible within the currently disturbed areas. The overall geologic features and processes within and adjacent to the project corridor would retain their natural features and natural roles within the ecosystem. Therefore, the impacts of alternative A on soils, topography, or geology would not approach the level of significant as defined by the Council on Environmental Quality.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

Under alternative B, there would be impacts on soils, topography, and geology from the construction of the multiuse trail. Depending on the location in the project corridor, construction of the trail would require excavation of existing substrate and the creation of embankments in order to provide an adequate trail foundation. Retaining walls would be used to minimize the area of disturbance, and best management practices would be utilized to minimize impact intensity throughout alternative B. Impacts associated with these actions are discussed below.

Topography and Geology Impacts

Retaining walls are commonly used along roadway corridors in the park and provide a means to minimize the geographic area of transportation impacts. Large retaining walls can create a change to topography; however, the retaining walls used in alterative B would be small in comparison to those found elsewhere in the park, limiting the relative intensity of topographic impacts. Further, after revegetation of areas surrounding the retaining walls, these minimal impacts to topography would not result in major changes to natural processes locally, and would not be readily apparent to visitors using the project area. This is largely due to the location of the trail alignment under alternative B generally being close to existing roads, where the local topography and geologic resources have already been manipulated to support the roadway corridor and visitor transportation.

Additionally, while construction of cut and fill slopes and retaining walls would occur adjacent to the trail, the anticipated changes to existing topography and geologic features would not noticeably modify natural landforms, with the exception of the trail underpass located at Deer Ridge Junction intersection. The underpass structure would require the permanent displacement of approximately 16,000 cubic feet of soils and bedrock, as well as grading into and out of the underpass. This would take place within the Rofork-Chasmfalls complex map unit, in which weathered bedrock is typically found at a depth of 14-38 inches. Therefore, in addition to some gravelly sandy loam displacement, some paralithic bedrock would likely be removed via blasting. Structural integrity of surrounding areas are not anticipated to be noticeably affected.

Best management practices required by the National Park Service would reduce potential adverse impacts on topography and geologic resources. A list of best management practices that have been required by the National Park Service on past projects are presented in appendix C. Key points relevant to the best management practices used by the National Park Service for minimizing impacts on topography and geologic resources include the following:

- Clearing and Excavation—Surface boulders that will remain on the site following construction shall be carefully stockpiled during construction in order to protect natural lichen growth. Boulders will replaced in their natural position.
- Grading—A balance would be achieved between the creation of steep cuts and fills to minimize the amount of disturbance, and the creation of flatter cuts and fills to minimize erosion and promote the reestablishment of vegetative cover. The natural contour of the land would be restored to the degree possible. Slopes would simulate the irregularity of the existing terrain.
- Cut slopes—Boulders firmly in place and protruding from cut slopes would be left undisturbed. All cut slopes would be sculpted to irregular surfaces preserving segments of large rock outcrops leaving staggered, irregular ledges, shelves, and outcrops with jagged edge appearance and planting pockets suitable for placement of topsoil and plants.
- Fill Slopes—Fill slopes would be graded to provide an irregular surface with staggered ridges, ledges, planting pockets, and large boulders exposed. Additional material would be incorporated into the fill slopes to obtain additional blending into the natural terrain and to develop areas for planting.

Soil Impacts

The area of direct impacts on soil resources from excavation, grading, and construction activities would be approximately 74 acres. This area is based on the width of the approximate 15.3-mile length of the trail in alternative B, the 10-foot width of the multiuse trail, and an additional average width of approximately 15 feet on each side of the trail required for new cut and fill slopes. Table 10 depicts the type and amount of soils that would be impacted under alternative B.

TABLE 10. SUMMARY OF SOIL IMPACTS UNDER ALTERNATIVE B

Map Unit Symbol	Map Unit Name	Erosion Hazards	Acres Within Limits of Disturbance
16	Isolation gravelly sandy loam	Moderate	21.97
17	Kawuneeche loam	Slight	3.53
19	Kawuneeche mucky peat	Slight	2.32
21	Legault very gravelly sandy loam	Severe	2.47
22	Lumpyridge gravelly coarse sandy loam	Slight	0.49

23	Lumpyridge- Rofork complex	Moderate	0.13
27	Nanita very gravelly sandy loam	Moderate	11.44
28	Nanita very gravelly sandy loam	Severe	11.90
35	Rofork-Chasmfalls complex	Severe	19.94
44	Venable loam	Slight	1.99

Source: NRCS 2013

Direct impacts to soil could include a temporary decrease in soil productivity and an increase soil compaction. New embankments and fill slopes would be expected to experience a temporary decrease in soil productivity from the disruption of soil biological processes and changes to soil physical properties. However, topsoil salvage, replacement, and revegetation in these areas would promote rehabilitation of natural soil productivity levels as the community regenerates in approximate the first 10 to 15 years after construction. Soil compaction would be expected to occur in the approximately 19 acres where the multiuse trail would remain for the foreseeable future. However, additional adverse impacts would be expected to be minimal, due to the local existing conditions in roadside locations where soil has been previously manipulated and compacted for shoulder maintenance, utilities, parking lots, and pull-offs. Therefore, adverse impacts related to a temporary decrease in soil productivity and an increase soil compaction would be minimal and have little effect on natural processes locally.

Indirect impacts to soil could include a temporary increase in soil erosion. Once the new multiuse trail is constructed, a small amount of soil material would be expected to be lost due to erosion caused by wind, rainfall, and stormwater runoff until disturbed areas can be stabilized and revegetation. Based on the soil map units presented above, approximately 46 acres (60 percent) of the project corridor have soil types with a severe erosion hazard and 22 acres (29 percent) have a moderate erosion hazard. Soil with severe and moderate erosion hazards may be subject to higher soil loss and may require more frequent maintenance measures and more extensive erosion control measures. However, these soils conditions are common in the park, and direct impacts from soil loss near the trail would be avoided by Best Management Practice already in place. Indirect impacts related to soil loss, such as increased sedimentation and reduced water quality in nearby water resources, would not result in major changes to natural processes locally. Avoidance and minimization of impacts would occur through the use of best management practices, such as the use of erosion and sediment control measures approved by the National Park Service.

As indicated above, best management practices required by the National Park Service would avoid and minimize potential adverse impacts on soil resources. A list of best management practices that have been required by the National Park Service on past projects are presented in appendix C. Key points relevant to the best management practices used by the National Park Service for loss of soil resources include the following:

- Topsoil salvage—A minimum of 2 inches of material shall be conserved unless it is determined to be unsuitable due to the presence of exotic vegetation. In some locations, a depth of 12 or more inches of material can be conserved. Conserved topsoil would consist of natural humus bearing soils, duff, and vegetable matter obtained from the overlying portions of the excavated or embankment areas.
- Equipment Management—Nonconventional methods would be required to excavate, stockpile, and place the conserved material. Equipment capable of excavating small, isolated pockets of

soil, removing stumps as required, and placing material on slopes and in pockets on rock ledges would be required to perform the work..

- Erosion and Sediment Control—Temporary erosion control devices or methods would be used to protect sensitive areas. In areas where slopes are greater than 2:1, soil erosion devices (including but not limited to weed-seed free straw bales, wattles and blankets) would be applied to the disturbed area. For larger disturbed areas, erosion control fencing would be installed.

Some soil types in the project corridor have construction and maintenance constraints due to other physical properties, such as potential for frost action or frost heave. Frost action occurs when moisture moves into the freezing zone of the soil, and reflects the likelihood of upward or lateral expansion of the soil caused by the formation of ice (or frost heave) and the subsequent collapse of the soil and loss of strength upon thawing. This phenomena can cause damage to pavements and other rigid structures, and may require more frequent maintenance measures.

Soil types in the project corridor with high frost action are typically found in wetlands and include the Kawuneeche loam, Kawuneeche mucky peat, and Venable mucky peat soil map units. Approximately 8 acres (10 percent) of the project corridor has soil with a high frost action, and approximately 43 acres (56 percent) of the corridor has soil with a moderate frost action. Areas with high or moderate frost action would be expected to be more prone to adverse effects such as soil loss and erosion. However, these soils conditions are also common in the park, and direct impacts from soil loss due to frost action would be avoided by Best Management Practice already in place. Indirect impacts related to frost action, such as increased soil loss and sedimentation in water resources, would be temporary and minimized though the use of best management practices.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting soils, topography, and geology under alternative B would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, fire management, and reconstruction of the Fall River Entrance. Collectively, these actions have resulted or may result in long-term, adverse impacts on soils, topography, and geology. For instance, Bear Lake Road reconstruction activities involved additional soil disturbances from the realignment of a segment of the road, grading, and road widening. In addition, horse use in the park results in soil compaction and erosion from the heavy use of 260 miles of horse trails, some of which transect the project corridor. Vegetation management results in soil disturbance from the removal of exotic invasive species and trees infested with bark beetles. Similarly, fire management actions such as thinning of forest vegetation adversely impact soils. Finally, the future reconstruction of the Fall River entrance is likely to result in soil disturbances and some changes in topography in the vicinity of the project corridor. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would be long-term and adverse. Alternative B would contribute a noticeable increment to the cumulative adverse impact on soils, topography, and geology.

Conclusion

Although 74 acres of soils would be subject to disturbance during construction and long-term compaction as a trail, this represents a very small proportion (approximately 0.45%) of underlying soil types' total distribution throughout the park. As such, alternative B would result in minimal adverse impacts on soil, topography, and geology resources, but would not result in major changes in local or regional ecological

processes. Duration of impacts could vary, but all adverse impacts would be mitigated through use of best management practices designed to avoid significant impacts to soil, topography, and geology resources. The intensity of the impacts is further lessened due to the placement of the multiuse trail within an existing roadway corridor, where these resources have already been influenced by road construction, utilities, and other infrastructure.

Park managers would continue to strive to preserve geologic features and soil resources to the extent possible. In the context of the park's 1976 master plan, the minimal intensity of anticipated impacts to soil, topography, and geology in alternative B would support the concept of creating corridors of use to safeguarding the park's processes on a larger scale. Moreover, the intensity of impacts would not hinder the capacity of soil and geologic features in the project corridor to function as a critical part of the ecological community, and would have a minimal effect on natural processes related to vegetation, hydrology, water quality, and wildlife. Therefore, based on the context and intensity described above, the impacts of alternative B on soils, topography, or geology would not approach the level of significance. Alternative B would contribute a noticeable increment to the cumulative impact.

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, there would be direct and indirect impacts on soils, topography, and geology from the construction of the multiuse trail. Similar to alternative B, the construction of the trail would require excavation of existing soils, the creation of embankments, and the construction of retaining walls, which would be used to minimize the area of disturbance. The anticipated changes to existing topography and geologic features along the multiuse trail would not result in major changes in existing landforms or natural processes, and would not be readily apparent to visitors using the project area. The trail may also temporarily displace geologic resources, such as surface boulders and rock outcroppings. However, similar to alternative B, the National Park Service would use best management practices to return these features to current conditions (or as nearly as possible) upon completion of final trail grading, with the same exception described under alternative B for the underpass at Deer Ridge Junction.

The same types of impacts and best management practices described under alternative B would apply to this alternative, as well. However, there would be a change in acreage and, in a few places, in the location of these impacts. The area of direct impacts on soil resources from excavation, grading, and construction activities in alternative C would be approximately 69 acres. This area is based on the width of the approximate 14.2-mile length of the trail in alternative C, the 10-foot width of the multiuse trail, and an additional average width of approximately 15 feet on each side of the trail required for new cut and fill slopes. Table 11 depicts the type and amount of soils that would be impacted under alternative C.

TABLE 11. SUMMARY OF SOIL IMPACTS WITHIN ALTERNATIVE C

Map Unit Symbol	Map Unit Name	Erosion Hazard	Acres Within Limits of Disturbance
16	Isolation gravelly sandy loam	Moderate	18.70
17	Kawuneeche loam	Slight	0.56
19	Kawuneeche mucky peat	Slight	1.38
21	Legault very gravelly sandy loam	Severe	2.47
22	Lumpyridge gravelly coarse sandy loam	Slight	0.49
27	Nanita very gravelly sandy loam	Moderate	11.44
28	Nanita very gravelly sandy loam	Severe	12.17
35	Rofork-Chasmfalls complex	Severe	22.38
44	Venable loam	Slight	1.82

Source: NRCS 2013

After construction, impacts related to soil compaction would also be expected to occur in the approximate 17 acre footprint of the multiuse trail itself. In comparison to alternative B, additional adverse impacts would be expected due to compaction when accounting for the 3.6 additional miles of overland trail in alternative C that would be located away from existing roadway corridors, in areas that currently have little soil disturbance from humans.

Approximately 39 acres (55 percent) of the project corridor has soil with a severe erosion hazard, 30 acres (42 percent) has a moderate erosion hazard, and 2 acres (3 percent) has a slight erosion hazard. While it is difficult to accurately quantify how much soil could be lost, it is reasonable to infer that soil with severe and moderate erosion hazards may be subject to higher soil loss, and may require more frequent maintenance measures and more extensive erosion control measures. Due to the 3.6 additional miles of overland trails away from the existing roadway corridor, these adverse impacts could be greater than under alternative B.

Soils in the project corridor with high frost action are the same wetland soil types as those located in alterantive B, and include the Kawuneeche loam, Kawuneeche mucky peat, and Venable mucky peat soil map units. Corresponding to the reduction in wetlands encountered in alternative C, only 2 acres (3 percent) of the project corridor has soil with a high frost action. The amount of soils with moderate frost action is also reduced to 33 acres (45 percent) within the project corridor. Comparatively, this could lessen the potential for adverse impacts such as soil loss and erosion after construction. Similar to alternative B, these effects would be temporary and minimized though the use of best management practices, such as erosion and sediment control measures approved by the National Park Service.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting soils, topography, and geology under alternative C would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, fire management, and reconstruction of Fall River entrance. The impacts of these actions are described under alternative B. Collectively, these actions have resulted or may result in long-term, adverse impacts on soils, topography, and geology. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be long-term and adverse. Alternative C would contribute a noticeable increment to the cumulative adverse impact on soils, topography, and geology.

Conclusion

Although 69 acres of soils would be subject to disturbance during construction and long-term compaction as a trail, similar to alternative B, this also represents a very small proportion (approximately 0.43%) of the underlying soil types' total distribution throughout the park. Alternative C would result in minimal adverse impacts on soil, topography, and geology resources, and these impacts would not result in major changes in local or regional ecological processes. Duration of impacts could vary, but all adverse impacts would be mitigated through use of best management practices designed to avoid significant impacts to soil, topography, and geology resources. The intensity of the impacts is increased in alternative C due the portions of the corridor that would be constructed away from the existing roadway (approximately 3.6 additional miles), where soil, topography, and geology resources have not already been influenced by road construction, utilities, and other infrastructure. However, in comparison to alternative B, some of these areas consist of soil types with a lower percentage of potential soil loss factors, such as erosion hazard and frost action.

As under alternative B, park managers would continue to strive to preserve geologic features and soil resources to the extent possible. In the context of the park's 1976 master plan, the minimal intensity of anticipated impacts to soil, topography, and geology in alternative C would support the concept of creating corridors of use to safeguarding the park's processes on a larger scale. Moreover, the intensity of impacts would not hinder the capacity of soil and geologic features in the project corridor to function as a critical part of the ecological community, and would have a minimal effect on natural processes related to vegetation, hydrology, water quality, and wildlife. Therefore, based on the context and intensity described above, the impacts of alternative B on soils, topography, or geology would not approach the level of significant. Alternative C would contribute a noticeable increment to the cumulative impact.

VEGETATION

METHODOLOGY

Potential impacts on vegetation are assessed based on the current description of vegetation presented in chapter 3 of this EA. The current vegetation was compared with the alternatives described in chapter 2 to determine how vegetation would be impacted. Resource-specific context for assessing impacts of the alternatives on vegetation includes the following:

- Rocky Mountain National Park is an environment rich in floral diversity as many unique vegetation communities exist resulting from variable elevation, soil, and climate. The over 265,000 acres of park land is divided between approximately 60% forest, 13% alpine tundra, 18% exposed rock, and 9% mixture of vegetative habitats (NPS 2003). In general, the plants of the park are representative of typical southern Rocky Mountain flora (NPS 2013c).
- Native vegetation communities are a critical part of natural systems and ecology. Direct impacts on vegetation resources can also have secondary indirect impacts on other natural resources such as soil, hydrology, water quality, and wildlife, among others.
- Impact intensity can vary considerably based on site-specific factors affecting the type, amount, and location of vegetation removed or replaced, as well as the geographic breadth of the impact (i.e., local community or regional community).

- The use of effective best management practices can ensure that impact intensity will not result in significant impacts.
- Rare vegetation associations are unique and have higher conservation value.
- NPS *Management Policies 2006* call for park managers to preserve and restore the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant populations and the communities and ecosystems in which they occur. They should also strive to minimize human impacts on native plants, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006).
- One of the management principles essential for maintenance of natural plant communities within the park includes prevention of the introduction of exotic (i.e., nonnative, invasive) species (NPS 2006). To this end, the park has established an Invasive Exotic Plant Management Plan (NPS 2003), and the park's design guidelines specify use of native species and naturalized plantings (NPS 2011b).
- The park's 1976 master plan acknowledges that large numbers of visitors with contemporary comfort standards are a threat to the park's resources but notes that designing corridors for use is one way of safeguarding the park's vital land processes (NPS 1976).

IMPACTS OF ALTERNATIVE A: NO ACTION

Under alternative A the multiuse trail would not be constructed. Without the multiuse trail, park visitation would continue to include heavy traffic during peak visitation, which could result in minimal impacts on vegetation near roadways and parking lots as low levels of vegetation (individual plants) are lost due to parking outside designated areas and trampling along road shoulders and other vegetated areas not specifically designated for visitors or their cars.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting vegetation under alternative A would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, fire management, and reconstruction of Fall River entrance. Collectively, these actions have resulted or may result in short- and long-term impacts and long-term beneficial impacts on vegetation. For instance, the reconstruction of Bear Lake Road involved the widening of the roadway and the realignment of one segment, thereby permanently removing vegetation. In addition, commercial and personal horse use has the potential to trample vegetation adjacent to trails and could resulting in direct impacts to adjacent plants. Vegetation management actions have long-term beneficial impacts by maintaining and restoring natural vegetative communities as well as reducing bark beetle damage potential. Similarly, fire management strives to maintain the natural, fire-dependent communities in the project corridor while reducing the potential for wildland fires. The reconstruction of the Fall River entrance could result in the permanent removal of vegetation. The impact of these past, present, and reasonably foreseeable actions would generally be adverse in the short and long terms and beneficial in the long-term. When combining the impacts of these projects with the impacts of alternative A, the cumulative impact would be adverse in the short and long terms and beneficial in the long-term. Alternative A would contribute an imperceptible increment to the cumulative adverse impact on vegetation because damaged would occur in previously disturbed areas and be local in scale.

Conclusion

Alternative A would result in continued adverse impacts on vegetation for the foreseeable future, limited mainly to roadside areas in the project corridor where vegetation function is reduced and disturbance is already present to some extent. The multiuse trail would not be constructed, and the existing vegetation within the project corridor would remain generally as it is. Park management challenges regarding the maintenance of healthy vegetation populations, and control of nonnative or exotic species within the project corridor would remain unchanged. The overall vegetative communities within and adjacent to the project corridor would retain their natural features and natural roles within the ecosystem. The park would continue to manage invasive exotic species. Alternative A would contribute an imperceptible adverse increment to the cumulative impacts. Therefore, the impacts of alternative A on vegetation would not rise to the level of significant.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

Under alternative B, there would be impacts on the existing vegetation in the park from the construction of the multiuse trail. The direct impacts on vegetation from excavation, grading, and construction activities would remove approximately 69 acres of existing vegetation along the project corridor. This area is based on the approximate 15.3-mile length of the trail in alternative B, the 10-foot width of the multiuse trail, and an additional average width of approximately 15 feet on each side of the trail required for new cut and fill slopes. Of the approximately 69 acres of vegetation removed under alternative B, adverse direct impacts would include the removal of existing vegetation by installation of the multiuse trail, including approximately 21 acres of the existing forested habitat, 22 acres of ponderosa pine grassland community, 10 acres of the shrub habitat, and 16 acres of road-side grassland/barren areas.

While much of the trail would be mostly in roadside locations without extensive forested habitat, the adverse impacts from losing vegetation include a potential reduction in vegetated community functions such as provision of wildlife habitat, retention of surface water runoff, and visual aesthetics offered to visitors using roadways. Adverse indirect impacts also include potential damage to the plants surrounding the proposed trail via factors such as nutrient loss, root damage, or exposure. For example, trees could succumb to root damage caused by soil movement during construction, or be more susceptible to wind throw due to exposure created in canopy openings. Vegetation potentially harmed by these factors would not be expected to diminish immediately, but could experience a progressive decrease in overall health and longevity, potentially leading to the death of some plants. Vegetation loss from indirect impacts would be expected to be minimal, but could include formation of dead or dying hazard trees, and would require vigilant monitoring and maintenance activities by the National Park Service to avoid reduced public safety issues along the trail. Other adverse indirect impacts could include an increase in exposure to pine bark beetle infestation, namely to trees that are damaged and potentially more susceptible to infestation.

The extent to which alternative B would adversely impact vegetation would be offset by use of NPS and park-specific best management practices and protocols. Namely, areas disturbed by construction, excluding the surface area of the trail, would be revegetated to reestablish natural habitat surrounding the multiuse trail. Over time, revegetation methods would be applied to approximately 50 acres of the 69-acre area of disturbance under alternative B, leaving only 19 acres of unvegetated trail. Key points relevant to the best management practices used by the National Park Service for loss of vegetation resources include:

- Vegetation Salvage—Trees and shrubs to be removed during construction would be identified prior to construction, salvaged where possible, and reused within the project corridor for revegetation. Plants would be salvaged in early spring or late fall/early winter during plant dormancy periods, and survivability would be maximized through existing NPS vegetation salvage protocols. Plant species of concern, such as antelope bitterbrush, would be salvaged and replanted within the project corridor to achieve the NPS goal of no net loss of such species.
- Imported Material—All plants used for project revegetation would require NPS clearance for exotic plant species. If exotics plants are present, an NPS approved management technique would be employed.
- Equipment Management—Construction equipment would be kept within construction limits to protect adjacent undisturbed vegetation. Earthwork and hauling equipment would be cleaned of mud, plant material, and weed seed prior to entering the park.
- Removal of Vegetation—Selected snags would be salvaged and stockpiled in designated storage areas for subsequent placement on completed slopes to enhance habitat and reduce erosion.

A comprehensive list of best management practices approved by NPS and previously used in the park is presented in appendix C. For example, while some of the existing vegetation in the park would be lost, the NPS would restore the surrounding natural habitat by salvaging native plants species, topsoil, and geologic features such as boulders. Salvaged material would be reused to finish grading activities around the multiuse trail, such as sculpting cut slopes to preserve rock outcroppings and create planting pockets that are suitable for placement of salvaged topsoil and plants. The success of revegetation would require extensive monitoring by NPS, and there is a high potential for maintenance activities such as additional planting, invasive species eradication, and hazard tree removal.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting vegetation under alternative B would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, fire management, and reconstruction of Fall River entrance. Collectively, these actions have resulted or may result in short- and long-term impacts and long-term beneficial impacts on vegetation. Impacts of these actions are described under alternative A. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would be adverse in the short and long terms and beneficial in the long-term. Alternative B would contribute a noticeable increment to the cumulative adverse impact on vegetation.

Conclusion

Alternative B would result in the removal of existing vegetation due to direct and indirect impacts described above. Such impacts would be adverse and relatively minimal on a park-wide scale and would be mitigated through use of best management practices, including replacing vegetation with native species in 50 acres of the project corridor. Implementation of best management practices would ensure that park managers reduce potential for secondary impacts to other natural resources, preserve natural communities to the extent possible, and minimize the introduction and/or propagation of exotic species. Much of the vegetation removed under alternative B would be limited to areas within an already impacted roadway corridor, which would leave a greater portion of the existing vegetation communities park-wide intact.

Following construction, 19 acres of vegetation would be removed by the trail, which equates to approximately 0.01% of the park's vegetated areas. This adverse impact would not affect the park's floral diversity, native vegetation communities, and overall ecological health. Moreover, no known rare vegetation communities are located within the project corridor. The impact would not affect the current ability of park managers to preserve native plant populations and the overall ecosystem, while minimizing human impacts to the maximum extent possible. In the context of the park's 1976 master plan, the minimal intensity of anticipated impacts to vegetation in alternative B would also support the concept of creating corridors of use to safeguarding the park's processes on a larger scale. For these reasons, the impacts of alternative B on vegetation would not approach the level of significant. Alternative B would contribute a noticeable increment to the cumulative adverse impact.

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, there would be direct and indirect impacts on the existing vegetation in the park from the construction of the multiuse trail. The direct impacts on vegetation from excavation, grading, and construction activities would remove approximately 67 acres of existing vegetation. This area is based on the width of the approximate 14.2-mile length of the trail in alternative C, the 10-foot width of the multiuse trail, and an additional average width of approximately 15 feet on each side of the trail required for new cut and fill slopes. Of the 67 acres of vegetation removed under alternative B, adverse direct impacts would include the removal of existing vegetation by installation of the multiuse trail, including approximately 22 acres of the existing forested habitat, 22 acres of ponderosa pine grassland community, 10 acres of the shrub habitat, and 13 acres of road-side grassland/barren areas. Alternative C would impact more forest and less grassland/barren areas, which reflects the difference in trail alignment and the 3.6 additional miles of overland segments. The adverse impacts from losing these types of vegetation would be greater than those described under alternative B, due to the potential for a greater reduction in vegetated community functions such as provision of wildlife habitat and retention of surface water runoff.

As described under alternative B, adverse indirect impacts include potential damage to the plants surrounding the proposed trail via factors such as nutrient loss, root damage, or exposure. Under alternative C, due to the increased disturbance of forested habitats, more trees could succumb to root damage caused by soil movement during construction, or be more susceptible to wind throw due to exposure created in canopy openings. Vegetation loss from indirect impacts would still be expected to be relatively small when considered regionally, but would include formation of more dead or dying hazard trees, and would require additional monitoring and maintenance activities by the National Park Service to avoid public safety issues along the trail. An increase in exposure to pine bark beetle infestation could be greater in alternative C, due to the potential for more trees that are damaged and potentially more susceptible to infestation.

