

**United States Department of the Interior  
Bureau of Land Management  
and  
United States Department of Agriculture  
Forest Service  
and  
United States Department of the Interior  
Bureau of Reclamation**

---

**Environmental Assessment  
for the Palisade Plunge Trail**

**DOI-BLM-CO-S080-2017-0030-EA**

**JUNE 2018**

---



U.S. Department of the Interior  
Bureau of Land Management  
Grand Junction Field Office  
2815 H Road  
Grand Junction, Colorado 81506



U.S. Department of Agriculture  
Forest Service  
Grand Mesa, Uncompahgre and Gunnison  
National Forests  
2777 Crossroads Blvd  
Grand Junction, CO 81506



U.S. Department of the Interior  
Bureau of Reclamation  
Western Colorado Area Office  
445 West Gunnison Ave., Suite 221  
Grand Junction, CO 81501-5711

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple-use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, wilderness, air, and scenic, scientific, and cultural values.

## Table of Contents

CHAPTER 1 – INTRODUCTION .....	1
1.1 IDENTIFYING INFORMATION .....	1
1.2 PROJECT LOCATION AND LEGAL DESCRIPTION.....	1
1.3 PURPOSE AND NEED.....	4
1.4 LEAD AND COOPERATING AGENCIES .....	4
1.5 PUBLIC PARTICIPATION .....	6
1.5.1 Scoping.....	6
1.5.2 Public Comment Period .....	7
1.6 FEDERAL DECISIONS TO BE MADE .....	8
CHAPTER 2 – PROPOSED ACTION AND ALTERNATIVES .....	9
2.1 INTRODUCTION .....	9
2.2 ALTERNATIVES ANALYZED IN DETAIL .....	9
2.2.1 Alternative A – No Action Alternative .....	9
2.2.2 Alternative B – Proposed Action .....	9
2.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL.....	32
2.3.1 BOR Alternative.....	32
2.3.2 Motorized Use Alternative .....	32
2.4 PLAN CONFORMANCE REVIEW .....	33
2.5 STANDARDS FOR PUBLIC LAND HEALTH .....	36
CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES .....	37
3.1 INTRODUCTION .....	37
3.1.1 Elements Not Present or Not Affected.....	38
3.1.2 Past, Present, Reasonably Foreseeable Actions .....	38
3.2 PHYSICAL RESOURCES.....	38
3.2.1 Soils (includes a finding on Standard 1) .....	38
3.2.2 Water (surface and groundwater, floodplains) (includes a finding on Standard 5).....	41
3.3 BIOLOGICAL RESOURCES .....	45
3.3.1 Invasive, Non-native Species .....	45
3.3.2 Vegetation (includes a finding on Standard 3).....	46
3.3.3 Wetlands and Riparian Zones (includes a finding on Standard 2).....	51
3.3.4 Threatened, Endangered, and Sensitive Species (includes a finding on Standard 4).....	53
3.3.5 Wildlife (includes fish, aquatic and terrestrial) (includes a finding on Standard 3).....	69
3.4 HERITAGE RESOURCES AND HUMAN ENVIRONMENT .....	77
3.4.1 Cultural Resources .....	77
3.4.2 Paleontological Resources.....	80
3.4.3 Tribal and Native American Religious Concerns.....	81
3.4.4 Visual Resources .....	83
3.4.5 Social, Economic, and Environmental Justice .....	84
3.4.6 Transportation and Access .....	87
3.4.7 Wastes, Hazardous or Solid .....	91
3.5 LAND RESOURCES .....	92
3.5.1 Recreation .....	92
3.5.2 Wilderness and Wilderness Characteristics .....	96
3.5.3 Range Management.....	97
3.5.4 Land Tenure, Rights of Way and other Uses .....	100
3.5.5 Fire and Fuels.....	101
CHAPTER 4 - CONSULTATION AND COORDINATION .....	103
4.1 LIST OF PREPARERS AND PARTICIPANTS.....	103
4.2 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED .....	105
CHAPTER 5 - REFERENCES .....	106

### List of Maps

Map 1	General Project Location .....	3
Map 2	Route Designation Changes .....	10
Map 3	Social Trail Rehabilitation & Resource Protection Fencing .....	15
Map 4	Orchard Mesa Power Canal and Highway 6 & 24 Crossing .....	19
Map 5	Construction Timing Limitations.....	31
Map 6	Roadless Areas.....	89
Map 7	Grazing Allotments.....	98

### List of Tables

Table 1	Required Permits, Approvals, and Authorizing Actions .....	5
Table 2	Land Ownership by Milepost.....	12
Table 3	Miles Crossed by Landowner .....	13
Table 4	Waterbodies Crossed by Proposed Trail.....	17
Table 5	Roads Crossed by Proposed Trail.....	17
Table 6	Fences Crossed by Proposed Trail.....	17
Table 7	Potentially Impacted Resources.....	37
Table 8	Whitewater Creek Peak Flows at Trail Crossing.....	41
Table 9	Protected Beneficial Uses for Stream Segments Crossed or within One Mile of the Proposed Trail Alignment.....	42
Table 10	State Listed Noxious Weed Observations.....	45
Table 11	Common Plants Observed within Each Ecological Zone .....	47
Table 12	Federally Listed Species that May Occur in the Project Area .....	54
Table 13	GMUG and GJFO Sensitive Species with Potential for Occurrence in the Project Area .....	59
Table 14	Forest Service Management Indicator Species Considered and Evaluated for this Project.....	63
Table 15	Summary of Colorado Hookless Cactus Plants Documented during Survey Efforts within 25 meters of the Palisade Plunge Trail Centerline .....	66
Table 16	Seasonal Timing Restrictions and Spatial Buffers that Would Be Applied to Occupied Raptor Nests Documented in the Project Area.....	76
Table 17	Population and Population Change, 2000 – 2016.....	84
Table 18	Grazing Allotments in the Project Area.....	99

### List of Attachments

Attachment A	Responses to Public Comments on the Preliminary EA
Attachment B	Biological Evaluation and Management Indicator Species Report

### List of Abbreviations and Acronyms

AADT	Annual Average Daily Traffic
APE	Area of Potential Effect
ARPA	Archeological Resources Protection Act
ATV	all terrain vehicle
AUM	Animal Unit Month
BE	Biological Evaluation
BCC	Birds of Conservation Concern
BLM	Bureau of Land Management
BMPs	Best Management Practices
BOR	U.S. Bureau of Reclamation
CDLE	Colorado Department of Labor and Employment
CDOLA	Colorado Department of Local Affairs
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CNHP	Colorado Natural Heritage Program
COHVCO	Colorado Off Highway Vehicle Coalition
COPMOBA	Colorado Plateau Mountain Bike Trail Association
CPW	Colorado Parks and Wildlife
CWMA	Colorado Weed Management Association
EA	Environmental Assessment
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
Flattops	Flattops Archaeological Consultants
FLPMA	Federal Land Policy and Management Act
Forest Service	U.S. Forest Service
ft	foot
FSM	Forest Service Manual
FSR	Forest Service Road
GJFO	Grand Junction Field Office
GMUG	Grand Mesa, Uncompahgre, and Gunnison National Forest
I-70	Interstate 70
IDT	Interdisciplinary Team
ILBT	Interagency Lynx Biology Team
IMBA	International Mountain Bicycling Association
LAU	Lynx Analysis Unit
LHA	Land Health Assessment
MBTA	Migratory Bird Treaty Act
MIS	Management Indicator Species
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MP	milepost
MU	Mapping Unit
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

---

NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OHV	off-highway vehicle
OMID	Orchard Mesa Irrigation District
OMPC	Orchard Mesa Power Canal
PFYC	Potential Fossil Yield Classification
PL	Public Law
PRPA	Paleontological Resources Preservation Act
R-2	Region 2
RMP	Resource Management Plan
ROWs	rights-of-ways
SARC	Search and Rescue Control
SGS	Stokes Gulch Siphon
SH-65	State Highway 65
SHPO	State Historic Preservation Officer
SRMA	Special Recreation Management Area
TMDL	Total Maximum Daily Load
TPA	Trails Preservation Alliance
U.S.	United States
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UTV	utility task vehicle
VRM	Visual Resource Management
WCIU	wilderness characteristics inventory unit
WestWater	WestWater Engineering
WoUS	Waters of the United States

## CHAPTER 1 – INTRODUCTION

### 1.1 IDENTIFYING INFORMATION

---

**BACKGROUND:** This Environmental Assessment (EA) has been prepared by the Bureau of Land Management (BLM) Grand Junction Field Office (GJFO) in cooperation with the U.S. Forest Service (Forest Service) Grand Mesa, Uncompahgre, and Gunnison National Forests (GMUG), and the U.S. Bureau of Reclamation (BOR) to analyze the proposed construction of 31.6 miles of new singletrack trail and maintenance and use of approximately 34 miles of overall trail. The Palisade Plunge proposal is a collaborative effort between the BLM, the Forest Service, the BOR, the Town of Palisade, Mesa County, City of Grand Junction, Colorado Parks and Wildlife (CPW), and the Colorado Plateau Mountain Bike Trail Association (COPMOBA). The trail is one of Colorado the Beautiful’s “16 in 2016” initiatives to support trails and promote outdoor recreation in Colorado. Local governments and tourism organizations are also supportive of the project and view it as a key opportunity for economic development.

COPMOBA has been actively involved in the planning, construction, monitoring, and maintenance of trails in the area. One of COPMOBA’s objectives is to provide new mountain bike trail riding opportunities. COPMOBA members have worked with the BLM, the Forest Service, and other cooperating agencies to design the Palisade Plunge Trail alignment. COPMOBA has also partnered with the Town of Palisade and Mesa County to obtain grants that provided funding necessary for biological, cultural, paleontological, and wetland surveys and National Environmental Policy Act (NEPA) analysis of this proposal. These entities also plan to provide funding and volunteer labor for construction, monitoring, and maintenance of the proposed trail.

**CASEFILE/PROJECT NUMBER:** DOI-BLM-CO-S080-2017-0030-EA

**PROJECT NAME:** Palisade Plunge Trail

**PLANNING UNIT:** Grand Junction Field Office, Grand Mesa, Uncompahgre, and Gunnison National Forest

### 1.2 PROJECT LOCATION AND LEGAL DESCRIPTION

---

The Palisade Plunge Trail would be located in Mesa County, Colorado. The trail would begin at the top of Grand Mesa and descend for 33.84 miles to the Town of Palisade (see Map 1).

**LEGAL DESCRIPTION:**

#### **BLM-Administered Lands**

Sixth Principal Meridian, Mesa County, Colorado

T. 12 S., R. 97 W.,

Sec. 6, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , lot 8, lot 9.

T.11 S., R. 97 W.,

Sec. 30, lot 2, lot 3, lot 4;

- Sec. 31, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, lot 6, lot 5, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>.  
 T. 11 S., R. 98 W.,  
 Sec. 1, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 2, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec 11, NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, lot 5, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>;  
 Sec. 12, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>;  
 Sec. 13, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>;  
 Sec. 24, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>;  
 Sec. 25, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>.

### National Forest System Lands

#### 6<sup>th</sup> Principal Meridian, Mesa County, Colorado

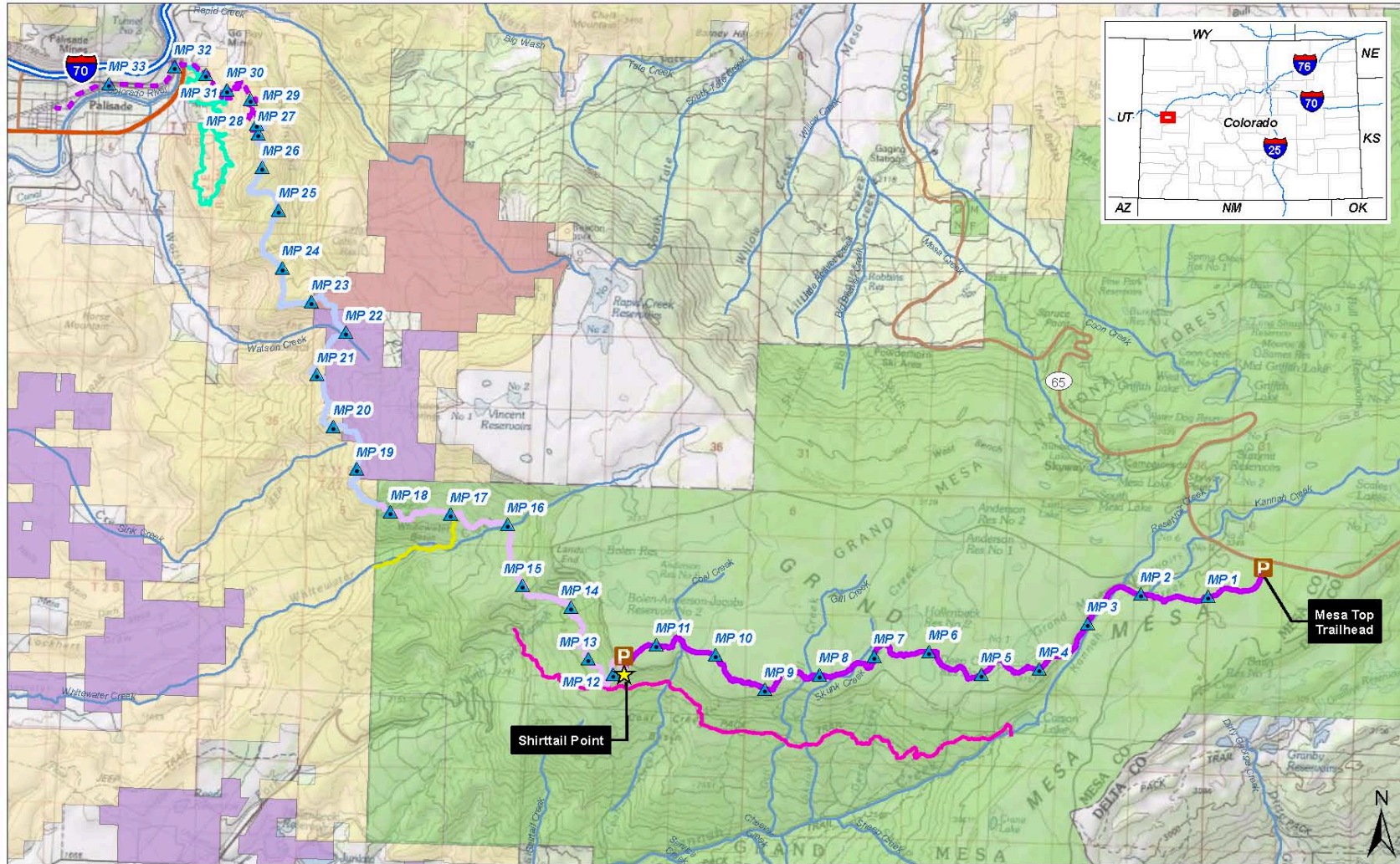
- T. 12 S., R. 95 W.,  
 Sec. 7, NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>.  
 T. 12 S., R. 96 W.,  
 Sec. 11, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 12, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 14, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>;  
 Sec. 15, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 16, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 17, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 18, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 19, NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>.  
 T. 12 S., R. 97 W.,  
 Sec. 4, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 5, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 9, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>;  
 Sec. 10, SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 13, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>;  
 Sec. 14, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec. 15, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>.

### City of Grand Junction Lands

#### 6<sup>th</sup> Principal Meridian, Mesa County, Colorado

- T. 11 S., R. 97 W.,  
 Sec 19, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>;  
 Sec 30, SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>;  
 Sec 31, NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>.





**Legend**

- ▲ Milepost
  - Palisade Plunge Trail**
  - ◆ Bicycle and Foot Only\*
  - ⋈ Bicycle and Foot Only with Seasonal Closure
  - ⋈ Bicycle, Horse, and Foot Only
  - ⋈ Bicycle, Horse, and Foot Only with Seasonal Closure
  - ⋈ Whitewater Basin Trail
  - ⋈ Coal Creek Trail
  - ⋈ Palisade Rim Trail
- Surface Ownership**
  - Bureau of Land Management
  - Forest Service
  - City of Grand Junction
  - Town of Palisade
  - Private
  - Streams

\*Winter Closure may be moved to the intersection near MP 30.4 if there are violations of the closure past MP 27.48



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project was developed through digital means and may be updated without notice.

**Palisade Plunge Trail**  
Mesa County, Colorado

**Map 1**  
General Project Location

## **Town of Palisade Lands**

### 6th Principal Meridian, Mesa County, Colorado

T. 11 S., R. 97 W.,

Sec. 19, NE $\frac{1}{4}$ SW $\frac{1}{4}$ , lot 3.

T. 11 S., R. 98 W.,

Sec. 2, NE $\frac{1}{4}$ SW $\frac{1}{4}$ , lot 18.

## **Private Lands**

### 6<sup>th</sup> Principal Meridian, Mesa County, Colorado

T. 11 S., R. 98 W.,

Sec. 2, lot 18, lot 20;

Sec. 3, SE $\frac{1}{4}$ SE $\frac{1}{4}$ ;

Sec. 9, lot 1, lot 3;

Sec. 10, lot 1, lot 2, lot 3, lot 4.

## **Private Lands (Town of Palisade Easement)**

T. 11 S., R. 98 W.,

Sec. 2, NE $\frac{1}{4}$ SW $\frac{1}{4}$ .

## **1.3 PURPOSE AND NEED**

---

The purpose of the Proposed Action is to provide a unique mechanized recreational opportunity to complement mountain biking trails that already exist in the Grand Valley Area. Public lands in the area already provide world-class mountain bike singletrack riding opportunities. The proposed trail would add a long-distance downhill riding opportunity from the Mesa Top Trailhead to downtown Palisade, Colorado. The need for this project is to support collaborative, community-supported recreation opportunities. The need for the project is established by the BLM's and the Forest Service's responsibility to plan for quality recreation opportunities on the public lands, as required by the Federal Land Policy and Management Act (FLPMA) of 1976 and the Multiple Use and Sustained Yield Act of 1960. This project also responds to key elements of the BLM and Forest Service strategies for managing the public lands, including BLM's Connecting with Communities National Recreation Strategy, which directs the BLM to work with communities to better serve common recreation customers, and to "facilitate greater well-being and economic benefits within communities." The BOR is responsible for authorizing the proposed surface uses of the BOR-managed parcels within the project boundary.

## **1.4 LEAD AND COOPERATING AGENCIES**

---

The BLM is the lead federal agency overseeing the NEPA process and is coordinating the preparation of the environmental analysis. The cooperating agencies with decision-making authority or other special expertise include the Forest Service, the BOR, Town of Palisade, Mesa County, City of Grand Junction, and CPW.

The project traverses several jurisdictional boundaries including federal and local agencies. A list of permits, approvals, and authorizing actions necessary to construct, maintain, and use the proposed trail is included in Table 1.