Adverse impacts on vegetation during construction of the multiuse trail under alternative C would be mitigated using best management practices. Namely, revegetation methods would be applied to approximately 50 acres of the 67-acre area of disturbance for alternative B, leaving only 17 acres of unvegetated trail. A comprehensive list of best management practices approved by the National Park Service and previously used in the park are presented in appendix C. Due to the increase in direct impacts on forested land in comparison to alterative B, some best management practices would be applied more widely in alternative C. As such, the adverse effects of direct impacts on vegetation could be somewhat

offset by the beneficial attributes offered by mitigation. However, due to the increased area of disturbance to forested land, additional monitoring and maintenance would likely be required by the National Park Service to ensure revegeation success.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting vegetation under alternative C would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, fire management, and reconstruction of Fall River entrance. Collectively, these actions have resulted or may result in short- and long-term impacts and long-term beneficial impacts on vegetation. Impacts of these actions are described under alternative A. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be adverse in the short and long terms and beneficial in the long-term. Alternative C would contribute a noticeable increment to the cumulative adverse impact on vegetation.

Conclusion

Although the overall acreage disturbed in alternative C is reduced when compared to alternative B, the amount of previously undisturbed forest habitat impacted is greater in acreage. Alternative C would result in removal of existing vegetation due to direct and indirect impacts described above. Similar to alternative B, these impacts would be adverse and relatively minimal on a park-wide scale and would be mitigated through use of best management practices, including replacing vegetation with native species in 50 acres of the project corridor. Implementation of best management practices would ensure that park managers reduce potential for secondary impacts to other natural resources, preserve natural communities to the extent possible, and minimize the introduction and/or propagation of exotic species.

Following construction, 17 acres of vegetation would be removed by the trail, which equates to approximately 0.01% of the park's vegetated areas. This adverse impact would not affect the park's floral diversity, native vegetation communities, and overall ecological health, and no known rare vegetation communities are located within the project corridor. The impact would still allow park managers to preserve native plant populations and the overall ecosystem, while minimizing human impacts to the maximum extent possible. Regarding the park's 1976 master plan, the minimal intensity of anticipated impacts to vegetation in alternative C would also support the concept of creating corridors of use to safeguarding the park's processes on a larger scale. For these reasons, the impacts of alternative C on vegetation would not approach the level of significant. Alternative C would contribute a noticeable increment to the cumulative adverse impact.

WILDLIFE AND WILDLIFE HABITAT

METHODOLOGY

Potential impacts on wildlife and wildlife habitat are assessed based on the current description of wildlife and wildlife habitat presented in chapter 3 of this EA. The current wildlife and wildlife habitat was compared with the alternatives described in chapter 2 to determine how wildlife and wildlife habitat

would be impacted. Resource-specific context for assessing impacts of the alternatives on wildlife and wildlife habitat includes the following:

- The diverse ecosystems and large tracts of land associated with the Rocky Mountains provide ample habitat for a variety of animals.
- Wildlife and wildlife habitat are considered fundamental resources of Rocky Mountain National Park, and vegetation throughout the park provides wildlife habitat.
- Impact intensity can vary considerably based on site-specific factors affecting the type, amount, and location of wildlife or wildlife habitat, as well as the geographic breadth of the impact (i.e., local community or regional community).
- Significant impacts do not typically apply to adverse effects on individual or small groups (e.g., 2 to 20 individuals) of wildlife species; rather, significant impacts affect wildlife populations locally and regionally. For example, obstacles to the migratory patterns of birds could have a significant effect on a population level.
- The use of effective best management practices (such as adherence to time-of-year restrictions) can ensure that impact intensity will not result in significant impacts.
- Rare animal species are unique and have higher conservation value.
- NPS *Management Policies 2006* calls for park managers to preserve and restore the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native wildlife populations and the communities and ecosystems in which they occur. They should also strive to minimize human impacts on native wildlife, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006).
- One of the objectives of the park's 1976 master plan is to manage the wildlife native to this portion of the Rocky Mountains so as to minimize the impact of man. The master plan also acknowledges that large numbers of visitors with contemporary comfort standards are a threat to the park's resources but notes that designing corridors for use is one way of safeguarding the park's vital land processes (NPS 1976).

IMPACTS OF ALTERNATIVE A: NO ACTION

Under alternative A, there would be no new impacts on wildlife and wildlife habitat from the construction of a multiuse trail. No changes would occur to the existing conditions within the project corridor as a result of the proposed action, and public use would be expected to continue in a manner similar to its present use. No new land disturbing activities would occur as a result of the proposed multiuse trail, and there would be no associated loss or fragmentation of wildlife habitat. As a result, wildlife behavior and habitat would not be expected to change noticeably under this alternative. The existing roadway corridor and recreational activities in the project corridor would continue to fragment wildlife habitat and influence wildlife movement and activity. Occasional wildlife mortality would continue from collisions with motor vehicles.

Cumulative Impacts

Although past, present, and reasonably foreseeable future actions may and have affected wildlife and wildlife habitat in the area, alternative A would have no impacts and therefore would not contribute to the

effects of other actions. Consequently, there would be no cumulative impacts on wildlife and wildlife habitat under alternative A.

Conclusion

Alternative A would not result in changes to the existing conditions or existing infrastructure or natural areas in the park. This alternative would avoid new sources of human-caused disturbance on wildlife behavior and would maintain the existing abundance and diversity of native wildlife species in the park. Park managers would continue to preserve native wildlife, and wildlife would continue to have ample habitat available. Because there would be no impacts from the proposed action under this alternative, there would be no cumulative impacts on wildlife and wildlife habitat under alternative A. Therefore, the impacts of alternative A on wildlife and wildlife habitat would not approach the level of significant.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

General Impacts

Under alternative B, there would be direct and indirect impacts on the existing wildlife and wildlife habitat in the park from the construction and use of the multiuse trail. Types of impacts could generally include the following:

- Direct impacts from long-term displacement of wildlife habitat
- Direct impacts from injury or death of individuals or populations
- Indirect impacts from alteration of or disturbance to wildlife habitat, and
- Indirect impacts on wildlife populations

Excavation, grading, and construction activities in alternative B would disturb approximately 69 acres of vegetation (21 acres of the existing montane-forest wildlife habitat, 22 acres of ponderosa pine/grassland habitat, 10 acres of shrub habitat, and 16 acres of road-side grassland/barren areas) that currently provides wildlife habitat. Forested habitats (including montane-forest and ponderosa pine/grassland habitats) are often more suitable foraging, nesting, and denning habitat for multiple species of wildlife; therefore, impacts on forests would be more detrimental than other vegetation types. Roadside grasslands displaced by the multiuse trail can have lower habitat quality due to factors such as reduced vegetative cover and increased sources of disturbance (e.g., noise from vehicles). As a result, species diversity can be lower and preferred by habitat generalists and open habitat specialists that can have a broader range of tolerance to roadside conditions (Knapp et al. 2013).

Of these 69 acres of vegetation displaced in alternative B, direct impacts due to the physical removal of wildlife habitat would be limited to the 19 acre footprint of actual trail area. The remaining 50 acres of vegetation displaced in newly disturbed areas surrounding the trail (e.g. graded slopes) would be replanted with native species and would regenerate over time. Due to the long period of time required for natural communities to regenerate and function suitably for wildlife, this would be considered a long-term alteration of wildlife habitat (occurring over a period of decades).

Therefore, alternative B would increase habitat fragmentation along the roadway corridor. The trail alignment follows the road for nearly all of the 15.3-mile alignment, and while much of the habitat

disturbance from trail construction would occur within areas of previous disturbance (such as fill slopes) increased habitat fragmentation would occur due to widening the overall developed footprint of the roadway corridor. This level of fragmentation could cause altered habitat use and/or changes in wildlife travel corridors, an effect which could expand outside the project corridor. The potential adverse effects of this change are related to subsequent alterations in normal biological behavior, such as increased exposure to predation and increased energy expenditure.
These types of impacts would likely apply to animals throughout the food chain, including large mammals and birds, as well as smaller animals, insects, and species whose dispersal methods may be limited by the type of vegetative cover that is available. These organisms may also be negatively affected by the type of vegetation that persists trail construction, and can exacerbate the effects even in an area where altered habitat by previous construction already exists (Hand et al. 2014). Some of these impacts can take years to manifest, and therefore habitat fragmentation can have consequences on species over a long term. However, when considering the context of the vast amount of wildlife and wildlife habitat available within Rocky Mountain Nation Park, the adverse effects of habitat fragmentation at this local scale would likely only affect individual or small groups of animals, but not larger populations of species.

Further, individual or small groups of animals crossing the roadway and trail footprint may be affected by the increase in overall width of corridor development. For instance, the increased width may lead to increased exposure to vehicles while animals are crossing between roadside habitats, and could result in increased wildlife collisions and interactions by faster multiuse trail users. The frequency of collisions could be higher than seen on typical hiking trails if biking is the predominant form of trail use. The higher speed of travel associated with bicycles, especially in steep terrain, reduces the ability of humans to avoid wildlife traversing the trail. However, the adverse direct impacts on wildlife, such as injury or death, would be expected to be relatively low and would not affect wildlife on the population level.

Other disruptions to wildlife behavior could results from adding noise and visual disturbance to the project corridor as a result of recreational use. This disturbance could occur during initial construction activities, or as a result of the recreational activities once the trail is built. The impact is typically indirect, as the effects from these types of disturbance typically extend beyond the edge of the physical footprint of the proposed action and vary considerably with topography, vegetation, and the type and duration of human activity. Noise and visual disturbances can alter the normal biological activities of wildlife and include negative effects such as avoidance behavior, alteration to wildlife corridors, inhibited communication between individual animals, and/or creation of buffer zones where wildlife activity is generally reduced (Barber, Crooks, and Fristrup 2009).

These types of disruptions and adverse impacts already exist on some level near the existing roadway corridor and would be expected to be minimally increased by the addition of a multiuse trail next to the road. As a result, under alternative B, indirect impacts on wildlife from a more widely developed roadway corridor would not change substantially from existing conditions, which currently is influenced by vehicular traffic and other recreational activity. However, it should be noted that the effects of these types of indirect disturbance can be poorly understood for some species, and can vary greatly based on site-specific conditions. Nevertheless, the potential scope of effect is relatively small due to the abundance of wildlife and wildlife habitat in the park, and the absence of rare wildlife species in the project corridor.

Species-Specific Impacts

The impact on large ungulates in the park (i.e. Rocky Mountain elk, mule deer, and bighorn sheep) is expected to be minimal in alternative B because direct habitat loss and disturbance would be limited to areas bordering the road or parking areas. Even in areas where ungulates are known to use roadside areas heavily during certain seasons (e.g., elk and bighorn in Horseshoe Park), these species have become habituated to and tolerant of human activity. Further, recent studies of multiuse pathways in Grand Teton National Park showed that "while pathway construction and use resulted in direct habitat loss and widened and diversified the human footprint, [the] results did not consistently demonstrate alterations in ungulate distribution and behavior" (Hardy and Crooks 2011). The study further concludes an apparent decrease in behavioral responsiveness of elk near multiuse trails, especially during peak visitation, suggested that this species can be tolerant of this type of disturbance.

However, potential negative effects on larger ungulates include avoidance of the development footprint on a short-term basis, during or immediately after the trail's construction. While this would reduce the chance of direct impacts and human interaction in the construction zone, the avoidance behavior could impact fitness and other normal biological activity. Noise and disturbance may cause elk to seek quieter habitat farther from the trail during the spring calving season in June and during the fall rut in September and October. However, as Hardy and Crooks (2011) suggest, there would be no noticeable long-term effect on ungulates from the multiuse trail construction or use under alternative B.

Other mammals, such as black bears, coyotes, weasels, porcupines, and squirrels, may be similarly affected by noise and disturbance during construction and may temporarily avoid activity near the project corridor from May to October. While this short-term impact would temporarily displace some mammals, the species would be expected to return to their normal biological activity following completion of construction. Longer term impacts on mammals that would persist after construction are not expected under alternative B.

Various bird species along the trail corridor would also be temporarily displaced during construction. Cavity nesting species could be displaced from the clearing of tree habitats. Impacts on great horned owls are expected to be minor because their breeding season (February to May) is mostly prior to the construction season (May to October). A territory of northern pygmy owls near Sprague Lake may be affected by trail construction activity. The location of the pygmy owl nest site is not known; however, a forest buffer over several hundred feet separates the road from the lake. Minor to moderate impacts on pygmy owls may occur if construction work disturbs the nest site during the April to August breeding season. Red-tailed hawk and northern goshawks are occasionally observed in the project corridor, but no nest sites are located near the proposed trail location and impacts would be negligible. Both short-term and long-term negative impacts on bird species from alternative B are expected to be minimal and local in scale.

Alternative B would also result in the loss of wetland habitat potentially utilized by chorus frogs, boreal toads, northern leopard frogs, and other amphibians. Impacted wetlands do not provide breeding habitat for amphibians, but amphibians may use some of these wetland areas for foraging or other normal biological activities. Further, no rare amphibian species or habitat would be affected, so the loss of amphibian habitat would be replaced by wetland restoration elsewhere in the park. Therefore, short-term and long-term adverse impacts on amphibian species from alternative B are also expected to be minimal and local in scale.

Aquatic species in Mill Creek, Glacier Creek, Big Thompson River, Hidden Valley Creek, and Fall River could potentially be impacted by trail construction activities adjacent to drainages. For instance, a short-term increase in stream sedimentation is possible from erosion of exposed soil during construction, which could temporarily degrade instream habitat conditions or aquatic organisms. However, any increased sediment collected in these waterways during or immediately after construction would likely be removed by stream processes during high flow periods. Therefore, no long-term adverse impacts on aquatic resources are expected following construction and revegetation of disturbed areas.

Mitigation of Impacts

Mitigation and conservation measures would be incorporated into alternative B to minimize potential impacts on wildlife. These measures were developed and effectively implemented during other park projects. Some of the best management practices applicable to minimizing wildlife habitat impacts for all species are described below.

- Vegetation removal and disturbance within the construction limits would be minimized and all disturbed areas would be revegetated with native species.
- Wildlife crossing signs and interpretive signs would be used to inform the public about the presence of wildlife.
- Construction activity during the elk rut from September 15 to October 31 would be avoided.
- Snags and cavity nest trees would be avoided to the extent possible. If clearing is needed, cavity trees would be removed during the non-breeding season in the fall per the requirements of the Migratory Bird Treaty Act.
- Surveys for migratory bird nests would be conducted prior to ground disturbing activities.
- Restoration of wetland habitats would replace amphibian habitat impacted by trail improvements.
- A stormwater management plan would be prepared for the Colorado Department of Public Health and Environment. Best management practices would be used to minimize erosion and the introduction of sediments to aquatic habitat during and after construction.
- Any discharges of dredged or fill material into surface waters would be regulated under the Clean Water Act Section 404 permitting process. All Section 404 permits require a Water Quality (401) Certification from the Colorado Department of Public Health and Environment before a 404 permit can be issued. The 401 certification would not allow discharges into surface water to result in any violations of applicable water quality standards and policies.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting wildlife and wildlife habitat in the vicinity of the project corridor would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, and fire management. Collectively, these actions have resulted or may result in long-term adverse and beneficial impacts on wildlife and wildlife habitat. Bear Lake Road reconstruction widened the roadway and realigned one segment, thereby increasing habitat fragmentation and permanently removing some wildlife habitat. Similarly, commercial and personal horse use increases habitat fragmentation. Conversely, vegetation management actions and fire management preserve natural vegetative communities and wildlife habitat. The impact of these past, present, and reasonably foreseeable actions would generally be long-term and both adverse and beneficial. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would

be long-term and both adverse and beneficial. Alternative B would contribute a noticeable increment to the cumulative adverse impact and an imperceptible increment to the cumulative beneficial impact on wildlife and wildlife habitat.

Conclusion

Alternative B would have minimal adverse impacts on wildlife and wildlife habitat in the park. By utilizing more of the existing roadway corridor in the park, the trail alignment would minimize newly developed land, habitat fragmentation, and the long-term loss of forested wildlife habitat. Direct impacts from removal of wildlife habitat would be limited to 19 acres, and long-term alteration of wildlife habitat would be limited to approximately 50 acres. The disturbance of 43 acres of forested habitats would have the potential to diminish the quality of wildlife habitat; however, natural communities would be somewhat reestablished through replanting and regeneration over time. Noise and visual disturbances during trail construction and ongoing recreational use would also result in impacts on wildlife, but these adverse impacts already exist on some level near the existing roadway corridor and would be expected to be minimally increased by the addition of a multiuse trail next to the road. Minimal short-term adverse impacts on aquatic habitat are possible from stream sedimentation during construction.

Although some habitat fragmentation could occur, alternative B would not noticeably reduce the inherent function of natural habitat areas and would not disrupt population dynamics or natural migration patterns. Instead, the adverse impacts described above would have a limited scope of affect within the park's wildlife resources. For instance, individual animals or small groups of animals may experience negative impacts from trail construction, but the impacts would not be detrimental to local or regional wildlife populations for any wildlife species found in the park. Further, rare wildlife species would not be affected by the trail. As such, factors such as species diversity, richness, and abundance within the park would not be affected by this alternative. Therefore, the impacts of alternative B on wildlife and wildlife habitat would not approach the level of significant. Alternative B would contribute a noticeable increment to the cumulative impact.

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

General Impacts

Under alternative C, there would be direct and indirect impacts on the existing wildlife and wildlife habitat in the park from the construction and use of the multiuse trail. Types of impacts would be similar to alternative B, and could generally include the following:

- Direct impacts from long-term displacement of wildlife habitat
- Direct impacts from injury or death of individuals or populations
- Indirect impacts from alteration of or disturbance to wildlife habitat
- Indirect impacts on wildlife populations

Excavation, grading, and construction activities in alternative C would disturb up to approximately 67 acres of existing vegetation (approximately 22 acres of the existing montane-forest wildlife habitat, 22 acres of ponderosa pine/grassland habitat, 10 acres of shrub habitat, and 13 acres of road-side grassland/barren areas) that currently provides wildlife habitat. Similar to alternative B, impacts on forests (including montane-

forest and ponderosa pine/grassland habitats) would be more detrimental than impacts on the other habitat types due to the loss of valuable foraging, nesting, and denning habitat for multiple species of wildlife.

Of the 67 acres of vegetation disturbed under alternative C, direct impacts due to the removal of wildlife habitat would be limited to the 17 acre footprint of actual trail area. Similar to alternative B, the remaining 50 acres of vegetation disturbed in newly disturbed areas surrounding the trail (e.g. graded slopes) would be replanted with native species and would regenerate somewhat over time. Due to the long period of time required for natural communities to regenerate and function suitably for wildlife, this would be considered a long-term alteration of wildlife habitat (occurring over a period of decades).

Habitat fragmentation under alternative C would be greater than expected under alternative B (see chapter 2 graphics for graphics depicting the different routes). The overland segment of the trail alignment east of Horseshoe Park would stray from the road (by more than 30 feet) for 1 mile, creating a gap in what is currently a relatively contiguous vegetated landscape. During initial construction of the trail, fragmentation would be noticeable. Even after revegetation of the areas on either side of the trail, this newly-developed corridor would impose greater alterations in habitat usage and/or alter wildlife travel corridors than under alternative B. The remainder (the majority) of the trail would follow the road and, as described under alternative B, would also cause increased habitat fragmentation. Widening the overall developed footprint of the roadway corridor could result in increased wildlife collisions either by vehicles or faster multiuse trail users. As described under alternative B, the adverse direct impacts on wildlife, such as injury or death, would affect individuals or small groups of animals, but not local or regional populations.

Due to the overland segment of trail, alternative C would also be expected to result in additional disruptions of wildlife caused by noise and visual disturbance from construction and recreational activity. Disruptions along roadway corridors would be similar to those described under alternative B; however, disturbance from construction activities and long-term recreational activity under alternative C could be greater than under alternative B because the expansion of the developed area outside of existing roadway corridors (where disturbance of this nature is currently infrequent). This expansion would introduce potential sources noise and visual disturbance that could increase opportunity for wildlife avoidance behavior, inhibited communication, and buffer zones of reduced wildlife activity. While this type of indirect disturbance is poorly understood for some species and can vary greatly based on site-specific conditions, the potential scope of effect is relatively small due to the abundance of wildlife and wildlife habitat in the park, and the absence of rare wildlife species in the project corridor.

Species-Specific Impacts

The impact to large ungulates also is expected to be minimal under alternative C. Unlike alternative B, habitat loss and disturbance would not be limited to areas bordering the road or parking areas, or to areas where animals have become habituated or tolerant of human activity. However, this path avoids the western portion of Sheep Lakes, where sheep are known to migrate seasonally out of the mountains and to the lakes in Horseshoe Park known as Sheep Lakes. Avoiding this area would further reduce the possibility of impacts on sheep and elk using this area. As mentioned under alternative B, the elk and sheep commonly found in the Horseshoe Park area are habituated to human activity. Further, studies of ungulate behavior have concluded an apparent decrease in behavioral responsiveness of elk near multiuse trails, especially during peak visitation, suggesting that this species can be tolerant of this type of disturbance. Noise and disturbance during the spring

calving season in June and during the fall rut in September and October may cause elk to seek quieter habitat farther from the trail. However, as Hardy and Crooks (2011) suggest, there would be no noticeable long-term impacts on ungulates from the multiuse trail construction or use under alternative C.

Similar to alternative B, other mammals, such as black bears, coyotes, weasels, porcupines, and squirrels, may be similarly affected by noise and disturbance during construction and may temporarily avoid activity near the project corridor from May to October. Construction activities could have a minimal short-term effect on black bear movement or activity near the multiuse trail, but long-term impacts on black bears are not expected. However, temporarily displaced wildlife would be expected to return following completion of construction.

Alternative C could increase displacement of cavity nesting bird species due the increase in proportional loss of forested habitat. However, most cavity nesting birds would be expected to relocate following construction. While various owls, red-tailed hawks, and northern goshawks are occasionally observed in the project corridor, no nest sites are located near the proposed trail location and impacts would be negligible. Both short-term and long-term negative impacts on bird species from alternative C are expected to be minimal and local in scale.

Similar to alternative B, alternative C would also result in the loss of wetland habitat potentially utilized by chorus frogs, boreal toads, northern leopard frogs, and other amphibians. However, alternative C would impact less wetland habitat than alternative B. In either case, impacted wetlands do not provide breeding habitat for amphibians, but amphibians may use some of these wetland areas for foraging or other normal biological activities. Further, no rare amphibian species or habitat would be affected, so the loss of amphibian habitat would be replaced by wetland restoration elsewhere in the park. Therefore, short-term and long-term adverse impacts on amphibian species from alternative C are also expected to be minimal and local in scale.

Similar to alterative B, aquatic species in Mill Creek, Glacier Creek, Big Thompson River, Hidden Valley Creek, and Fall River could potentially be impacted by trail construction activities adjacent to drainages. However, the potential for a short-term increase in stream sedimentation would be lessened due to the reduction in wetland and stream impacts in alternative C. Negative environmental effects in waterways, such as reduced water quality and aquatic habitat would also be fewer. Best management practices for erosion and sediment control would be implemented to minimize the introduction of sediments to these drainages. Any increased sediment collected in these waterways during construction would have minimal long-term impacts because sediments in these high gradient drainages would be removed during high flow periods. No long-term adverse effects on aquatic resources are expected following construction and revegetation of disturbed areas.

Mitigation of Impacts

Mitigation and conservation measures would be incorporated into alternative C to minimize potential impacts on wildlife. These measures are the same as those described in alternative B, and were developed and effectively implemented during other park projects.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting wildlife and wildlife habitat under alternative C would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, and fire management. Collectively, these actions have resulted or may result in long-term adverse and beneficial impacts on wildlife and wildlife habitat. Impacts of these actions are described under alternative B. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be long-term and both adverse and beneficial. Alternative C would contribute a noticeable increment to the cumulative adverse impact and an imperceptible increment to the cumulative beneficial impact on wildlife and wildlife habitat.

Conclusion

Similar to alternative B, alternative C would have minimal adverse impacts on wildlife and wildlife habitat in the park. However, in comparison to alternative B, the proposed trail alignment would increase newly-developed land and the disturbance of forested wildlife habitat, utilizing less of the existing roadway corridor in the park. Within the overland section of the alignment, the trail would increase newly developed land, habitat fragmentation, and the removal of forested wildlife habitat. Direct impacts from removal of wildlife habitat would be limited to 17 acres, and long-term alteration of wildlife habitat would be limited to approximately 50 acres. The disturbance of 44 acres of forested habitats would have the potential to diminish the quality of wildlife habitat; however, natural communities would be somewhat reestablished through replanting and regeneration over time. Noise and visual disturbances during trail construction and ongoing recreational use would also result in impacts on wildlife, but these adverse impacts already exist on some level near the existing roadway corridor and would be expected to be minimally increased by the addition of a multiuse trail next to the road. Minimal short-term adverse impacts on aquatic habitat are possible from stream sedimentation during construction.

Although more habitat fragmentation could occur in alternative C, the increase would not noticeably reduce the inherent function of natural habitat areas and would not disrupt population dynamics or natural migration patterns. Instead, similar to alternative B, the adverse impacts described above would have a limited scope of affect within the park's wildlife resources. For instance, individual animals or small groups of animals may experience negative effects from trail construction, but the effects would not be detrimental to local or regional wildlife populations for any wildlife species found in the park. Further, rare wildlife species would not be affected by the trail. As such, factors such as species diversity, richness, and abundance within the park would not be affected by this alternative. Therefore, the impacts of alternative C on wildlife and wildlife habitat would not approach the level of significant. Alternative C would contribute a noticeable increment to the cumulative impact.

WETLANDS AND OTHER WATERS OF THE U.S.

METHODOLOGY

Potential impacts on wetlands are assessed based on the current description of wetlands presented in chapter 3 of this EA. Current wetlands were compared with the alternatives described in chapter 2 to

determine how each wetland area would be impacted. Resource-specific context for assessing impacts of the alternatives on wetlands includes

- Wetlands have unique functions and values (groundwater recharge, stormwater storage, discharge, unique habitats; etc.) that are intrinsic to wetlands and cannot be easily duplicated or replaced.
- Wetland function and value is variable. Densely vegetated wetlands can provide even greater functional aspects, including nutrient reduction and pollution filtration that have a direct impact on the quality of the associated wetland systems.
- Waters of the U.S. can include features such as rivers, stream channels, and open waters (among others) that may provide additional functions and values to overall wetland complexes.
- U.S. Army Corps of Engineers, through the federal Nationwide Permit program (33 CFR 330), views the discharge of dredge or fill material up to 0.5 acres into non-tidal waters of the United States for recreational projects as having less than minimal impact on the aquatic environment.
- The National Park Service manages wetlands in compliance with NPS mandates and the requirements of Executive Order 11990 (Protection of Wetlands), the Clean Water Act, the Rivers and Harbors Appropriation Act, and the procedures described in DO-77-1 (Wetland Protection). As such, the National Park Service has adopted a goal of "no net loss" of wetlands and also has set goals for a long-term net gain of wetlands service wide (NPS 2002).
- NPS *Management Policies 2006* call for park managers to preserve and restore the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant populations and the communities and ecosystems in which they occur. They should also strive to minimize human impacts on native plants, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006).