**Table 1**  
**Required Permits, Approvals, and Authorizing Actions**

<b>Agency</b>	<b>Permit or Consultation</b>	<b>Applicability</b>
<b><i>Federal</i></b>		
Bureau of Land Management Lead Agency for NEPA – GJFO	EA Preparation, route designation, and approval of facilities proposed on BLM-managed public land  Facilitate State Historic Preservation Officer (SHPO) and tribal consultation  Facilitate United States Fish and Wildlife Service (USFWS) consultation Submit Biological Assessment	NEPA compliance  Inventory, excavate, and/or remove cultural or historic resources  Facilitate consultation processes with federal, state, and local agencies
Forest Service Cooperating Agency – GMUG	EA review, route designation, and approval of facilities proposed on National Forest System lands  Antiquities and cultural resource permits  Assist with USFWS consultation Review Biological Assessment	NEPA compliance  Inventory, excavate, and/or remove cultural or historic resources  Assist with consultation processes with Tribes, SHPO, and USFWS
U.S. Bureau of Reclamation Cooperating Agency	EA Review, approval for facilities proposed on BOR-managed public land and that cross BOR rights-of-way (ROWs)  Assist with USFWS, SHPO and tribal consultation	NEPA compliance, approve fence crossing, and ensure public safety near power canal  Assist with consultation processes with Tribes, SHPO, and USFWS
U.S. Fish and Wildlife Service	Issue Concurrence Letter	Section 7 Consultation
<b><i>State</i></b>		
Colorado Parks and Wildlife Cooperating Agency	Special expertise and NEPA review	Development of Proposed Action and alternatives
Colorado Department of Transportation	Issue Special Use Permit to Mesa County and special expertise  Memorandum of Understanding between CDOT, Federal Highway Administration, BLM Colorado, and Forest Service Rocky Mountain Region	Approval of trail located in Colorado Department of Transportation (CDOT) ROW and development of Proposed Action  Coordination during NEPA process and development of Proposed Action
<b><i>Local</i></b>		
City of Grand Junction Cooperating Agency	Agreement or easement, special expertise, and NEPA review  Watershed Permit	Approval of trail crossing City lands and development of the Proposed Action and alternatives  Approval of trail crossing through City of Grand Junction watershed

Agency	Permit or Consultation	Applicability
Town of Palisade Cooperating Agency	Memorandum of Understanding, special expertise, obtaining easements and private land acquisition, NEPA review  Watershed Permit	Approval of trail crossing Town lands and development of Proposed Action and alternatives  Approval of trail crossing through Town of Palisade watershed
Mesa County Cooperating Agency	Obtain Special Use Permit from CDOT, MOU with City of Grand Junction for watershed crossing, special expertise, and NEPA review	Permitting of trail crossing of U.S. Highway 6 and 24, agreement with City of Grand Junction for crossing watershed development of Proposed Action and alternatives

## 1.5 PUBLIC PARTICIPATION

### 1.5.1 Scoping

#### Public Scoping

NEPA regulations (40 Code of Federal Regulations [CFR] §1500-1508) require that a scoping process be used to identify potential significant issues in preparation for impact analysis. The principal goal of scoping is to allow public participation to identify issues, concerns, and potential impacts that require detailed analysis.

A news release was prepared and publicized, outlining the proposed Palisade Plunge Trail Project, providing notice of a public meeting, and the intent of the BLM and Forest Service to prepare an EA analyzing the project. The news release was posted on June 6, 2017. The public was invited to provide comments on the proposal for 30 days beginning June 6, 2017, through July 5, 2017. One public scoping meeting was held on June 15, 2017 in Palisade.

During the public scoping comment period, 40 comment letters and emails were received, including one from a state agency (CDOT), two from local agencies (Town of Palisade and Grand Valley Metropolitan Planning Organization), two from local businesses, one from COPMOBA, and 34 from individuals. The BLM and Forest Service made changes to the EA to address many of the concerns that the public raised during the scoping process. Some of the larger changes to the EA included updating the planning related to safety and emergency evacuation, improving the proposed U.S. Highway 6 and 24 crossing and parking, adding connections to the Palisade Rim Trail, trail alignment near the City of Grand Junction property, trail alignment near BOR-managed land and the irrigation canal, and adding design features to protect Orchard Mesa Irrigation District (OMID) facilities.

#### Internal Scoping

Maps of the proposed trail alignment and description of the Proposed Action were distributed to the BLM and Forest Service Interdisciplinary Team (IDT) and discussed at IDT meetings. Members of the IDT, U.S. Fish and Wildlife Service (USFWS), BOR, Mesa County, Town of Palisade, City of Grand Junction, and Colorado Department of Transportation (CDOT) employees visited the trail alignment on several occasions. Documentation of resources potentially impacted based on internal scoping and site visits is included in Table 7 in Chapter 3.

### Issues Identified

Internal issues identified include potential impacts to Colorado hookless cactus, nesting raptors, migratory birds, big game winter ranges, hydrology (primarily wetland and ephemeral drainage crossings), paleontological resources, livestock grazing management, cultural resources, rights-of-way crossings, recreational user experience and interactions, soil erosion and trail stability, roadless areas, and social and economic conditions. Development of project design features were based on these identified internal issues.

The CDOT requested coordination with their agency during alternative development if the proposed alignment would use portions of U.S. Highway 6 and 24 or other CDOT rights-of-ways (ROWs). The local agencies and businesses provided general comments in support of the project. The COPMOBA generally supports the project but provided suggestions regarding trail closures, gates, equestrian uses of the trail, connections to other existing trails, and locations for parking area and facilities.

Of the comments provided by individuals, 29 of the 34 comments support the project. Concerns expressed in five of the comments focused on safety of the existing Palisade Rim Trail for hikers and potential conflicts with bikers and hikers on the proposed Palisade Plunge Trail. One comment expressed concern for watersheds, increased cost of tourism, trash, increased traffic, potential increase in emergency response, impact on wildlife, and tourists not following guidelines.

### Issues not Analyzed

The BLM GJFO received a letter from Trails Preservation Alliance (TPA) on September 6, 2017 (outside of the scoping period). TPA expressed concern that development of a single user group recreation trail, with limited accessibility and projected use and relatively high cost is not the best use of funds from any source. The letter noted that the Palisade Plunge Trail Project should be designed to be a multiple-use trail including motorized use (see Section 2.3.2, below).

### **1.5.2 Public Comment Period**

The preliminary draft of this EA was posted to the BLM ePlanning website [https://eplanning.blm.gov/epl-front-office/eplanning/nepa/nepa\\_register.do](https://eplanning.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do) and announced by press release for a 30 day comment period starting March 15, 2018. Interested parties were notified of the availability of the EA.

During the public comment period, 77 comment letters and emails were received, including three from state agencies (CDOT, CPW, and Colorado Geological Survey), one from a local agency (Mesa County), two from environmental advocacy groups (Roaring Fork Audubon and Rocky Mountain Recreation Initiative), one from a motorized access advocacy group (Colorado Off Highway Vehicle Coalition [COHVCO] and TPA), four from businesses (MAD Racing, Palisade Chamber of Commerce, Timbers Bachelor Gulch, and Van Winkle Ranches), and 66 from individuals. Substantive comments and responses are provided in Attachment A.

Comments from CDOT were focused on parking issues and the trail crossing of U.S. Highway 6 and 24. The EA was revised to include identification of parking areas along the trail route and Map 4 was revised to include a better depiction of work in the clear zone at the U.S. Highway 6 and 24 crossing. Comments by CPW focused on impacts to important wildlife habitats including potential development of social trails. The EA was revised to include the requirement for

additional signage at kiosks and development of a Monitoring and Mitigation Plan. Colorado Geological Survey pointed out that a portion of the trail alignment passes through landslide terrain. The EA was revised to include a design feature stating that educational material about potential landslide areas would be provided to the public and that the trail would be closed until repairs are completed if a landslide were to occur. Mesa County indicated that they support the adaptive management approach for the trail.

Comments from COHVCO and TPA expressed concerns that the trail would not be built for motorized vehicles and that funding for monitoring and maintenance of the trail has not been defined. The EA was revised to include preparation of a Monitoring and Maintenance Plan as a collaborative effort between the agencies and partners.

Individual comments were generally in support of the project; however, some expressed concerns such as funding for monitoring and maintenance, impacts to wildlife habitat, and general trail user experience.

## **1.6 FEDERAL DECISIONS TO BE MADE**

---

The BLM and the Forest Service will decide whether to approve the proposed Palisade Plunge Trail Project, which includes the proposed route designations and associated facilities including approval of the Shirttail Point Trailhead (Forest Service). The BLM will decide whether to approve a change in designation for routes 014 and 0952, and to approve rehabilitation of social trails located between the Palisade Rim Trail and the proposed Palisade Plunge Trail based on the analysis contained in this EA. This EA analyzes the construction, maintenance, and use of the Palisade Plunge Trail. The BLM and Forest Service may choose to: a) authorize the project with design features as proposed b) authorize an alternative to the project, or c) not authorize the project at this time. The BOR will decide whether to authorize proposed fences and allow use within their ROWs.



## CHAPTER 2 – PROPOSED ACTION AND ALTERNATIVES

### 2.1 INTRODUCTION

---

The purpose of this chapter is to provide information on the Proposed Action and Alternatives.

### 2.2 ALTERNATIVES ANALYZED IN DETAIL

---

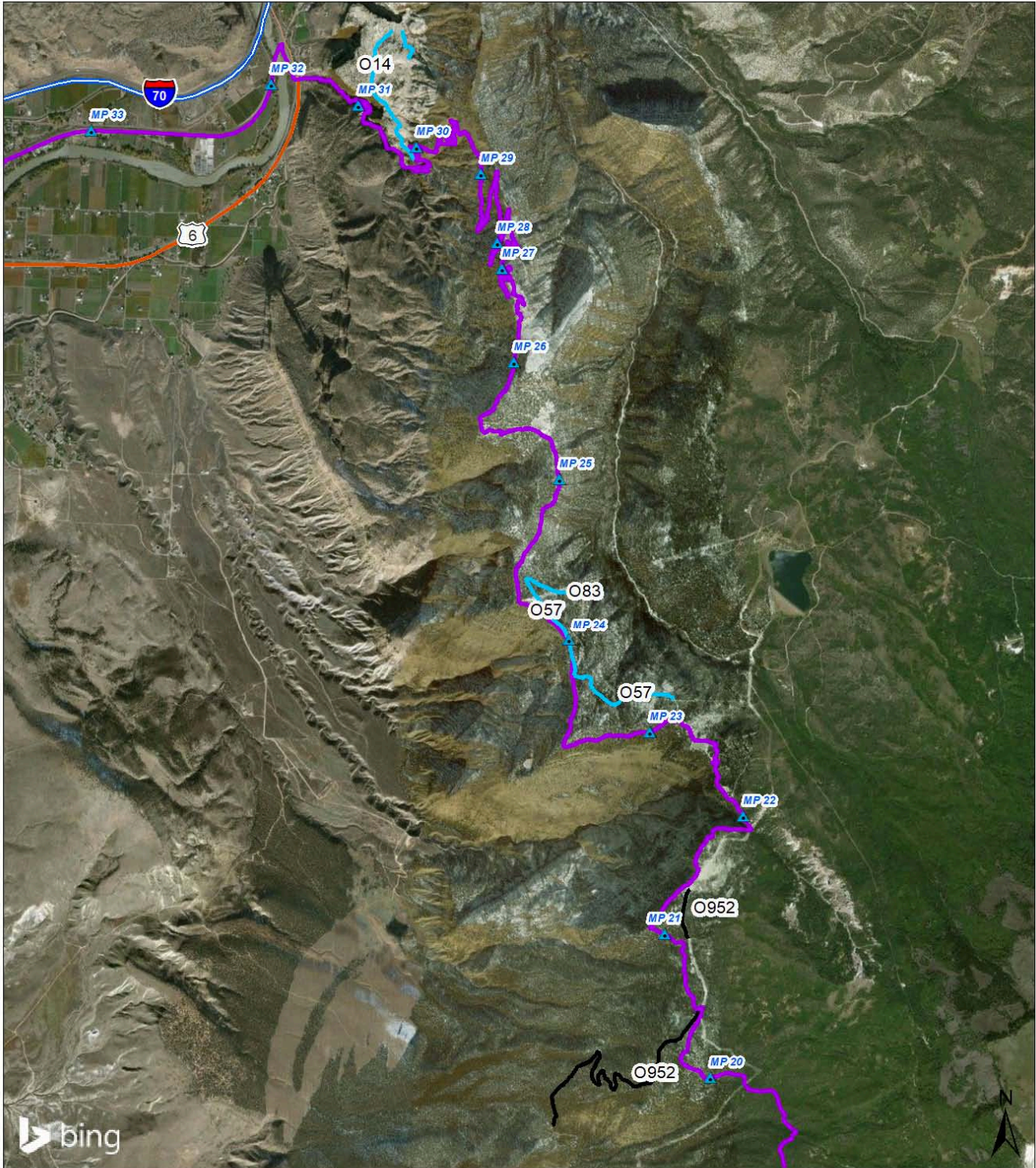
#### 2.2.1 Alternative A – No Action Alternative

In the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved. Existing use of authorized and unauthorized trails in the area would continue and could possibly increase. Rehabilitation of 0.57 mile of existing social trails would not occur. Other ongoing activities and resource uses in the project area including timber management, livestock grazing, recreation, ROWs, wildland fire suppression, vegetation treatments, prescribed fire, public utility infrastructures, and water uses would continue.





#### 2.2.2 Alternative B – Proposed Action

Under Alternative B, the BLM and Forest Service would approve construction of 31.6 miles of new singletrack trail and maintenance and use of approximately 34 miles of mechanized trail in Mesa County, Colorado. The primary use of the trail is envisioned as a long-distance descent for mountain bikers and other non-motorized recreationists from the top of the Grand Mesa to downtown Palisade. The trail would also be open to two-way traffic, and hikers and bikers who wish to ascend from the Palisade Rim Trailhead or from other approved access points to the trail. The trail would also be open to equestrian use from the Mesa Top Trailhead to the boundary between National Forest System land and BLM-administered public land at Milepost (MP) 18.24. The trail would be closed to equestrian use from this point to the terminus at the west end because it is too steep for horses. The trail would have a winter closure for wildlife from December 1 to May 1 from MP 11.60 to MP 30.41, but would initially be enforced under adaptive management at MP 27.48.

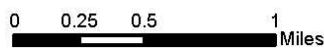
Under the Proposed Action, the designation for route O14 (segments 7207, 7588, and 7605) would be changed from “closed” to “administrative” to allow for permitted use and maintenance and the designation for route 0952 would change from “open to all terrain vehicles and utility task vehicles (ATV/UTV)” to “open to all uses” (see Map 2). The designations for route O57 (segments 7654 and 8022), and O83 (segment 8201) would also be changed from “closed” to “administrative” to allow for permitted use and maintenance on these routes; however, the changes in designation for these routes are being analyzed in a separate EA (DOI-BLM-CO-S080-2017-0006-EA) for an amendment to a power line right-of-way across BLM-managed public land. Maintenance would be limited to the minimal level needed to allow for occasional access by high-clearance four-wheel drive vehicles, including power line maintenance service vehicles and vehicles used for emergency evacuation. Maintenance would include removal of vegetation or rocks and soil that interfere with vehicle access on or immediately adjacent to the route, and using small bulldozers or excavators to repair any heavily damaged sections of the route following severe weather events. Maintenance would not include regular blading or grading of the routes.



**Legend**

-  Palisade Plunge Trail
-  Milepost
-  Change from "Closed" to "Administrative"
-  Change from "Open to ATV/UTV" to "All Uses"

\*Note: Routes O57 and O83 Analyzed in DOI-BLM-CO-S080-2017-0006-EA



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project was developed through digital means and may be updated without notice.

**Palisade Plunge Trail**  
**Mesa County, Colorado**

**Map 2**  
**Route Designation Changes**



### Description of Trail Alignment

The trail would begin on the Grand Mesa at the existing Mesa Top Trailhead near the intersection of State Highway 65 (SH-65) and Lands End Road (MP 0.00). The trail would start out at an elevation of 10,723 feet (ft) and would travel west, generally paralleling Lands End Road on the south side of Lands End Road. The trail would cross Kannah Creek and Reservoir Creek at MPs 1.88 and 2.26, respectively. After crossing Reservoir Creek, the trail would parallel Kannah Creek on the north side for approximately 1 mile and then cross Lands End Road at MP 3.61. At MP 3.99, the trail would cross Deep Creek Road (Forest System Road [FSR] #108) and then skirt around the south side of Grand Mesa Reservoir Number 1 crossing Reservoir Creek at MP 4.54. The trail would skirt around the north side of Deep Creek Reservoir Number 2 at approximate MP 6.00 about 0.5-mile north of Raber Cow Camp and then cross Deep Creek (MP 6.70), Skunk Creek (MP 7.40), and Gill Creek (MP 8.18). The trail would continue across the top of the Mesa generally paralleling Lands End Road. The trail alignment was rerouted between MP 9.38 and MP 9.90 based on wildlife concerns.

Between MPs 10.34 and 10.57, the Forest Service evaluated two different options for crossing Coal Creek. The northern option (crossing Coal Creek at MP 10.53) was selected to keep the crossing further away from Lands End Road. The trail would again cross Lands End Road at MP 11.49. This first 11-mile section is relatively flat until it reaches and skirts north of the landmark known as Shirrtail Point at roughly MP 11.60. A new parking area is proposed at this location. From this point, the trail would descend down the rim of the Grand Mesa from an elevation of 9,900 ft to 9,200 ft in about 0.5-mile.

For the next 14 miles, the trail would descend gradually while traversing north along the steep side slopes, benches, and rims below the main rim of Grand Mesa until it begins a more rapid descent towards the Colorado River at MP 26.47. At MP 12.39, the trail would intersect with the proposed Coal Creek Trail Connector, a 0.5-mile route that would connect the Palisade Plunge Trail to the existing Coal Creek Trail. The trail would cross North Fork Kannah Creek at MP 14.20 and Lands End Road again at MP 14.73. The Lands End Road continues northwest to the Lands End Overlook which is approximately a 0.5-mile northwest upslope from the trail. Also at the Lands End Road crossing, the existing Whitewater Basin Trail begins. The proposed trail would follow the Whitewater Basin Trail for approximately 2.2 miles until the Whitewater Basin Trail turns south at MP 16.95. The proposed trail would continue to the west on the south side of Cliff Lake Reservoir at MP 17.35 and continue to MP 18.24 where it would leave National Forest System lands and enter public lands administered by the BLM. As the trail enters BLM administered land, it also enters BLM's Rapid Creek Wildlife Emphasis Area and continues until MP 19.30 where it turns slightly east and crosses into land owned by the City of Grand Junction for 0.14 mile crossing Sink Creek at MP 19.39. After crossing Sink Creek, the trail heads slightly west and again enters BLM administered land for 0.04 mile between MPs 19.44 and 19.48. For 2.97 miles between MP 19.48 and 22.45, the trail crosses in and out of City of Grand Junction land and BLM administered public land (all within the Rapid Creek Wildlife Emphasis Area on BLM administered public land) crossing Watson Creek at MP 21.92. At MP 21.08, the trail would contour through the Blowout, a locally known landmark.

Between MP 22.37 and MP 23.23, the trail alignment was rerouted to the northeast to avoid a raptor nest. The reroute is located on City of Grand Junction land for 0.08 mile (MPs 22.37 to 22.45), Town of Palisade land for 0.5-mile (MPs 22.45 to MP 22.95), and BLM administered public land for 0.28 mile (MPs 22.95 to MP 23.23).

The trail would continue on BLM administered public land and cross into the Palisade Rim Special Recreation Management Area (SRMA) at MP 24.30. The route mostly stays within the SRMA for 7.11 miles until the route crosses into private land at MP 31.41. At approximate MP 29.19 and MP 30.42, the trail was rerouted twice to avoid the threatened Colorado hookless cactus (*Sclerocactus glaucus*). At MP 30.41, the trail would intersect with the proposed Palisade Rim Connector #1, a 0.36-mile route that would connect the Palisade Plunge Trail to the existing Palisade Rim Trail. At MP 30.95, the trail would intersect the Palisade Rim Connector #2, a proposed 0.08-mile trail connecting the Palisade Plunge Trail to the existing Palisade Rim Trail.

At MP 31.41, the trail would cross onto private land. It briefly goes back onto BLM land at MP 31.43 and back onto private land at MP 31.44. The trail then continues onto the Town of Palisade land at MP 31.45 and exits at MP 31.57 and back onto private land and across U.S. Highway 6 and 24 at MP 31.58. Mesa County would apply for a Special Use Permit from CDOT for the U.S. Highway 6 and 24 crossing. The trail alignment would follow U.S. Highway 6 and 24 on the west side for approximately 0.21 mile along an existing trail and into an existing parking area (see description under Facilities, below). At the parking area, the trail alignment turns south crossing the Colorado River at MP 31.85.

The trail would parallel both sides of North River Road into Palisade. Mesa County will be conducting work on North River Road including creation of 4-foot multipurpose shoulders that would allow all vehicles (including bikes) to traverse the road safely. The intersection of North River Road and U.S. Highway 6 and 24 is currently being designed by a consulting engineering firm and will be designed according to discussions with CDOT; however, it is not part of the Proposed Action. From North River Road the trail would cross Second Street (MP 33.59) and Bower Street (33.70) and terminating at MP 33.84. The ending elevation is 4,728 ft.

#### Land Ownership

Table 2 lists land ownership by MP and Table 3 lists total miles crossed by landowner.