IMPACTS OF ALTERNATIVE A: NO ACTION

Under alternative A, the multiuse trail would not be constructed. Without the multiuse trail, park visitation would continue to include congested traffic during peak visitation, but this would not result in additional impacts on wetlands located near roadways and parking lots.

Cumulative Impacts

Although past, present, and reasonably foreseeable future actions may and have affected wetlands and other waters of the U.S. in the area, alternative A would have no impacts and therefore would not contribute to the effects of other actions. Consequently, there would be no cumulative impacts on wetlands and other waters of the U.S. under alternative A.

Conclusion

Alternative A would have no impact on wetlands and other waters of the U.S. because a multiuse trail would not be developed. No destruction, loss, or degradation of wetlands would occur, thereby preserving the resources in their existing conditions. Therefore, the impacts of alternative A on wetlands and other waters of the U.S. would not approach the level of significant.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

Under alternative B, there would be direct and indirect impacts on wetlands and other waters of the U.S. from the construction of the multiuse trail. The multiuse trail would traverse approximately 0.64 acre of wetlands and 347 linear feet of stream channel. The locations of impact areas are depicted in figures 11-14, and table 12 specifies the type, classification, and size of wetland and other waters of the U.S. that could be impacted under alternative B. Please note that for display purposes, the figures show the 40-foot project corridor; however, for the purpose of estimating the extent of impacts, the trail is assumed to be limited to 10 feet wide.

TABLE 12. IMPACTS OF WETLANDS AND OTHER WATERS OF THE U.S. UNDER ALTERNATIVE B

Resource Type	Cowardin et al. (1979) Classification	Size of Impacted Resource	Total Area of Impact Per Resource Type
Stream	R2UB1	24 linear feet	347 linear feet
	R2RB1	13 linear feet	
	R3RB1	294 linear feet	
	R4SB3	16 linear feet	
Wetland	PEM1B	0.08 acres	0.64 acres
	PEM1C	0.06 acres	
	PSS1C	0.11 acres	
	PFO1B	0.39 acres	

Source: VHB 2013

The stream and wetland types identified within alternative B (and summarized in Table 12) include water resources commonly found in the park, east of the Continental Divide. Unique wetland and stream types that do exist within Rocky Mountain National Park, such as those that provide habitat for threatened or endangered species, are avoided by alternative B. The wetland overview map shown in Figure 11 helps clarify the size and context of water resources affected by alternative B, showing their small size in comparison to larger complexes associated with Horseshoe Park and Moraine Park. Further, proposed impacts associated with alternative B avoid the broadest portions of these wetland complexes and utilize previously developed areas near existing road crossings. In the context of these larger wetland and stream systems, traversing approximately 0.64 acre of wetlands and 347 linear feet of stream channel near existing crossings would be expected to have no noticeable effect on the broader wetland ecosystems within the park.

Short-term adverse impacts could include sedimentation from stormwater runoff during trail construction activities. These impacts could temporarily disrupt biological conditions within wetland and/or stream channels. For example, increased sedimentation in a stream could temporarily increase turbidity in flowing water and reduce habitat quality for stream organisms. Surface scour from overland runoff could also change soil conditions and alter vegetation communities, thereby reducing functional aspects of vegetated wetlands such as nutrient reduction and pollution filtration. Assuming the proper installation and maintenance of best management practices, such as erosion and sediment control devices in sensitive areas, these potential impacts would only be temporary and relatively unnoticeable on a local scale. Further, conditions would likely return to normal shortly after the multiuse trail construction.

In some instances, some support structures (such as wooden piles) may need to be installed to support boardwalks or other types of crossings to minimize impacts of trail installation. Additional temporary

sedimentation may result from installation of these supports and would result in a small amount of sediment and vegetation displacement for the life of the trail.

View of a Horseshoe Park impact area, where alternative B would cross Fall River and its adjacent scrub-shrub wetlands. (Photo credit: VHB)

The long-term impacts on wetland and other waters of the U.S. in alternative B would include the shading of wetlands and stream resources by boardwalks or other crossing mechanisms that avoid fill to the greatest extent possible. Wetland functions that could be affected by the installation of boardwalks would include minor localized floodflow alteration, sediment/shoreline stabilization, and wildlife habitat. While the shading of these stream and wetland resources would reduce the quality of such functions and values, the extent of the impact would be minimal in nature due to best management practices, and the adverse effect would likely remain on a local scale.

Wetland mitigation includes avoidance, minimization, and compensation. Any unavoidable impacts on wetlands would be compensated for through in-park replacement of wetlands at a minimum ratio of 1:1. The site or sites for mitigation have not been identified at this time; however, the park is aware of several areas that would benefit from restoration. Appropriate sites would be identified in collaboration with the U.S. Army Corps of Engineers during any relevant permitting.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting wetlands and other waters of the U.S. under alternative B would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, and fire management. Collectively, these actions have resulted or may result in both beneficial and adverse long-term impacts on wetlands and other waters of the U.S. For instance, Bear Lake Road reconstruction activities involved the realignment of a segment of the road in order to avoid impacts to wetlands. In addition, horse use along horse trails in the vicinity of the project corridor also has the potential to increase sedimentation in wetlands and other waters of the U.S. Vegetation management results in ecosystem maintenance which reduces impacts on wetlands. Similarly, fire management actions maintain the current ecosystem and reduce the likelihood of

catastrophic wildland fires, which in turn prevent adverse impacts on wetlands and other waters of the U.S. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would be long-term and both beneficial and adverse. Alternative B would contribute a noticeable increment to the cumulative adverse impact on wetlands and other waters of the U.S.

Conclusion

Alternative B would have adverse impacts on wetlands and waters of the U.S. from the construction of multiuse trail segments that traverse areas containing these resources. The intensity of the impacts would be minimized due to the placement of the trail within an existing roadway corridor, where most natural resources have already been influenced by road construction, utilities, and other infrastructure. New impacts on wetland and other waters of the U.S. would be limited to 0.64 acres of wetlands and 347 linear feet of stream channel, and further minimized through avoidance of unique habitats and use approved best management practices. Although there could be very minor alteration of existing wetlands and waters of the U.S. characteristics and conditions, no net loss would occur. Within the context of the broader wetland ecosystem, the capacity of wetland and stream resources to perform existing functions and values would not be affected by alternative B. Due to the size of wetland impacts, the U.S. Army Corps of Engineers may determine alternative B to have less than minimal impacts on the aquatic environment, but it may not qualify for the nationwide permit program. Therefore, the impacts of alternative B on wetlands and waters of the U.S. would not approach the level of significant. Alternative B would contribute a noticeable increment to the cumulative adverse impact on wetlands and other waters of the U.S.

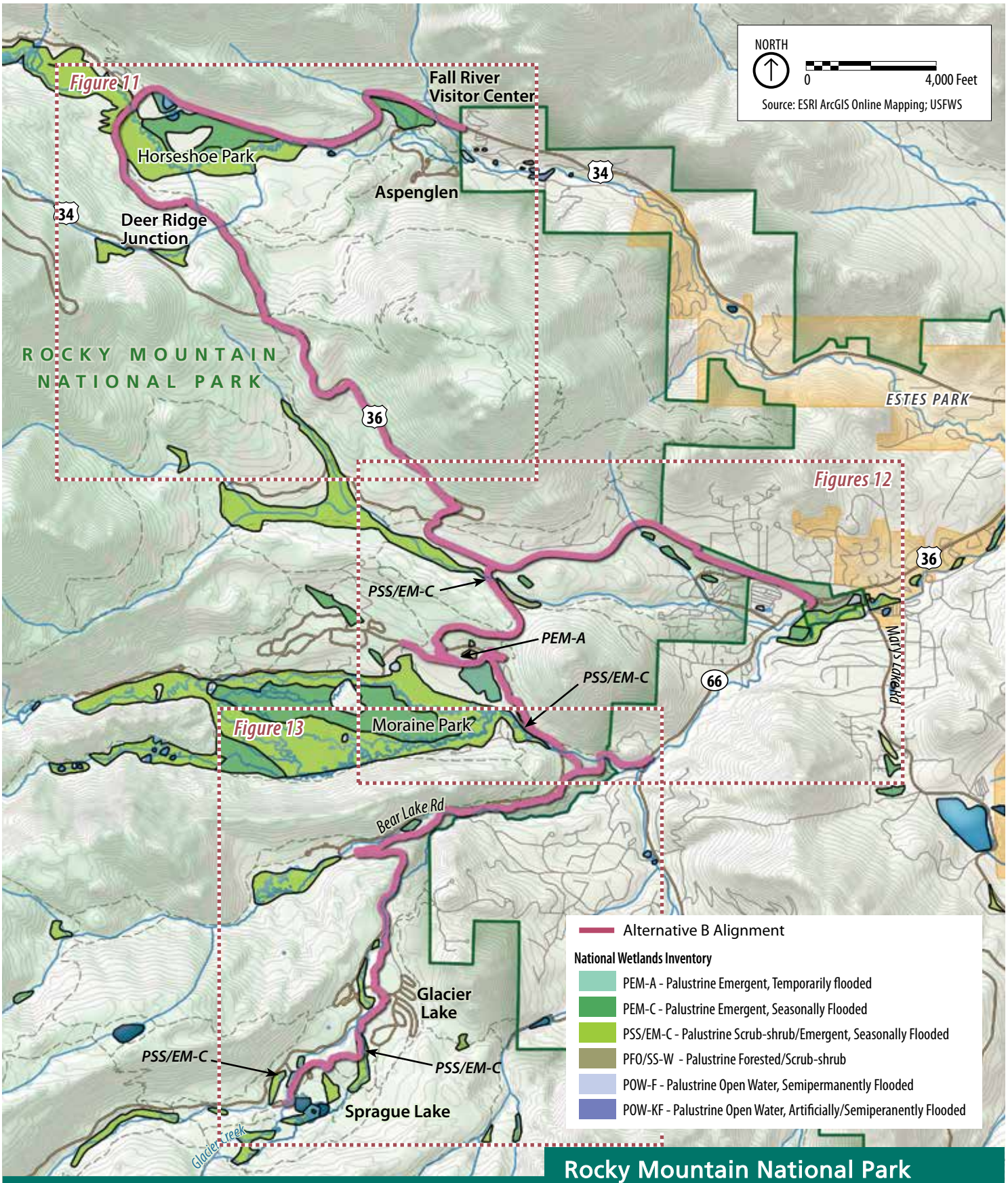

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FIGURE 11

Alternative B Wetland Overview Map

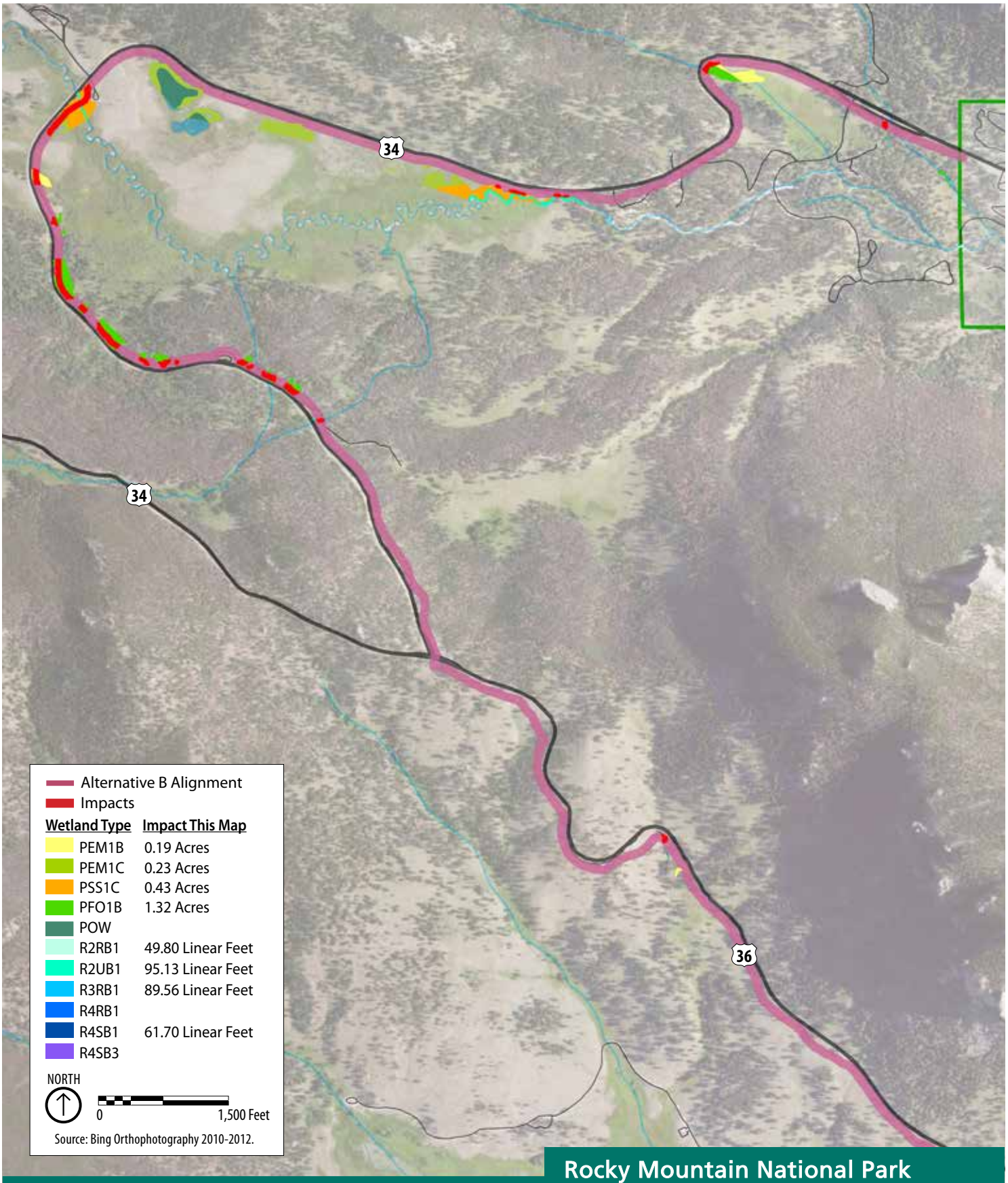

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FIGURE 12

Alternative B - Wetland Map #1

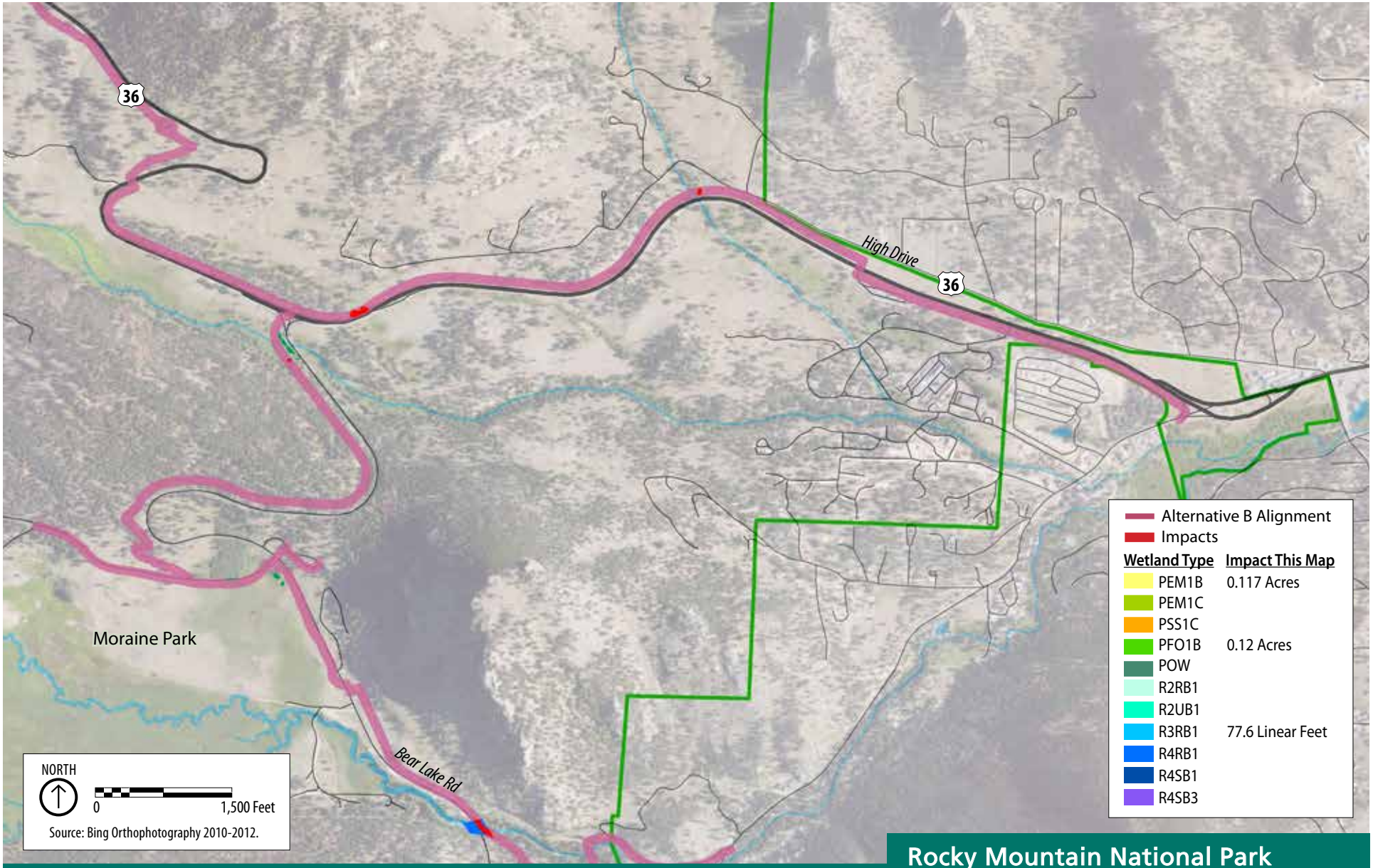

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FIGURE 13

Alternative B - Wetland Map #2

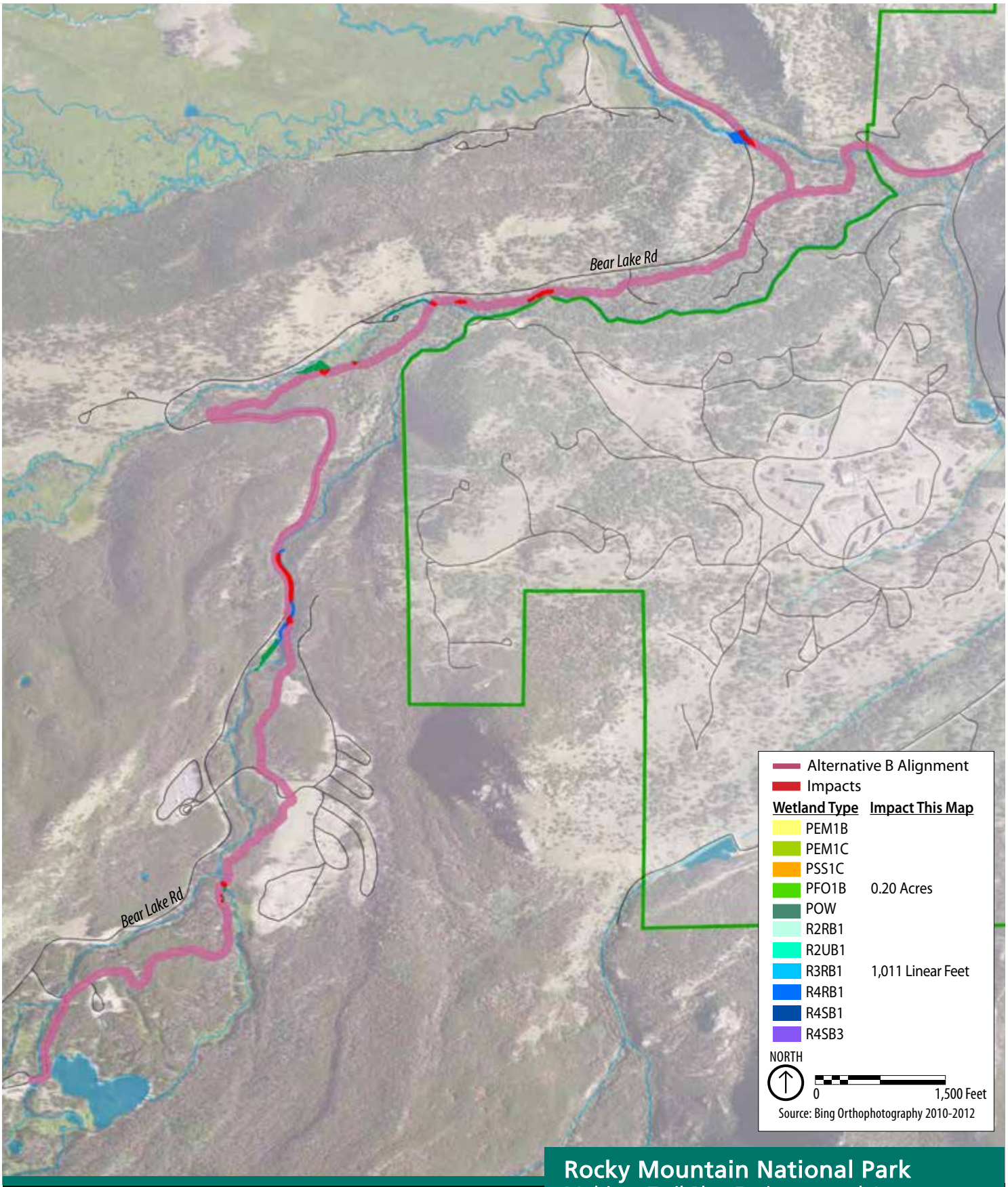

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FIGURE 14

Alternative B - Wetland Map #3

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, there would be similar direct and indirect impacts on wetland and other waters of the U.S. as described under alternative B. However, due to the overland route that avoids the wetlands in Horseshoe Park, the extent of impacts under this alternative is less than under alternative B. The multiuse trail would traverse approximately 0.09 acres of wetlands and 321 linear feet of stream channel. The locations of impact areas are depicted in figures 15-18, and table 13 specifies the type, classification, and size of wetland and other waters of the U.S. that could be impacted under alternative C. Again, please note that for display purposes, the figures show the 40-foot project corridor; however, for the purpose of estimating the extent of impacts, the trail is assumed to be limited to 10 feet wide.

TABLE 13. IMPACTS ON WETLANDS AND OTHER WATERS OF THE U.S. WITHIN THE ALTERNATIVE C PROJECT CORRIDOR

Resource Type	Cowardin et al. (1979) Classification	Size of Impacted Resource	Total Area of Impact Per Resource Type
Streams	R2UB1	10 linear feet	321 linear feet
	R3RB1	296 linear feet	
	R4SB3	15 linear feet	
Wetlands	PEM1B	0.02 acres	0.09 acres
	PFO1B	0.07 acres	

Source: VHB 2013

As described in alternative B, the stream and wetland types identified within alternative C (and summarized in Table 13) include water resources commonly found in the park, east of the Continental Divide. Unique wetland and stream types that do exist within Rocky Mountain National Park, such as those that provide habitat for threatened or endangered species, are also avoided by alternative C. The wetland overview map shown in Figure 15 helps clarify the size and context of water resources affected by alternative C, showing their small size in comparison to larger complexes associated with Horseshoe Park and Moraine Park. Even more than alternative B, the impacts associated with alternative C avoid the broadest portions of these wetland complexes and utilize areas near road existing crossings.

In the context of these larger wetland and stream systems, traversing approximately 0.09 acre of wetlands and 321 linear feet of stream channel would be expected to have no noticeable effect on the broader ecosystems within the park. The impacts on wetlands and other waters of the U.S. from the construction and long-term presence of wetland/stream crossings under alternative C could cause minor disruptions in biological conditions. However, impacts would be mitigated to the extent practicable, changes are expected to be relatively unnoticeable on a local scale, and the extent of impacts on these resources would be less than under alternative B. Replacement of wetlands would take place as needed, as described under alternative B.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting wetlands and other waters of the U.S. under alternative C would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, and fire management. The impacts of the actions are described under alternative B. Collectively, these actions have resulted or may result in both beneficial and adverse long-term impacts on wetlands and other waters of the U.S. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be long-term and both beneficial and adverse. Alternative C would contribute a noticeable increment to the cumulative adverse impact on wetlands and other waters of the U.S.

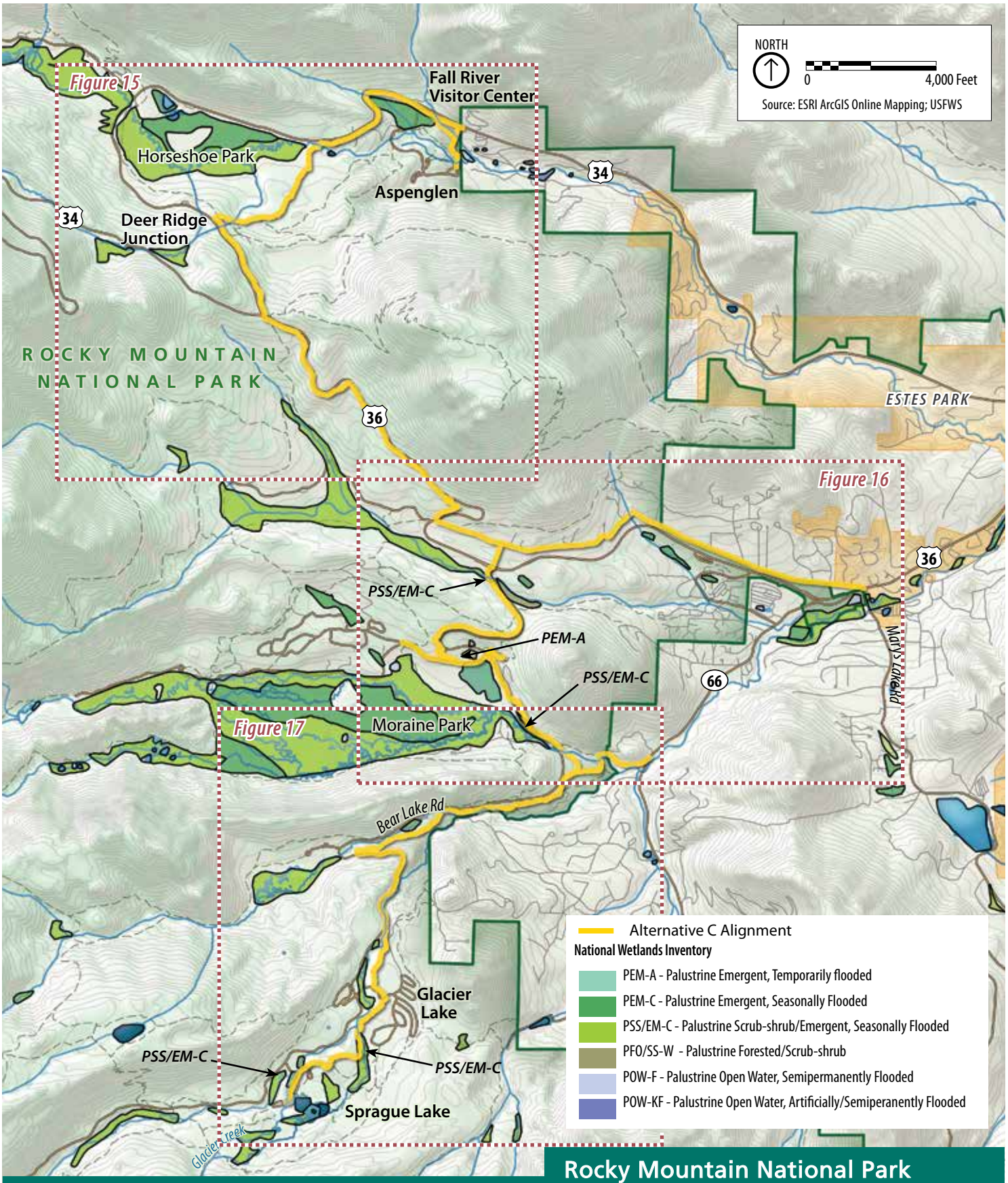

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FIGURE 15

Alternative C - Wetland Overview Map

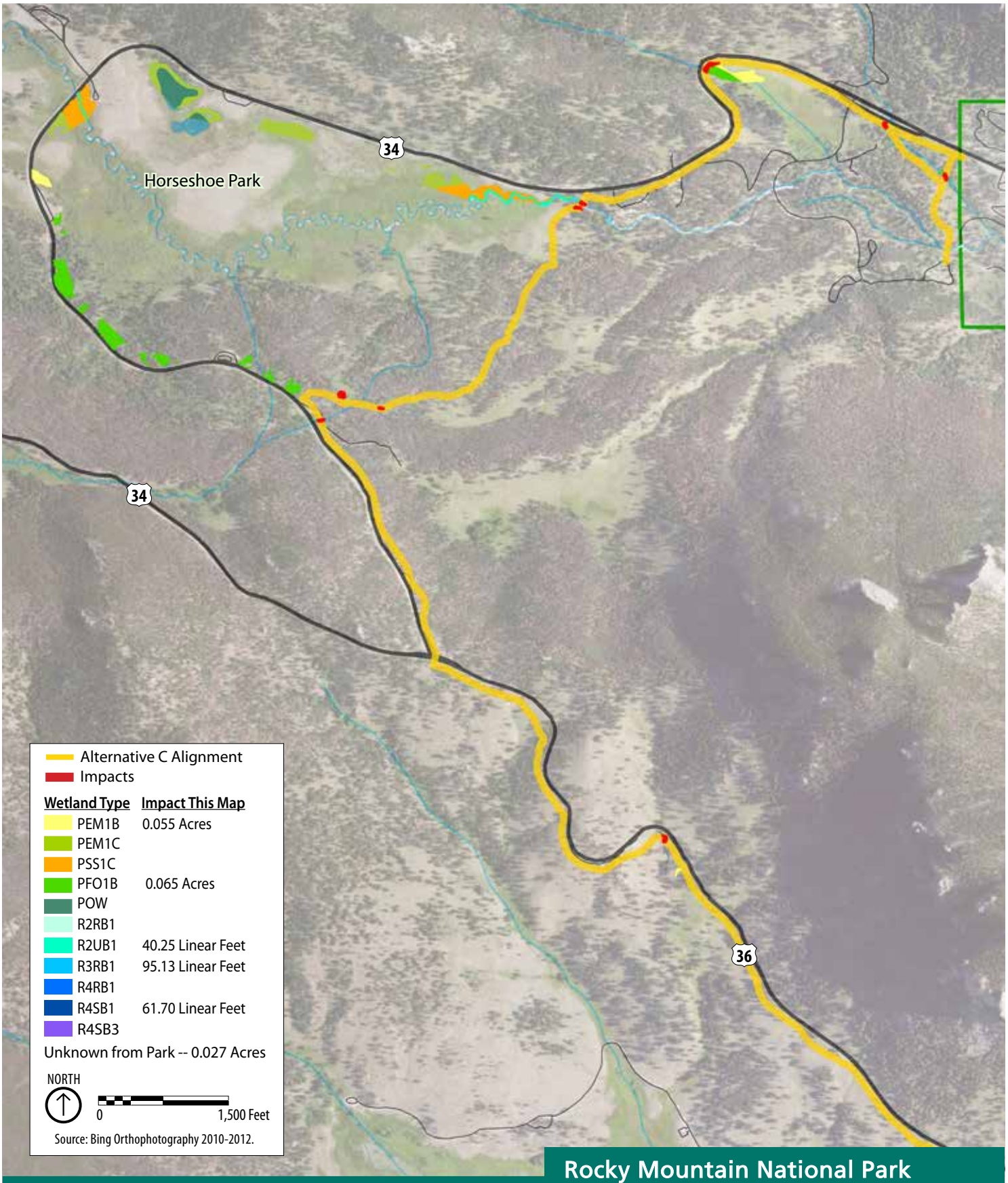

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FIGURE 16

Alternative C - Wetland Map #1

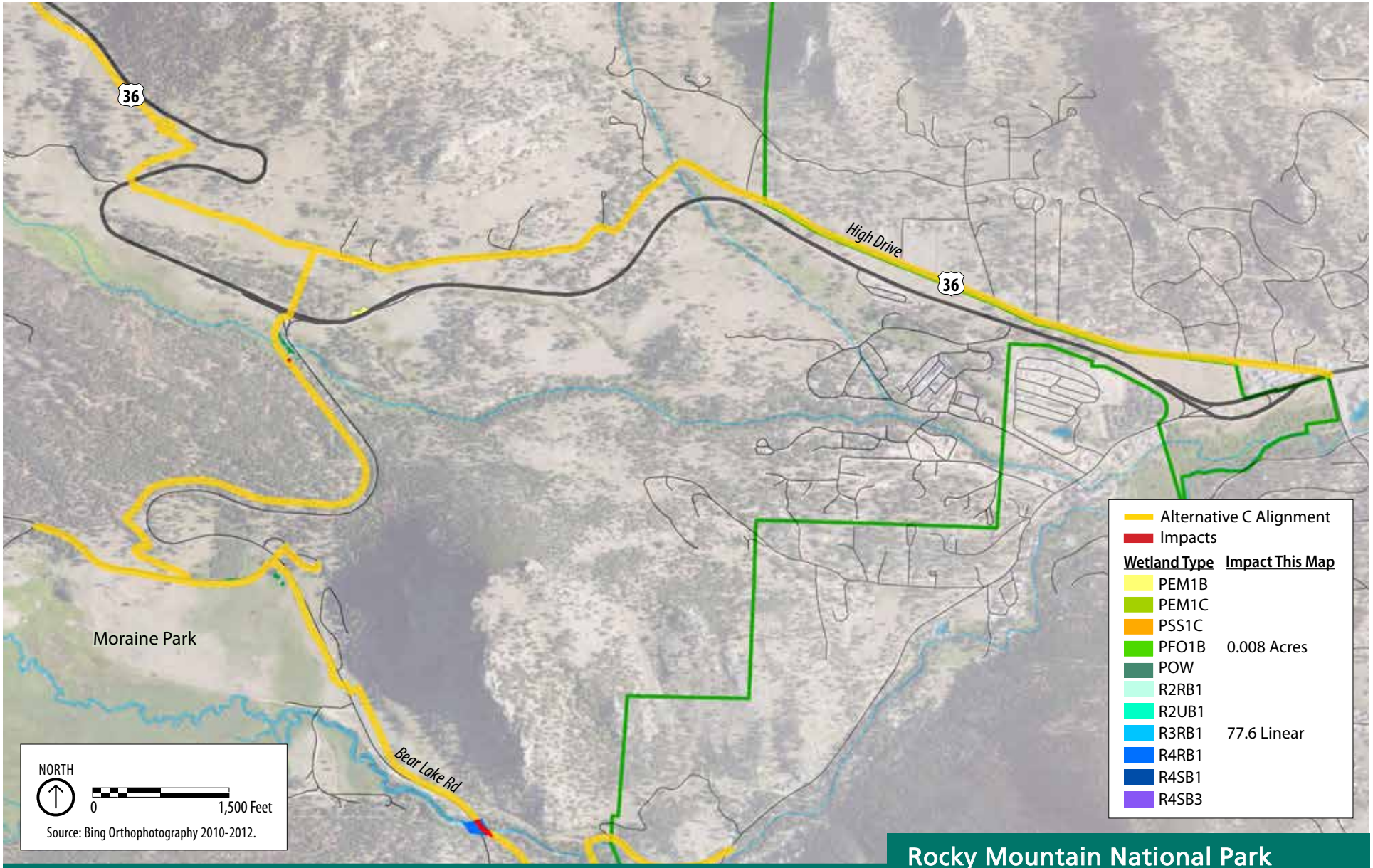

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FIGURE 17
Alternative C - Wetland Map #2

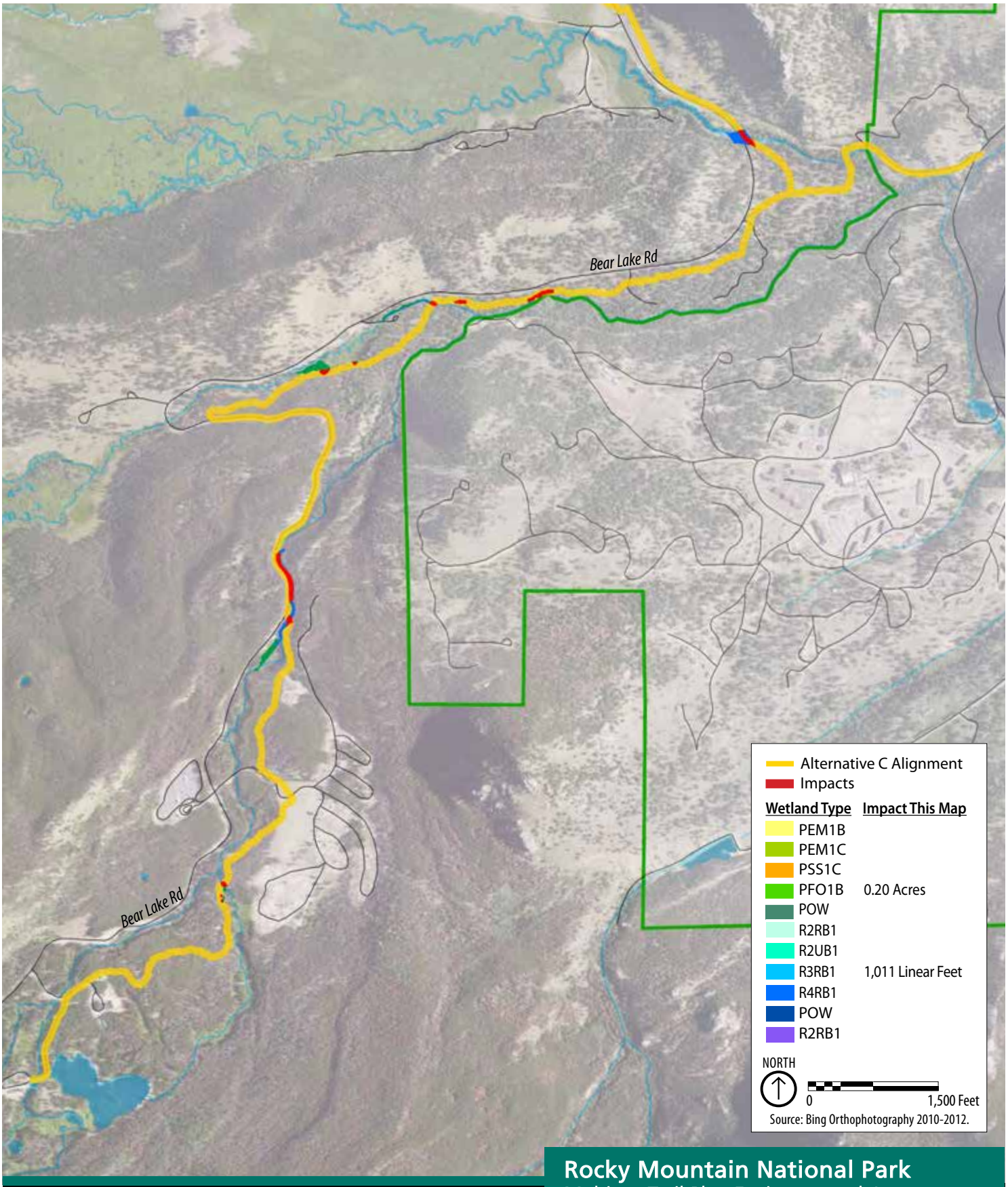

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FIGURE 18

Alternative C - Wetland Map #3

Conclusion

Similar to alternative B, alternative C would have adverse impacts on wetlands and waters of the U.S. from the construction of multiuse trail segments that traverse areas containing these resources. The intensity of the impacts would be minimized due to the placement of the trail within an existing roadway corridor, where most natural resources have already been influenced by road construction, utilities, and other infrastructure. New impacts on wetland and other waters of the U.S. would be limited to 0.09 acres of wetlands and 321 linear feet of stream channel, and further minimized through avoidance of unique habitats and use approved best management practices. Although there could be very minor alteration of existing wetlands and waters of the U.S. characteristics and conditions, no net loss would occur. Within the context of the broader wetland ecosystem, the capacity of wetland and stream resources to perform existing functions and values would not be affected by alternative C. Due to the size of wetland impacts, the U.S. Army Corps of Engineers may determine alternative C to have less than minimal impacts on the aquatic environment, and it would be expected to qualify for the nationwide permit program. The impacts of alternative C on wetlands and waters of the U.S. would not approach the level of significant. Alternative C would contribute a noticeable increment to the cumulative adverse impact on wetlands and other waters of the U.S.

HISTORIC STRUCTURES, HISTORIC DISTRICTS, CULTURAL LANDSCAPES

METHODOLOGY

Potential impacts on historic structures, historic districts, and cultural landscapes within the project corridor are assessed based on the qualities that contribute to the significance of the cultural resources presented in chapter 3 of this document, specifically those qualities that contribute to the properties' setting, feeling and association. The current settings of these resources was compared with the alternatives described in chapter 2 to determine how cultural resources would be impacted. Resource-specific context for assessing impacts of the alternatives on historic structures, historic districts and cultural landscapes includes the following:

- All of the properties that are either listed or determined eligible for the National Register of Historic Places were recognized as meeting Criterion A for their association with Recreation and Tourism Development, 1865-1945, the transportation history of Rocky Mountain National Park and/or Politics/Government, and/or Criterion C, for their representation of NPS rustic architecture (1870-1941).
- Although existing documentation of the cultural resources did not always specifically note the importance of their settings, it is evident that their natural surroundings, which include sweeping views of mountains, forests of tall ponderosa pines, random boulders, native grasses other vegetation all contribute to their significance and were the reasons in most instances for their location and siting.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under alternative A there would be increasing adverse impacts to historic structures, historic districts, and cultural landscapes even if no multiuse trail is constructed. Despite the park's current and future efforts to control vehicular traffic and parking, the cultural resources can be expected to face noticeable adverse impacts as the presence of vehicles and congestion during peak visitation would continue to intrude into their peaceful settings.

Cumulative Impacts

Past, present, and reasonably foreseeable actions at the park affecting historic structures, historic districts, and cultural landscapes under alternative A would include the following: Bear Lake Road reconstruction, vegetation management, fire management, and Fall River entrance reconstruction. Collectively, these actions have resulted or may result in long-term adverse and beneficial impacts on historic structures, historic districts, and cultural landscapes. Bear Lake Road reconstruction widened the roadway and realigned one segment, thereby altering the visual qualities of cultural resources in the project corridor. Vegetation and fire management preserve natural vegetative communities and the cultural landscapes in the project corridor; however, the removal of trees infested with bark beetles could have adverse impacts on cultural resources. The Fall River entrance would likely be reconstructed so as not to intrude on historic properties but has the potential to do so. The impact of these past, present, and reasonably foreseeable actions would generally be long-term and both adverse and beneficial. When combining the impacts of these projects with the impacts of alternative A, the cumulative impact would be long-term and both adverse and beneficial. Alternative A would add an imperceptible increment to the cumulative adverse impact on historic structures, historic districts, and cultural landscapes.

Conclusion

Alternative A would result in changes to the existing conditions of the cultural resources in the project corridor due to continued vehicular and parking issues which would detract somewhat from the natural setting of the resources. However, the characteristics for which they were listed or determined eligible for the National Register would not be noticeably diminished, based on a review of their National Register nomination or other official designation reports. Alternative A would add an imperceptible increment to the cumulative adverse impact on historic structures, historic districts, and cultural landscapes. Therefore, the impacts of alternative A on historic structures, historic districts, and cultural landscapes would not approach the level of significant.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

Impact Overview

Under alternative B, there would be direct and indirect impacts to the settings of the cultural resources from the construction and use of the multiuse trail. Examples of impacts could generally include the following:

- Removal of some pines and re-installation of boulders in the vicinity of the detached segments of the trail

- Direct impacts to roadways due to markings for road crossings and the construction of the trail itself in the road in some instances and the addition of signage along the multiuse trail
- Indirect impacts as views from historic properties outward may now include views of the detached trail and people on it

Noticeable impacts associated with alternative B would mainly involve the excavation, grading and construction of the detached trail segments which would add a linear hardened surface trail to the natural settings surrounding the cultural resources. Some pine trees and vegetation may need to be removed to accommodate the detached trail's location and boulders may need to be temporarily removed, although they would be re-installed in their original locations as much as possible. Most of the resources are nestled in relatively isolated locations within the park, surrounded by pines which shield the properties from the existing roads and trails; the exceptions are Trail Ridge Road, Bear Lake Road, and Beaver Meadows Visitor Center. The trail alignment would generally follow existing landscape contours, so the sloping and/or flat topography in the vicinity of the settings of the cultural resources would be retained.

Temporary impacts during construction would include the changed appearance of the resources' settings due to boulder and vegetation removal and the presence of construction trucks and other equipment.

Specific Impacts to Cultural Resources

Historic Structures

Beaver Meadows Visitor Center. In the vicinity of the visitor center, the detached multiuse trail would be located on the south side of US 36. The trail would add a linear hardened surface trail to the area north of the visitor center, which already fronts upon US 36 with a parking lot between. The multiuse trail would have only a minimal direct long-term impact on the visitor center's setting as the area already hosts various pedestrian and vehicular activities. In addition, the trail's location north of the visitor center has no direct or visual impact on the center's views of Long's Peak. The trail would also not noticeably impact the groves of ponderosa pine and native vegetation around the center that are recognized as most significant to its setting. Alternative B would have an imperceptible impact to this resource.

Trail Ridge Road. The location of the multiuse trail as a detached segment from the road would vary, on both the north and south sides of the road. At Deer Ridge Junction, the trail would cross under the road through a concrete tunnel/box culvert that is approximately 100 feet in length and 16 feet wide. The culvert would have an adverse direct and indirect, long-term impact on the road as it may require some physical intervention with the road and may be partially visible as it crosses under the road. The existing culverts, retaining walls, and guard rails along the road would not be impacted by the multiuse trail construction. Abutments and headwalls would be faced with natural stone to blend with natural landscape and historic character of Trail Ridge Rd.

The multiuse trail's location along the road would have a minimal indirect long term impact on the road as it would add a linear structure of hardened surface adjacent to the roadway. But the wider views of mountains, concentrations of ponderosa pines, boulders and native vegetation and other natural features along the road would only be minimally impacted by the presence of this trail within the foreground of the road's setting. Alternative B would have a noticeable impact to this resource as it would slightly change the road's existing appearance, but not alter its wider viewshed.

Glacier Basin Ranger Station. The multiuse trail, which is detached from Bear Lake Road in the vicinity of the station, would extend along the eastern edge of a thick concentration of ponderosa pine which borders a large meadow in front of the station. The entrance road and interior campground roads are also visible from the station. The trail may be visible in the middle ground view from the station, but its location bordering the pines would help ameliorate its presence as it would not stand out as a totally separate feature. The trail would be approximately 45 feet from the ranger station. The presence of additional pedestrians and other users along the trail would only minimally indirectly impact the setting as such activity to some degree already exists within the setting. Alternative B would have a noticeable impact to this resource, but would not adversely impact its setting.

Bear Lake Road. The multiuse trail along Bear Lake Road, a 5.8-mile long segment, would be located on the west side of the road on its northern end, with a crossing further south to the east side of the road. Although most of the trail is detached, with a likely setback of 8-10 feet, it would be attached to the road near the Moraine Park Campground. The new linear trail with hardened surface would be added to the road's setting, resulting in a minimal impact to the road as the areas close to the road are only sparsely covered with ponderosa pines, vegetation, and boulders and the visibility of the trail's actual path would be hidden behind some of the trees, lessening the visual impact. New signage and cross-walk markings on the road as it crosses to the east side of the road would add a layer of such infrastructure to the area, which already hosts signage and road markings, but it would only have a minimal, long-term impact to this road. Alternative B would have a noticeable impact to this resource, but would not adversely impact its setting.

Historic Districts

Fall River Entrance Historic District. The new multiuse trail's location on the south side of U.S. 34 for one mile, set back from the road by 10 feet or more would be visible from the Fall River Entrance Historic District's south boundary as the district is on the north side of the road. The trail would have a long-term impact as it adds a new structure within the setting. Alternative B would have a noticeable impact to this resource, but would not adversely impact its important distant viewshed.

Moraine Park Museum and Amphitheater Historic District. A short spur segment of the trail from its main alignment along Bear Lake Road would lead into the Moraine Park Museum and Amphitheater Historic District. The spur would be located on the existing pavement of the entrance road and would only require markings here to indicate the new trail's route. The main alignment on Bear Lake Road would be located on the west side of this road, west of this complex. The trail would be located along a boulder-strewn area that contains few trees, although the museum (now the Discovery Center) is now shielded from Bear Lake Road by groups of ponderosa pines. The amphitheater is located farther east from Bear Lake Road and is completely hidden by groves of ponderosa pines and its natural bowl setting within the landscape. Alternative B would have an imperceptible impact to this resource.

The main alignment of the multiuse trail in the vicinity of this historic district would have a subtle long-term impact on the district by adding a linear structure with hardened surface to the foreground setting of the complex. The trail is detached from the road in this area, would travel along the western side of Bear Lake Road, where a gentle slope would reduce the visibility of the trail when viewed from the east within the complex. The multiuse trail would have no impact on the mountain views to the east and west of the complex. Alternative B would have an imperceptible impact to this resource.

William Allen White Cabin/Studio Historic District. The multiuse trail would be detached from Bear Lake Road on the west side of the road in the vicinity of this historic district in order to minimize the visual impact. The district's setting of sparse concentrations of ponderosa pines, boulder-studded ground, and native vegetation would be minimally impacted visually by the addition of the multiuse trail, mitigated by the presence of the existing road nearby. The mountain views to the west, a major factor in the siting of the complex, are not impacted by the presence of the multiuse trail. Alternative B would have a noticeable impact to this resource, but would not adversely impact its setting.

Cultural Landscapes

Old High Drive Area. The multiuse trail would travel along a section of High Drive Road then cross U.S. 36 and run along the south side of the road. The residences within the area are largely hidden by concentrations of ponderosa pine from the roads to the south. The trail's location on High Drive Road would have minimal visual impact on the area's setting as it is physically located on the road and would only require markings to indicate the trail. The trail segment to the south along US 36 would be minimally visible due to the intervening groves of trees. Alternative B would have an imperceptible impact to this resource.

Glacier Basin Campground Area. The multiuse trail, which is detached from Bear Lake Road in the vicinity of the campground, would extend along the eastern edge of a thick concentration of ponderosa pine which borders a large meadow in front of it. The entrance road and interior campground roads are also visible and are physically part of the campground's infrastructure. The trail may be visible in the middle ground view from the campground, but its location bordering the pines would help ameliorate its presence as it would not stand out as a totally separate feature. The presence of additional pedestrians and other users along the trail would have a slight impact on the setting as such activity to some degree already exists within the setting. Alternative B would have a noticeable impact to this resource, but would not adversely impact its setting.

Tuxedo Park Residences Area. The multiuse trail would travel on the south side of Bear Lake Road in the vicinity of the Tuxedo Park Area, which lies further south. The trail is located within a dense grouping of ponderosa pine, which may necessitate the removal of some trees. The trail would add a linear component with hardened surface to the structures' setting. But Alternative B would have a noticeable impact, but would not adversely impact its setting due both to the intervening groves of trees between the trail and the area and their distance from the trail.

Mill Creek Ranger Station and Residence Area. The multiuse trail would run along the south side of Bear Lake Road as a detached trail within a thick grove of ponderosa pine. The trail would skirt the eastern edge of the area, which includes both a station and residence, along with other ancillary structures accessed by an existing asphalt-paved road. The multiuse trail would have a noticeable impact due to the addition of a linear structure with hardened surface to the area's setting but the overall wooded setting of the area would remain intact with minimal physical interruption. Alternative B would have a noticeable impact to this resource, but would not adversely impact its setting.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting historic structures, historic districts, and cultural landscapes under alternative B would include the following: Bear Lake Road reconstruction,

vegetation management, fire management, and Fall River entrance reconstruction. Impacts of these actions are described under alternative A. Collectively, these actions have resulted or may result in long-term adverse and beneficial impacts on historic structures, historic districts, and cultural landscapes. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would be long-term and both adverse and beneficial. Alternative B would add a noticeable increment to the cumulative adverse impact on historic structures, historic districts, and cultural landscapes.

Conclusion

Alternative B would result in changes to the existing conditions of the cultural resources in the project corridor due to minimal physical or visual impacts to their settings. The construction of an underpass below Trail Ridge Road would have a direct physical and visual impact, but otherwise the changes to the cultural resources' physical appearance would be minimal. The values for which they were listed or determined eligible for the National Register would not be noticeably diminished. Alternative B would contribute a noticeable increment to the cumulative adverse impact on historic structures, historic districts, and cultural landscapes. Overall, the impacts of alternative B on historic structures, historic districts, and cultural landscapes would not approach the level of significant.