**Table 2**  
**Land Ownership by Milepost**

<b>Landowner</b>	<b>Begin Milepost</b>	<b>End Milepost</b>	<b>Length (miles)</b>
Forest Service	0.00	18.24	18.24
BLM	18.24	19.30	1.06
City of Grand Junction	19.30	19.44	0.14
BLM	19.44	19.48	0.04
City of Grand Junction	19.48	19.86	0.38
BLM	19.86	20.46	0.60
City of Grand Junction	20.46	20.65	0.19
BLM	20.65	21.40	0.75
City of Grand Junction	21.40	22.45	1.05
Town of Palisade	22.45	22.95	0.50
BLM	22.95	31.41	8.46
Private	31.41	31.43	0.02
BLM	31.43	31.44	0.01
Private	31.44	31.45	0.01
Town of Palisade	31.45	31.57	0.12
Private	31.57	33.84	2.27
<b>Total</b>			<b>33.84</b>

The Proposed Action would include potential BLM acquisition of fee title interest to an approximately 1-acre parcel of land, as well as an approximately 0.22-acre (25 ft wide by 234 ft long) easement from the Town of Palisade for construction, maintenance, and public use of the trail. The parcel and easement are located in T. 11S., R. 98W., Sec. 2, Lot 18, NE $\frac{1}{4}$ SW $\frac{1}{4}$ , and contain approximately 778 feet of the trail. The BLM would acquire the parcel and easement through either donation or purchase dependent upon appropriation of funding such as Land and Water Conservation Fund Recreational Access funding. The Town of Palisade wishes to convey these properties to the BLM for management of the portions of trail crossing these parcels. The acquisitions, if pursued, would be processed in accordance with BLM land acquisition procedures including fair market value appraisals, title review and approval, and hazardous materials surveys.

**Table 3**  
**Miles Crossed by Landowner**

<b>Landowner</b>	<b>Length (miles)</b>
Forest Service	18.24
BLM	10.92
City of Grand Junction	1.76
Town of Palisade	0.62
Private	2.30
<b>Total</b>	<b>33.84</b>

#### Trail Specifications and Trail Management Objectives

Although the proposed trail is approximately 34 miles, the length of trail constructed would be 31.60 miles; the last 2.40 miles of the trail would be on existing paved surface that would be expanded to accommodate bikes along North River Road. The trail tread width would vary from 18 inches to 36 inches, and the short-term corridor disturbance (during construction) would be up to 60 inches. The managed corridor width would generally be 4 ft to 6 ft, with some narrower corridors where vegetation allows, and corridor height would be 12 ft or more for segments of the trail open to equestrian use, and a minimum of 7 ft for segments open only to bicycle and foot travel. Tread grades would generally be less than 15%, with an average tread grade of 5 to 10% over the length of the trail. Maximum tread grade would be 25% for short sections. The tread surface type would be constructed from on-site soils and sub-soils, and would be widely variable, depending on soil types, rock content, and vegetation types. It would vary from smooth dirt surfaces to rocky technical sections. Natural obstacles and technical trail features would include unavoidable obstacles of 18 inches or less. Avoidable obstacles may be present within the tread surface. The trail would include sections with loose sand and rocks. Short sections of the trail may exceed the general criteria described above.

#### Facilities

The eastern trailhead, referred to as the “Mesa Top Trailhead”, is an existing paved parking area located adjacent to and accessed by SH-65, a National and State-designated Scenic and Historic Byway. The trailhead provides parking for over 75 vehicles and includes two restroom buildings (both buildings containing a women’s and men’s side) as well as two change rooms.

Also proposed is the construction of a new trailhead located at MP 11.60 at the Shirttail Point Area. The new trailhead would provide additional parking for approximately 25 vehicles, and to address sanitation concerns, a new double-vault toilet building. The proposal would include the

construction of a graveled trailhead, approximately 60 ft wide by 150 ft long with a single double-vault toilet building.

After MP 11.60 at Shirttail Point, the proposed trail alignment would follow a section of the Wild Rose Trail built by John Otto. It would provide access into the northwest portion of the Kannah Creek Basin. The existing route would be reconstructed and would require engineering and construction of rock retaining walls.

A parking area currently licensed to the Town of Palisade from CDOT is located on the west side of U.S. Highway 6 and 24 at MP 31.61. The parking area has a capacity of approximately 25 vehicles, with room for expansion that would add approximately 20 more vehicles. The parking area is currently used for fishing and tubing access to the Colorado River as well as by hikers and bikers using the existing Palisade Rim Trail. This parking area would not be available for permitted shuttles. Parking for the Palisade Plunge Trail would be identified as the Mesa Top Trailhead, Shirttail Point Trailhead, and downtown Palisade.

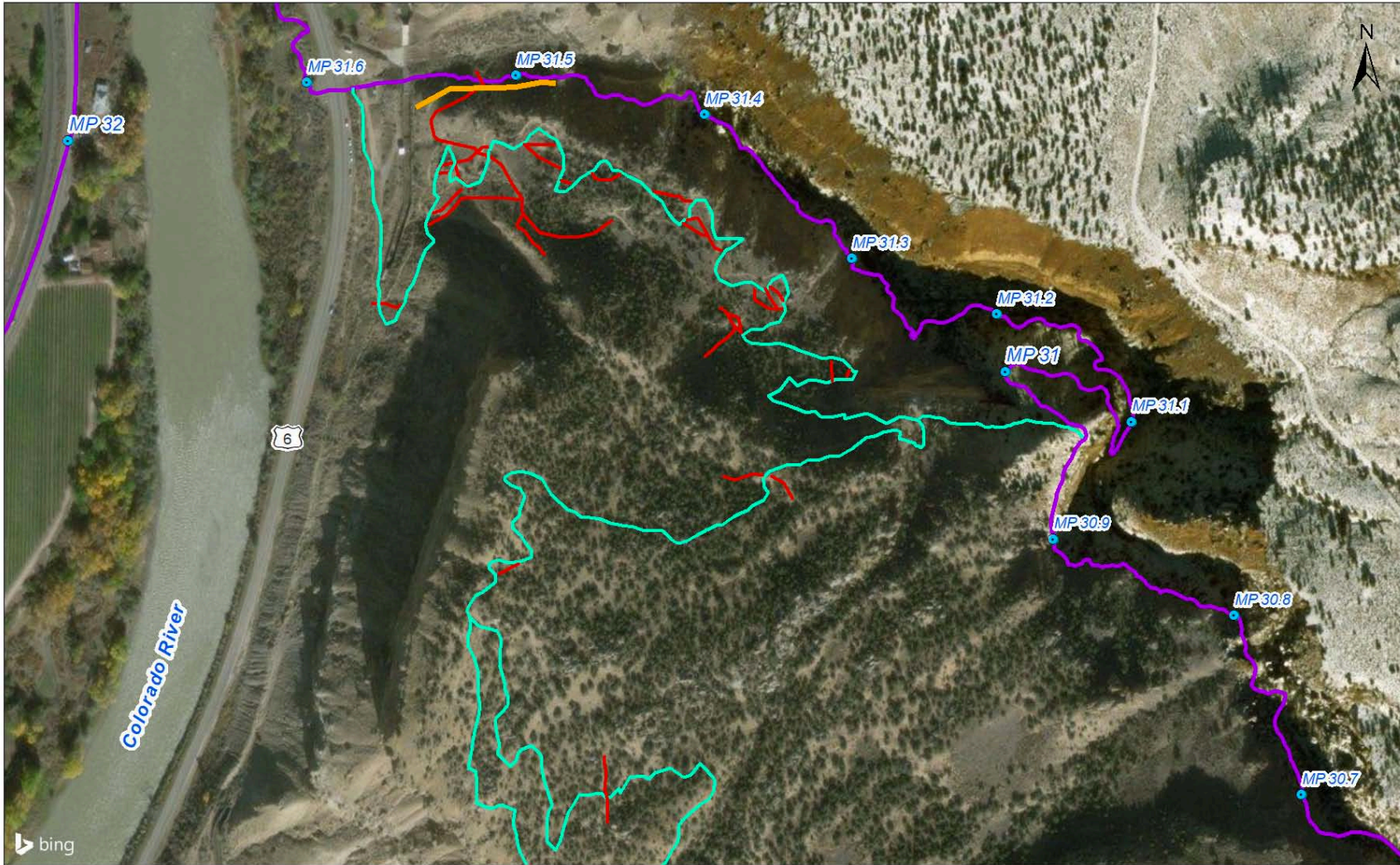
Parking is not allowed along state highways, including U.S. Highway 6 and 24. Mesa County and CDOT would reduce the shoulder width along U.S. Highway 6 and 24 by relocating the bar ditch and reclaiming portions of the shoulder beyond the bar ditch. CDOT would also place signs that describe parking restrictions in this area.

Designated parking facilities for private vehicles and shuttles are not provided in the Town of Palisade; however, there is plenty of parking for these vehicles in the Town. Public restrooms are available at 209 Main Street in downtown Palisade.

The need for helispots, equipment caches, and access for search and rescue has been identified but individual locations have not been confirmed. Potential helispot locations have been identified through review of aerial photography and use of on-the-ground knowledge of the trail alignment. The BLM and Forest Service would work with Mesa County Search and Rescue Control (SARC) to determine and refine exact locations for helispots, equipment caches, and other access needs using monitoring data. Helispots would require a 100 ft x 100 ft area with a grade not more than 1 or 2%. Vegetation at helispots would be maintained at a height of 2 ft or less to allow for helicopter takeoff and landing. An area of about 10 ft x 20 ft would be required for an equipment cache. Mesa County SARC has identified the potential need for an equipment cache including a small shed that would be placed upon a concrete slab. Equipment would be checked and restocked at the beginning of each season. These proposed facilities would be placed in areas where no concerns were identified in resource surveys.

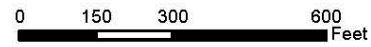
Construction of fence and placement of barriers would be needed adjacent to the City of Grand Junction Property Boundary near the gate (MP 22.50). Approximately 350 ft of fencing would be constructed on BOR-managed property near the west end of the trail to block travel on social trails located near Colorado hookless cacti (see Map 3). Natural barriers may also need to be placed near Colorado hookless cactus locations to provide protection against accidental trampling. Barriers may include placement of rocks or other natural debris to protect these sites and areas. Fencing may also be placed on the north side of the trail that crosses the Hodge's property if trespass onto their property cannot be mitigated with property boundary signs. Approximately 450 ft of fence would be placed on the south side of the Henderson's property to stop trespass. Fencing would also be placed along the siphon and canal for safety. This fencing would be designed to keep people, pets, and animals out of the canal and siphon.





**Legend**

- Milepost
- Palisade Plunge Trail
- Palisade Rim Trail
- Proposed Fence
- Social Trail Rehabilitation



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project was developed through digital means and may be updated without notice.

**Palisade Plunge Trail  
Mesa County, Colorado**

**Map 3  
Social Trail Rehabilitation &  
Resource Protection Fencing**

### Trail User Experience

In addition to the physical specifications described above, the trail would be designed, constructed, and maintained to provide trail users with a variety of different opportunities, experiences, and settings. These would include opportunities to: experience and connect with nature; experience solitude, and a chance to escape from daily routines and urban environments; enjoy spending time with family and friends; to have fun while challenging one's physical capabilities and technical bicycle riding skills; and to experience a certain level of challenge and risk due to the remote nature of the trail and because portions of the trail present significant vertical exposure.

The proposed trail and project area would be closed to mechanized and motorized use from the top of the Grand Mesa rim (Shirttail Point at MP 11.60) to the boundary with the BLM and through the BLM Rapid Creek Wildlife Emphasis Area from December 1 through May 1.

The proposed trail would be open to bicycles, foot, and equestrian use on National Forest System lands. It would be open to bicycles and foot traffic only on all other lands.

Camping would not be allowed on BLM land within the Palisade Rim SRMA because the SRMA is closed to camping in the GJFO RMP. The City of Grand Junction also prohibits camping on their property. Camping would be allowed on BLM-managed public lands outside of the Palisade Rim SRMA and on National Forest System lands in accordance with applicable Forest Service regulations.

### Recreation Permitting

As an initial allocation, total annual use authorized under recreation permits would not be greater than 25 percent of the overall annual use. This would include total use for guided riding and special events. Every 3 to 5 years, the BLM and Forest Service would evaluate this allocation based on monitoring data to determine if it needs to be adjusted on portions of the trail or on the whole trail. Group size for guided trips would be limited to eight people, including guides. Permits would only be issued for mountain biking and pedestrian activities (hiking and trail running).

Events would be limited to mountain biking or trail running events of no more than 2 days in duration, and with no more than 150 participants per event. Two-day events would be limited to two weekdays, or one weekend day (Saturday or Sunday) and one weekday (i.e. no Saturday-Sunday weekend events). No spectator areas or aid stations would be allowed within the Palisade Rim SRMA or on BOR-managed public land or ROWs. To reduce impacts to other trail users, the trail would not be closed during events, and the number of events would be limited to one event per month.

Along with the criteria listed above and other resource considerations, permit proposals would be evaluated based on support from local communities and coordination with the Town of Palisade and other interested partners and cooperating agencies.

The Forest Service may issue permits for shuttle locations on National Forest System public land. The BLM would not issue shuttle permits because there are no potential drop off or pick up areas on BLM-managed public land.

### Linear Feature Crossings

There are numerous intermittent, ephemeral, and perennial streams that would be crossed by the trail that typically flow northeast to southwest towards the Gunnison River (see Table 4).

**Table 4**  
**Waterbodies Crossed by Proposed Trail**

<b>Milepost</b>	<b>Waterbody Name</b>	<b>Milepost</b>	<b>Waterbody Name</b>
1.86	Unnamed Drainage	13.87	Unnamed Drainage
1.88	Kannah Creek	14.02	Unnamed Drainage
2.26	Reservoir Creek	14.20	N. Fork Kannah Creek
4.54	Reservoir Creek	14.24	Unnamed Drainage
4.66	Unnamed Drainage	15.17	Unnamed Drainage
5.33	Unnamed Drainage	15.94	Whitewater Creek
5.55	Unnamed Drainage	16.55	Unnamed Drainage
5.82	Unnamed Drainage	16.88	Unnamed Drainage
6.20	Secondary Spillway Ditch Hallenbeck Reservoir	19.39	Sink Creek
6.70	Deep Creek	21.92	Watson Creek
7.37	Unnamed Drainage	30.52	Unnamed Drainage
7.40	Skunk Creek	30.67	Unnamed Drainage
8.18	Gill Creek	30.74	Unnamed Drainage
9.52	Unnamed Drainage	31.13	Unnamed Drainage
10.53	Coal Creek	31.25	Unnamed Drainage
12.96	Unnamed Drainage	31.29	Unnamed Drainage
13.21	Unnamed Drainage	31.85	Colorado River
13.71	Unnamed Drainage		

A list of the roads crossed by the proposed trail is provided in Table 5.

**Table 5**  
**Roads Crossed by Proposed Trail**

<b>Milepost</b>	<b>Road Name</b>
3.61	Lands End Road (FSR #100)
3.99	Deep Creek Road (FSR #108)
11.49	Lands End Road
14.73	Lands End Road
31.58	U.S. Highway 6 and 24
33.59	Second Street
33.70	Bower Street

The proposed trail alignment crosses multiple boundary fences used to control livestock (see Table 6).

**Table 6**  
**Fences Crossed by Proposed Trail**

<b>Milepost</b>	<b>Design Feature</b>
19.20	Cattleguard
19.24	Cattleguard
19.70	Cattleguard
20.46	Cattleguard
21.84	Cattleguard
22.34	Cattleguard
22.95	Cattleguard

The Palisade Plunge Trail would cross OMID's Orchard Mesa Power Canal (OMPC) Stokes Gulch Siphon (SGS) at MP 31.55 (see Map 4). In order to direct trail users, and to minimize wear and erosion of the concrete apron, a sustainable semi-rigid transition would be installed up from the siphon apron to ground level by armoring the bank with landscape blocks or similar materials to raise the tread approximately 18 inches to reach the apron. Additionally, the tread surface over on the west side of the concrete apron would be reinforced by tacking or gluing an artificial covering (e.g., geotextile honeycomb with gravel fill) or paving with concrete. Concrete jersey barriers (Type 7 or similar) would be added across the south side of the siphon where the trail crosses the concrete culvert apron. The north side of the siphon would be blocked by placing 6-foot high wire mesh fence. A gate would be added to the fence to allow OMID to maintain the canal and siphon. Similar fencing would be added to the west side of the siphon to limit public parking and to protect OMID's ROW. This fence would have a locked gate to provide OMID access to their ROW facilities.

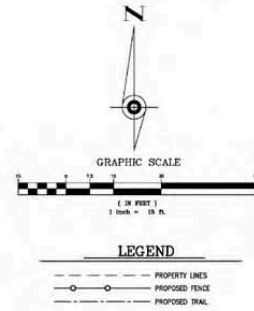
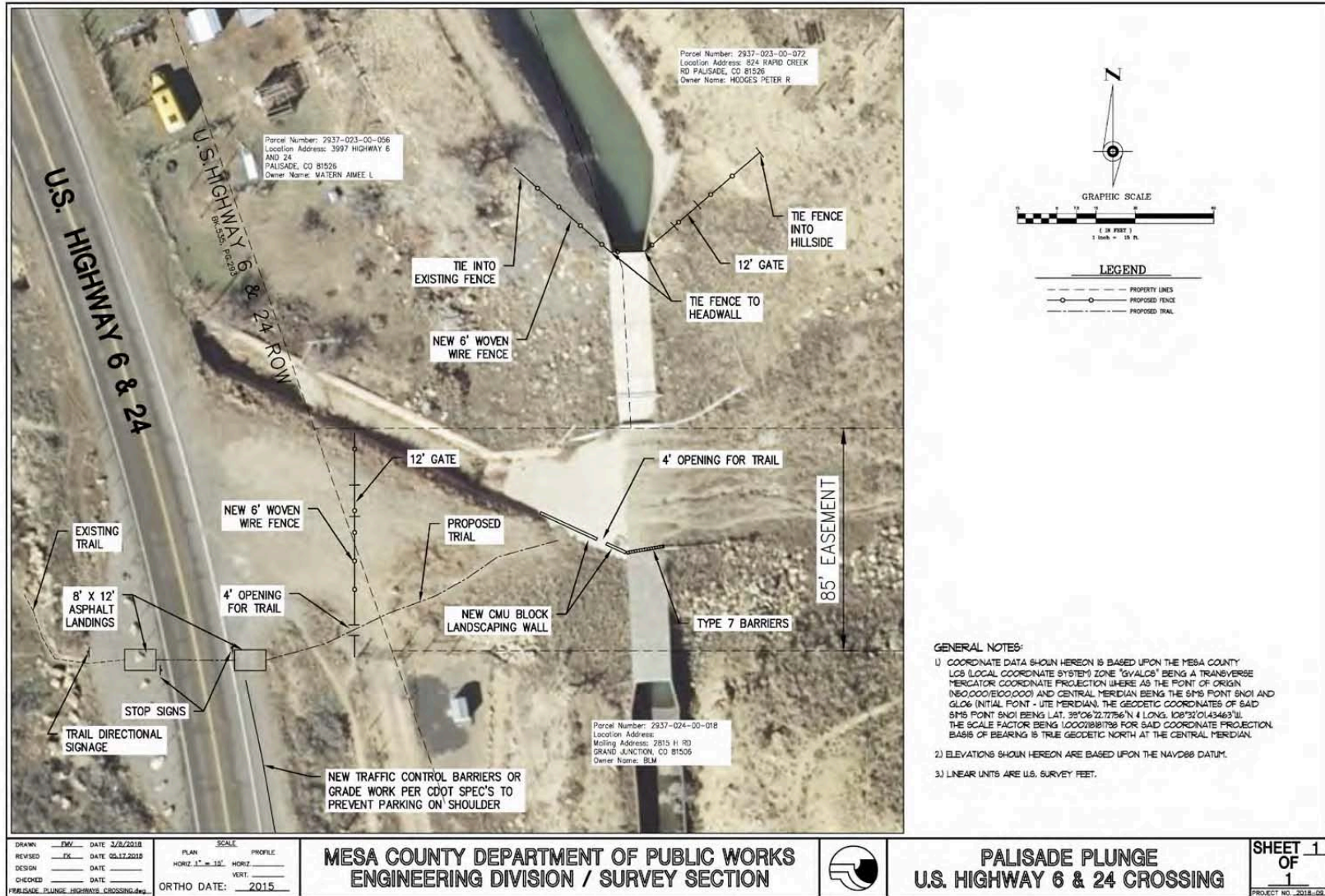
The Palisade Plunge Trail would cross U.S. Highway 6 and 24. Gravel or concrete landing pads of approximately 6 ft by 12 ft and stop signs would be added on the sides of U.S. Highway 6 and 24 where the Palisade Plunge Trail and Palisade Rim Trail pedestrian crossing is located (see Map 4). As part of the maintenance for the existing Palisade Rim Trail, work within the clear zone would consist of either grading or placement of acceptable barriers according to CDOT specifications. A description of the work proposed within the clear zone would be detailed in the Special Use Permit issued by CDOT to Mesa County for the crossing of U.S. Highway 6 and 24.