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, there would be direct and indirect impacts to the settings of the cultural resources from the construction and use of the multiuse trail, which would be identical to alternative B throughout most of the project corridor, with two exceptions.

The first exception is in the northern segment of the project corridor where the trail would follow an overland route, and not travel along certain sections of U.S. 34 (Trail Ridge Road). The only difference between the two alternatives is that US 34 would experience less visual impact in the area where the overland route would bypass the road segment proposed in alternative B. Alternative C would not impact Trail Ridge Road.

The second exception is along Bear Lake Road west of the William Allen White Cabin/Studio Historic District where the multiuse trail is located on the east side of the road In alternative C, the trail would be closer to and more visible from the district. Alternative C would have a noticeable adverse impact on the historic district.

Examples of impacts could generally include the following:

- Removal of some pines and re-installation of boulders in the vicinity of the detached segments of the trail
- Direct impacts to roadways due to markings for road crossings and the construction of the trail itself in the roads in some instances and the addition of signage along the multiuse trail
- Direct impacts to roadways as markings for road crossings and the trail itself in some instances and signage would be added for the multiuse trail
- Indirect impacts as views from historic properties outward may now include views of the detached trail and people on it

Long-term direct impacts associated with alternative C would mainly involve the excavation, grading and construction of the detached trail segments which would add a linear structure with hardened surface to the natural settings surrounding the cultural resources. Some pine trees and vegetation may need to be removed to accommodate the detached trail's location and boulders may need to be temporarily removed, although they would be re-installed in their original locations as much as possible. Most of the resources are nestled in relatively isolated locations within the park, surrounded by pines which shield the properties from the existing roads and trails; the exceptions are Trail Ridge Road, Bear Lake Road, and Beaver Meadows Visitor Center. The trail alignment would follow existing landscape contours, so the sloping and/or flat topography in the vicinity of the settings of the cultural resources would be retained.

Short-term impacts during construction would include the changed appearance of the resources' settings due to boulder and vegetation removal and the presence of construction trucks and other equipment.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting historic structures, historic districts, and cultural landscapes under alternative C would include the following: Bear Lake Road reconstruction, vegetation management, fire management, and Fall River entrance reconstruction. Impacts of these actions are described under alternative A. Collectively, these actions have resulted or may result in long-term adverse and beneficial impacts on historic structures, historic districts, and cultural landscapes. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be long-term and both adverse and beneficial. Alternative C would add a noticeable increment to the cumulative adverse impact on historic structures, historic districts, and cultural landscapes.

Conclusion

Alternative C would result in changes to the existing conditions of the cultural resources in the project corridor due to minimal physical or visual impacts to their settings. The construction of an underpass below Trail Ridge Road would have a direct physical and visual impact, but otherwise the changes to the cultural resources' physical appearance would be minimal. The characteristics for which they were listed or determined eligible for the National Register would not be noticeably diminished. Alternative C would contribute a noticeable increment to the cumulative adverse impact on historic structures, historic districts, and cultural landscapes. Overall, the impacts of alternative C on historic structures, historic districts, and cultural landscapes would not approach the level of significant.

SITE ACCESS AND CIRCULATION

METHODOLOGY

Potential impacts on site access and circulation are assessed based on the current description of site access and circulation presented in chapter 3 of this EA. The current site access and circulation was compared with the alternatives described in chapter 2 to determine how site access and circulation would be impacted. Resource-specific context for assessing impacts of the alternatives on site access and circulation includes the following:

- NPS *Management Policies 2006* call for "trailheads, and trail access points from which trail use can begin, will be carefully tied into other elements of the park development and circulation system to facilitate safe and enjoyable trail use and efficient management" (NPS 2006).
- One of the management objectives for visitor use in the park's 1976 master plan was "to increase the enjoyment of Bear Lake and other heavily used areas by the improvement of circulation, methods of transportation, and the dissemination of visitor information" (NPS 1976).

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no-action alternative, the multiuse trail would not be constructed, and there would be no changes in site access and circulation. No changes would be made to the park roadways, trails, parking areas, or shuttle system. While bicyclists would continue to be able to ride along U.S. 34, U.S. 36, and Bear Lake Road, they would continue to be prohibited from trails. Similarly, while pedestrians would continue to be able to walk or run along existing park trails, they are unlikely to walk on park roadways. Hikers would continue to use the existing parking areas and shuttle service to traverse the park before or after using the trail system, but no additional connections would be made. Visitors using other self-propelled modes of transportation would continue to access the same areas of the park that they currently can.

During peak visitation in the summer months, heavy park use could result in some hindrances to site access and circulation. Some of the parking areas that connect to the trail system and shuttle service regularly fill to capacity, and visitors would have to find alternate parking areas that provide access to the same park features. Bicyclists would continue to bike along park roadways, which could cause congestion if drivers are unwillingly to pass the bicyclists.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting site access and circulation under alternative A would include the following: Bear Lake Road reconstruction, commercial and personal horse use, and Estes Park trail plans. Collectively, these actions have resulted or may result in both adverse and beneficial impacts on site access and circulation. For instance, Bear Lake Road reconstruction took more than 10 years to complete, resulting in temporary adverse impacts for periods of time over many years but ultimately had a long-term, beneficial impact on site access and circulation through the improvement of the road. Commercial and personal horse use has a beneficial impact on site access and circulation because it provides an additional mode of accessing the park and using park trails. In addition, the Comprehensive Trails Master Plan that EVRPD is developing for the Estes Valley in conjunction with the NPS and other federal, state, county, and local partners will serve as the planning effort to help develop these trail networks that will connect the park with other trails and roads. The impact of these past, present, and reasonably foreseeable actions would generally be adverse in the short term and beneficial in the long term. When combining the impacts of these projects with the impacts of alternative A, the cumulative impact would be beneficial in the long term. Alternative A would contribute an imperceptible adverse increment to the cumulative impacts on site access and circulation.

Conclusion

Overall, alternative A could result in slight adverse impacts on site access and circulation due to continued congestion in parking areas and on shared roadways. However, any delays caused by sharing

roadways and heavy park use would not prevent visitors from using park roads and trails or accessing notable park features. Alternative A would contribute imperceptibly to the cumulative impacts on site access and circulation. Therefore, the impacts of alternative A on site access and circulation would not approach the level of significant.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

Under alternative B, the new multiuse trail would provide additional means of access and circulation within the park. In addition to the current roadways used primarily for vehicular circulation, a new 15.3-mile multiuse trail would be constructed alongside U.S. 34 and U.S. 36 between the Fall River Visitor Center and the Beaver Meadows Visitor Center, and alongside Bear Lake Road between U.S. 36 and Sprague Lake. This trail would provide an alternate access route for self-propelled modes of transportation along a similar route as currently provided by these road corridors. The trail would also provide a number of additional connections to existing trailheads, campgrounds, visitor centers, overlooks, and parking lots along the parks eastern developed corridor. Some of the key access points that would be included along the trail include the following, which can be found on figure 4 in chapter 2:

- Aspenglen Campground
- West Horseshoe Park
- Deer Mountain Trailhead
- Beaver Meadows Visitor Center
- Moraine Park Discovery Center
- Moraine Park Campground
- Tuxedo Park
- Glacier Basin Campground
- Park and Ride parking lot
- Sprague Lake

A variety of users could use this trail. Visitors with limited mobility and those with strollers may prefer the wider, hardened trail surface of the multiuse trail to other park trails. Hikers could use the multiuse trail to connect to other trails within the park. Although a majority of bicyclist currently using the road may continue to use the road, some may elect to incorporate a different route along the multiuse trail.

Multiuse trail users could park in one of a number of parking areas within the project corridor that range in capacity from a few spaces to 400 spaces at the Park-and-Ride, thereby better distributing cars throughout the park and somewhat reducing road congestion. Some bicyclists may choose to use the multiuse trail. However, bicyclists would still be permitted on roadways, and the number of bicyclists on the roadway is not expected to be reduced noticeably. There would be seven road crossings under this alternative which could cause minor congestion both on the trail and the roadways when trail users are waiting to cross and when drivers are waiting for trail users to cross.

Portions of all three shuttle routes overlap with the proposed route alignment, connecting the multiuse trail to seven shuttle stops. Visitors could easily access the multiuse trail from eight other stops that are not along the proposed route alignment.

During construction, roadway congestion may be slightly increased due to the presence of construction equipment. Though staging areas would be established during the design process, it is likely that drivers would slow down in construction areas, thereby inhibiting ideal circulation. It is also possible that portions of trails adjacent to the proposed alignment would be closed during construction, and visitor access to certain areas of the park would be impeded.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting site access and circulation under alternative B would include the following: Bear Lake Road reconstruction, commercial and personal horse use, and Estes Park trail plans. These actions and their impacts are described under alternative A. Collectively, these actions have resulted or may result in both adverse and beneficial impacts on site access and circulation. The impact of these past, present, and reasonably foreseeable actions would generally be adverse in the short term and beneficial in the long term. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would be adverse in the short term and beneficial in the long term. Alternative B would contribute a noticeable beneficial increment to the cumulative impacts on site access and circulation.

Conclusion

Alternative B would result in beneficial impacts on site access and circulation because a new transportation route would provide additional connections to trailheads, campgrounds, visitor centers, overlooks, and parking lots along the park's developed eastern corridor. This route would better accommodate self-propelled modes of transportation, which would provide for greater spatial dispersal of park visitors along this corridor. However, there would be adverse impacts in the short- and long-term because of delays and closures during construction and because of possible congestion at the seven road crossings. Alternative B would contribute noticeably to the cumulative impacts on site access and circulation. Overall, alternative B would provide improvements of circulation, increased methods of transportation, and improved opportunities for connections between elements of park development. Therefore, neither adverse nor beneficial impacts of alternative B on site access and circulation would rise to the level of significant.

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, the new multiuse trail would provide additional means of access and circulation within the park for a variety of users. A new 14.2-mile trail would be constructed alongside U.S. 34 and U.S. 36 between the Fall River Visitor Center and the Beaver Meadows Visitor Center, and alongside Bear Lake Road between U.S. 36 and Sprague Lake. In a similar way as described under alternative B, this trail would provide an alternate access route for self-propelled modes of transportation and would provide a number of additional connections to existing trailheads, campgrounds, visitor centers, overlooks, and parking lots along the parks eastern developed corridor. However, unlike alternative B, this alignment would travel away from the roadways in two areas: at the east end of Horseshoe Park and near Beaver Meadows.

In these areas, the trail would be aligned much further from the roadway in an effort to protect resources. Some of the key access points that would be included along the trail include the following, which can be found on figure 5 in chapter 2:

- Aspenglen Campground
- Deer Mountain Trailhead
- Beaver Meadows Visitor Center
- Moraine Park Discovery Center
- Moraine Park Campground
- Tuxedo Park
- Glacier Basin Campground
- Park and Ride parking lot
- Sprague Lake

A variety of users could use this trail. Visitors with limited mobility and those with strollers may prefer the wider, hardened trail surface of the multiuse trail to other park trails. Hikers could use the multiuse trail to connect to other trails within the park. Although a majority of bicyclist currently using the road may continue to use the road, some may elect to incorporate a different route along the multiuse trail.

As described under alternative B, multiuse trail users could park in one of a number of parking areas within in the project corridor that range in capacity from a few spaces to 400 spaces at the Park-and-Ride, thereby better distributing cars throughout the park and somewhat reducing road congestion. Again, bicyclist use of the roads is not anticipated to change noticeably. There would one less road crossings under this alternative than under alternative B for a total of six crossings. These crossings would have the potential to cause minor congestion both on the trail and the roadways when trail users are waiting to cross and when drivers are waiting for trail users to cross.

Alternative C would provide the same connectivity with the shuttle system as described under alternative B, and the same potential for congestion and hindered access during construction would apply under this alternative as described under alternative B.

Cumulative Impacts Analysis

Past, present, and reasonably foreseeable actions at the park affecting site access and circulation under alternative C would include the following: Bear Lake Road reconstruction, commercial and personal horse use, and Estes Park trail plans. These actions and their impacts are described under alternative A. Collectively, these actions have resulted or may result in both adverse and beneficial impacts on site access and circulation. The impact of these past, present, and reasonably foreseeable actions would generally be adverse in the short term and beneficial in the long term. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be beneficial in the long term. Alternative C would contribute a noticeable beneficial increment to the cumulative impacts on site access and circulation.

Conclusion

Alternative C would result in beneficial impacts on site access and circulation because a new transportation route would provide additional connections to trailheads, campgrounds, visitor centers, overlooks, and parking lots along the park's developed eastern corridor. This route would better accommodate self-propelled modes of transportation, which would provide for greater spatial dispersal of park visitors along this corridor. However, there would be adverse impacts in the short- and long-term because of delays and closures during construction and because of possible congestion at the seven road crossings. Alternative C would contribute noticeably to the cumulative impacts on site access and circulation. Overall, alternative C would provide improvements of circulation, increased methods of transportation, and improved opportunities for connections between elements of park development. Therefore, neither adverse nor beneficial impacts of alternative C on site access and circulation would rise to the level of significant.

VISITOR USE AND EXPERIENCE

METHODOLOGY

Potential impacts on visitor use and experience are assessed based on the current description of visitor use and experience presented in chapter 3 of this EA. The current visitor use and experience was compared with the alternatives described in chapter 2 to determine how visitor use and experience would be impacted. Resource-specific context for assessing impacts of the alternatives on visitor use and experience includes the following:

- One of the management objectives for visitor use in the park's 1976 master plan was "to increase the enjoyment of Bear Lake and other heavily used areas by the improvement of circulation, methods of transportation, and the dissemination of visitor information" (NPS 1976).
- The park was the fifth most visited park in 2014 with 3,434,751 visitors. For the past 20 years, annual visitation has been around 3 million (NPS2013f).
- Visitors come to the park for a variety of reasons and value park resources differently. The vast majority of visitors (95% in the summer and 96% in the winter) consider trails as "Very Important" or "Extremely Important" visitor facilities, and most consider park trails to be very good quality (Blotkamp et al. 2011; Papadogiannaki, Le, and Hollenhorst 2011).
- The project corridor is currently used for scenic drives and bicycle trips as well as stops at the various overlooks and pullouts along the route. In a recent survey, 74% of summertime visitors rated the roads as an "Extremely Important" visitor facility, 88% rated scenic overlooks as either "Very Important" or "Extremely Important" visitor facilities, and 82% ranked the quality of the park's scenic pullouts as above average (Blotkamp et al. 2011).

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no-action alternative, the multiuse trail would not be constructed, and there would be no changes in visitor use and experience along the project corridor. Use the project corridor primarily for scenic drives, with opportunities for activities such as wildlife viewing, photography, picnicking, hiking,

backpacking, rock-climbing, camping, horseback riding, bicycling (limited to park roads, not trails), fishing, cross-country skiing, snowshoeing, and snow tubing). The existing park roads and trails would continue to support these activities.

For a variety of reasons, visitors would pull over to overlooks, in pullout areas, and along the side of the road in the project corridor. These patterns would continue under the no-action alternative. Along U.S. 34, visitors use three overlooks to view wildlife and the vistas near Sheep Lakes. Just down the road, many visitors park along the road at Deer Ridge Junction to access the Deer Mountain Trailhead. Similarly, visitors use the numerous pullout areas on Bear Lake Road to access many park trails. Many trail users hike from and back to the location of their car, while some choose to use the shuttle system to supplement their hiking itinerary.

Bicyclists would continue to ride along the roadways. These visitors are unlikely to use the shuttle system; there are currently no bicycle accommodations on the shuttles.

Under this alternative, all of these uses of park roadways would continue, and visitors may experience inconveniences such as waiting to safely pass bicyclists on the roads. Focus on nearby vehicles, bicycles, and pedestrians could detract from the experience of visitors on scenic drives.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting visitor use and experience under alternative A would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, and Estes Park trail plans. Collectively, these actions have resulted or may result in both adverse and beneficial impacts on visitor use and experience. Bear Lake Road reconstruction took more than 10 years to complete, resulting in temporary adverse impacts for periods of time over many years due to construction delays but ultimately had a long-term, beneficial impact on visitor use and experience through the improvement of the road. Commercial and personal horse use provides visitors an additional method of experiencing the park but also adds horse manure to trails, where many hikers find avoidance to be an inconvenience. Vegetation management actions maintain natural landscapes in the park and result in a long-term, beneficial impact. In addition, the Estes Park trail plans would have a beneficial impact on visitor use and experience by providing the option for a car-free experience. The impacts of these past, present, and reasonably foreseeable actions would generally be beneficial in the long term. When combining the impacts of these projects with the impacts of alternative A, the cumulative impact would be beneficial in the long term. Alternative A would contribute an imperceptible increment to the cumulative adverse impact on visitor use and experience.

Conclusion

Alternative A could result in slight adverse impacts on visitor use and experience due to congestion in parking areas and on roadways. The existing range of uses available in the project corridor would remain unchanged. Alternative A would contribute imperceptibly to the cumulative impacts on visitor use and experience. Although there would be no added opportunities for visitor use or experience within the project corridor, visitors would continue to enjoy the existing trails and scenic drives. Therefore, the impacts of alternative A on visitor use and experience would not rise to the level of significant.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

Under alternative B, a new 15.3-mile trail would be constructed alongside U.S. 34 and U.S. 36 between the Fall River Visitor Center and the Beaver Meadows Visitor Center, and alongside Bear Lake Road between U.S. 36 and Sprague Lake. This new multiuse trail would provide additional opportunities for visitor use and new visitor experiences along the eastern developed corridor of the park.

The trail would provide a new route for visitors to experience the project corridor. While the primary use of the corridor now is vehicular, visitors would have an opportunity to walk, run, and bicycle along a similar route separately from the existing roads. Visitors would have the opportunity to leisurely travel through and view the vistas of areas such as Sheep Lakes, Deer Ridge Junction, and Beaver Meadows. Unlike existing park trails, this trail would allow many types of activities including bicycling, walking/running, use of baby strollers, snowshoeing, and/or cross-country skiing. Hikers would benefit from the many connections to other park trails and amenities. The park amenities to which this trail would connect are outlined in the "Site Access and Circulation" impacts described above. Although the sights, sounds, and smells of vehicles could be evident for trail users for much of the trail, the trail experience would provide an open air experience at the scale and pace of a hiker, jogger, or bicyclist. Some visitors may prefer a more active experience of the trail corridor over the enclosed, faster pace tour provided by a vehicle.

Portions of all three shuttle routes overlap with the proposed route alignment, connecting the multiuse trail to seven shuttle stops. Visitors could easily access the multiuse trail from eight other stops that are not along the proposed route alignment. The addition of the multiuse trail along this corridor, in combination with possibly adding bicycle racks to the park's shuttle vehicles, would greatly increase the range of self-propelled itineraries available to park visitors. For instance, park visitors could catch a shuttle in Estes Park and use it to take their bicycles to Sprague Lake or Deer Ridge Junction. From the relative high points along the propose trail corridor, visitors could ride their bicycles back into Estes Park. As mentioned in "Site Access and Circulation," full benefits from contiguous trail connections may not be realized prior to completion of trails outside of NPS jurisdiction.

A minimum of 10 feet would separate the 14.6 miles of detached portions of the trail from the roadways which would increase the perceived level of safety, both for trail users and motorists. The 10-foot setback would be particularly beneficial for families. Similarly, visitors with limited mobility and those with strollers may prefer the wider, hardened trail surface of the multiuse trail to other park trails; the trail would provide them a more desirable park experience. The National Park Service would comply with guidelines for sustainable and accessible trail design. Signs would be posted at major trail access points providing information about the trail. This information would allow users to judge how well the trail suits their individual needs and limitations.

Casual recreational bicyclists are not comfortable using the park roads where they must share the roads with motor vehicles; therefore, the establishment of this multiuse trail would offer a new opportunity for use by this group. Although a majority of bicyclist currently using the road may continue to use the road, some may elect to incorporate a different experience along the multiuse trail as part of their routine. The number of bicyclists on the roads is not expected to change noticeably; therefore, motorists would continue to experience the inconvenience of sharing the road with bicyclists.

There may be conflicts between different types of trail users, but the park would minimize visitor conflicts through use of trail etiquette educational materials posted at primary access points along the trail. The NPS also would conduct conflict monitoring to determine when and what additional conflict mitigation strategies might be implemented. Additional strategies could include (but are not limited to) imposing a speed limit, adding bike patrols, and establishing designated use days where bicycles are only allowed on specific days or during specific times.

Under this alternative, there would be seven road crossings (indicated on figure 3 in chapter 2). Crossings have the potential to increase the inconvenience experienced by motorists while watching for trail users and waiting for them to cross. However, these designated crossings would increase the safety of all park visitors. Advance warnings for pedestrian and vehicle crossings would be placed along the trail and intersecting roads and trails to minimize potential conflicts at intersections. There would be two crossings in a short distance (approximately 0.5 miles) near the Moraine Park Discovery Center. In this area, the trail would be constructed on the western side of Bear Lake Road in order to minimize the impact of the trail on the cultural landscape near the William Allen White Cabin. The first crossing would lead to a spur to the Moraine Park Discovery Center and would not be used by all trail users. Still, the additional crossing somewhat increases the risk of road congestion and safety concerns. An underpass would be constructed at Deer Ridge Junction. The underpass would substantially reduce the risk of incidents between trail users and motorists, and congestion related to pedestrian crossings would be eliminated.

During construction, visitors would experience increased roadway congestion due to the presence of construction equipment. Though staging areas would be established during the design process, it is likely that equipment and construction activities would distract visitors from the natural and cultural resources along these routes. It is also possible that portions of trails adjacent to the proposed alignment would be closed during construction, preventing visitors from being able to use portions of adjacent trails.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting visitor use and experience under alternative B would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, and Estes Park trail plans. These actions and their impacts are described under alternative A. Collectively, these actions have resulted or may result in both adverse and beneficial impacts on visitor use and experience. The impacts of these past, present, and reasonably foreseeable actions would generally be beneficial in the long term. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would be adverse in the short term and beneficial in the long term. Alternative B would contribute noticeable adverse and beneficial increments to the cumulative long-term, beneficial impacts on visitor use and experience.

Conclusion

Alternative B would result in short-term adverse impacts due to inconveniences during construction and long-term beneficial impacts due to the availability of a new trail to experience scenic routes and park resources. Alternative B would contribute noticeably to the cumulative impacts on visitor use and experience. Overall, implementation of alternative B would increase enjoyment of the heavily used sites along the developed eastern portion of the park through the addition of the multiuse trail, an amenity that previous visitor surveys (Blotkamp et al. 2011; Papadogiannaki, Le, and Hollenhorst 2011) have implied

would be a welcome addition to the park. Therefore, neither adverse nor beneficial impacts of alternative B on visitor use and experience would rise to the level of significant.

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, a new 14.2-mile trail would be constructed alongside U.S. 34 and U.S. 36 between the Fall River Visitor Center and the Beaver Meadows Visitor Center, and alongside Bear Lake Road between U.S. 36 and Sprague Lake. Unlike alternative B, this alternative would have two overland segments that would diverge from the roadways. As described under alternative B, this new multiuse trail would provide additional opportunities for visitor use and new visitor experiences along the eastern developed corridor of the park albeit along a slightly different route. Areas where impacts on visitor use and experience would vary under alternative C when compared to alternative B are highlighted below.

The trail would provide a new route for visitors to experience the project corridor in a very similar way to that described under alternative B with a few notable differences. Under alternative C, the proposed alignment would not provide access to the three overlooks near Sheep Lakes and Horseshoe Park along U.S. 34. Instead, this alignment would travel overland, providing different views into Horseshoe Park from the east. The list of park amenities to which the trail would connect under this alternative is included in the "Site Access and Circulation" impact section above.

Alternative C would have 12.5 miles of detached portions of the trail where a minimum of 10 feet would separate the trail from the roadways. The perceived level of safety along this length would be increased, both for trail users and motorists. The perception of safety associated with distance from traffic would be greatest along overland trail segments. However, the distance from the road could increase the time required for emergency services to respond in case of an accident. The separation from vehicles would also provide the most natural experience for trail users because the sights and sounds of cars is the least.

Under this alternative, there would be six road crossings (compared to the seven crossings under alternative B). Unlike alternative B, there would be only one crossing near the Moraine Park Discovery Center. In this area, the trail would be constructed on the eastern side of Bear Lake Road. This alignment would be more obvious to visitors to the William Allen White cabin which could detract somewhat from the experience of the historic setting. However, the reduced crossings may lessen safety concerns and inconvenience to both trail users and motorists. These crossings are indicated on figure 4 in chapter 2.

As described under alternative B, the trail would provide a new opportunity for a variety of self-propelled use along the project corridor, including an opportunity for relatively casual recreational bicyclists to experience the project corridor separately from vehicular traffic. Dedicated road cyclists would continue to use the road. This corridor would connect to the same shuttle stops as described above, offering similar opportunities for expanded visitor itineraries. The trails would be signed to assist visitors in assessing how the trail suits their individual needs and limitations. Signs would also provide etiquette guidance to minimize user conflicts.

Impacts from construction would be the same as described under alternative B.

Cumulative Impacts Analysis

Past, present, and reasonably foreseeable actions at the park affecting visitor use and experience under alternative C would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, and Estes Park trail plans. These actions and their impacts are described under alternative A. Collectively, these actions have resulted or may result in both adverse and beneficial impacts on visitor use and experience. The impacts of these past, present, and reasonably foreseeable actions would generally be beneficial in the long term. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be beneficial in the long term. Alternative C would contribute noticeable adverse and beneficial increments to the cumulative long-term, beneficial impacts on visitor use and experience.

Conclusion

Overall, alternative C would result in short-term adverse impacts due to inconveniences during construction and long-term beneficial impacts due to the availability of a new trail to experience scenic routes and park resources. While some visitors may find that view of the multiuse trail from the William Allen White Cabin diminishes their experience somewhat, alternative C also would reduce the number of road crossings would thereby provide safer conditions for motorists and trail users. Alternative C would contribute noticeably to the cumulative impacts on visitor use and experience. Overall, implementation of alternative C would increase enjoyment of the heavily used sites along the developed eastern portion of the park through the addition of the multiuse trail, an amenity that previous visitor surveys (Blotkamp et al. 2011; Papadogiannaki, Le, and Hollenhorst 2011) have implied would be a welcome addition to the park. Therefore, neither adverse nor beneficial impacts of alternative C on visitor use and experience would rise to the level of significant.

PARK OPERATIONS

METHODOLOGY

Potential impacts on park operations are assessed based on the current description of park operations presented in chapter 3 of this EA. The current park operations were compared with the alternatives described in chapter 2 to determine how park operations would be impacted. The geographic area considered for these impacts includes the entire park because park staff are responsible for maintaining facilities park-wide. Resource-specific context for assessing impacts of the alternatives on park operations includes the following:

- The park was the fifth most visited park in 2014 with 3,434,751 visitors. For the past 20 years, annual visitation has been around 3 million (NPS 2013f).
- Park staff maintain park facilities such as roads and trails. The park has approximately 120 miles of roadways and approximately 2,000 parking spaces. Approximately 355 miles of hiking trails exist within the park.
- Park staff is responsible for resource protection, law enforcement, and emergency response throughout the park.
- Some park staff are housed in residences in the park.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no-action alternative, the multiuse trail would not be constructed, and there would be no additional impacts on park operations. No additional facilities would be constructed; park staff would continue to maintain the park's 120 miles of roadways and 355 miles of hiking trails. Park staff would continue to respond to incidents both on roadways and trails.

Cumulative Impact Analysis

Although past, present, and reasonably foreseeable future actions may and have affected park operations in the area, alternative A would have no impacts and therefore would not contribute to the effects of other actions. Consequently, there would be no cumulative impacts on park operations under alternative A.

Conclusion

Alternative A would not result in changes to the existing conditions or existing infrastructure or natural areas in the park. Consequently, there would be no cumulative impacts on park operations under alternative A. Impacts of this alternative on park operations would not approach the level of significant because there would be no change in responsibilities of park staff and because facilities and infrastructure would not change.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

Under alternative B, a new 15.3-mile multiuse trail would be constructed. The new trail would have adverse impacts on park operations through the additional maintenance of a new park facility and the necessity for increased visitor information, trail monitoring, and law enforcement.

The new trail and its associated signage would be maintained by park staff. The new trail would have a total area of approximately 19 acres, and its associated signs would be placed at major access points to inform visitors about the trail and trail etiquette. Routine maintenance of the proposed project could include restriping, resurfacing, repairing retaining walls, stabilizing slopes, cleaning culverts, and removal of hazard trees. During the winter months, park staff would not plow snow or treat the trail with sand because snowshoers and cross-country skiers are intended users. However, park staff would need to inspect this trail for damage in the spring. Depending on the selected surface material(s), the trail may sustain damage after the ground has thawed, particularly in areas with high frost action and low soil strength and where the trail is located on soils with moderate or severe erosion hazard. These areas may require more frequent maintenance measures and more extensive erosion control measures by park staff in order to maintain both the trail and the natural areas adjacent to it. Park staff would also oversee revegetation and invasive species monitoring following construction. Currently, volunteers assist park staff with maintenance of the trails; as such, park resources may be saved through the help of volunteers, but park staff may have to provide additional instruction in how to maintain the multiuse trail.

It is presumed that visitors would use this trail in tandem with other means of travel within the park, including the shuttle system. Currently park staff monitors the operation of the shuttle service through a variety of service measures. After the construction of the trail, park staff would coordinate with the shuttle operator to ensure that the current shuttle system is meeting the needs of users.

The promotion of mixed use of transportation methods could reduce the number of cars on park roads. Reduced road use, combined with the construction of the multiuse trail, has the potential to reduce the risk of incidents between drivers and other park visitors. However, this alternative would have seven designated road crossings which could increase the risk of incidents even though they would be marked. Additionally, the construction of the multiuse trail could result in incidents between trail users, which park staff may have to respond to and document. Because this trail would be within sight of major park roadways for a majority of its length, it is not anticipated that the need for emergency medical services nor search and rescue efforts would notably increase the demand on staff resources. Relative to most trails in the park, emergency medical services would be easier for park staff to perform along this pathway because emergency vehicles could easily reach the majority of the trail.

This alternative is anticipated to result in increased bicycle use within the park. While bicycle use on park trails is currently prohibited, it is an issue that park staff would continue to face. By providing a trail that permits bicycle use, park staff may see a decrease in bicycle use in violation of park rules. However, it is also possible that more bicyclists would venture onto the twelve trails and trail segments that intersect with the proposed trail. As such, park staff may have to increase their efforts to inform visitors of bicycle use regulations and their monitoring presence and law enforcement actions along other park trails.

Lastly, the trail would pass by several areas used for park staff housing. Staff living in these areas may experience more noise and slightly less privacy than under current conditions.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting park operations under alternative B would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, fire management, Estes Park trail plans, and reconstruction of Fall River entrance. Collectively, these actions have resulted or may result in long-term and both beneficial and adverse impacts on park operations. For instance, the Bear Lake Road reconstruction resulted in beneficial impacts on park operations because the new road surface is wider, safer, and in better condition. Commercial and personal horse use results in an adverse impact on park operations because of the heavy use and degradation of 260 miles of park trails. Vegetation management actions require extensive staff resources in order to monitor and manage vegetation (some of the trail-specific management actions—revegetation, invasive monitoring, and hazard tree removal—are mentioned above). In addition, fire management requires park staff to manage fire dependent plant communities within the park but also decreases the likelihood that park staff would have to fight catastrophic wildland fires. The implementation of the Estes Park trails plans could result in a slight decrease in the need for park staff to manage entrance stations (because of an increase in visitors entering the park through trails) but could also result in a slight increase in violations of bicycle use policies and maintenance required on adjacent park trails. The reconstruction of the Fall River entrance would result in short-term increased demand at other park entrances and a shift of maintenance resources to other areas of the park during construction. The impact of these past, present, and reasonably foreseeable actions would generally be short- and long-term and both beneficial and adverse. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would be adverse in the short term and both adverse and beneficial in the long term. Alternative B would contribute a noticeable increment to the cumulative adverse impact on park operations because additional maintenance, visitor information, and coordination

would be required, and an imperceptible increment to the cumulative beneficial impact on park operations because risk to public safety could be decreased and bicycle use violations could increase.

Conclusion

Overall, alternative B would result in long-term adverse impacts through the additional maintenance of a new park facility and the necessity for increased visitor information, trail and vegetation monitoring, trail patrols, and potentially emergency response. The proximity of the detached trail to park roads would facilitate access of park rangers conducting trail patrols and emergency personnel to the trail. Alternative B would contribute noticeably to the cumulative impacts on park operations. In the context of the 120 miles of roadways and 355 miles of hiking trails for approximately 3 million visitors a year, the addition of 15.2 miles of multiuse trail would not cause an undue burden on park operations. Therefore, impacts on park operations under alternative B would not approach the level of significant.

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, a new, 14.2-mile (17-acre) multiuse trail would be constructed. The new trail would have adverse impacts on park operations through the additional maintenance of a new park facility and the necessity for increased visitor information, trail monitoring, and law enforcement. The impacts on park operations from implementation of alternative C would be very similar to those of alternative B with the exceptions described below.

This alternative would have six designated road crossings which could increase the risk of incidents from existing conditions, even with appropriate warning signs. Safety risks at road crossings would be slightly less under this alternative than under alternative B because it has one less crossing.

Additionally, unlike alternative B, 3.6 additional miles of overland trail would diverge from the roadways under alternative C. This segment would be less accessible to park staff responding to emergencies; however, trail design would make this trail more accessible to emergency services personnel than typical single track hiking trails elsewhere in the park.

Cumulative Impacts Analysis

Past, present, and reasonably foreseeable actions at the park affecting park operations under alternative C would include the following: Bear Lake Road reconstruction, commercial and personal horse use, vegetation management, fire management, Estes Park trail plans, and reconstruction of Fall River entrance. These actions and their impacts are described under alternative B. The impact of these past, present, and reasonably foreseeable actions would generally be long-term and both beneficial and adverse. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be adverse in the short term and both adverse and beneficial in the long term. Alternative C would contribute a noticeable increment to the cumulative adverse impact on park operations because additional maintenance, visitor information, and coordination would be required, and an imperceptible increment to the cumulative beneficial impact on park operations because risks to public safety could be decreased and bicycle use violations could increase.

Conclusion

Overall, alternative C would result in long-term adverse impacts through the additional maintenance of a new park facility and the necessity for increased visitor information, trail and vegetation monitoring, trail patrols, and potentially emergency response. The proximity of the detached trail to park roads would facilitate access of park rangers conducting trail patrols and emergency personnel to the trail, although this alternatives would have a 3.6 additional miles of trail that travels away from the existing roads. Alternative C would contribute noticeably to the cumulative impacts on park operations. In the context of the 120 miles of roadways and 355 miles of hiking trails for approximately 3 million visitors a year, the addition of 14.2 miles of multiuse trail would not cause an undue burden on park operations. Therefore, impacts on park operations under alternative C would not approach the level of significant.

SOCIOECONOMIC RESOURCES AND GATEWAY COMMUNITIES

METHODOLOGY

Potential impacts on socioeconomic resources and gateway communities are assessed based on the current description presented in chapter 3 of this EA. The current socioeconomic resources and gateway communities were compared with the alternatives described in chapter 2 to determine how socioeconomic resources and gateway communities would be impacted. The geographic area considered for this impact topic encompasses Estes Park. Resource-specific context for assessing impacts of the alternatives on socioeconomic resources and gateway communities includes

- The park was the fifth most visited park in 2014 with 3,434,751 visitors (NPS 2013f). About 80 percent of the annual visitation to the park occurs from May through September.
- Tourism and recreation make up the largest industry in the Estes Valley.
- Non-local spending on overnight accommodations and restaurants totals 60% of the overall direct spending in the region.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no-action alternative, the multiuse trail would not be constructed, and there would be no additional impacts on socioeconomic resources and gateway communities. No additional facilities would be constructed and therefore would not draw additional visitors to the region outside of anticipated visitation increases. The economy of the tri-county area would continue to be supported by park visitors, but no changes in demand for services are anticipated. Members of the gateway community of Estes Park are unlikely to interact differently with the park.

Cumulative Impact Analysis

Although past, present, and reasonably foreseeable future actions may and have affected socioeconomic resources and gateway communities in the area, alternative A would have no impacts and therefore would

not contribute to the effects of other actions. Consequently, there would be no cumulative impacts on socioeconomic resources and gateway communities under alternative A.

Conclusion

Alternative A would not result in changes to the park and no changes to the current socioeconomic conditions as part of this project. Consequently, there would be no cumulative impacts on socioeconomic resources and gateway communities under alternative A. The impacts of this alternative on socioeconomic resources and gateway communities would not rise to the level of significant because there would be no change in the park's influence of the economy of the surrounding region.

IMPACTS OF ALTERNATIVE B: ROADSIDE TRAIL

Under alternative B, a new 15.3-mile trail would be constructed, including connections to Estes Park at the Fall River Entrance, Beaver Point, and a spur to connect to Highway 66 in Estes Park. The proposed multiuse trail could draw more visitors to the park and to entice visitors to stay longer. Additionally, the possible connections between the proposed trail and Estes Park may encourage more travel between the park and Estes Park. Any benefits resulting from greater connectivity may not be fully realized until additional trail connections are built in Estes Park (acknowledged under the cumulative impact analysis below). Until the Estes Park trail system reaches the park, the park's multiuse path would connect to the existing infrastructure.

Non-local spending on overnight accommodations and restaurants totals 60% of the overall direct spending in the region. The additional experience provided by the multiuse trail may encourage visitors, particularly bicyclists to spend more time in the park or Estes Park. Additionally, an increasing number of visitors may want to rent bicycles from business in Estes Park to take advantage of the new opportunities afforded by the multiuse trail. As a result, non-local spending in the area may increase.

Because the multiuse trail would be constructed in the eastern side of the park, it is unlikely that this alternative would have impacts on the socioeconomics of the town of Grand Lake or Grand County.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting socioeconomic resources and gateway communities under alternative B would include commercial and personal horse use and Estes Park trail plans. Collectively, these actions have resulted or may result in long-term beneficial impacts on socioeconomic resources and gateway communities. For instance, commercial and personal horse use within the park provides local jobs and a source of revenue for the concessionaire. In addition, the Estes Park trail plans provides a number of trails and proposes a more robust trail system adjacent to, and eventually connecting with, the trail system within the park. This trail system would provide additional experiences for visitors to the area and would encourage the support of local businesses. The impact of these past, present, and reasonably foreseeable actions would generally be long-term and beneficial. When combining the impacts of these projects with the impacts of alternative B, the cumulative impact would be long-term and beneficial. Alternative B would contribute an imperceptible increment to the cumulative beneficial impact on socioeconomic resources and gateway communities.

Conclusion

Overall, alternative B would result in long-term beneficial impacts by potentially attracting and retaining additional visitors to the park, most of whom would stay in Estes Park. Alternative B would contribute imperceptibly to the cumulative impacts on socioeconomic resources and gateway communities. Overall, it is possible that the addition of the multiuse trail may bolster the already thriving tourism and recreation industry that is the mainstay of Estes Park, although the change in visitation patterns may be subtle. Therefore, the impact of alternative B on socioeconomic resources and gateway communities would not rise to the level of significance.

IMPACTS OF ALTERNATIVE C: ROADSIDE AND OVERLAND TRAIL

Under alternative C, a new 14.2-mile trail would be constructed, including a possible spur to connect to Highway 66 in Estes Park. Impacts under this alternative are the same as under alternative B.

Cumulative Impact Analysis

Past, present, and reasonably foreseeable actions at the park affecting socioeconomic resources and gateway communities under alternative C would include commercial and personal horse use and Estes Park trail plans. The impacts of these actions are described under alternative B. Collectively, these actions have resulted or may result in long-term beneficial impacts on socioeconomic resources and gateway communities. When combining the impacts of these projects with the impacts of alternative C, the cumulative impact would be long-term and beneficial. Alternative C would contribute an imperceptible increment to the cumulative beneficial impact on socioeconomic resources and gateway communities.

Conclusion

Overall, alternative C would result in long-term beneficial impacts through the additional park trail and the possible connection to the Estes Park trail system. Alternative C would contribute imperceptibly to the cumulative impacts on socioeconomic resources and gateway communities. Overall, it is possible that the addition of the multiuse trail may bolster the already thriving tourism and recreation industry that is the mainstay of Estes Park, although the change in visitation patterns may be subtle. Therefore, the impact of alternative C on socioeconomic resources and gateway communities would not rise to the level of significant.

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CONSULTATION AND COORDINATION

Director's Order 12 requires the National Park Service to make "diligent" efforts to involve the interested and affected public in the National Environmental Policy Act process. This process, known as scoping, helps to determine the important issues and eliminate those that are not; allocate assignments among the interdisciplinary team members and/or other participating agencies; identify related projects and associated documents; identify other permits, surveys, consultations, etc. required by other agencies; and create a schedule that allows adequate time to prepare and distribute the environmental document for public review and comment before a final decision is made. This chapter documents the scoping process for the proposed action, identifies future compliance needs and permits, and includes the list of preparers for the document.

THE SCOPING PROCESS

The scoping process is initiated at the beginning of a National Environmental Policy Act project to identify the range of issues, resources, and alternatives to address in the environmental assessment. Typically, both internal and public scoping is conducted to obtain feedback on these elements. State and federal agencies were also contacted in order to uncover any additional planning issues and to fulfill statutory requirements.

The planning process for the proposed action was initiated during the internal, agency, and public scoping in 2007 for the Bear Lake Road Phase 2 Improvement Project Environmental Assessment (NPS 2009a). Additional study to document the capital investment and operational considerations associated with constructing a multiuse trail in eastern Rocky Mountain National Park took place as part of the Multi-Use Trail Feasibility Study (NPS 2009b). During this study, 18 stakeholders from the following organizations provided input via in-person interviews or e-mail correspondences:

- Estes Park Chamber of Commerce
- Estes Park Conventional and Visitors Bureau
- Estes Valley Community Development
- Estes Valley Land Trust
- Estes Valley Recreation & Park District
- Estes Valley Recreation and Park District Trails Committee

- International Mountain Bicycling Association
- Larimer County Sherriff's Office
- National Park Service Intermountain Region
- Private landowners
- Rocky Mountain National Park
- Rocky Mountain Nature Association
- Unites States Forest Service
- YMCA of the Rockies

Public involvement continued with the *Multiuse Trail Plan Environmental Assessment*. This process introduced the purpose of and need for a multiuse trail and continued discussions with interested agencies and individuals. This process introduced the purpose and need of the project and potential improvements that could better accommodate a multiuse trail in Rocky Mountain National Park. Discussions with interested agencies and individuals were initiated at this time.

INTERNAL SCOPING

The internal scoping process for the specific improvements included in the proposed action began in November 2012, when staff from the park and their consultants conducted internal scoping. During an on-site meeting, park staff and their consultants walked the area of proposed improvements to determine areas of specific concern. The team discussed the purpose of and need for the project and planning issues that should be considered during development of this environmental assessment.

PUBLIC SCOPING

The National Park Service sent out a press release on February 12, 2013 announcing the public scoping period and announcing a public scoping meeting on February 19, 2013. The National Park Service hosted a public open house the evening of February 19 at the Hondius Room of the Estes Valley Library. At this time, the National Park Service solicited public input on the proposed multiuse trail and amenities that would improve the developed eastern portion of the park. The meeting also provided the public with information on the purpose and need of the project, the planning process that would be followed, and instructions on how to provide feedback. Approximately 48 members of the public attended the open house.

The National Park Service held a public scoping comment period from February 4, 2013 to March 21, 2013 to solicit input on the proposed action during which a total of 34 public comments were received. Comments were received during the public scoping meeting, in the mail, via email, and on the NPS PEPC website. The majority of the public comments supported the multiuse trail plan while providing suggestions for potential adjustments to the plan. Specifically, commenters suggested changes to the rules on the proposed trail, users' interactions with vehicles, and design and alignment features that would improve visitor experience. Only two commenters questioned the need for a new proposed trail over existing park facilities. Other concerns included effects on natural resources from construction and visitor use, park operations, and visitor experience.

The NPS hosted a second public meeting at the Estes Park Museum on August 6, 2013 to present the preliminary draft alternatives and gather feedback on the proposed action alternatives. The meeting was attended by about 30 members of the public. A second public comment period was held from July 23, 2013 to August 23, 2013, during which time 22 pieces of correspondence were received. The NPS considered public input and additional internal scoping comments before final refinement of the alternatives presented in this EA.

AGENCY SCOPING

As part of the scoping effort, the National Park Service contacted the U.S. Fish and Wildlife Service, the Colorado State Historic Preservation Officer, and Northern Arapaho Tribe, the Southern Ute Indian Tribe, the Ute Indian Tribe, and the Ute Mountain Ute Tribe. During government to government consultation, the park met directly with representatives of the Southern Ute, Northern Arapaho, and Cheyenne and Arapaho tribes. In an email dated December 20, 2013, the park initiated informal consultation with the U.S. Fish and Wildlife Service citing the results of consultation from the earlier work on one section of the trail which was previously surveyed for special status species. In a letter dated August 6, 2013, the park sent a notification of consultation to the State Historic Preservation Officer citing that a determination of effect would be completed at a later date. The Assessment of Effect for this project will be completed separately. Agency letters are included in "Appendix B: Relevant Correspondence." The environmental assessment addresses these concerns, where appropriate; however, some concerns fall outside the scope of this project.

FUTURE COMPLIANCE NEEDS/PERMITS

Implementation of the proposed action would require compliance with laws and regulations. Future compliance is described below.

36 CFR 4.30

This EA has also been prepared in compliance with the revised National Park Service Bike Rule, 36 CFR 4.30, and serves as the planning document for the multiuse visitor path and has considered and evaluated the cost of construction and life cycle maintenance costs of the path, has prescribed a sustainable design for construction of the path, and has considered safety, strategies to prevent or minimize user conflicts, methods of protecting natural and cultural resources, and integration with alternative transportation systems. After the decision document for this EA is signed, the park will need to obtain the approval of the Regional Director and promulgate a special regulation authorizing bicycle use to designate the proposed trail for bicycle use because the trail is new and takes place outside of specifically designated developed areas.

NATIONAL ENVIRONMENTAL POLICY ACT AND REGULATIONS OF THE COUNCIL ON ENVIRONMENTAL QUALITY

NEPA applies to federal actions that may significantly affect the quality of the human environment. This generally includes major construction activities that involve the use of federal ands or facilities, federal funding, or federal authorizations. This EA meets the requirements of NEPA and regulations of the Council on Environmental Quality in evaluating potential effects associated with activities on federal lands.

NATIONAL HISTORIC PRESERVATION ACT

Section 106 of the National Historic Preservation Act of 1966 (as amended) requires federal agencies to take into account the effects of their undertakings on historic properties. Compliance with section 106 will be conducted separately, but concurrently, with this environmental assessment. The State Historic Preservation Officer was notified of this intent during scoping. The National Park Service will provide the State Historic Preservation Officer with an Assessment of Effect letter for concurrence. This EA also will be supplied to the Colorado State Historic Preservation Officer during public review of the document. The National Park Service will continue to coordinate with the State Historic Preservation Officer as necessary to ensure compliance with the National Historic Preservation Act.

The park also initiated tribal consultation with four tribes through letters dated February 5, 2013: the Northern Arapaho Tribe, the Southern Ute Indian Tribe, the Ute Indian Tribe, and the Ute Mountain Ute Tribe. The park also provided additional background on the alternatives being evaluated in the EA via a letter dated September 11, 2014. The tribes also will receive a copy of this EA during the public review period.

ENDANGERED SPECIES ACT

The Endangered Species Act mandates that all federal agencies consider the potential impacts of their actions on species listed as threatened or endangered in order to protect the species and preserve their habitats. Although a number of special status species are found throughout the park, no federally threatened or endangered species or their critical habitat are known to exist within the project corridor. Based on field observations during site visits and previous U.S. Fish and Wildlife Service consultation conducted by the National Park Service, potential habitat for these species was determined to be absent within the project corridor. The U.S. Fish and Wildlife Service provided concurrence with the park's determinations of effect on the Mexican spotted owl (*Strix occidentalis lucida*), Canada lynx (*Lynx canadensis*), and the North American wolverine (*Gula gula luscus*) in a letter dated August 25, 2014. For all these species, the determination was that the proposed project may affect, but is not likely to adversely affect these species. The National Park Service will provide the U.S. Fish and Wildlife Service with a copy of the EA and will reinitiate consultation in the unlikely event that any federally listed threatened or endangered species are encountered during construction.

CLEAN WATER ACT

Appropriate erosion and siltation controls would be maintained during construction, and all exposed soil or fill material would be permanently stabilized at the earliest practicable date. To this end, erosion

control devices such as silt fences would minimize impacts associated with construction. The National Park Service would submit an application for and acquire a Section 404 permit prior to fill of waters of the United States. The National Park Service would acquire a National Pollution Discharge and Elimination System Stormwater Permit prior to any construction work on site.

EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS

This order requires federal agencies to avoid, where possible, impacts on wetlands. Because impacts to wetlands may exceed 0.1 acres, the park has prepared a Wetland Statement of Findings for the action alternatives, attached in appendix A.

LIST OF PREPARERS AND CONTRIBUTORS

This document was prepared by Vanasse Hangen Brustlin, Inc., Resource Systems Group, Inc., staff at Rocky Mountain National Park, the NPS Denver Service Center, and the NPS Intermountain Regional Office.

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PUBLIC REVIEW

The plan/environmental assessment will be on formal public and agency review until September 10, 2015, and has been distributed to a variety of interested individuals, agencies, and organizations. It also is available on the internet at <http://parkplanning.nps.gov/romo>, and hard copies are available at the park's visitor centers, the Office of the Superintendent, and the following libraries: Estes Valley, Fort Collins, Loveland, Boulder, Longmont, and Juniper.

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APPENDIX A: WETLANDS STATEMENT OF FINDINGS

Statement of Findings for Wetlands

for

Rocky Mountain National Park Multiuse Trail

Larimer County, Colorado

Recommended: _____

Vaughn Baker, Superintendent, Rocky Mountain National Park Date

Recommended: _____

Ed Harvey, Chief National Park Service Water Resources Division Date

Recommended: _____

Sue E. Masica, Director Intermountain Region Date

INTRODUCTION

In 2009 Rocky Mountain National Park received funding from the Federal Transit Administration (FTA) to conduct a feasibility study to examine the opportunities and constraints related to developing a multiuse trail on the east side of the park. One of the identified opportunities was to connect the proposed trail inside the park with the growing network of multiuse trails being developed within and around the gateway community of Estes Park, Colorado. The conclusion of the study was that a multiuse trail, roughly following the existing road network on the east side of the park, was indeed feasible. The total length of trail considered in the study was approximately 15.5 miles. The proposed multiuse trail would follow U.S. Highway 34 from the Fall River Entrance to Deer Ridge Junction, then follow U.S. Highway 36 from Deer Ridge Junction to Beaver Point. The trail would also parallel Bear Lake Road from U.S. Highway 36 to Sprague Lake.

As an outcome of the 2009 feasibility study, in 2012 Rocky Mountain National Park received funding from FTA to conduct planning and compliance for the proposed multiuse trail as required by the National Environmental Policy Act (NEPA). The park determined that the appropriate NEPA pathway would be to prepare an Environmental Assessment (EA). The consulting firm of Vanasse Hangen Brustlin, Inc. (VHB) was retained to prepare the EA.

Rocky Mountain National Park and VHB have prepared, and will make available for public review and comment, a Multiuse Trail Environmental Assessment that examines alternative alignments for a multiuse trail on the east side of the park, and evaluates the potential impacts associated with the development of up to 15.5 miles of new trail.

Executive Order 11990 (Protection of Wetlands) requires the National Park Service (NPS) and other federal agencies to evaluate the likely impacts of actions in wetlands. NPS Director's Order #77-1: Wetland Protection and Procedural Manual #77- 1 provides NPS procedures for complying with Executive Order 11990. This Statement of Findings (SOF) documents compliance with the NPS wetland protection procedures.

PROPOSED ACTION

The EA examines three alternatives, as described below.

Alternative A – No Action

As part of the guiding principles of NEPA, the alternatives under consideration must include a “no action” alternative as prescribed by the regulations found in 40 CFR 1502.14. This no action alternative represents one viable and feasible choice within the range of management options.

Under this alternative, the roadways and trails within the project corridor would remain as they are. The multiuse trail would not be constructed in this alternative and the project corridor would remain unchanged, with many areas accessible exclusively by vehicular transport or road cycling. The project corridors of U.S. 34, U.S. 36, and Bear Lake Road would continue to be two lanes, one in each direction that is 12 to 14 feet wide with paved shoulders that range from 1 to 4 feet wide.

Visitor access within the eastern portion of the park would be via private vehicle, tour bus, and the free shuttle bus. Shuttle stops in the project corridor include Beaver Meadows Visitor Center, Moraine Park Discovery Center, Moraine Park Campground, Tuxedo Park, Glacier Basin Campground, and the Park & Ride at Glacier Basin. Bicycling and pedestrian use (e.g., running and jogging) would be allowed along the park roadways with no changes. Bicycles would continue to be permitted only on established roadways within the park.