### Design and Construction

The trail would be constructed using a combination of hand tools (pick mattocks, McCleods, shovels, rakes) and motorized trail-building equipment (e.g., walk-behind trail machine, trail dozer, mini excavator). In some locations large rocks or rock layers would need to be moved or manipulated to create a suitable tread surface. This would be accomplished using a variety of methods, including: levering rocks into place using hand-held rock bars or digging bars; breaking or shaping rocks with sledge hammers and chisels, rock drills, non-explosive chemical rock-breaking techniques and tools; lifting and hauling rocks into place using electric winches (mounted on a trail building machine), mechanical winches (come-along), block and tackle systems, and grip hoists.

The trail would be designed and constructed using best management practices (BMPs) described in the U.S. Forest Service Trail Construction and Maintenance Notebook (Forest Service 2007), GJFO Trail Design Criteria (BLM 2004), and International Mountain Bicycling Association's (IMBA's) "Trail Solutions" (IMBA 2004.) These BMPs include curvilinear design principles that utilize the contours of the natural topography, as well as frequent tread grade reversals. Tread grades would adhere to the "Half Rule" (tread grade does not exceed one-half of the cross-slope grade). Tread grades may be steeper where durable surfaces, such as large rocks, can be incorporated into the trail design. These trail design features, in combination with properly constructed tread profiles (blended backslope, outsloped tread, and cleared/rounded critical edge), create tread surfaces that shed water and minimize erosion from the tread surface.





**GENERAL NOTES:**

- COORDINATE DATA SHOWN HEREON IS BASED UPON THE MESA COUNTY LGS (LOCAL COORDINATE SYSTEM) ZONE 'GVALCS' BEING A TRANSVERSE MERCATOR COORDINATE PROJECTION WHERE AS THE POINT OF ORIGIN (N500000/E100000) AND CENTRAL MERIDIAN BEING THE 5THS POINT SNOI AND GLO6 (INITIAL POINT - UTE MERIDIAN), THE GEODETIC COORDINATES OF SAID 5THS POINT SNOI BEING LAT. 38°06'27.7786" N & LONG. 108°32'01.43463" W, THE SCALE FACTOR BEING 1.0000181759 FOR SAID COORDINATE PROJECTION, BASIS OF BEARING IS TRUE GEODETIC NORTH AT THE CENTRAL MERIDIAN.
- ELEVATIONS SHOWN HEREON ARE BASED UPON THE NAVD83 DATUM.
- LINEAR UNITS ARE U.S. SURVEY FEET.

DRAWN	DMW	DATE	3/6/2018	SCALE	
REVISED	FK	DATE	05/17/2018	PLAN	PROFILE
DESIGN		DATE		HORIZ. 1" = 10'	HORIZ.
CHECKED		DATE		VERT.	
PALISADE PLUNGE HIGHWAYS CROSSING.dwg				ORTHO DATE:	2015

**MESA COUNTY DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION / SURVEY SECTION**



**PALISADE PLUNGE  
U.S. HIGHWAY 6 & 24 CROSSING**

**SHEET 1  
OF 1**  
PROJECT NO. 2018-09



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project was developed through digital means and may be updated without notice.

**Palisade Plunge Trail  
Mesa County, Colorado**

**Map 4  
Orchard Mesa Power Canal  
and Highway 6 & 24 Crossing**

In most cases, overburden cleared during trail construction would be widely broadcast both above and below the constructed tread surface. Excess soil or overburden would not be deposited in drainages, or in sensitive plant areas, unless used for protective design features. Native materials in the trail corridor would be preferentially used for route construction (where available) and would incorporate switchbacks, berms, rolling dips, armoring, and other standard trail-design practices so that erosion and maintenance needs would be minimized. Plants, rocks, and soil cleared from the corridor during construction would be moved or stockpiled for use in restoration.

Most of the trail on BLM administered public lands would be constructed using hand tools, especially in areas with sensitive plants. On National Forest System lands, the trail would be mostly constructed using hand tools and/or machines capable of constructing the trail to meet specifications. Construction would occur outside of the winter closure where the winter closure applies (see below).

The following design features would be implemented to reduce potential impact to resources as follows:

#### Soils

- When saturated soil conditions exist, or when rutting becomes deeper than 3 inches, construction would be halted until soil material dries out or is frozen sufficiently for construction to proceed without undue damage and erosion to soils.
- Surface-disturbing actions would be sensitive to natural resource protection. When surface disturbance in sensitive areas is unavoidable, it would be minimized to the greatest extent practicable, especially near drainage features and on soils mapped as being saline.
- Drainage from disturbed areas would be confined or directed to minimize erosion, particularly within 100 ft of all drainages. No runoff, including that from roads, would be allowed to flow into intermittent or perennial waterways without first passing through sediment-trapping mechanisms such as vegetation, anchored bales, or catchments.
- Surface disturbance would be limited and associated impacts to natural resources by considering the character of the topography and landform. Deep vertical cuts, long or steep fill slopes, and side cuts across steep slopes would be avoided. Stream and channel crossings would be vertical. Critical edges would be rounded.
- Native vegetation and soils would be protected, and disturbance to them would be minimized.
- Educational material about potential landslide areas would be provided to the public. The trail would be closed until repairs are completed if a landslide were to occur.

#### Water

- Stream crossings would be located where the channel is narrow, straight, and uniform, and has stable soils and relatively flat terrain to the extent possible.
- Low water crossings would be designed to minimize disturbance to the waterbody and to pass a normal range of flows for the site.
- Streams would be crossed perpendicular to the trail alignment.
- Suitable drainage measures would be installed and maintained to collect and disperse runoff and avoid or minimize erosion of the trail surface and adjacent areas.

- Suitable measures would be used to avoid or minimize scour and erosion of the channel and foundations to maintain the stability of the channel and banks.
- Surface materials that are suitable to the trail site would be used and maintained to withstand traffic and minimize runoff and erosion specifically in areas where high wall slip (curves, acceleration, and braking) during biking would generate loose soil material.

### Invasive Non-Native Species

- The BLM and the Forest Service would be responsible for monitoring noxious weeds and treating weeds on their respective portions of the trail. If monitoring indicates weeds are present, then the BLM, Forest Service, or partners (with employees that hold State of Colorado approved applicators licenses) would spray and reseed with native seed mix to treat weed infestations.
- Prior to disturbance identified noxious weeds would be treated with the appropriate herbicide or mechanically removed.
- During construction, workers would inspect, remove, and properly dispose of weed seed and plant parts found on clothing and equipment. Proper disposal means bagging and incinerating seeds and plant parts or washing equipment in an approved containment area.
- The BLM, Forest Service, or Contractor would monitor sites where seed, hay, straw, or much has been applied. Weeds would be eradicated before they form seed.
- The BLM and Forest Service would continue to inspect and document all disturbance in noxious weed-infested areas for at least three growing seasons following construction. Weeds would be treated with the appropriate herbicide or removed.
- The trailheads and access points would be signed to educate visitors about noxious and invasive weeds, proper bicycle and equipment cleaning techniques, and the consequences of their activities.
- Special recreation permits would contain noxious weed management stipulations (e.g., pre-event inventories to avoid infested areas; event management to avoid or isolate activities that could cause weed introduction or spread, monitoring, and treatment of infestations exacerbated by the activity; and other appropriate noxious weed management stipulations).
- All equipment (including heavy equipment, hand tools, boots, waders, etc.) that has been previously used in a river, stream, lake, pond, or wetland would be disinfected per the following CPW procedures prior to moving the equipment between waterbodies to reduce the chance of introducing aquatic nuisance species: remove all mud and debris from equipment and either 1) spray/soak equipment in a solution of quaternary ammonium-based institutional cleaner and clean water (6 ounces of Green Solutions High Dilution Disinfectant 256 or Super HDQ Neutral per gallon of water) for at least 10 minutes prior to, and after, contact with river water. Manage rinsate as a solid waste in accordance with local, county, state, or federal regulations or 2) spray/soak equipment with water greater than 140 °F for at least 10 minutes.

### Vegetation

- Vegetation removal would include only the minimum amount necessary to construct and maintain the trail.

### Wetlands

- The trail width would be necked down to 24 inches when crossing wetlands.
- The trail would be designed and located to minimize disturbance to the waterbody.
- Suitable drainage measures would be installed and maintained to collect and disperse runoff and avoid or minimize erosion of trail surface and adjacent areas.
- Surfacing materials suitable to the trail site would be used and maintained to withstand traffic and minimize runoff and erosion.
- Turnpikes or similar structures would be constructed where appropriate for portions of the trail that cross wetlands.

### Special Status Species (Colorado Hookless Cactus Conservation Measures)

- Proposed disturbance for the trail would avoid Colorado hookless cactus by 5 meters upslope from the trail and 10 meters downslope from the trail.
- Construction would not occur within 10 meters of hookless cactus if motorized equipment is utilized during the flowering season of April 1 to May 30.
- The trail would be designed to keep people on it (e.g., rocks along the side of the trail at locations near cacti).
- The cactus would be directly protected long-term (e.g., boulders) or short-term during construction (e.g., safety cones).
- Social trails would be closed or potentially rehabilitated (see Map 3).
- A fence would be constructed around MP 31.50 on the south side of the wash that ties into the canal and extends approximately 345 ft to the east (see Map 3). This would keep the public in the drainage and would discourage social trails from connecting to the Palisade Rim Trail and walking along the canal.
- The trail would be monitored by partners monthly during months when the entire trail is open and would be generally maintained throughout the life of the trail system.
- If ground-disturbing activities occurs after 2019 within areas with hookless cactus habitat, botanical surveys would be conducted prior to ground-disturbing activities during the appropriate survey season (Colorado hookless flowering season – April through May) to verify cacti are not within 5 meters (upslope) to 10 meters (downslope) of the proposed disturbance.
- Noxious weeds would be controlled and other undesirable plant species within disturbed areas that may out-compete Colorado hookless cactus documented within the vicinity of the project area.
- Construction of the stream crossing at Whitewater Creek would not be conducted between June 1 and September 1 to prevent the release of sediment during the spawning and egg incubation timeframe for blue lineage Colorado River cutthroat trout.

### Special Status Species (Northern Goshawk)

- If the identified northern goshawk nest moves closer to the trail, or if the trail proves to cause substantial disturbance to the nest, the trail may be temporarily closed during the critical fledging period.

*Special Status Species (Boreal Toad)*

- Education would be provided about boreal toads asking for help identifying them. This may include a poster at the Mesa Top Trailhead.

*Special Status Species (Blue-Lineage Colorado River Cutthroat Trout)*

- Periodic monitoring of trout in Whitewater Creek and water quality monitoring would occur in collaboration with CPW so that any the effects of the trail and stream crossings to the blue-lineage Coclorado River cutthroat trout would be addressed to the maximum extent possible.

*Special Status Species (General)*

- Trail construction personnel would be educated on the identification of the snake to prevent mortality if encountered during construction of the project, as well as prevent injury to construction workers. If a rattlesnake is encountered during project construction, its location would be documented and the snake would not be harassed.
- Waterbody crossings would be designed to maintain the desired migration or other movement of fish and other aquatic life inhabiting the waterbody.
- For BLM sensitive species, surface-disturbing activities would be avoided within 100 meters of occupied plant habitat wherever possible and where geography and other resource concerns allow. Fragmentation of existing populations and identified areas of suitable habitat would be avoided wherever possible.

*Wildlife*

- No vegetation removal or ground-disturbing activities would occur during the period May 15 to July 15 (unless a biologic monitor is on site or if surveys are conducted immediately prior to vegetation clearing).
- To minimize impacts to nesting raptors documented in the project area, no construction would occur within the following temporal and spatial buffers:
  - Between February 15 and July 15, 0.33 mile spatial buffer (MPs 23.60 to 24.63 and MPs 30.67 to 31.69) for red-tailed hawk.
  - Between April 1 and August 15, 0.25 mile spatial buffer (MPs 21.85 to 21.97 and MPs 22.93 to 23.84) for Coopers hawk.
  - Between December 15 and July 15, 0.5 mile spatial buffer (MPs 21.23 to 23.42) for Golden eagle.
  - Between March 15 and July 31, 0.5 mile spatial buffer (MPs 18.35 to 19.48) for Peregrine falcon.
  - Between March 1 and July 15, 0.25 mile spatial buffer (MPs 15.4 to 15.82) for Long-eared owl.
  - Between March 1 and August 15, 0.5 mile spatial buffer (MPs 11.75 to 13.63) for Northern goshawk.
- The trail and project area would be closed to mechanized and motorized (trail is not open to motorized use at any time) use from the top of the Grand Mesa rim on National Forest System lands (MP 11.60) to the trail intersection at MP 30.41 but would initially be enforced under adaptive management at MP 27.48 from December 1 to May 1. If BLM monitoring indicates cyclists are continuing south past MP 27.48 during the winter closure, then the winter closure location would be moved to MP 30.41 and cyclists would

not be allowed to use the section of the trail between MPs 30.41 and 27.48. This closure would help to maintain winter and transitional habitat for elk and deer, especially during low snow years when use of this trail may still be available, and in the early spring, when these species are coming off of a long winter with depleted energy reserves and human disturbance could result in decreased winter survival.

- A gate would be installed at the top of the Grand Mesa where the Lands End Road drops down from the rim. In low snow years that allow access to this point, this gate would be closed starting on December 1 to restrict mechanized and motorized (trail is not open to motorized use at any time) travel in the area below the mesa rim.
- Constructed fences would comply with applicable wildlife fence standards, such as those described in BLM Handbook H-1741-1, Fencing (BLM 1989). Current standards for fencing cattle out in deer and elk range is a 4-strand fence 40 inches high with a spacing of wires from ground to top of 60 inches (smooth bottom wire), 6 inches (second wire barbed), 6 inches (third wire barbed), and 12 inches (top wire preferably smooth, but it may need to be barbed in areas of intense cattle use). Fencing would be limited to the minimum amount necessary. All fencing would be wildlife friendly, per CPW's recommendations.
- Development would be conducted on existing or previously disturbed surface locations to reduce impacts on undisturbed areas and minimize impact on wildlife habitat.
- Signage at kiosks and trailheads would illustrate the importance of complying with seasonal closures, not constructing illegal user-created trails, keeping dogs on leash or under voice command, not disturbing young and newborn animals, keeping a safe distance for wildlife viewing, and the potential danger of encounters between moose, bears, mountain lions, and people, especially those with dogs.
- The length and height of retaining walls would be limited as best possible to not impede the movement patterns of mule deer and elk.
- If during construction, or use of this trail, a raptor nest or other important wildlife feature is discovered, mitigations may be implemented to protect the nest or other wildlife resource.

### Cultural Resources

- All persons who are associated with trail construction would be informed that federal laws protect cultural resources and they would be subject to prosecution for disturbing or destroying any historic or archaeological sites, or collecting any cultural objects, prehistoric or historic from federal lands.
- Class III cultural resource inventory of any additional surface-disturbing projects such as helispots, emergency caches, social trail rehabilitation, fence crossings, trailheads, vault toilets, etc. would be required prior to trail construction if outside of the current survey corridor. They would not be authorized within historic properties without additional Section 106 consultation.
- Further consultation with the State Historic Preservation Officer (SHPO) would be required prior to incorporation of the Otto Trail into the trail alignment. A Memorandum of Agreement (MOA) is required and mitigation would need to be completed prior to work on the Wild Rose Trail segment (5ME13956.2).
- Site 5ME4947, an Archaic and Ute rock art site, would be monitored at least bi-annually by BLM archaeologists, or trained site stewards. Cameras and trail counters may be used

in the area to determine amounts of visitation as well as to monitor and record vandalism or other disturbance to the cultural resource. If conditions warrant additional protection, physical barriers such as fences may be placed around the site following appropriate consultation with tribes, SHPO, and other resource specialists.

- The creation of interpretive signage on kiosks at trailheads or websites would inform the public about some of the resources on or near this project and their importance and history. This additional understanding could lead to a decrease of indirect effects by reducing unauthorized removal of artifacts from public lands and decreasing vandalism to rock art.

### Paleontological Resources

- The Wasatch Formation would be monitored during construction because it has a high Potential Fossil Yield Classification (PFYC) rating.
- All persons who are associated with the project would be informed that federal laws protect paleontological resources, and they would be subject to prosecution for disturbing or destroying any vertebrate fossils or paleontological sites, or collecting fossilized bones, tracks, or any other vertebrate trace fossils from federal lands.
- The Paleontological Resources Preservation Act (PRPA) (16 United States Code [USC] Code 470aaa) requires that activities in the vicinity of a vertebrate fossil discovery be immediately suspended and the discovery protected from damage. The BLM or Forest Service Authorized Officer would evaluate, or would have evaluated, such discoveries as soon as possible, but not later than 10 working days from the discovery. Appropriate measures to mitigate adverse effects to significant paleontological resources would be determined by the BLM or Forest Service Authorized Officer. Operations would be allowed to continue by (1) stabilizing the fossil resource in place and avoiding further disturbance to the fossil resource; or (2) mitigating impacts to the fossil resource prior to continuing construction through the project area.

### Tribal and Native American Religious Concerns

- Class III cultural resource inventory of any additional surface-disturbing projects such as helipads, emergency caches, social trail rehabilitation, fence crossings, trailheads, vault toilets and would be required prior to trail construction if disturbance would occur outside of the current survey corridor. These facilities would not be authorized within historic properties or areas of tribal concern without additional tribal consultation. Additional tribal consultation may be required based on what is found during inventory.
- Site 5ME4947, an Archaic and Ute rock art site, would be monitored at least bi-annually by BLM archaeologists, or trained site stewards. Cameras and trail counters may be used in the area to determine amounts of visitation as well as to monitor and record vandalism or other disturbance to the cultural resource. If conditions warrant additional protection, physical barriers such as fences may be placed around the site following appropriate consultation with tribes, SHPO, and other resource specialists.
- Interpretation products describing Ute lifeways and their use of the landscape would be created to encourage an appreciation of Ute peoples (living and past) and cultural resources. These products could take the form of websites or kiosks at locations such as trailheads. These products would be produced collaboratively with tribal members and would incorporate their perspective.



### Visual

- Storage sheds and bolts would be painted a color to blend with the surrounding rock.

### Transportation and Access

- The GMUG consulted a second time with the Regional Forester for consistency with the 2012 Colorado Roadless Rule prior to issuance of a final decision on the Proposed Action.

### Wastes, Hazardous or Solid

- Proper fuel management BMPs would be employed. BMPs include the following:
  - Fueling and equipment maintenance activities would not take place within 100 ft of any live water (stream, pond, lake, etc.) or any drainage (perennial or ephemeral.) All product containers (oil and hydraulic fluid cans, etc.) would be removed from the site and disposed of properly.
  - Soils contaminated by fuel spills would be removed and disposed of properly.
  - Any fuel spills would be reported to the BLM or Forest Service.

### Recreation

- Facility development would utilize the BLM Guidelines for a Quality Built Environment Manual (BLM 2010).
- Recreation visitor use monitoring systems would be developed and maintained to track visitor use trends.
- Special recreation permits would contain noxious weed management stipulations (e.g., pre-event inventories to avoid infested areas; event management to avoid or isolate activities that could cause weed introduction or spread, monitoring, and treatment of infestations exacerbated by the activity; and other appropriate noxious weed management stipulations).

### Range Management

- New fences would be constructed to BLM and Forest Service standards, as applicable, allowing for the appropriate wildlife passage. Fences constructed would comply with applicable wildlife fence standards, such as those described in BLM Handbook H-1741-1, Fencing (BLM 1989) and Forest Service publication 5E42E31-Range Structural Equipment (Forest Service 1988).
- Any damage to the function of range improvements (e.g., fence damage, cattleguard cleaning, and livestock loss) would be repaired immediately or remedied.
- Cattleguards or other similar limiters that allow cyclists and pedestrians to pass fences but prohibit cattle from crossing would be installed at fence crossings.

### Rights-of-Way

- The project would be designed to avoid or otherwise ensure the protection of existing ROW and other authorized facilities located on public lands within the project area, including coordination with ROW holders.



### Fire and Fuels

- During design and construction of the trail, adequate site distance would be provided at all locations where the trail crosses Lands End Road.
- The proposed parking area at Shirttail Point would include signage instructing people to park vehicles away from dry vegetation and posting fire restriction notifications. Guidance about reporting wildland fires would also be provided.

### Monitoring and Maintenance

Long-term maintenance would be the responsibility of the respective land management agencies (BLM and Forest Service) with assistance of their partners (e.g., COPMOBA) and would include repair of erosion control features, culverts, and corridor clearing (brush and tree removal or trimming) as needed. The land managers and their partners would maintain the trail to meet the trail management objectives, specifications, and user experiences described above, and in the EA for the Palisade Rim Trail (DOI-BLM-CO-130-2010-0047-EA). Short reroutes, within 20 ft of the original designated route, would be authorized if a natural event (e.g., flash flood, rock slide) substantially alters the usability of the route, and standard maintenance is not practical.

The number of vehicles used to access the proposed trail as well as the level of use is currently unknown. For analysis purposes, it was assumed that there could be up to 300 mountain bike riders in a single day on weekends for approximately 5 months of the year (due to seasonal closures and weather restraints) for the entire trail (based on the Whole Enchilada Trail in Moab, Utah). This amount of trail use cannot be extrapolated to use throughout the entire year because large portions of the trail would be closed from December 1 to May 1 to protect wintering big game. It was also assumed that rider groups would use shuttles to access the trailhead and that 125 vehicles per day could access the trail during the peak summer and autumn recreational-use season, assuming a carpooling rate of 2.5 passengers per vehicle. Parking areas for vehicles are discussed above (Facilities). The amount of trail maintenance required on an annual basis is also unknown.

To address these unknowns, the BLM, Forest Service, and partners would develop a Monitoring and Maintenance Plan and include a schedule for monitoring and also identify parties responsible for monitoring and maintenance. The Plan would include a breakdown of the types of maintenance that would be required by trail segment or regions and by different times of the year. Maintenance needs would vary based upon elevation (vegetation type, slope, and proximity to drainages and water) throughout the year. Maintenance might include clearing fallen trees (at the beginning of the season and after wind events) and trimming vegetation and oakbrush in the higher elevations, repairing drainage features, maintaining trail critical edge, repairing areas with erosion, maintaining bicycle cattleguards, replacing signs, and repairing rock ramps, etc. to maintain the integrity and stability of the trail.

The City of Grand Junction would monitor near their reservoirs during their regular weekly inspections of these facilities. The Town of Palisade would improve and maintain North River Road and the parking lot on the west side of U.S. Highway 6 and 24. COPMOBA would lead and complete three large scale work days each year (early season, mid-season, and late season) and would provide monthly monitoring throughout the entire year for the portions of the trail that are open.

Partners would work with the BLM and Forest Service on developing a central clearinghouse where the monitoring, maintenance needs, and maintenance efforts would be reported and tracked. A comprehensive record would be kept of all monitoring and maintenance. The Plan would also be reviewed annually.

If user trails create unauthorized trails, they would be closed and none would be considered for future approval.

If the monitoring and maintenance plan cannot be fully implemented with available agency and partner resources, other funding sources would be pursued to ensure full implementation of the plan. Additional funding sources would include, but are not limited to, outside grants and trail user fees.

#### Temporary Trail Closures and Reroutes

Trail managing agencies and other landowners would implement temporary closures as needed to allow for construction or maintenance activities, and to keep trail users safe. In addition to trail construction or maintenance activities, temporary trail closures may be required for construction and/or maintenance of infrastructure in the vicinity of the trail (e.g., roads, canals, power transmission lines, pipelines). In some cases, trail traffic could be detoured or rerouted onto other designated roads and/or trails. For example, trail users could bypass a closure in the lower section of Stokes Gulch by detouring to one of the connector trails to the Palisade Rim Trail. Any temporary trail closures/reroutes would be signed at appropriate locations.

#### Long-Term Signage, Kiosks, Limiters, and Gates

Long-term signage would be installed to help users have a better trail experience, to provide for safety on the trail, and to provide educational information. The signs would include trail name signs and maps within the trail system and trailhead signs at trailheads and/or major intersection points. The frequency of trail markers would be based upon monitoring of trail users. If monitoring indicates that users are getting lost or are not able to report their location during emergency situations then the frequency of trail marker (carsonite with mileage numbers) placement would increase. The BLM and Forest Service may place trail markers at 1 mile intervals if monitoring indicates that this is necessary. Possible locations for long-term signage, gates, and kiosks, boundary marker carsonite, and limiters are:

- Mesa Top Trailhead – kiosk
- Proposed Parking Area at Shirrtail Point (MP 11.60) – kiosk, trail limiter, gate
- Lands End Road crossing (MP 14.70) – two signs, two limiters, two gates
- Lands End Road at rim– gate for winter closure
- Plunge Point Overlook – informational interpretive wayside sign (MP 26.47)
- Rapid Creek Wildlife Emphasis Area Boundary (MP 18.20) – sign
- City of Grand Junction Property Boundary at gate (MP 22.50) – sign and wing fences
- Trail intersects road (MP 22.78) – sign and/or limiter
- Boundary between Wildlife Emphasis Area and SRMA (MP 24.30) – sign and gate
- Overlook at the conditional winter closure boundary for mountain biking (MP 27.48) – sign
- Flash Flood Hazard Area (MP 30.47 to MP 30.76, and MP 30.80 to MP 31.57) – carsonite markers

On both ends of the southern Palisade Rim Trail Connector (MP 30.41) – sign trail limiter or gate

On both ends of the northern Palisade Rim Trail Connector (MP 30.96)

Private Property Boundary (MP 31.41 to MP 31.45) – carsonite markers

Parking area at bottom of the trail (MP 31.60) – kiosk

Kiosks, signs, brochures, and digital media resources would also include educational, interpretive, and regulatory information including, but not limited to:

- Directional orientation – maps and trail descriptions
- Safety messages – trail user preparedness, trail remoteness and exposure, weather-related risks (e.g., lightning, flash floods, wildfires), canal flume safety, and bailout locations
- Educational and interpretive messages – area history, geology, plants and wildlife, cultural resources and tribal use, geologic hazards, wildfire, search and rescue COSAR card/emergency evacuation, user safety, trail management partnerships, trail etiquette and ethics, trail stewardship opportunities and maintenance reporting
- Regulatory messages – allowable uses (travel management), seasonal closures, private property restrictions, and temporary closure notifications

#### Winter Closure

Winter closure (December 1 through May 1) for mountain biking would be in effect from MP 11.60 on National Forest System lands to the eastern boundary of and through the BLM Rapid Creek Wildlife Emphasis Area ending at the intersection with the southern Palisade Rim Trail Connector near MP 30.41. The BLM would use adaptive management to provide flexibility for the location of the western extent of the big game winter closure (e.g., specific dates may be adjusted annually based on weather conditions and coordination with CPW). Mountain bike riders would be allowed to use the trail from the intersection near MP 30.41 to the eastern boundary of the Rapid Creek Wildlife Emphasis Area near MP 27.48 as long as BLM monitoring indicates that trail cyclists are not continuing to the south past MP 27.48 during the winter closure period.

If BLM monitoring indicates that any cyclists are riding to the south past MP 27.48, then the BLM would enforce the closure point at the trail intersection near MP 30.41. The BLM would consider moving the closure location as far west as MP 30.41 if there are any violations of the winter closure point at MP 27.48. Big game winter range closures may also include pedestrian travel (e.g., hikers and runners) if the BLM determines that this additional use restriction is necessary to reduce disruption to big game during the winter season. As described in the GJFO RMP, the BLM may occasionally adjust seasonal limitation periods annually based on coordination with CPW (e.g., mild winters, late hunting seasons, etc.). Proper gates and signage would be installed to ensure adherence to the winter closure. Trail segments on other portions of National Forest System lands would “self close” in the winter due to winter conditions.

### Social Trail Rehabilitation

Under the Proposed Action, existing social trails would be rehabilitated to reduce the potential for impact to Colorado hookless cacti (see Map 3 for currently identified routes) as well as to reduce other resource impacts. Restoration of social trails in general would include naturalization and camouflage using rocks, branches, and/or vertical mulch. Restoration signage may need to be placed temporarily. Where social trails have been well established, there may be a need for soil manipulation (ripped, tilled, or de-compacted) to discourage future use and to promote vegetation growth. Soil manipulation would be completed with hand tools (e.g., shovel or pick) to alter the soil to a depth of less than 6 inches. Following soil manipulation, there may be a need to apply an appropriate native seed mix, vertical mulch, and/or placement of rocks. Reclamation would be completed to try to blend the disturbed area to look as similar as possible to undisturbed areas. All actions would only occur within the disturbed area of the social trail. Social trails that are not identified on Map 3, such as those along U.S. Highway 6 and 24 or others that may develop in the future may also be reclaimed with similar techniques as those described above. Appropriate surveys (e.g., cultural and biological) would be conducted prior to restoration. Depending on the location, a cultural and/or biological monitor may be required during restoration work. Restoration work would adhere to the construction timing limitations (Map 5).

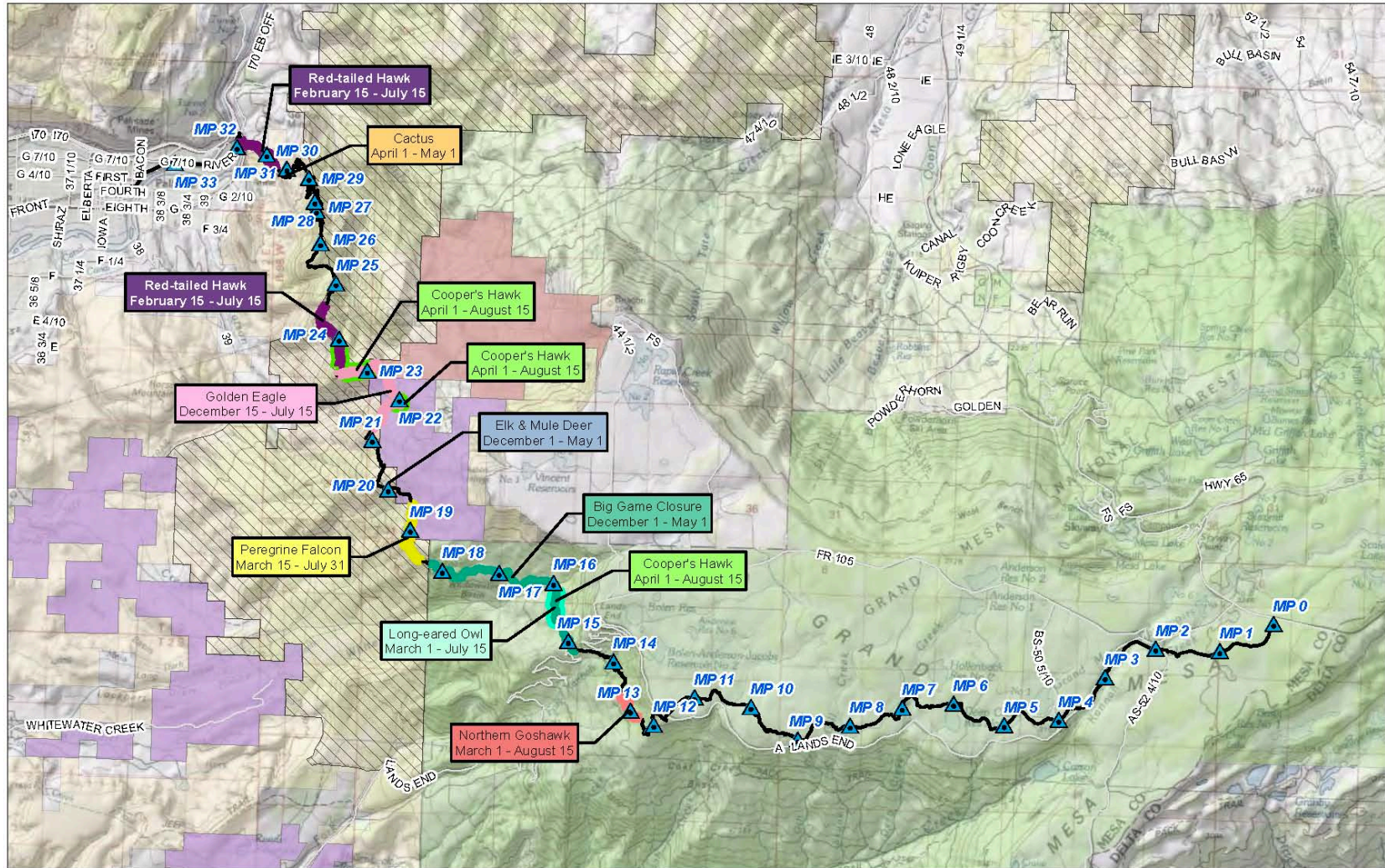
### Visitor Notification for Construction and Maintenance Activities

Trail managing agencies and/or partner organizations and trail construction/maintenance contractors would notify trail users about any planned trail work, closures, and reroutes through press releases, agency and partner websites, trailhead kiosks/signs, and caution signs in the immediate vicinity of trail work activities.

### Schedule

Construction of the trail would begin once all approvals are obtained. Construction could occur during spring (if an area can be cleared for nests), summer, fall, and winter (up to December 1 in areas closed for big game winter range). Construction would take approximately 18 months to complete although it would not be continuous due to timing limitations and weather. Construction timing limitations would apply for the big game winter range, Colorado hookless cactus, migratory birds, and raptors (Map 5). Construction would likely begin on the west end of the trail route near Palisade, Colorado. By constructing the trail segments from MP 30.42 to 31.50, and the two connector routes to the Palisade Rim Trail, the BLM would provide several new loop opportunities for cyclists and pedestrians; and therefore, so these segments would be the first priority for construction.

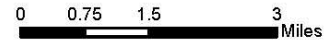




Legend

- Palisade Plunge Trail
- Milepost
- Surface Ownership**
- Bureau of Land Management
- Forest Service
- City of Grand Junction
- Town of Palisade
- Private

- Rapid Creek Wildlife Emphasis Area (Timing Limitation December 1 through May 1)
- Forest Service Big Game Closure December 1 through May 1 MP 11.60 to 18.23
- No vegetation removal entire route May 15 - July 15 or Biologic Monitor is required.



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project was developed through digital means and may be updated without notice.

**Palisade Plunge Trail  
Mesa County, Colorado**

**Map 5  
Construction Timing Limitations**

---

## **2.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL**

---

In general, during internal and external scoping, biological and physical surveys, and the trail layout and design process, many different alignments were considered; for example, different alignments were considered across the City of Grand Junction property within the Kannah Creek Basin, and near Cottonwood Creek and Rapid Creek (see Map 6). One by one, these alignments were eliminated from detailed study because an option was available that better met recreation objectives and/or better protected potentially affected resources (i.e., nesting birds) and addressed public concern (i.e., livestock operations). The original routes are shown on Map 6.

On National Forest System lands, the original trail alignment was rerouted from Kannah Creek Basin MP 9.38 to MP 9.99 due to wildlife concerns. Also on National Forest System lands, two different options for crossing Coal Creek were evaluated between MP 10.34 and MP 10.76. The northern route was selected to keep the crossing further away from Lands End Road. Another example, to avoid a direct line of sight from the trail to a nesting raptor, the trail was rerouted between MP 22.39 and 23.22 on public lands managed by the BLM, City of Grand Junction, and Town of Palisade. On BLM-managed public land, two portions of the original alignment were rerouted to avoid Colorado hookless cactus plants near MP 29.19 and MP 29.30.

### **2.3.1 BOR Alternative**

Between MPs 31.3 and 31.6, the original proposed route crossed a section of land administered by the BOR. The original route was located south of the revised route (Proposed Action). This original route traversed through an area of Colorado hookless cactus and near a large irrigation canal that raised safety concerns; and therefore, efforts were made to move the trail onto private lands to the north. Agreements (for sale and easements) have been made with the private landowners to be able to move the alignment onto the private lands, which is reflected in the Proposed Action. The route on private lands (Proposed Action) would provide a better quality trail experience because it is located at a lower elevation, which allows for better flow of the trail and would avoid the BOR-managed land entirely. Therefore, this alternative was eliminated from detailed analysis.

### **2.3.2 Motorized Use Alternative**

Motorized use on the trail was proposed in a letter from the TPA, but is not considered in detail because it does not conform with the Forest Service and BLM land use plans and is outside of the scope of the project. The portions of the trail on National Forest System lands (Coal Creek Trail) and within the Palisade Rim SRMA are closed to motorized use. The purpose of the project is to provide a non-motorized trail that connects the Mesa Top Trailhead to the Town of Palisade (Section 1.3, Purpose and Need). Portions of the trail on BLM-managed public lands are constrained by multiple short-radius switchback turns that are not practical for use by motorcycles or other motorized vehicles. The trail also has a substantial amount of exposure in areas where the trail crosses steep terrain with cross slopes exceeding 60 percent. Special measures such as placement of bolts are necessary to enable Mesa County SARC to use a rescue motorcycle because the terrain is too rough and steep for easy passage by motorized vehicle. The purpose of the Palisade Rim SRMA is to provide non-motorized singletrack trails.

---

## 2.4 PLAN CONFORMANCE REVIEW

---

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plans (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Grand Junction Resource Management Plan (BLM 2015a).

Date Approved: August 10, 2015.

Decision Number/Page and Language: REC-MA-06/Page 95. Provide recreational travel routes that are compatible with other resource objectives and connect the following areas:

- Grand Mesa to Palisade Rim SRMA and Horse Mountain Extensive Recreation Management Area (ERMA).

Decision Number/Page and Language: REC-OBJ-02/Page 95. Increase collaboration and cooperation with community partners and other service providers to help communities produce greater well-being and socioeconomic health and deliver outstanding recreation experiences to visitors while sustaining the distinctive character of public lands recreation settings.

Decision Number/Page and Language: REC-SRMA-AU-73 (*Palisade Rim SRMA*)/Page 135.

- Work with stakeholders to design and construct any new system trail, access points or facilities identified as necessary for achievement of SRMA objectives.
- Reroute, repair, or close and restore unsustainable and eroding routes.

Decision Number/Page and Language: REC-72/Appendix H, Page H-73. BMPs for the Palisade Rim SRMA (for both resource and resource use objectives) include, but are not limited to, the following:

- Close the SRMA to motorized travel.
- Limit mechanized travel to designated routes throughout the SRMA.
- Work with stakeholders to improve existing access and create additional access to the SRMA.
- Work with partners (e.g., Town of Palisade and Mesa County) to develop connectivity to adjoining urban trails to provide safe access to BLM-administered lands, alternative transportation options, and improved recreational opportunities.
- Limit new trail development to the minimum necessary to achieve SRMA objectives.
- Utilize current GJFO “Trail Development Process” and “Trail Design Criteria” guidance to create a sustainable recreational route system that helps achieve SRMA objectives.

Decision Number/Page and Language: REC-SRMA-AU-69 (*Palisade Rim SRMA*)/Page 134.

Camping restrictions:

- Close the SRMA to overnight camping and campfires to reduce impacts to this intensively used area that lies in close proximity to private residences.

Decision Number/Page and Language: F&W-WEA-MA-02 (Wildlife Emphasis Areas)/Page 54-55.

- Consolidate surface-disturbing activities within existing disturbance to avoid fragmentation.

Decision Number/Page and Language: F&W-WEA-MA-03 (Wildlife Emphasis Areas)/Page 54-55.