Alternative A would have no impact on wetlands.

Alternative B – Roadside Trail

Under this alternative, the multiuse trail predominantly would follow U.S. 34, U.S. 36, and Bear Lake Road in the eastern portion of the park, directly connecting at the Fall River Entrance and Beaver Point. Figure 1 shows the approximate alignment of the proposed trail, which follows the landscape contours on existing grade benches, old trail corridors, road alignments, and flatter ground with appropriate slopes. The overall length of the multiuse trail under alternative B is 15.3 miles with the majority of its length detached from the road (14.6 miles).

Where the trail is detached from the road, it is offset from the edge of pavement by a minimum of 10 feet, with further separation by grade changes where there are higher slope differentials. This offset distance provides a separation between the trail and vehicles on the road.

Stream crossings would be necessary in areas where the proposed multiuse trail intersects an existing stream or river. In alternative B, there would be a total of nine stream crossings throughout the length of the trail (indicated by blue circles on figure 1). One stream crossing is located in an area where the trail would be attached to the road along Bear Lake Road, which would require improvements to an existing bridge to accommodate the width of the trail. In the other areas, the detached trail would likely require the installation of a new separate trail bridge to cross over rivers and streams.

Under alternative B, there would be direct and indirect impacts on wetlands and other waters of the U.S. from the construction of the multiuse trail. The multiuse trail would traverse approximately 0.64 acre of wetlands and 347 linear feet of stream channel.

Alternative C – Roadside and Overland Trail

Under alternative C, the multiuse trail predominantly would follow U.S. 36 and Bear Lake Road, but unlike alternative B, it would include overland routes at the Fall River Entrance, through the east side of Horseshoe Park, and parallel to U.S. 36 on the Beaver Point Trail which ties into High Drive near the Beaver Meadows Entrance. This trail would cover a similar area within the eastern portion of the park as alternative B. The main differences are that, under alternative C, there would be overland routes bypassing the Sheep Lakes and West Horseshoe Park areas and the trail would use the existing Beaver Point Trail to travel overland until reaching High Drive in the vicinity of the Beaver Meadows Entrance. As under alternative B, some sections of trail would be attached to the roadway, some would be detached from the roadway, and some would travel “overland.” Overland trails are a subset of detached trail where the trail travels a more substantial distance away from the road. The overall length of the alternative C multiuse trail is 14.2 miles, with the majority of its length detached from the road (12.5 miles). Figure 2 shows the approximate alignment of the trail.

Under alternative C, there would be similar direct and indirect impacts on wetland and other waters of the U.S. as described under alternative B. However, due to the overland route that avoids the wetlands in Horseshoe Park, the extent of impacts under this alternative is less than under alternative B. The multiuse trail would traverse approximately 0.09 acres of wetlands and 321 linear feet of stream channel.

SITE DESCRIPTION

Wetlands

The identification of wetlands and other waters of the U.S. within the project corridor commenced in 2001 with an investigation of the Bear Lake Road corridor spanning from Bear Lake down to the intersection with U.S. 36. The methodology used to complete the study was based on the 1987 Corps of Engineers Wetland Delineation Manual (USACE 1987). This study identified multiple wetlands and streams associated with the floodplain and riparian zone of Big Thompson River, Glacier Creek, and Mill Creek. Based on the investigation and classification of the water resources using Cowardin (1979) classification, prominent wetland types identified included palustrine (non-tidal, freshwater wetlands) forested wetlands, palustrine scrub-shrub forested wetlands, palustrine emergent wetlands, and various stream channels classified under the riverine (wetlands contained within a channel) system (ERO 2001). The majority of the wetlands and stream identified in the project corridor are within close proximity to Bear Lake Road, and some flow under the road through various culverts. Portions of the 2001 study area were investigated again in 2005, applying the same wetland delineation methodology, but within a different portion of the current project corridor. The 2005 investigation also identified water resources within several alternate alignments for the proposed trail, as well as an area for the proposed realignment of Bear Lake Road. This investigation identified multiple wetlands and streams associated with the floodplain and riparian zone of Glacier Creek and Mill Creek, many of which were originally identified during the 2001 study (ERO 2006).

An additional study area was then investigated in 2013 along the existing roadway corridor between Beaver Meadows Visitor Center and Fall River Visitor Center in order to complete the comprehensive identification of wetland and waters of the U.S. for the entire project corridor. The 2013 study included approximately 8 miles of variable width roadway corridor along U.S. 34 and U.S. 36. Wetland and waters of the U.S. delineation fieldwork was conducted from May 13 to May 17, 2013 using the technical criteria and procedures outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valley, and Coast Region (Version 2.0)* and associated guidance to identify jurisdictional boundaries within the project corridor (USACE 2010). Wetland classification followed the "Cowardin System" in accordance with NPS Procedural Manual #77-1 (NPS 2012).

Wetlands and waters of the U.S. within the portion of the project corridor investigated in 2013 include wetlands, streams, and several open water bodies (VHB 2013) as outlined in Figure 3. Many of the wetlands and streams identified in the 8 mile portion of the project corridor are within close proximity to U.S. 34 and U.S. 36, and some flow under the road through various culverts.

FIGURE 1 – ALTERNATIVE B – ROADSIDE TRAIL

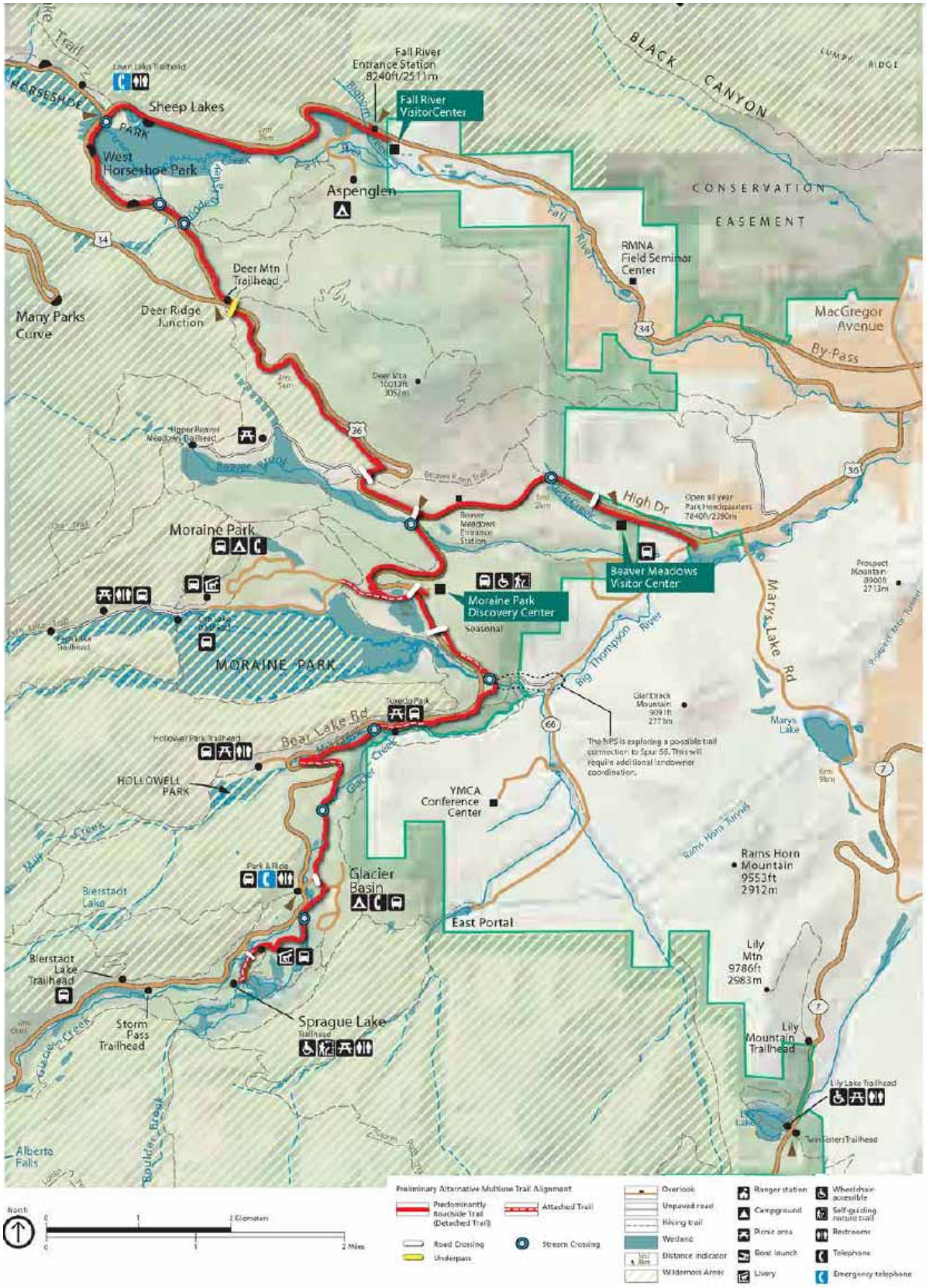
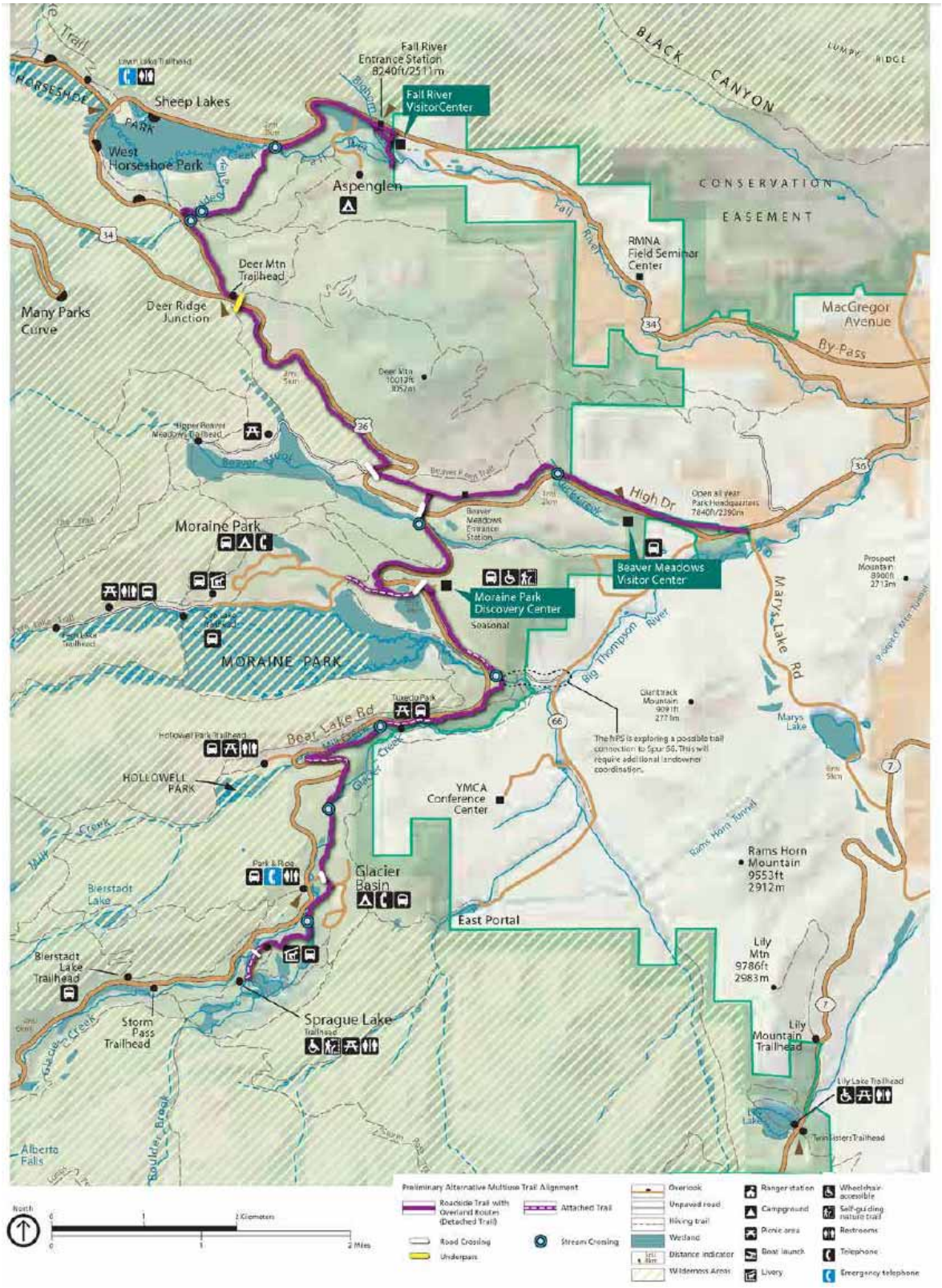


FIGURE 2 – ALTERNATIVE C – ROADSIDE AND OVERLAND TRAIL



Based on wetland classification following the "Cowardin System" (Cowardin et al. 1979), seven different types of wetlands and streams were identified within the project corridor. The wetlands are classified by Cowardin (1979) as part of the palustine system (non-tidal, freshwater wetlands) and include forested wetlands, scrub shrub wetlands, emergent wetlands, and open water wetlands. Streams are classified by Cowardin (1979) under the riverine system (wetlands contained with a channel) and include lower perennial stream channel, upper perennial stream channel, and intermittent stream channel (VHB 2013). An overview of all wetlands identified within the approximate 15 mile project corridor is shown in figure 3. It should be noted that all wetlands were surveyed prior to the severe flooding event that took place in September of 2013. Although this flooding caused extensive damage in many wetland areas within the park, the resources within the project corridor sustained relatively minor changes as a result of the flooding.

Of the major wetlands and waters of the U.S. identified within the project corridor, many were found in association with Fall River and Big Thompson River, where the rivers meander through U-shaped valleys with broad floodplains. In Horseshoe Park, Fall River crosses into the project corridor under the U.S. 34 bridge just west of the Sheep Lakes area (Figure 4). The river may be categorized as R2UB1 (System-Riverine; Subsystem-Lower Perennial; Class-Unconsolidated Bottom; and Subclass-Cobble Gravel) according to Cowardin et al. (1979). The river channel is approximately 15 to 25 feet wide and is defined by a clear ordinary high water mark. Immediately beyond the river banks, PSS1C (System-Palustrine; Class-Scrub Shrub; Subclass-Broadleaved Deciduous; and Water Regime-Seasonally Flooded) floodplain wetlands are dominated by shrub-sized willow (*Salix* spp.) species, which then transition to PEM1C (System-Palustrine; Class-Emergent; Subclass-Persistent; and Water Regime-Seasonally Flooded) wetlands along the outer boundary of the Fall River floodplain, where elk browsing has stunted plant growth (VHB 2013).

Similar palustrine and riverine wetlands are found in Moraine Park in association with the Big Thompson River, just west of the river's crossing with Bear Lake Road.

FIGURE 3 – WETLAND OVERVIEW

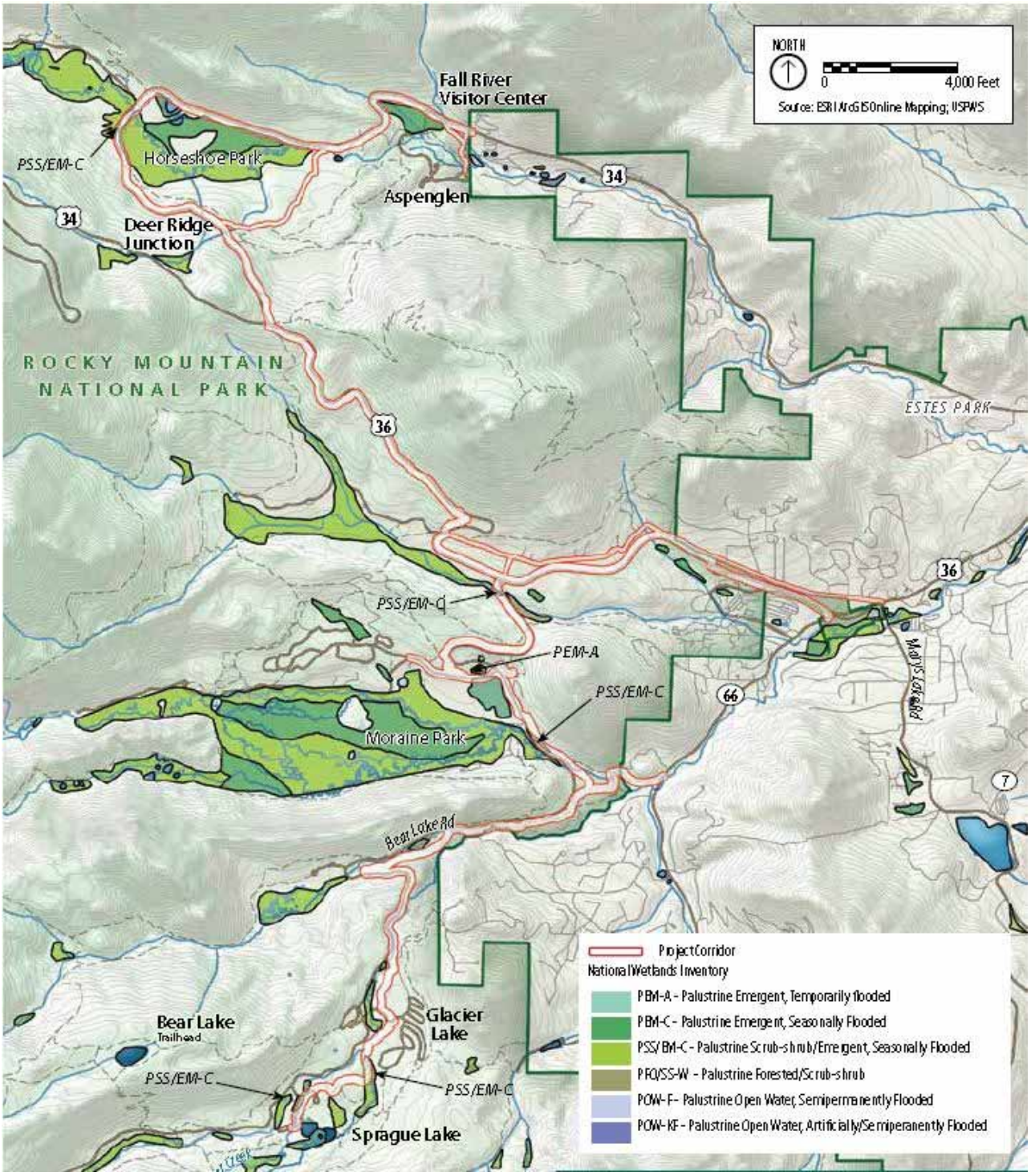


FIGURE 4 – HORSESHOE PARK WETLANDS

Important wetland features within the project corridor are also found in the Sheep Lakes area of Horseshoe Park. The Sheep Lakes wetlands do not consist of true lakes as classified by Cowardin et al. (1979), which generally include deepwater habitats greater than 20 acres in size. Wetlands in the Sheep Lakes area are smaller in size and are only covered by a few feet of water at their deepest point. As a result, they fall under the Cowardin et al. (1979) classification of POW (System-Palustrine and Class-Open Water) wetlands and have a variable width fringe of PEM1C (System-Palustrine; Class-Emergent; Subclass-Persistent; and Water Regime-Seasonally Flooded) wetlands dominated by hydrophytic rushes (*Juncus* spp.) and sedges (*Carex* spp.). While these wetlands are geographically isolated from the larger area of contiguous Fall River floodplain wetlands, they are connected hydrologically due to seasonal hydrologic surface water connections which occur due to the minimal change in elevation across this area of Horseshoe Park.

Other major wetlands and waters of the U.S. also include palustrine forested seepage wetlands located east of U.S. 34 as the road approaches Deer Ridge Junction, and palustrine forested riparian wetlands located along Bear Lake Road in association with Glacier Creek and Mill Creek. Most of these wetlands may be categorized as PFO1B (System-Palustrine; Class-Forested; Subclass-Broadleaved Deciduous; and Water Regime-Saturated) according to Cowardin et al. (1979). Streams within the seepage wetlands flow intermittently (occasionally drying up during the year) and may be categorized as R4SB1 (System-Riverine; Subsystem-Intermittent; Class-Streambed; and Subclass-Bedrock). Hydrology in seepage wetlands is provided by high levels of groundwater outflow, expressed within concave hillslopes and microtopography, and dominant vegetation includes Balsam poplar (*Populus balsamifera*), alder (*Alnus* spp.), birch (*Betula* spp.), and sedges (*Carex* spp.). Streams within the riparian wetlands are perennial (flowing year round) and may be categorized as R3SB1 (System-Riverine; Subsystem-Upper Perennial; Class-Streambed; and Subclass-Bedrock). Hydrology in riparian wetlands is provided by groundwater and high levels of overbank flooding from the Glacier Creek and Mill Creek, and dominant vegetation includes alder and willow species.

Wetlands Functional Values Assessment

A wetland functions and values assessment was prepared for all wetland resources following the *New England Highway Methodology* developed by the USACE (USACE 1993). The following functions and values were ascribed to the NPS wetland systems present on the site:

The wetlands and waters of the U.S. resources found in Horseshoe Park and Moraine Park are high in quality, with significant functions and values for groundwater recharge/discharge, flood flow alteration, sediment/toxicant filtration, nutrient retention, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, and visual quality/aesthetics (ERO 2001, VHB 2013).

Significant functions and values of the Sheep Lakes wetlands include groundwater discharge, floodflow alteration, nutrient removal, production export, sediment stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, and visual quality/aesthetics (VHB 2013).

Significant functions and/or values in palustrine forested wetlands within the project corridor include groundwater recharge/discharge, floodflow alteration, sediment/toxicant filtration, nutrient retention, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, and visual quality/aesthetics (ERO 2001. ERO 2006, VHB 2013).

As indicated above, the major wetlands and waters of the U.S. identified within the project corridor are high in quality and have a high level of functional capacity (ERO 2001, ERO 2006, VHB 2013). However, multiple wetlands that were identified within the project corridor have a reduced functional capacity, due to factors such as small size, location in the watershed, limited amount of vegetative cover, poor substrate conditions, etc. For example, several small PEM1C (System-Palustrine; Class-Emergent; Subclass-Persistent; and Water Regime-Seasonally Flooded) wetlands along the northern edge of the Fall River floodplain in Horseshoe Park have reduced wetland hydrology from overbank flooding, and have vegetation reduced by elk browsing (VHB 2013). This results in a reduced functional capacity of these wetlands within the project corridor. Similarly, wetlands identified near some roadside locations exist in small depressions or narrow drainageways that receive overland runoff from relatively small catchments. Other wetlands and waters of the U.S. with a reduced functional capacity include small ephemeral or intermittent streams with no wetland floodplain (VHB 2013).

JUSTIFICATION FOR USE OF THE WETLANDS

The purpose of the multiuse trail system is to enhance multimodal connections to existing visitor use areas and the seasonal shuttle system. The park serves as a destination both for the population local to Colorado's Front Range as well as for visitors travelling from afar. The majority of Colorado residents regularly participate in walking, running, hiking, bicycling, horseback riding, and other trail-based activities. Bicycling is a popular recreational activity for both residents and visitors in Colorado. The creation and maintenance of a multiuse trail infrastructure is considered a top priority on the Front Range of Colorado, and Colorado residents report that recreational trails are integral to their quality of life. Outdoor recreation is increasingly popular across the country, and current recreation planning emphasizes recreational activities that are healthy, safe, and accessible to a diverse population. Therefore, the project would help to meet the projected increase in demand for access to recreational opportunities within the park.

Bicycling, both road biking and mountain biking, are growing in popularity. Currently bicycles are only permitted on paved and unpaved roadways within the park; bicycles are currently not permitted on trails within the park. Therefore, this project would better accommodate bicycles as part of an overall increase in multimodal access to the park.

Objectives for the proposed action include:

- explore potential multiuse trail connections to other recreational opportunities in the area such as campgrounds and other multiuse trails such as those managed by the Town of Estes Park and the Estes Valley Recreation and Park District
- expand recreational opportunities for self-propelled transportation
- provide an alternate means of transportation within the park's developed eastern side
- provide connections to the park's shuttle bus system
- provide for new visitor experiences within the park
- minimize conflicts among visitors
- provide a safe multiuse trail system

The two action alternatives considered in the EA would impact wetlands and waters of the U.S. as development of the trail in both alternatives would involve nine stream crossings. Alternative B would impact other wetlands in Horseshoe Park that are not directly associated with stream crossings. Alternative B would traverse 0.64 acre of wetlands and 347 linear feet of stream channel. Alternative C would traverse approximately 0.09 acres of wetlands and 321 linear feet of stream channel.

The multiuse trail has been designed to roughly follow the existing road network on the east side of the park for several reasons:

- To avoid additional fragmentation of wildlife habitat
- To reduce impacts in undisturbed habitat by utilizing areas that were previously impacted during road construction
- To access the same visitor amenities that can be reached via the road network. These amenities include three campgrounds, three visitor centers, several trailheads and shuttle bus stops.
- To enhance safety by allowing park rangers to easily patrol the trail while driving along the road and allowing emergency response vehicles easy access to the trail from the roadside.

One of the primary benefits of the overland route that crosses the east end of Horseshoe Park as described in Alternative C is to avoid wetland impacts associated with Alternative B at the west end of Horseshoe Park. Although no decision has been made on which alternative might be selected, implementation of Alternative C would result in significantly less wetland impact (0.09 acre versus 0.64 acre for Alternative B).

Achieving the objectives listed above would not be possible without crossing streams or wetlands that are in the vicinity of the existing road network. The park is committed to replacing wetlands impacted by the multiuse trail. This would at a minimum involve 1:1 replacement of wetlands in-kind at a location (or locations) within the park to be identified.

INVESTIGATION OF ALTERNATIVE SITES AND DESIGNS

The EA evaluated three alternatives that are described in detail in this Statement of Findings. The EA will be released for public review and comment without the identification of an NPS preferred alternative. The rationale not identifying a preferred alternative is to make it clear to the public that the NPS has not made any commitments or decisions on how to proceed and to let the public know that their input is critical to the decision making process. Table 1 provides a side-by-side comparison of the three alternatives and their impacts to wetlands and waters of the U.S.