- Reduce habitat fragmentation by reducing road density (focusing primarily on duplicative or redundant routes) in wildlife emphasis areas. Route density of less than 0.5 miles of road per square mile preferred, where this cannot be achieved implement winter closures if feasible to seasonally limit route-related disturbance in the most critical winter months.

Decision Number/Page and Language: F&W-WEA-AU-13 (Rapid Creek Wildlife Emphasis Area)/Page 58-59.

- Implement seasonal travel limitations for motorized and mechanized travel in a portion of the area (23,500 acres) from December 1 to May 1. Seasonal limitation periods may be adjusted based on coordination with CPW (e.g., mild winters, late hunting seasons, etc.).

Decision Number/Page and Language: F&W-WEA-MA-22 (Rapid Creek Wildlife Emphasis Area)/Page 59.

- Areas within big game winter range may be closed to foot, horse, motorized, and/or mechanized travel from December 1 to May 1.

Decision Number/Page and Language: TRV-MA-05, Page 155.

Manage 126,200 acres as *closed* to motorized travel (administrative and permitted vehicular access only):

- SRMAs
  - Palisade Rim

Decision Number/Page and Language: TRV-MA-36/Page 161.

- Maintain a minimum of administrative access to rights-of-way, other land use authorizations, and utility corridors.

Decision Number/Page and Language: L&R-OBJ-06/Page 176.

Acquire Lands or interests in lands through exchanges, purchases, easements, or donations to facilitate resource goals and objectives.

Decision Number/Page and Language: L&R-MA-17/Page 177.

Pursue opportunities with landowners, either through purchase or exchange, for acquisition of private properties or easements that enhance public access and recreation opportunities consistent with recreation and resource program objectives.



**TRV-MA-39:**

In some cases limit public access to protect range improvements from potential damage.

Decision Number/Page and Language: TRV-MA-43/Page 162.

- Within each individual SRMA/RMZ, clearly prescribe travel management allowable uses and implementation actions that help achieve SRMA/RMZ objectives.

Decision Number/Page and Language: TRV-MA-46/Page 162.

- Consider route features, quality user experience, and route connectivity to determine appropriate route use type (i.e., open, mechanized, ATV, UTV, foot, etc.).

Decision Number/Page and Language: TRV-MA-47/Page 162.

- Work closely with Mesa and Garfield counties to maintain public access to areas identified as important for recreation.

Decision Number/Page and Language: TRV-MA-62/Page 164.

- Reduce redundancies in routes to minimize habitat fragmentation, and minimize direct impacts from motorized and mechanized users of roads, routes, and trails on listed species and in designated critical habitat for threatened and endangered plants. Identify mitigation where open routes are negatively affecting listed species and/or designated critical habitat, and ensure that Land Health Standard 4 is being achieved or progress is being made towards meeting this Standard.

Name of Plan: Grand Mesa, Uncompahgre, and Gunnison National Forests Amended Land and Resource Management Plan (Forest Service 1991).

Date Approved: July 1991.

Decision Number/Page and Language: Trail Management System 03/Page III-82. Provide a full range of trail opportunities in coordination with other federal, state, and municipal jurisdictions and private industries both on and off National Forest System lands.

Decision Number/Page and Language: Special Use Management – Recreation 01/Page III-109. Permit special uses which are complementary and compatible with kind and development level of the associated Forest Service Facilities within the area.

Name of Plan: Grand Mesa National Forest Travel Plan Revision – Decision Notice and Finding of No Significant Impact (Forest Service 1994).

Date Approved: December 12, 1994.

Decision Number/Page and Language: Page 5. Non-motorized travel (hiking, horseback riding, mountain biking) will not be restricted except on trails specifically designated for certain types of use (ex: Crag Crest Upper Loop for hikers only, Land of Lakes overlook

for hikers and wheelchairs only, inter-campground trail system for hikers). Non-motorized travelers will be encouraged to remain on established routes.

## **2.5 STANDARDS FOR PUBLIC LAND HEALTH**

---

In January 1997, the Colorado State Office of the BLM approved the Standards for Public Land Health and amended all Resource Management Plans (RMPs) in the State. The BLM also incorporated the standards into the 2015 GJFO RMP and other RMPs that have since been revised. Standards describe the conditions needed to sustain public land health and apply to all uses of public lands.

Standard 1: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods.

Standard 3: Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.

Standard 4: Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Standard 5: The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado.

A formal Land Health Assessment (LHA) was conducted for the Whitewater Common and North Fork Kannah Creek Allotments in 2006 (BLM 2006) and was updated in 2010. A formal LHA was conducted for the Kannah-Plateau Area in 2010. Both of these LHAs coincide with the project area and trail alignment. The area was determined to be Meeting all the Standards for Public Land Health (BLM 2015b). The impact analysis addresses whether the Proposed Action and any alternatives being analyzed would result in impacts that would maintain, improve, or cause a deterioration in land health conditions for each of the five standards. These findings are located in Chapter 3 of this document.

## CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

### 3.1 INTRODUCTION

This section provides a description of the human and natural environmental resources that could be affected by the Proposed Action (see Table 7) and presents comparative analyses of the direct, indirect, and cumulative effects on the affected environment stemming from the implementation of the actions under the Proposed Action and other alternatives analyzed.

This EA draws upon information compiled in the Grand Junction Resource Area RMP (BLM 2015a).

**Table 7  
Potentially Impacted Resources**

Resources	Not Present On Location	No Impact	Potentially Impacted	Mitigation/ Design Features Necessary?
Air and Climate	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water (surface and subsurface, floodplains)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Geological and Mineral Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive, Non-native Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wetlands and Riparian Zones	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Special Status Plants	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Special Status Wildlife	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Migratory Birds	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wildlife (Aquatic and Terrestrial)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cultural or Historical	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Paleontological	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Native American Religious Concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Visual Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social and Economic	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Transportation and Access	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wastes, Hazardous or Solid	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Areas of Critical Environmental Concern	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreation (Recreation, RMAs, Special Recreation Permits)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
National Lands Conservation System (Wild and Scenic Rivers, Historic Trails, Wilderness Study Areas)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wilderness and Wilderness Characteristics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Range Management	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wild Horse and Burros	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Tenure, ROW, Other Uses	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire and Fuels	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 3.1.1 Elements Not Present or Not Affected

The following elements, identified as not being present or not affected are not brought forward for additional analysis in this EA:

**Air and Climate.** Mechanized use, foot traffic, and equestrian use of the trail would not generate a lot of dust. The primary air quality impact would be from vehicles travelling to and from the project area.

**Geological/Mineral Resources.** No active or proposed minerals projects occur along the trail path. Coal exploration has occurred in the immediate vicinity, but the prospective seam has either already been mined, or was deemed to be not economic.

**Areas of Critical Environmental Concern.** The proposed project would not have an impact on Areas of Critical Environmental Concern, because the proposed trail alignment does not cross any of these areas.

**National Lands Conservation System.** The proposed project would not have an impact on National Conservation Land such as Wild and Scenic Rivers, Wilderness Study Areas, and National Historic Trails because the proposed trail alignment does not cross any of these areas.

**Wild Horse and Burro.** The project is located outside of the Wild Horse Management Area and there are no wild horses located in the area.

**Prime or Unique Farm Lands.** There are no prime or unique farmlands in the project area.

### 3.1.2 Past, Present, Reasonably Foreseeable Actions

NEPA requires federal agencies to consider the cumulative effects of proposals under their review. Cumulative effects are defined in the Council on Environmental Quality (CEQ) regulations 40 CFR §1508.7 as "...the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency...or person undertakes such other actions." The CEQ states that the "cumulative effects analyses should be conducted on the scale of human communities, landscapes, watersheds, or airsheds" using the area that might be affected by the proposed action.

Past, present, and reasonably foreseeable actions include timber harvests (for spruce beetle and sudden aspen decline treatments), trail construction and use, livestock grazing, recreational hunting and permitted outfitting, ROWs for public utilities, wildlife fire suppression, vegetation treatments, prescribed fire treatments, and motorized recreation such as off-highway vehicle (OHV) and snowmobile riding.

## 3.2 PHYSICAL RESOURCES

---

### 3.2.1 Soils (includes a finding on Standard 1)

#### 3.2.1.1 Current Conditions:

The trail crosses three Soil Survey Areas in Mesa County: CO660 from MPs 0 to 18.21; CO680 from MPs 18.21 to 18.85 and 22.97 to 33.83; and CO682 from MPs 18.85 to 22.97. Soils crossed by the proposed trail have been described using the Natural Resources Conservation Service (NRCS) SSURGO database (NRCS 2018) and the Soil Survey Area tabular and spatial data (NRCS 2017a, b, and c).

Soils along the majority of the trail (31.5 miles) are stony and gravelly loams and unweathered bedrock textures with a root restrictive layer of lithic bedrock between 10 to 60 inches. Slopes encountered along the trail range from 0 to 90 percent. Soils on slopes greater than 35 percent are shallow or consist of bedrock. Available water to a depth of 60 inches is low to very low and wind erosion potential is moderate to high. Slope, large stones, and available water are limiting characteristics for these mapping units. Soil reactivity is also a limiting characteristic for some of the soils. Therefore, suitability ratings for roads and trails range from somewhat limited to severely limited based on these soil characteristics. According to the NRCS ratings for hazard of erosion on roads and trails, 53 percent of the soils crossed by the trail are rated severe and 35 percent are rated moderate. A rating “moderate” indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion control measures are needed. A rating of “severe” indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion control measures are needed.

In the valley, near the end of the trail starting at MP 31.50, the soils are deeper, fine-grained, sandy and silty clay loams. Four of the mapping units, (MP 32.02 to the end of the trail) are classified as prime farmland, if irrigated. These soils contain 5 to 35 percent calcium carbonate and are slightly saline or sodic. Calcium carbonate content, soil reactivity, and available water are limiting factors for revegetation. Soils in this segment are rated slight to moderate for erosion hazard on roads and trails.

The proposed parking area at MP 11.60 would affect one soil mapping unit (MU187) Skisamas-Secondest complex. This soil is a mix of gravelly loam and unweathered bedrock. It has a hazard of erosion rating of moderate and a root restrictive layer of lithic bedrock at 7 to 20 inches.

*Finding for Public Land Health Standard 1 for Upland Soils:*

The Whitewater-Kannah Creek and Kannah-Plateau LHAs coincide with the project area on BLM lands. The soils in the project area are meeting Public Land Health Standard 1 (BLM 2015b), which states that upland soils should exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

### **3.2.1.2 Environmental Consequences:**

Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but use of existing authorized and unauthorized social trails in the area would continue and possibly increase. Rehabilitation of 0.57 mile of existing social trails would not occur. Impacts to soil resources from implementation of the Proposed Action would not occur. However, existing impacts related to soil erosion and soil loss from other activities or resource uses including timber management, livestock grazing, recreation, ROWs, wildland fire suppression, vegetation treatments, prescribed fire, public utility infrastructures, and water uses would continue.

*Finding for Public Land Health Standard 1 for Upland Soils:*

Land Health Standard 1 is being achieved (BLM 2015b). Under the No Action Alternative, use and proliferation of social trails would likely continue without managed development. The No Action Alternative would not cause changes to Land Health Standard 1 from implementation of the Proposed Action. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, ROWs, wildland fire suppression, vegetation treatments, prescribed fire, and water uses could affect Land Health Standard 1.

### Cumulative Effects:

Cumulative effects of the No Action Alternative include increased watershed sediment production rates and sediment delivery to water ways from existing trails, roads, grazing, and recreation. Impacts related to soil erosion and soil loss from other activities or resource uses (both existing and in the future) including timber management, livestock grazing, recreation, and water uses would continue.

### Alternative B – Proposed Action:

The Proposed Action would create new surface disturbance across 31.60 miles of soils that are rated as moderate to severe potential for erosion. Approximately 0.57 mile of social trails would be rehabilitated. Surface disturbance associated with trail construction would directly impact soils through removal of soil stabilizing agents and crossing drainages causing increased erosion and soil loss from and adjacent to the route. As is typical with any new surface disturbance, some level of increased erosion from disturbed areas would persist although the severity of those impacts would be minimized through design features, BMPs, and maintenance. Design features include halting construction when saturated soil conditions exist or when road rutting becomes deeper than 3 inches, minimizing surface disturbance in sensitive areas, confining drainage from disturbed areas, and avoiding deep vertical cuts, long or steep fill slopes, and side cuts across steep slopes. Stream and channel crossing would be vertical and critical edges would be rounded. The trail tread surface would be slightly sloped to facilitate drainage and shed water across the trail instead of down the tread. Indirect effects include general erosion of the trail surface, widening of stream channels at crossings, and an increase in disturbed area in the watershed. The trail could also become a new channel and increase erosion if not properly maintained. The direct effects are expected to only last for the duration of the construction period. Indirect effects are expected until the disturbed area revegetates and throughout the life of the trail.

Approximately 0.21 acre of temporary and permanent impacts to soils (MU 187) would occur due to the construction of the proposed gravel trailhead and parking area at MP 11.60. Direct impacts include some level of increased erosion caused by surface disturbance during construction. This would only last for the duration of the construction period and decrease as the area revegetates. Indirect effects are expected throughout the life of the trail based on the amount of use; however, design features, BMPs, and maintenance would minimize the severity.

### *Finding for Public Land Health Standard 1 for Upland Soils:*

Land Health Standard 1 is being met and it is not expected that implementation of the Proposed Action would cause Standard 1 to not be met. Erosion and soil loss would be minimized with implementation of the proposed design features. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, and water uses could affect Land Health Standard 1.

### Cumulative Effects:

Cumulative effects under the Proposed Action would be similar to those under the No Action Alternative. Impacts to soils through erosion and soil loss would be minimized with implementation of the proposed design features. Impacts related to soil erosion and soil loss from other activities or resource uses (both existing and in the future) including timber management, livestock grazing, recreation, and water uses would continue.

### 3.2.2 Water (surface and groundwater, floodplains) (includes a finding on Standard 5)

#### 3.2.2.1 Current Conditions:

##### Surface Water:

The proposed Palisade Plunge Trail is located in the Upper Colorado Region as defined by the U.S. Geological Survey (USGS 2017), and traverses from the Colorado Headwaters Basin (Colorado Headwaters-Plateau Sub-basin) into the Gunnison Basin (Lower Gunnison Sub-basin). In the Colorado Headwaters Basin, the trail straddles the Jerry Creek-Colorado River Watershed (Rapid Creek Sub-watershed) and the Sink Creek-Colorado River Watershed (Watson Creek and Sink Creek Sub-watersheds), while in the Gunnison Basin the trail is in the Kannah Creek-Gunnison River watershed (Whitewater Creek, North Fork Kannah Creek, and Headwaters Kannah Creek Sub-watersheds).

The proposed trail alignment is located in an area that is drained predominantly by ephemeral and intermittent drainages. The trail would cross two perennial streams, Whitewater Creek and Deep Creek, located in the Whitewater Creek and Headwaters Kannah Creek Sub-watersheds, respectively. Peak flows on perennial streams typically occur in May and June, resulting from snowmelt. Base flows occur in late fall and winter from groundwater when surface runoff is minimal. Intense summer thunderstorms are often responsible for peak flows on the smaller tributaries that can cause severe flooding in localized areas. Estimated peak flows for Whitewater Creek at the trail crossing are listed in Table 8. Peak flows occurred mostly in May.

**Table 8**  
**Whitewater Creek Peak Flows at Trail Crossing**

<b>Return Period</b>	<b>Flow (cubic feet per second)</b>
2 Year Peak Flood	68
5 Year Peak Flood	94.3
10 Year Peak Flood	113
25 Year Peak Flood	129
50 Year Peak Flood	151
100 Year Peak Flood	169
Source: Capesius and Stephens 2009.	

Approximately 0.7 inches of rain must fall in the project area before any runoff occurs (NRCS 2004). Precipitation frequency indicates that intense 1-hour storms with a precipitation depth of more than 0.7 inches occur approximately once every 5 years (National Oceanic and Atmospheric Administration [NOAA] 2018). Twenty-four-hour periods of rainfall with a precipitation depth of more than 0.7 inches occur at least annually. Short, intense storms causing large runoff with the potential to cause severe erosion along the trail may happen less frequently than once every 5 years; however, sustained 24-hour rainfall events causing minor erosion may occur at least once per year.

Within each river basin in Colorado, specific stream segments are defined and specific use classifications and numeric water quality standards are adopted. The Colorado Department of Public Health and Environment (CDPHE) applies one of two water quality-based designations to stream segments: An “outstanding waters” designation may be applied to certain high-quality waters that constitute an outstanding natural resource. No degradation of outstanding waters by regulated activities is allowed (CDPHE 2018). A “use-protected waters” designation may be

applied to waters with existing quality that is not better than necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water. The stream segments crossing or within 1 mile of the proposed trail alignment to the Gunnison River or the Colorado River are listed in Table 9, with their defined classifications (CDPHE 2017a and 2017b).

Waters draining to the Gunnison River are identified by CDPHE as COGULG in the Lower Gunnison Basin and waters draining to the Colorado River are identified as COLCL. CDPHE identifies this part of the Colorado River as the Lower Colorado.

In the Town of Palisade watershed, Cottonwood Creek from the source to its confluence with Rapid Creek is considered an “outstanding water,” for which the highest level of water quality protection applies. Outstanding waters have to be maintained and protected at their existing quality (CDPHE 2018).

Limited water quality data has been collected in the associated watersheds. Single field measurements have been taken of water quality in four springs located within 1 mile of the trail alignment in the North Fork Kannah Creek and Kannah Creek Headwaters. Water quality in the springs is good, with very low specific conductance (USGS 2017). Water quality in Kannah Creek (USGS Station No. 09152000, located approximately 3 miles below the proposed trail alignment), was measured from 1956 to 2003. Water in upper Kannah Creek has very low specific conductance (averaging 160 microsiemens per centimeter), and selenium concentrations below detection limit.

**Table 9**  
**Protected Beneficial Uses for Stream Segments**  
**Crossed or within One Mile of the Proposed Trail Alignment**

<b>CDPHE Stream Segment ID</b>	<b>Streams Crossed or Within One Mile of Trail</b>	<b>Protected Beneficial Uses</b>
COGULG03	Whitewater Creek, North Fork Kannah Creek, Coal Creek, Gill Creek, Skunk Creek, Deep Creek, Reservoir Creek, Kannah Creek, and intermittent or ephemeral unnamed tributaries to all above creeks	Agriculture, Aquatic Life Cold Class 1, Recreation Class E, Water Supply
COGULG04A	Whitewater Creek below the national forest boundary	Agriculture, Aquatic Life Warm Class 2, Recreation Class P, Water Supply
COGULG14	Cliff Lake Reservoir, Bolen Reservoir, Bolen Anderson-Jacobs Reservoir 2, Anderson Reservoir No. 6, Hollenbeck Reservoir No. 2, Deep Creek Reservoir No. 2, Grand Mesa Reservoirs No. 1, 6 8 and 9, Carson Lake	Agriculture, Aquatic Life Cold Class 1, Recreation Class E, Water Supply
COLCLC02B	Colorado River at North River Road Bridge	Agriculture, Aquatic Life Warm Class 2, Recreation Class E
COLCLC13A	Watson Creek, Sink Creek, their tributaries, and several unnamed ephemeral drainages	Agriculture, Aquatic Life Warm Class 2, Recreation Class P
COLCLC17A	Cottonwood Creek and its tributaries	Agriculture, Aquatic Life Cold Class 1, Recreation Class P, Water Supply
COLCLC17B	Lower Rapid Creek	Agriculture, Aquatic Life Cold Class 1, Recreation Class P, Water Supply
Source: CDPHE 2017a and 2017b.		



In the Lower Gunnison River Basin, the CDPHE has determined that tributaries to the Gunnison River downstream of the National Forest boundary (COGULG04A), including Whitewater Creek and lower Kannah Creek, are currently impaired, because selenium concentrations exceed standards for Aquatic Life Use and/or Agricultural Use. A Total Maximum Daily Load (TMDL) for selenium was approved in 2011. The source for selenium is underlying native shale containing elevated levels of selenium. The Gunnison River Basin is extensively underlain by Mancos Shale. Various anthropogenic activities like sand and gravel extraction, agricultural and urban landscape irrigation accelerate the mobilization and transport of selenium from shale and shale-derived soil to surface water. The impaired reaches are at least 1 mile downstream of the proposed trail alignment. Lower Whitewater Creek is also impaired for sulfate and manganese, and lower Kannah Creek is on the monitoring list for sulfate.

In the Lower Colorado River basin, the CDPHE has determined that the Colorado River at North River Road Bridge (COGULG04A) is on the Monitoring and Evaluation List for sediment.

The proposed trail alignment crosses through the City of Grand Junction Municipal Watershed for approximately 18.4 miles between MPs 0.0 and 18.4, almost all on National Forest System lands. Mesa County would coordinate with the City of Grand Junction on any development activity within the Grand Junction Municipal Watershed according to the Memorandum of Understanding (MOU) between the City of Grand Junction and Mesa County. From MP 18.50 to its end, the trail alignment repeatedly crosses between the Palisade and Clifton watersheds.

#### Groundwater:

The proposed trail is located in the Colorado Plateaus Physiographic Province. The Colorado Plateaus aquifers are contained in a thick sequence of poorly to well-consolidated conglomerate, sandstone, siltstone, and shale. Volcanic rocks, carbonate rocks, and evaporite deposits in the area also can yield water to wells. Structural deformation, faulting, and lateral changes in the lithology of the rocks have produced a complex sequence of water-yielding layers (USGS 1995). The shallowest groundwater can be found in Quaternary deposits of alluvial gravel, sand, silt, and clay along the Colorado River.

#### *Finding for Public Land Health Standard 5 for Water Quality:*

The Whitewater-Kannah Creek and Kannah-Plateau LHAs coincide with the project area on BLM lands. According to the LHAs, water quality in the project area is meeting Land Health Standard 5 (BLM 2015b), which states that the water quality of all water bodies, including groundwater where applicable, located on or influenced by BLM-managed public lands will achieve or exceed the Water Quality Standards established by the State of Colorado. The Colorado River at North River Road Bridge (COGULG04A) is on the Monitoring and Evaluation List for sediment. Whitewater Creek outside the Forest at a distance of approximately 1 mile from the proposed trail alignment is considered impaired for selenium. All other waters within 1 mile of the proposed trail alignment are meeting water quality standards. Cottonwood Creek is considered an “outstanding water.”

### **3.2.2.2 Environmental Consequences:**

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but use of existing trails authorized and unauthorized trails in the area would continue and could possibly increase. Impacts to water resources from implementation of the Proposed Action would not occur. However, existing impacts to water resources from other

activities or resource uses including timber management, livestock grazing, recreation, ROWs, wildland fire suppression, vegetation treatments, prescribed fire, and water use would continue.

*Finding for Public Land Health Standard 5 for Water Quality:*

Land Health Standard 5 is being achieved (BLM 2015b). The No Action Alternative would not cause changes to Land Health Standard 5 from implementation of the Proposed Action. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, and water uses could affect Land Health Standard 5.

**Cumulative Effects:**

Cumulative effects of the No Action Alternative include sediment delivery to water ways from existing trails, roads, ROWs, grazing, and recreation. Impacts related to soil erosion and subsequent water quality from other activities or resource uses (both existing and in the future) including timber management, ROWs, wildland fires, vegetation treatments, prescribed fire, livestock grazing, recreation, and water uses would continue.

Alternative B – Proposed Action:

Construction of the trail would involve clearing of vegetation and exposure of soil. Construction would temporarily increase the potential for erosion, and local short-term minor adverse effects on water quality and hydrology are possible. Soil erosion control measures would be implemented to contain sediment and minimize these effects. Soil erosion control measures during construction would include restricting construction activities to dry summer months, and stopping construction during inclement weather, until streamflows are seasonably low and soil/channel conditions are sufficiently dry and stable to allow construction to continue without the threat of substantial erosion, sedimentation, or off-site sediment transport. Appropriate erosion and sediment control BMPs would be applied to all disturbed surfaces during temporary construction delays. BMPs would include placement of readily available mulch materials (e.g., branches, coarse woody debris) and/or imported mulch materials (straw) to reduce runoff velocity and intercept sediment. Some of the proposed channel crossings might require work in stream channels that could contain flowing water during construction. Wherever possible, activities would be delayed until flow has ceased or is at lowest flow. Adverse effects would be reduced upon completion of trail construction.

The trail could increase potential for stormwater flow down segments of the trail. Trails may cause concentrated flow. Trail design and drainage features would minimize impacts by decreasing the length at which the water can concentrate. The trail alignment has been located away from existing water developments (dams and spillways). Crossing of creeks and drainages would increase the potential for erosion in the creek bed and increased sediment load in the stream. Low water crossings would be used for all waterbody crossings; culverts would not be installed. With sustained 24-hour rainfall events occurring at least once per year, maintenance of the trail might be required once per year; however major maintenance from intense storms with large runoff would probably be required only once every 5 years.

With implementation of erosion control measures during construction and use of the trail, it is not expected that implementation of the Proposed Action would affect the City of Grand Junction watershed, the Clifton watershed or the Palisade watershed. Impacts to groundwater resources are not anticipated.

*Finding for Public Land Health Standard 5 for Water Quality:*

Land Health Standard 5 is being met and it is not expected that implementation of the Proposed Action would cause Standard 5 to not be met. With the implementation of the proposed design features, impacts to water quality would be minimized to the extent that Public Land Health Standard 5 continues to be met. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, ROWs, vegetation treatments, and water uses could affect Land Health Standard 5.

## Cumulative Effects:

Cumulative effects to water resources under the Proposed Action would be similar to those under the No Action Alternative. With implementation of the proposed design features, impacts to water resources would be minimal. Impacts to water resources from other activities and uses (both existing and in the future) including timber management, livestock grazing, recreation, and water uses would continue.

### 3.3 BIOLOGICAL RESOURCES

#### 3.3.1 Invasive, Non-native Species

##### 3.3.1.1 Current Conditions:

Noxious weed surveys were conducted concurrently during surveys for special status plants within the appropriate survey areas (WestWater Engineering [WestWater] 2017a). Noxious weeds in the project area are few and scattered along the length of the trail alignment. Noxious weeds observed during surveys included Canada thistle (*Cirsium arvense*), common mullein (*Verbascum thapsus*), musk thistle (*Carduus nutans*), tamarisk (*Tamarix ramosissima*), whitetop (*Cardaria draba*), and cheatgrass (*Bromus tectorum*). An isolated tamarisk and whitetop patch were observed along the drainage where the lower portion of the trail would be located. Noxious weed location descriptions are provided in Table 10. Cheatgrass was not mapped due to its scattered and widespread distribution throughout the lower portions of the trail alignment.

**Table 10**  
**State Listed Noxious Weed Observations**

<b>Common Name</b>	<b>State Listing Status</b>	<b>Location description</b>
Canada thistle ( <i>Cirsium arvense</i> )	B List	Scattered occurrences along National Forest System lands
Cheatgrass ( <i>Bromus tectorum</i> )	C List	Widespread and scattered distribution along lower portions of trail on BLM-managed public lands
Common mullein ( <i>Verbascum thapsus</i> )	B List	Scattered along trail in Sections 5 and 6, T. 12S, R. 97W
Musk thistle ( <i>Carduus nutans</i> )	B List	Scattered along National Forest System lands.
Tamarisk ( <i>Tamarix ramosissima</i> )	B List	Scattered occurrence along drainage bottom near trail terminus
Whitetop ( <i>Cardaria draba</i> )	B List	Isolated occurrence along drainage bottom

### **3.3.1.2 Environmental Consequences:**

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but use of existing authorized and unauthorized trails in the area would continue. Social trails (0.57 mile) would not be rehabilitated under this alternative. Impacts resulting from spread and introduction of invasive non-native species as a result of implementation of the Proposed Action would not occur. However, existing impacts related to invasive non-native species from other activities and resource uses including timber management, livestock grazing, recreation, ROWs, wildland fire suppression, vegetation treatments, prescribed fire, public utility infrastructures, and water use would continue.

#### Cumulative Effects:

Cumulative effects of the No Action Alternative include weeds currently growing along transportation systems and other disturbed areas. These would continue and could increase with additional development related to timber management, livestock grazing, recreation, and water uses.

#### Alternative B – Proposed Action:

Soil disturbance and potential weed distribution due to surface disturbance, increased vehicle traffic, equipment placement and operation, foot traffic, and other activities associated with the Proposed Action could increase the presence of weed species and/or could introduce them into areas that are not currently infested with non-native species. The BLM and the Forest Service would be responsible for monitoring and treating noxious weeds. The Monitoring and Maintenance Plan would set forth the requirements for identifying and treating weed infestations. All equipment (including heavy equipment, hand tools, boots, waders, etc.) that has been previously used in a river, stream, lake, pond, or wetland would be disinfected per the following CPW procedures prior to moving the equipment between waterbodies to reduce the chance of introducing aquatic nuisance species. The trailheads and access points would be signed to educate visitors about noxious and invasive weeds, proper bicycle and equipment cleaning techniques, and the consequences of their activities. Special recreation permits would contain noxious weed management stipulations. Implementation of these measures would minimize impacts from invasive non-native species.

#### Cumulative Effects:

With implementation of the proposed design features described in the Proposed Action (Chapter 2), including a weed management program, the project would not add to other weed-infested areas. Developed recreation facilities (such as the trail, trailhead, and parking areas) are easier to manage than undeveloped recreation sites because they are confined to a set area. Weeds currently growing along transportation systems and other disturbed areas would continue and could increase with additional development related to timber management, livestock grazing, recreation, and water uses. Additional authorized development would have monitoring and control requirements.

### **3.3.2 Vegetation (includes a finding on Standard 3)**

#### **3.3.2.1 Current Conditions:**

Field surveys were conducted by WestWater during summer 2017 (WestWater 2017a). Vegetation types were determined through field identification of plants, aerial photography, and

on-the-ground assessment of plant abundance visible during the survey. Identification of plant species was aided by using pertinent published field guides (Whitson et al. 2006; Colorado Weed Management Association [CWMA] 2013; Kershaw et al. 1998; Weber and Wittman 2012; Ackerfield 2015) and descriptions of habitat provided by the Colorado Natural Heritage Program (CNHP) (Spackman et al. 1997 and CNHP 2017).

Three main ecological zones were classified along the Palisade Plunge Trail (montane, foothills, semidesert). Common plants observed in each ecological zone are described in Table 11. The nomenclature in the plant table is consistent with the U.S. Department of Agriculture NRCS Plants Database (NRCS 2017).

**Montane Zone:** The montane zone occurs on the Grand Mesa at the higher elevations and consists of spruce-fir forests, aspen woodlands with an understory of currant, rose and mixed forbs/grasses, grass and wet meadows, and mixed grasslands and shrublands. The tree height in this zone ranges from approximately 50 ft to 80 ft.

**Foothills Zone:** As the trail traverses over the rim of the Grand Mesa, it passes through the foothills zone and the vegetation community becomes predominately dense mountain shrublands composed of Gambel oak, mountain mahogany, and serviceberry; scattered pinyon-juniper woodlands are also present. The oakbrush shrublands are mature stands that range in height from 8 ft to greater than 20 ft.

**Semi-desert Zone:** The lower elevation portions of the trail enter into the semi-desert shrublands zone which is composed of sagebrush shrublands, and scattered pinyon-juniper woodlands with a mixed grass/forb understory.

**Table 11**  
**Common Plants Observed within Each Ecological Zone**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Montane Zone *Abundance</b>	<b>Foothills Zone *Abundance</b>	<b>Semi-desert Zone *Abundance</b>
Subalpine fleabane	<i>Erigeron peregrinus</i>	Xxx		
Alderleaf mountain mahogany	<i>Cercocarpus montanus</i>		Xx	X
Alpine lousewort	<i>Pedicularis scopulorum</i>	Xx		
Alpine Timothy grass	<i>Phleum alpinum</i>	Xx		
Antelope bitterbrush	<i>Purshia tridentate</i>	Xx	Xx	
Aquatic sedge	<i>Carex aquatilis</i>	Xx		
Arrowleaf balsamroot	<i>Balsamorhiza sagittata</i>	Xx	Xx	
Aspen	<i>Populus tremuloides</i>	Xx		
Ball cactus	<i>Pediocactus simpsonii</i>		X	X
Big sagebrush, Basin	<i>Artemisia tridentata</i> spp. <i>tridentata</i>		X	Xx
Big sagebrush, Wyoming	<i>Artemisia tridentata</i> spp. <i>wyomingensis</i>		Xx	X
Broom snakeweed	<i>Gutierrezia sarothrae</i>			Xx
Cheatgrass	<i>Bromus tectorum</i>		X	X
Chokecherry	<i>Prunus virginiana</i>		Xx	
Colorado blue columbine	<i>Aquilegia coerulea</i>	X		
Common twinpod	<i>Physaria acutifolia</i>		Xx	X

<b>Common Name</b>	<b>Scientific Name</b>	<b>Montane Zone *Abundance</b>	<b>Foothills Zone *Abundance</b>	<b>Semi-desert Zone *Abundance</b>
Cushion phlox	<i>Phlox pulvinata</i>		X	X
Desert madwort	<i>Alyssum desertorum</i>		X	X
Desert princesplume	<i>Stanleya pinnata</i>		X	X
Desert trumpet	<i>Eriogonum inflatum</i>		X	X
Dusty beardtounge	<i>Penstemon comarrhenus</i>	X	Xx	X
Dwarf blueberry	<i>Vaccinium cespitosum</i>	Xxx		
Edible valerian	<i>Valeriana edulis</i>	Xxx		
Elk sedge	<i>Carex geyeri</i>	Xxx	Xx	
Englemann spruce	<i>Picea engelmannii</i>	Xx		
<i>Eriogonum ovalifolium</i>	Cushion buckwheat		X	X
European stickseed	<i>Lappula squarrosa</i>	X	X	X
Fourwing saltbush	<i>Atriplex canescens</i>			Xx
Gambel oak	<i>Quercus gambelii</i>		Xxx	
Geyer willow	<i>Salix geyeriana</i>	Xx		
Herb Sophia	<i>Descurainia sophia</i>		X	X
Indian ricegrass	<i>Achnatherum hymenoides</i>		X	Xx
James' galleta	<i>Pleuraphis jamesii</i>			Xxx
Kentucky bluegrass	<i>Poa pratensis</i>	Xx	X	
Larkspur spp.	<i>Delphinium spp.</i>	Xx		
Lewis flax	<i>Linum lewisii</i>	Xx	X	X
Longleaf phlox	<i>Phlox longifolia</i>		Xx	Xx
Lupine spp.	<i>Lupinus spp.</i>	Xx		
Mormon tea	<i>Ephedra viridis</i>			Xx
Mountain big sagebrush	<i>Artemisia tridentatassp. vaseyana</i>	Xx		
Mountain brome	<i>Bromus marginatus</i>	Xxx		
Mountain pepperweed	<i>Lepidium montanum</i>			
Mountain snowberry	<i>Symphoricarpos oreophilus</i>	X	X	
Northwest territory sedge	<i>Carex utriculata</i>	Xxx		
Fivenerve helianthella	<i>Helianthella quinquenervis</i>	Xxx		
Pinyon pine	<i>Pinus edulis</i>		Xx	Xx
Plainleaf willow	<i>Salix planifolia</i>	Xx		
Plains pricklypear	<i>Opuntia polyacantha</i>		Xx	Xx
Rayless tansyaster	<i>Machaeranthera grindelioides</i>		Xx	X
Rock goldenrod	<i>Petradoria pumila</i>	X	Xx	X
Rocky Mountain maple	<i>Acer glabrum</i>	X	X	
Roughseed cryptantha	<i>Cryptantha flavoculata</i>		Xx	Xx
Roundleaf snowberry	<i>Symphoricarpos rotundifolius</i>	Xx	X	
Rubber rabbitbrush	<i>Ericameria nauseosa</i>		Xx	Xx
Rushy milkvetch	<i>Astragalus lonchocarpus</i>		X	X
Sandberg bluegrass	<i>Poa secunda</i>	X	Xx	Xx
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	X	Xxx	X

<b>Common Name</b>	<b>Scientific Name</b>	<b>Montane Zone *Abundance</b>	<b>Foothills Zone *Abundance</b>	<b>Semi-desert Zone *Abundance</b>
Scarlet gilia	<i>Ipomopsis aggregata</i>	Xx	Xx	Xx
Sego lily	<i>Calochortus nuttallii</i>	X	X	X
Shadscale saltbush	<i>Atriplex confertifolia</i>			Xx
Shrubby cinquefoil	<i>Potentilla fruticosa</i>	Xxx		
Silvery lupine	<i>Lupinus argenteus</i>	Xx	X	
Singleleaf ash	<i>Fraxinus anomala</i>			X
False hellebore	<i>Veratrum tenuipetalum</i>	Xx		
Skunkbush sumac	<i>Rhus trilobata</i>			Xx (along drainageways)
Smooth brome	<i>Bromus inermis</i>	Xx		
Spanish bayonet	<i>Yucca harrimaniae</i>			x
Subalpine fir	<i>Abies lasiocarpa</i>	Xx		
Sulphur-flower buckwheat	<i>Eriogonum umbellatum</i>	Xx	X	
Tapertip onion	<i>Allium acuminatum</i>		X	X
Tarragon	<i>Artemisia dracunculus</i>		X	Xx
Tiny trumpet	<i>Collomia linearis</i>		X	X
Utah juniper	<i>Juniperus osteosperma</i>		X	Xx
Utah serviceberry	<i>Amelanchier utahensis</i>		Xxx	X
Utah sweetvetch	<i>Hedysarum boreale</i>		X	X
Western wheatgrass	<i>Pascopyrum smithii</i>		X	X
Western yarrow	<i>Achillea millefolium</i>	X	Xx	X
White stem gooseberry	<i>Ribes inerme</i>	Xx		
Winterfat	<i>Krascheninnikovia lanata</i>			X
Woods' rose	<i>Rosa woodsii</i>	Xx	Xx	
Yellow marsh marigold	<i>Caltha palustris</i>	Xx		
Yellow milkvetch	<i>Astragalus flavus</i>		Xx	Xx
Yellow paintbrush	<i>Castilleja flava</i>	Xx		
Yellow rabbitbrush	<i>Chrysothamnus viscidiflorus</i>	Xxx	X	
Yellow salsify	<i>Tragopogon dubius</i> subsp. <i>Major</i>		X	Xx

\*Abundance: .  
 Xxx= High frequency with uniform distribution.  
 Xx= Moderate frequency: occurrence scattered throughout.  
 X= Infrequent: only a small number of individuals noted.

#### *Finding on Public Land Health Standard 3 for Plant Communities:*

The Whitewater-Kannah Creek and Kannah-Plateau LHAs coincide with the project area on BLM-managed public lands. According to the LHAs, plant communities in the project area are meeting Land Health Standard 3 (BLM 2015b), which states that healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.



### 3.3.2.2 Environmental Consequences:

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but use of existing authorized and unauthorized trails in the area would continue. Rehabilitation of 0.57 mile of existing social trails would not occur. No project-related impacts affecting vegetation would occur from implementation of the Proposed Action. Currently permitted activities and other ongoing activities in the project area, and associated impacts, would continue. These include activities and impacts associated with timber management, livestock grazing, recreation, ROWs, wildland fire suppression, vegetation treatments, prescribed fire, public utility infrastructures, and water use.

#### *Finding on Public Land Health Standard 3 for Plant Communities:*

Land Health Standard 3 is being achieved (BLM 2015b). The No Action Alternative would not cause changes to Land Health Standard 3 from implementation of the Proposed Action. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, ROWs use and maintenance, wildland fire suppression, vegetation treatments, prescribed fire, and water uses could affect Land Health Standard 3.

#### Cumulative Effects:

Cumulative effects under the No Action Alternative impacting vegetation include fire control, fuels reduction and treatment projects, livestock grazing, timber management, and recreation. Impacts to vegetation from these other activities and resource uses are expected to continue and may increase with increased activity or development.

#### Alternative B – Proposed Action:

The Proposed Action would require the construction of trail tread varying from 18 to 30 inches wide, and the area of disturbance during construction would be up to 48 inches wide. In addition to the vegetation removal and soil disturbance associated with the trail tread, vegetation would be trimmed to create a travel corridor up to 6 ft wide and 7 ft tall (12 ft tall for the upper trail where equestrian use would be permitted). Trail design features and BMPs would control drainage and erosion so that impacts would not extend beyond this trail corridor.