TABLE 1. COMPARISON OF IMPACTS TO WETLANDS AND OTHER WATERS OF THE US

Resource Type	Cowardin et al. (1979) Classification	Alternative A Size of Impact	Alternative B Size of Impact	Alternative C Size of Impact
Stream	R2UB1	None	24 linear feet	10 linear feet
	R2RB1	None	13 linear feet	None
	R3RB1	None	294 linear feet	296 linear feet
	R4SB3	None	16 linear feet	15 linear feet
Wetlands	PEM1B	None	0.08 acre	0.02 acre
	PEM1C	None	0.06 acre	None
	PSS1C	None	0.11 acre	None
	PFO1B	None	0.39 acre	0.07 acre

Source: VHB 2013

Wetland Mitigation

Wetland mitigation includes avoidance, minimization, and compensation. As described above, and with the exception of the No Action Alternative (Alternative A), avoidance was not possible given the project objectives. Impacts to wetlands would be compensated for through on site mitigation at a minimum ratio of 1:1. On site mitigation for Alternative B would involve a minimum of 0.64 acre and for Alternative C 0.09 acre. The site or sites for mitigation have not been identified at this time, but would be identified in the future in collaboration with the U.S. Army Corps of Engineers.

Compliance

Clean Water Act Section 404

The proposed multiuse trail action alternatives would impact waters of the United States as defined by the Clean Water Act and are therefore subject to review by the U.S. Army Corps of Engineers. The Clean Water Act Section 404 regulates the discharge of dredged or fill material into waters of the United States. A joint application for 401 water quality certification and U.S. Army Corps of Engineers Section 404 permit will be submitted once a decision has been made on which alternative (or combination of alternatives) will be implemented as evidenced by issuance of a Finding of No Significant Impact (FONSI). Once a FONSI has been signed, more detailed design and engineering will be needed prior to construction. The required permits would be obtained once the final design has been completed and the precise extent of wetland impacts is known.

National Environmental Policy Act

The EA, the Assessment of Effect as required under Section 106 of the National Historic Preservation Act, this Statement of Findings for Executive Order 11990, and the FONSI will complete the NEPA requirements for this project.

CONCLUSION

The proposed multiuse trail alignment was designed to minimize impacts to wetlands and to compensate for unavoidable impacts to wetlands. The total area wetland impact of 0.64 acre under Alternative B and 0.09 acre under Alternative C would be compensated at a minimum 1:1 ratio of created or enhanced wetland.

The NPS finds that the proposed action is consistent with the policies and procedures of NPS Director's Order #77- 1: Wetland Protection, including the "no-net-loss of wetlands" policy.

REFERENCES

Cowardin, Carter, Golet, and LaRoe

1979 Class location Wetlands and Deepwater Habitats of the United States. Prepared for the Department of the Interior, Fish and Wildlife Service, Office of Biological Services, Washington, D.C.

ERO Resources Corporation (ERO)

2001 "Wetlands and Other Waters of the U.S. Report, Proposed Bear Lake Road Improvement Project." Denver, CO. ERO Resources Corporation. July.

2006 "Wetlands and Other Waters of the U.S., Bear Lake Road Phase II." Denver, CO. ERO Resources Corporation. March.

National Park Service, U.S. Department of the Interior (NPS)

2008 Directors Order 77-1: Wetland Protection. Accessed at: http://www.nps.gov/policy/DOrders/DO77-1-Reissue.htm

2012 Procedural Manual #77-1: Wetland Protection Procedural Manual. Accessed at: http://www.nps.gov/water/wetlands/Wetlands_Protection_Manuals.cfm

United States Army Corps of Engineers

1987 Corps of Engineers Wetland Delineation Manual

1993 New England Highway Methodology

2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valley, and Coast Region (Version 2.0)

Vanasse Hangen Brustlin, Inc. (VHB)

2013 "Rocky Mountain National Park Multiuse Trail Environmental Assessment, Wetlands and Other Waters of the U.S. Report" Williamsburg, VA. Vanasse Hangen Brustlin, Inc. October.

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APPENDIX B: RELEVANT CORRESPONDENCE

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
P.O. Box 25486, DFC (65412)
Denver, Colorado 80225-0486

IN REPLY REFER TO:
ES/CO: NPS/RMNP
Tails: 06E2400-2014-I-0757

AUG 25 2014

Mr. Vaughn Baker
Superintendent
Rocky Mountain National Park
Estes Park, Colorado 80517

Dear Mr. Baker:

This responds to your letter received on June 26, 2014, regarding the proposed Multi-Use Trail in Rocky Mountain National Park, Colorado. Additional project information was requested by the Service on August 4, 2014 and was provided by telephone conversation on August 11, 2014. You requested concurrence with your determination that the proposed project may affect, but is not likely to adversely affect the Mexican spotted owl (*Strix occidentalis lucida*), Canada lynx (*Lynx canadensis*), and the North American wolverine (*Gulo gulo luscus*). These comments have been prepared under the provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.).

The proposed project consists of developing up to 15.5 miles of a multi-use trail, which would include bicycle use, on the eastern side of the park. The trail would parallel existing roads for much of the route, with the potential for new route in the area of Horseshoe Park. Additionally, the trail may parallel a new alignment of a section of the Bear Lake Road. The Service has already consulted on this new alignment for the Bear Lake Road and provided concurrence on November 9, 2007 (TAILS 65412-2007-I-0608). The trail will not occur near any greenback cutthroat trout streams.

Based on the information provided in your letter, the Service concurs that the proposed project may affect but is not likely to adversely affect the Mexican spotted owl, Canada lynx, and the North American wolverine. The proposed project will not affect critical habitat for the Mexican spotted owl.

If any additional species that are Federally-listed, proposed for Federal listing, or candidate for Federal listing are found in the project area, if critical habitat is designated in the project area, or if project plans change, this office should be contacted to determine if further consultation will be required.

United States Department of the Interior

NATIONAL PARK SERVICE
Rocky Mountain National Park
Estes Park, Colorado 80517

IN REPLY REFER TO:

H4217 (ROMO)

AUG 6 2013

Mr. Edward Nichols
State Historic Preservation Officer
History Colorado
1200 Broadway
Denver, CO 80203

Reference: **Notification of Consultation, Multiuse Trail, Rocky Mountain National Park**

Dear Mr. Nichols:

Rocky Mountain National Park is in the process of preparing a Multiuse Trail Plan/Environmental Assessment to evaluate the potential for developing a multiuse trail system within the developed eastern portion of Rocky Mountain National Park (see enclosed newsletter).

The routes are in flux at present so we are not able to make a determination of effect on any of the cultural resources that may be in the area of potential effect of the trail. The purpose of this letter is to inform you of the project and begin a relationship of consultation. We are consulting with other interested parties as part of the Environmental Assessment and Section 106 process.

We will keep you informed and continue with consultation as the project phases develop. Please contact Karen Waddell, Cultural Resources Specialist, at (970) 586-1332 if you have any questions or comments.

Sincerely,

(SGD.) VAUGHN L. BAKER

Vaughn L. Baker
Superintendent

Enclosure

If you require additional information, please contact Leslie Ellwood of this office at (303) 236-4747.

Sincerely,

Susan C. Linner
Colorado Field Supervisor

Ref: Projects\NPS\RMNP\NPS_Multi-Use Trail_FWSconcur

ROMO TRIBAL CONTACTS

Updated May 21, 2014

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Darlene Frost 970-563-3620, dafrost@southern-ute.nsn.us. (ask Darlene to forward the email to Mr. Olguin)

Mr. Alden B. Naranjo NAGPRA Coordinator
Southern Ute Indian Tribe
P.O. Box 73
Ignacio, CO 81137
Phone: (970) 563-0100 x2257
Fax: (970) 563-0316
(attended GRTE Biodiversity Conference &conducted ethnographic work in park)

Ute Indian Tribe of the Uintah & Ouray Reservation, Utah
Gordon Howell, Chairman
Uintah and Ouray Tribal Business Committee
P.O. Box 190
Fort Duchesne, UT 84026
Phone: (435) 722-5141
Fax: (435) 722-2374
gordonh@utetribe.com

Ms. Betsy Chapoose
Ute Cultural Rights Protection
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Fort Duchesne, UT 84026
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Fax: (435) 722-2374
435-725-4824 Fax: 435-722-2374
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Ute Mountain Tribe of the Ute Mountain Reservation, Colorado, New Mexico, and Utah
Mr. Manuel Heart, Chairman
Ute Mountain Ute Tribe
P.O. Box JJ
Towaoc, CO 87734-0248
Phone: (970) 565-3751
Fax: (970) 565-7412

Mr. Terry Knight, Sr., THPO
Ute Mountain Ute Cultural Resources Program
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E-mail: tknight@utemountain.org
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United States Department of the Interior

NATIONAL PARK SERVICE
Rocky Mountain National Park
Estes Park, Colorado 80517

L24(ROMO)

SEP 11 2014

Mr. Ty Vicenti, President
Jicarilla Apache Tribal Council
P. O. Box 507
Dulce, NM 87528

Dear Mr. Vicenti:

Rocky Mountain National Park is exploring the possibility of creating a multiuse trail within the developed eastern portion of the park, outside of designated wilderness. The purpose of this trail system is to connect with local trail networks in the Estes Valley and provide additional opportunities for visitors to travel in the park on pathways, where they may walk, run, bicycle, use baby strollers, snowshoe, or cross country ski. The pathway would roughly parallel, but be separate from, existing roadways and would offer connections to several services in the park, including campgrounds, visitor centers, trailheads, and shuttle stops. Depending on the alternative selected, the multiuse trail would be up to 15 miles long and up to 10 feet wide.

We invite your input on any concerns you might have at this point related to the protection of cultural resources and sacred places within proximity to the proposed trail. Please let us know if you are interested in seeing portions of the proposed trail route as part of this initial scoping. If so, we will arrange a date in late September or early October, before winter weather sets in, that would accommodate the most parties. Please note that fees for professional services will not be paid for this elective activity.

The attached map shows the proposed alignment of the multiuse trails system, as well the location of known archaeological and historic sites, which are either determined eligible for listing on the National Register or are currently unevaluated. The archaeological sites consist of prehistoric open camps and a ground stone scatter. The National Park Service (NPS) collected material from these sites and stored the artifacts in the park museum facility. The historic sites consist of cabin sites, a spring with a pipe, and a water system with associated structures. The orange route shown on the map is marked as a 200 foot wide buffer to account for any cultural resources that may be affected. However, the NPS would only design and construct a 10 foot wide trail to avoid contact with any of these cultural sites.

Additional archaeological and historic sites, which are not marked on the map, have been determined ineligible for listing on the National Register. These ineligible sites consist of non-diagnostic isolated prehistoric artifacts, an open camp, trash middens, road remnants, cabin sites, and hearths. Archeological surveys, conforming to the Secretary of the Interior's Standards and

Guidelines for Archeology and Historic Preservation, will be conducted as site-specific projects if the project is implemented.

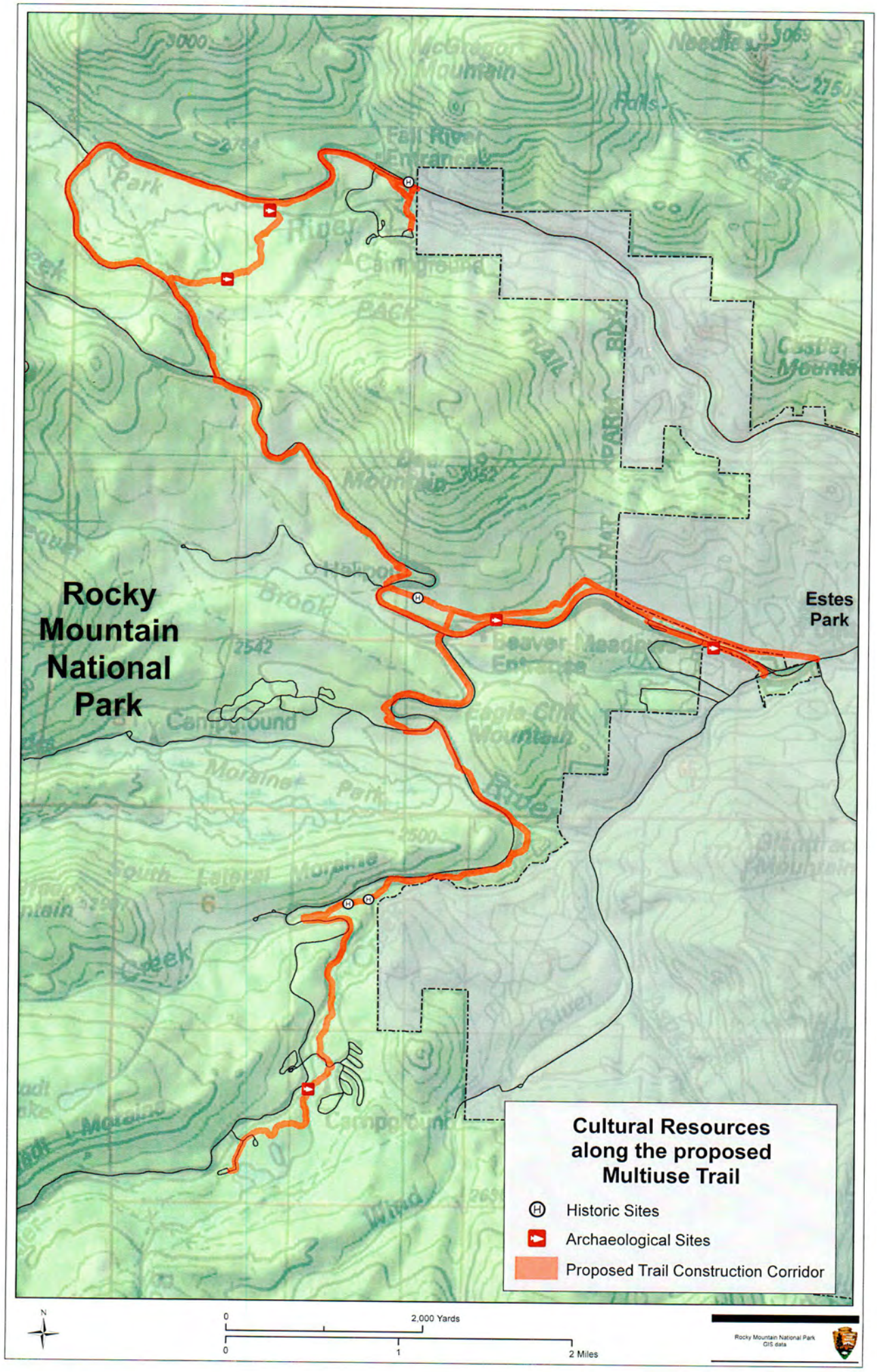
We anticipate releasing the environmental assessment for the plan in the late fall of 2014. In the meantime, we invite your input on concerns you might have about identified cultural resources. Please contact Larry Gamble at 970-586-1320 or larry_gamble@nps.gov if you have any questions or can offer some insights. We would appreciate having your comments back by October 13, 2014.

Sincerely,

Vaughn L. Baker
Superintendent

Enclosure

cc: Kimberly Greenwood, Indian Affairs and American Culture, Intermountain Region


Rocky Mountain National Park
Estes Park
Cultural Resources along the proposed Multiuse Trail
Historic Sites
Archaeological Sites
Proposed Trail Construction Corridor
N
0
2,000 Yards
0
1
2 Miles
Rocky Mountain National Park GIS data

APPENDIX C: MITIGATION MEASURES

MULTIUSE TRAIL NATURAL RESOURCE MITIGATION MEASURES

Implementation:

- The Contractor and park personnel shall take every precaution and make every effort to protect the delicate environment of Rocky Mountain National Park.
- Construction stipulations will be incorporated in the contract documents.
- To the degree possible, the project will be planned to maximize the survivability of salvaged trees and shrubs. Plant salvage will occur in early spring or late fall/early winter during dormancy.

Construction Limits:

- The construction area limits will be clearly defined, fenced, flagged or somehow delineated to keep ground disturbance to a minimum.
- Construction equipment will be kept within the construction limits to protect adjacent undisturbed vegetation. Under no circumstance will any vehicle be allowed outside the construction limits.

Equipment

- Rubber-tired vehicles will be used unless specific approval for tracked vehicles has been granted.
- Equipment will be refueled on an existing road or parking lot.
- Construction equipment not being used shall be parked out of the traveled way of roads and trails and within the construction limits.
- All earth-moving equipment (excluding hauling vehicles) shall be cleaned of mud, plant materials and weed seed prior to entering the National Park. Hauling vehicles shall meet the same requirement before their initial entrance into the park
- Solvents used to clean pavers, tools, etc., shall be carefully used, completely contained at the work site, and satisfactorily cleaned up as may be required.

Clearing and Grubbing

- Selected snags 4 to 12 inches diameter breast high (dbh) shall be salvaged and stockpiled in designated storage areas for subsequent placement on the completed slopes. The trees and snags shall be cut into random lengths from 8 to 30 feet and shall be limbed on one side. Sound snags and dead trees are preferred over live trees.

- Surface boulders that will remain on the site following construction shall be carefully stockpiled to protect natural lichen growth. Boulders will be replaced in their natural position (i.e., partially buried with lichen facing up, etc.).
- Grubbing of stumps shall be accomplished in such a manner as to conserve topsoil material. Non-conventional methods will be required to remove stumps in order to conserve topsoil without contaminating the material with underlying inorganic soils. Pushing trees over with heavy equipment or performing grubbing operations shall not be permitted until topsoil is conserved.
- If stumps are to be left in place, trees should be flush cut to ground level and cross-hatched to promote decomposition. Designated trees and snags once cut shall be removed in such a manner as to minimize damage to adjacent trees and vegetation.
- Furrows created by dragging larger timber away for disposal shall be hand raked to blend with finished grade.
- Burning of debris within the park will not be permitted. All debris and left over construction materials shall be removed from the park and disposed of in accordance with applicable local, State, and Federal regulations.

Excavation

- If excavation and/or grading is required for ditches, trail construction, etc., the topsoil shall be salvaged and stored in a separate location (refer to next section). Topsoil refers to the uppermost soil horizon, and natural humus bearing soils, duff, and vegetable matter. The depth of topsoil in the park varies and must be evaluated for each project to determine how much of the topsoil should be saved.
- Trees and shrubs are to be avoided if possible during trenching or excavation.
- Any excavated boulders, subsoil or topsoil that will not be needed for the project are to be removed as soon as possible to minimize damage to underlying vegetation.

Topsoil Salvage

- Salvaged topsoil will be separated from the sub-soil and stored in piles no higher than three feet and three feet wide. If possible, the soil will be stockpiled in a disturbed area to minimize the impact to adjacent vegetation.
- If the topsoil is to be stockpiled for several months or longer, it should be planted with a cover crop.
- A minimum of 2 inches of material shall be conserved unless it is determined to be unsuitable due to the presence of exotic vegetation. In some locations, a depth of 12 or more inches of material can be conserved. Live vegetation less than 3 feet in height and limbs less than 1 inch in diameter may be incorporated as topsoil in the stockpiles. Conserved topsoil shall consist of natural humus bearing soils, duff, and vegetable mater obtained from the overlying portions of the roadway excavation and embankment areas.
- Due to the limited amount of material available for topsoil and the need to establish the best growing medium possible for revegetation, non-conventional methods will be required to excavate, stockpile, and place the conserved material. Equipment capable of excavating small, isolated pockets of soil; removing stumps as required; and placing material on slopes and in pockets on rock ledges will be required to perform the work.

Vegetation Salvage

- All plant materials (trees, shrubs, grasses and forbs) to be salvaged shall be clearly identified prior to the start of construction.
- Antelope bitterbrush is a plant species of special concern. If antelope bitterbrush is present at the project site, the goal of plant salvage and revegetation is no net loss of this shrub.
- When salvaging trees and shrubs, as much soil as possible shall be preserved around the roots. Root balls from salvaged trees and shrubs will either be placed in containers or wrapped in burlap. The plants must be watered to keep the soil moist until they are replanted.
- Trees, shrubs and other containerized plants will be watered during the first growing season.
- If sod will be salvaged at the project site, the sod can be stripped with a backhoe, sod cutter or spade.
- If sod is to be replaced within five (5) days it can placed on canvas burlap and stored at the construction site. The sod should be watered and covered to prevent the vegetation from drying out. During hot, dry weather, the salvaged sod must be watered every day.
- Sod that cannot be replanted within five days must be placed into wooden flats lined with three inches of vermiculite and peat and watered on a routine basis.
- Vegetation removal and disturbance within the construction limits would be minimized and all disturbed areas would be revegetated with native species.

Rough Grading

- A balance is to be achieved between these competing and equal considerations: (a) the creation of steep cuts and fills to minimize the amount of disturbance, and (b) the creation of flatter cuts and fills to minimize erosion and promote the reestablishment of vegetative cover.

Finish Grading

- Once construction is complete, the natural contour of the land is to be restored to the degree possible. Slopes shall simulate the irregularity of the existing terrain.
- Abrupt angles are to be avoided at the top, toe and ends of newly formed slopes. The top, toe and ends of the slope are to blend in with natural contours.
- All earth and rock slopes shall be left with a roughened surface as they are being constructed.

Cut Slopes

- Boulders firmly in place and protruding from cut slopes shall be left undisturbed.
- All cut slopes shall be sculpted to irregular surfaces preserving segments of large rock outcrops leaving staggered, irregular ledges, shelves, and outcrops with jagged edge appearance and planting pockets suitable for placement of topsoil and plants.

Fill Slopes

- Fill slopes shall be graded to provide an irregular surface with staggered ridges steeper than the nominal slope ratio, staggered ledges, planting pockets, and large boulders exposed above the nominal fill slope.

- Where shown on the plans or directed by park staff, additional material shall be incorporated into the fill slopes to obtain additional blending into the natural terrain and to develop areas for planting.
- Any soil that has been over-compacted by traffic or equipment, especially when wet, will be tilled to break up rooting restrictive layers, and then harrowed and rolled to prepare the required firm seedbed.

Imported aggregate and soil

- All material sources used in the production of aggregates require archaeological clearance by a state or federal agency. The Contractor shall furnish written proof of archaeological clearance before transporting any aggregate into the park.
- All material sources require clearance for exotic plants. The Contractor shall notify the Project Manager of the sources(s) proposed for use at least 1 month before beginning operations. The source(s) will be investigated for exotic plants during the period. If exotics are present, the investigator will determine if the upper portion of the source is to be stripped or the exotics sprayed with an herbicide. When an herbicide is required, a licensed applicator shall apply the spray. An agronomist's certification that the source(s) is free from exotic plants may be substituted for the above requirements.

Placement of Topsoil

- Prior to placement of topsoil, prepare the areas as follows.
  (a) Slope ratios of 3:1 should be scarified to a nominal depth of 4 inches. Disking or scarification shall be done in a direction perpendicular to the natural flow of water.
  (b) Slopes steeper than 3:1 shall be prepared as directed by the Project Manager.
- Conserved topsoil shall be spread a minimum of 2 inches in depth, loose measurement, over all disturbed soil areas. Topsoil is to be replaced without compacting the soil.
- After spreading has been completed, large clods, loose stones larger than 12 inches, stumps, and large roots shall be removed and disposed of outside the park in accordance with local, county, State, and Federal regulations. Stones smaller than 12 inches which are firmly embedded in the topsoil may be left on the finished slopes

Erosion Control

- During grading, standard erosion control measures such as use of sediment fencing or wattles (i.e., bundles of sticks) would be used, as appropriate. If the area of disturbance is large enough to warrant it, an approved sediment and erosion control plan would be implemented.
- Temporary erosion control devices or methods shall be used to protect sensitive areas. Sensitive areas include but are not limited to lakes, stream corridors, drainages, riparian areas, wetlands, and aspen groves.
- In areas where slopes are greater than 2:1, soil erosion devices (including but not limited to weed-seed free straw bales, wattles and blankets) will be applied to the disturbed area. For larger disturbed areas, erosion control fencing must be installed. Areas requiring erosion control will be delineated and inspected by the park Biologist.
- Logs shall be placed on all erodible slopes. Logs shall be staggered and placed in a random fashion to prevent the appearance of a pattern.

- Trees and snags shall be placed on slopes following the placement of topsoil..

Seeding

- Planted seed shall be covered with no more than 1/4 to 3/4 inch of soil.

Mulching

- Division of Resource Stewardship personnel will determine if a project requires the use of mulch.

Wildlife

- Wildlife crossing signs and interpretive signs would be used to inform the public about the presence of wildlife.
- Construction activity during the elk rut from September 15 to October 31 would be avoided.
- Snags and cavity nest trees would be avoided to the extent possible. If clearing is needed, cavity trees would be removed during the non-breeding season in the fall per the requirements of the Migratory Bird Treaty Act.
- Surveys for migratory bird nests would be conducted prior to ground disturbing activities.

Wetlands

- Restoration of wetland habitats would include a minimum of 1:1 “in -kind” wetland replacement at a location or locations to be identified to replace amphibian habitat impacted by trail improvements.

Stormwater/Surface Waters

- A stormwater management plan would be prepared for the Colorado Department of Public Health and Environment. Best management practices would be used to minimize erosion and the introduction of sediments to aquatic habitat during and after construction.
- Any discharges of dredged or fill material into surface waters would be regulated under the Clean Water Act Section 404 permitting process. All Section 404 permits require a Water Quality (401) Certification from the Colorado Department of Public Health and Environment before a 404 permit can be issued. The 401 certification would not allow discharges into surface water to result in any violations of applicable water quality standards and policies.

Visitor Conflicts

- Minimize visitor conflicts through use of trail etiquette educational materials posted at primary access points along the trail. The NPS also would conduct conflict monitoring to determine when and what additional conflict mitigation strategies might be implemented. Additional strategies could include (but are not limited to) imposing a speed limit, adding bike patrols, and establishing designated use days (where bicycles are only allowed on specific days or during specific times).

Cultural Resources

- Prior to beginning work, baseline documentation and condition assessment data will be recorded for all cultural resources located within the project area. The data will be incorporated into a

cyclic monitoring program to document any changes (human or natural) in the condition of the resource.

- An archeological monitor will be present for ground disturbing activities that may have the potential to impact undisturbed cultural resources.
- Equipment and materials staging areas will avoid known cultural resources.
- Ground disturbance during trail construction would be minimized to prevent the inadvertent discovery of archeological resources and minimize scarring. Disturbed areas would be planted with native vegetation.
- If previously unknown archeological resources are discovered during the project, all work in the immediate vicinity (600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. Consultation will be conducted in accordance with 36 CFR Part 800.13, "Post-review Discoveries."
- Any archeological artifact or natural history specimens recovered as a result of a systematic investigation shall be accessioned and cataloged into the park's museum collection.
- In the event that human remains are discovered, staff will follow current guidelines in the Native American Graves Protection and Repatriation Act. Work will be halted, the site will be protected, and associated Native American groups contacted. The State Historic Preservation Office will be notified as well.
- The existing appearance of all cultural resources that the trail directly interacts or that alters the cultural resource's viewshed should be documented prior to construction.
- Any archeological artifact or natural history specimens recovered as a result of a systematic investigation shall be accessioned and cataloged into the monument's museum collection.

As the nation’s principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

ROMO 121/129124 July 2015