Construction of the new trailhead at Shirttail Point would require clearing of an area 60 ft wide by 150 ft long and spreading gravel for the parking area and associated facilities. An area of about 10 ft x 20 ft would also be required for equipment caches. Vegetation in this area would be cleared because the equipment would be placed in a small shed upon a concrete slab. Specific locations for helispots and equipment storage sheds have not been identified. Vegetation removal for construction of the trailhead and for the storage shed would be long-term impacts to vegetation. Developing and maintaining helispots would include trimming vegetation to 2 ft or less in height over an area covering 100 ft by 100 ft. Twenty-two potential helispot locations were identified. It is unlikely that all of these locations would be used or would require vegetation cutting and mowing. If vegetation cutting and mowing become necessary at all of these locations, then up to 5 acres of vegetation could be disturbed. Large woody vegetation would likely need to be completely removed but herbaceous and shrub vegetation could be left in place and would likely survive being trimmed.

The trail alignment has been designed to incorporate existing natural features as well as avoid or minimize impact to areas that would provide habitat or special features for sensitive species.

Although construction of the trail would impact vegetation within Subalpine, Montane, and Semi-desert Zones, the amount of vegetation removed within each vegetation zone would be negligible when considering the amount of similar vegetation types available within vegetation communities surrounding the trail.

*Finding on Public Land Health Standard 3 for Plant Communities:*

Land Health Standard 3 is being met and it is not expected that implementation of the Proposed Action would cause Standard 3 to not be met. With implementation of the design features provided in the Proposed Action (Chapter 2), impacts to vegetation would be minimized to the uses in the project area including timber management, livestock grazing, recreation, and water uses that could affect Land Health Standard 3.

Land Health Standard 3 is being achieved and it is not expected that implementation of the Proposed Action would cause Standard 3 to not be met.

Cumulative Effects:

Cumulative effects under the Proposed Action would be similar to the No Action Alternative. Construction of the trail would represent a small but permanent addition to the cumulative vegetation impacts within the project area. Other existing and future activities and resource uses impacting vegetation including fire control, fuels reduction and treatment projects, livestock grazing, timber management, ROW maintenance, and recreation are expected to continue and increase with increased activity or development.

### **3.3.3 Wetlands and Riparian Zones (includes a finding on Standard 2)**

#### **3.3.3.1 Current Conditions:**

The trail alignment was evaluated for the presence of riparian zones and wetlands. Prior to performing the delineation, biological surveys were conducted along the entire trail alignment between May and August of 2017 and potential wetland areas were identified. The identified areas were re-evaluated for wetland characteristics during September 2017 (WestWater 2017b). All wetlands and Waters of the United States (WoUS) were identified and delineated within 25 ft of the trail centerline. On the basis of wetland vegetation, soils, and hydrology, 12 wetland areas equaling 0.69 acre were identified and delineated; eight were wet meadow habitats (palustrine emergent) dominated by sedge species (*Carex* spp.), and four were scrub wetlands (scrub-shrub riverine) dominated by willows (*Salix* spp.).

The wetlands are located on the top of the Grand Mesa, or along creeks on the upper slopes, which drain from the summit. No wetland or riparian areas were identified along the lower portions of the trail, on arid BLM-managed public lands. The only exception is the cottonwood riparian zone along the Colorado River, which would not be impacted by trail construction. The surface water and shallow groundwater which support the wetlands and creeks on the Mesa consist of snowmelt which accumulates in surface depressions or percolates into the well-drained basalt soils and recharges groundwater supplies. The deep snowpack and flat topography of the Grand Mesa's plateau facilitates the development of extensive wet meadow complexes, and willow carrs dominate in the riparian corridor along the larger drainages such as Deep Creek and Whitewater Creek. According to the National Wetland Inventory coverage, approximately 380 emergent-forested-shrub wetlands have been delineated on the Grand Mesa plateau within the Kannah Creek – Gunnison River 5<sup>th</sup> field watershed and cover approximately 1,500 acres, not including fringe wetlands that occur along drainages.

Wetlands classified as palustrine emergent were located on the top of the Grand Mesa. Dominant vegetation in these wetlands included beaked sedge (*Carex utriculata*), tufted hairgrass (*Deschampsia caespitosa*), leafy tussock sedge (*Carex aquatilis*), marsh marigold (*Caltha leptosepala*), small-leaf angelica (*Angelica pinnata*), and arctic rush (*Juncus arcticus*). Wetlands classified as scrub-shrub riverine were located along the creeks draining from the top of the Grand Mesa. Dominant vegetation in these wetlands include narrowleaf willow (*Salix exigua*) and Geyer willow (*Salix geyeriana*), with an understory of marsh marigold and beaked sedge. The general condition of all wetlands was found to be good, with vigorous plant growth and well-developed hydrology.

*Finding for Public Land Health Standard 2 for Riparian Systems:*

There are no riparian zones on BLM-managed public land and the Forest Service does not make land health findings for wetlands.

### **3.3.3.2 Environmental Consequences:**

Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved. Existing use of authorized and unauthorized trails in the area would continue and could possibly increase. Rehabilitation of 0.57 mile of existing social trails would not occur. No project-related impacts to wetland and riparian areas from the Proposed Action would occur. Currently permitted activities and other ongoing activities in the project area such as timber management, livestock grazing, recreation, ROWs, wildland fire suppression, vegetation treatments, prescribed fire, public utility infrastructures, and water use would continue.

*Finding for Public Land Health Standard 2 for Riparian Systems:*

There are no riparian zones on BLM-managed public land and the Forest Service does not make land health findings for wetlands.

Cumulative Effects:

Cumulative effects under the No Action Alternative impacting wetlands include use of existing trails, roads, livestock grazing, and other recreation. Some activities that have the potential to impact wetlands would require permitting under Section 404 of the Clean Water Act, which would help to avoid or minimize impacts. Some activities are exempt from regulation under the Clean Water Act, including cattle grazing and timber harvest while other activities would cause incidental impact to wetlands. These activities could alter hydrology or directly damage wetlands in the future. Impacts to vegetation from these other activities and resource uses are expected to continue and increase with increased activity or development.

Alternative B – Proposed Action:

Direct impacts to wetlands would be limited to the extent of the trail disturbance (approximately 48 inches in width). Reducing the width of the trail through the wetlands would minimize impacts.

At points where the trail crosses wetlands, drainage structures, rock turnpikes, and armoring would be installed to create a stable trail tread. No bridges, boardwalks, or culverts are currently proposed for any of the wetland crossings because these structures can cause more damage than benefit in smaller systems. They often require substantial maintenance or can cause a lot of damage. Installation and maintenance would substantially increase the disturbance footprint. The

features necessary to create a stable trail tread within a wetland are unlikely to interrupt the underlying groundwater flows that support the wetlands, but do have the potential to interrupt surface water flow and potentially impact portions of the wetlands downgradient from the crossings. Surface water crossings have the potential to cause impacts by collecting, redirecting, and concentrating surface flows along the trail tread, and thereby causing erosion and discharge of sediment in areas adjacent to the trail. As a design feature of the project, streams would be crossed perpendicular to the trail alignment.

Impacts to wetlands would be mitigated by application of construction measures from the Forest Service National Core BMP Technical Guide (Forest Service 2012a), which were developed to improve management of water quality consistent with the Clean Water Act.

*Finding for Public Land Health Standard 2 for Riparian Systems:*

No riparian zones/wetlands would be affected by the Proposed Action on BLM-managed public lands; therefore, implementation of the Proposed Action would not contribute to Land Health Standard 2 to not be met. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, and water uses could affect Land Health Standard 2.

**Cumulative Effects:**

Cumulative effects under the Proposed Action would be similar to those under the No Action Alternative. Construction of the trail would represent a small addition to the cumulative wetland impacts within the project area. Activities and resource uses altering hydrology or directly impacting wetlands are expected to continue and increase with increased activity or development.

### **3.3.4 Threatened, Endangered, and Sensitive Species (includes a finding on Standard 4)**

#### **3.3.4.1 Current Conditions:**

##### **Federally Listed Species**

The USFWS (2017a) identified 11 species listed as threatened, endangered, or candidate species under the Endangered Species Act (ESA) that should be considered in effects analysis for the Proposed Action (see Table 12). The species include two mammals; Canada lynx (*Lynx canadensis*) listed as threatened and North American wolverine (*Gulo gulo luscus*), which is proposed for listing as threatened. The USFWS also identified two birds; Mexican spotted owl (*Strix occidentalis lucida*) and yellow-billed cuckoo (*Coccyzus americanus*), both listed as threatened and five fish; including the four endangered Colorado River fish species and their designated critical habitats downstream from the project and the Greenback cutthroat trout (*Oncorhynchus clarki stomias*). Two plant species were identified; Colorado hookless cactus and DeBeque phacelia (*Phacelia submutica*).

A determination of “no effect” was made for eight listed species including Mexican spotted owl, yellow-billed cuckoo, Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), bonytail chub (*Gila elegans*), greenback cutthroat trout, and DeBeque phacelia. The BLM also determined the Proposed Action is “Not Likely to Jeopardize the continued existence” of the North American wolverine. A determination of “no effect” or “not likely to jeopardize the continued existence” is the appropriate conclusion when the action agency determines that the Proposed Action would not affect listed species or proposed species respectively (USFWS and National Marine Fisheries Service [NMFS] 1998).

On December 20, 2017, the USFWS agreed with these determinations (USFWS 2017b). These species are not discussed further in this EA.

Based on species' ranges and available habitat within the project area, one ESA-plant species, the Colorado hookless cactus, and one ESA-wildlife species, the Canada lynx, are included for additional analyses of project effects. A determination of "May Affect, Not Likely to Adversely Affect" was made for both the Canada lynx (critical habitat for Canada lynx is not designated in Colorado) and for the Colorado hookless cactus (critical habitat is not designated).

**Canada Lynx.** Canada lynx occupy boreal, sub-boreal, and western montane forests (Ruediger et al. 2000) and in mesic coniferous forests that have cold, snowy winters and provide a prey base of snowshoe hare (*Lepus americanus*) (Ruggiero et al. 1999). In the western United States, they are associated with subalpine fir, Engelmann spruce, and also mesic lodgepole pine (*Pinus contorta*) and aspen cover types when mixed with subalpine fir habitat types. Primary Suitable Canada lynx habitat in Colorado is found roughly between 10,000 ft and 12,000 ft elevation (Ruediger et al. 2000). Lower montane forests are likely important for movement and dispersal.

**Table 12**  
**Federally Listed Species that May Occur in the Project Area<sup>1</sup>**

Listed Species	ESA Status <sup>2</sup>	Critical Habitat	Potential for Effect
<b>Mammals</b>			
Canada lynx <i>Lynx Canadensis</i>	Threatened	None Designated in Colorado	Not Likely to Adversely Affect
North American wolverine <i>Gulo gulo luscus</i>	Proposed Threatened	None Proposed	Not Likely to Jeopardize the continued existence
<b>Birds</b>			
Mexican spotted-owl <i>Strix occidentalis lucida</i>	Threatened	Not in Project Area	No Effect
Yellow-billed cuckoo <i>Coccyzus americanus</i>	Threatened	Yes	No Effect
<b>Fish</b>			
Colorado <i>Ptychocheilus lucius</i>	Endangered	Yes	No Effect
Razorback sucker <i>Xyrauchen texanus</i>	Endangered	Yes	No Effect
Humpback chub <i>Gila cypha</i>	Endangered	Yes	No Effect
Bonytail chub <i>Gila elegans</i>	Endangered	Yes	No Effect
Greenback cutthroat trout <i>Oncorhynchus clarki stomias</i>	Threatened	None Designated	No Effect
<b>Plants</b>			
Colorado Hookless Cactus <i>Sclerocactus glaucus</i>	Threatened	None Designated	Not Likely to Adversely Affect
DeBeque Phacelia <i>Phacelia submutica</i>	Threatened	Yes	No Effect
<sup>1</sup> Source: USFWS 2017a.			
<sup>2</sup> ESA Status = Endangered Species Act Status.			
<sup>3</sup> Critical habitats designated in the BLM GJFO and/or in the GMUG are indicated by "Yes."			

Densely regenerating conifer forests typically produce the highest densities of snowshoe hares (Koehler 1990; Koehler and Aubry 1994). Conifer-aspen forests with dense regeneration or with an extensive shrub and woody debris understory may be important for snowshoe hare or other prey species (Ruediger et al. 2000). Extensive stands of pure aspen are likely poor lynx foraging habitat, unless intermixed with spruce-fir or young lodgepole pine stands. Snowshoe hare are the primary prey of Canada lynx (Koehler and Aubry 1994), but red squirrels (*Tamiasciurus hudsonicus*) are an important alternative prey species (Koehler 1990; Ruediger et al. 2000). Shenk (2004 to 2009) indicated that among reintroduced radio-collared lynx in Colorado, 69 percent of their diet was comprised of snowshoe hare, and 27 percent of their diet was red squirrel, with other mammals and birds comprising a minor dietary component (and are mostly consumed in the summer months).

As a forest interior species, lynx generally confine their movements to forested or densely wooded habitats, rarely venturing far from cover, which provides not only foraging opportunities but also concealment from potential predators (including coyotes [*Canis latrans*] and mountain lions [*Felis concolor*]) (Ruggiero et al. 1999; Ruediger et al. 2000; Squires and Laurion 2000; Interagency Lynx Biology Team [ILBT] 2013). Suitable travel habitat may be defined as vegetation greater than 6 ft in height that supports a closed canopy. This definition could include densely regenerating aspen, riparian corridors, and tall willow stands, as well as conifer forests. For optimum habitat effectiveness, travel habitats should connect foraging, denning, and security habitats within an animal's home range.

The Grand Mesa supports a relatively large block of suitable lynx habitat. Although some of the habitat present is patchy and interspersed by large subalpine meadows and parks at the western end of the Grand Mesa, it could support around ten lynx home ranges (based on average home range sizes). Existing land uses may reduce local habitat effectiveness, but overall, the Grand Mesa supports a large area of viable habitat.

Coniferous forests on the Grand Mesa commonly support extensive areas with suitable snowshoe hare habitats (mature trees with low, sweeping branches and high amounts of coarse woody debris), which can support more permanent and year-round lynx residency. The further west on the Grand Mesa, the more open and naturally fragmented spruce-fir forests become. In the vicinity of the proposed trail route, coniferous forests become increasingly fragmented by subalpine meadows, which reduces habitat for snowshoe hares and additionally reduces habitat connectivity for snowshoe hares; the most western portions on the Grand Mesa are outside of Lynx Analysis Units (LAUs), given the lack of suitable coniferous habitats.

Within some stands of spruce-fir forests adjacent to the proposed trail alignment (especially near the eastern trailhead), forest management has removed trees recently killed by spruce beetle; in these stands, live coniferous cover has been reduced, which diminishes the quality of these stands for snowshoe hare, but there are still ample amounts of coarse woody debris to provide thermal and hiding cover for snowshoe hares and to allow for intra-stand habitat connectivity. Where coniferous stands become more isolated by subalpine meadows, there is still some snowshoe hare habitat within these small forest patches, but the density and abundance of snowshoe hares in these isolated patches would be too low to support the needed hunting and foraging opportunities to support lynx residency.

The Grand Mesa is also connected to the main spur of the Rocky Mountains via the Elk Mountains to the east and the West Elk Mountains to the south. These are the most likely routes (particularly the former) that animals dispersing from core areas would use to access and colonize the Grand Mesa. The Grand Mesa is a western terminus of contiguous montane and subalpine life zones extending west of Colorado's Rocky Mountains. As such, surrounded by desert life zones at elevations between 4,600 to 5,000 ft to the north and west, the Grand Mesa does not provide optimal habitat for west and northbound movements. The only existing landscape linkage or dispersal corridor on the Grand Mesa is on the far northeastern side of the Mesa. Because of these limited linkage corridors on the Mesa, it may take longer for the area to be initially located by lynx and colonized by several animals, which could initiate a subpopulation. However, this relatively large habitat block should remain "connected" to the main metapopulation, suggesting that long-term population viability could occur in this area.

Habitat connectivity across the project area is good. SH-65 is a relatively lower-speed highway with speed limits ranging from 35 to 55 miles per hour (CDOT 2018). Annual Average Daily Traffic (AADT) in Mesa County is 520 vehicles per day and in Delta County AADT ranges from 460 vehicles per day to 850 vehicles per day. Other roads in the area are generally low-speed, gravel roads. The terrain on the mesa top is generally level, and movement and dispersal would be easy for lynx. Aside from diurnal winter and summer recreation (see discussion below), there are no notable natural features, and little human developments or other anthropogenic factors that would restrict lynx utilization of the area, for at least dispersal and diurnal security habitat use. The mesa top has a very extensive winter recreation program (see discussion below), which may reduce selection of the western end of the Grand Mesa for more residency by lynx.

**Colorado Hookless Cactus.** Colorado hookless cactus is a federally listed threatened plant (USFWS 1979) that occurs on river benches, valley slopes, and rolling hills in Delta, Garfield, Mesa, and Montrose counties, Colorado (USFWS 1990). In 1979, the species was listed as *Sclerocactus glaucus*, with the common name as Uinta Basin hookless cactus. The USFWS (2007) identified three separate species that were formerly included within the *Sclerocactus glaucus*-complex to include *Sclerocactus brevispinus* (Pariette cactus), *S. glaucus* (renamed the Colorado hookless cactus), and *S. wetlandicus* (Uinta Basin hookless cactus). The USFWS (2009) revised the taxonomy of the 1990 listed *S. glaucus*, previously considered a complex (USFWS 1990), to recognize three distinct species: Pariette cactus (*S. brevispinus*), Colorado hookless cactus (*S. glaucus*), and redefined Uinta Basin hookless cactus (*S. wetlandicus*). All three species remain listed as threatened until the USFWS can conduct a five-factor analysis for each species to reevaluate status and evaluate the necessary elements for critical habitat (USFWS 2009). This rule became effective on October 15, 2009. Subsequent discussion within this EA focuses on the Colorado hookless cactus (*S. glaucus*), as described by the USFWS (2009).

Populations of Colorado hookless cactus occur primarily on alluvial benches (soils deposited by water) along the Colorado and Gunnison rivers and their tributaries within xeric, fine-textured soils overlain with cobbles and pebbles. It is known from Delta, Garfield, Mesa, and Montrose counties in Colorado (CNHP 2014). It grows in salt desert shrub, including species such as shadescale (*Atriplex confertifolia*), galleta grass (*Pleuraphis jamesii*), black sagebrush (*Artemisia nova*), and Indian ricegrass (*Achnatherum hymenoides*), as well as big sagebrush (*Artemisia tridentata*) and pinyon-juniper communities, at elevations ranging from 3,900 to 6,500 ft (USFWS 2010; CNHP 2014). Recent surveys have recorded the cactus at elevations up to 7,200 ft in the BLM Uncompahgre Field Office.



The Colorado hookless cactus is a perennial herb that produces pink flowers. Reproduction is predominantly sexual, although individuals may sprout multiple stems. Flowering occurs April to May and fruiting occurs May to June. Bees, flies, beetles, and ants have been observed visiting flowers. However, typical pollinators include the honeybee (*Apis mellifera*) and native bees in the genera *Eucera*, *Ashmeadiella*, *Heriades*, *Agapostemon*, and *Lasioglossum* (Rechel et al. 1999). Once seeds are released, they are dispersed primarily by ants (Rechel et al. 1999), but also by gravity or water flow (USFWS 1990).

The Colorado hookless cactus is located within approximately 1,395 square miles (83,039 acres) in the upper Colorado River and Gunnison River valleys of western Colorado. Approximately 3,400 acres are occupied and include approximately 23,000 individuals documented within 93 CNHP element occurrence records, although some of these individuals are historic because approximately 21 of the element occurrences have not been observed in over 20 years (CNHP 2014). Since 2014 more than 5,000 additional cacti have been recorded in the BLM GJFO. The majority of known cactus populations are located on BLM-administered lands (60 percent), with other important populations on tribal, state, and private lands. Populations on private lands are primarily near De Beque and Whitewater, Colorado (USFWS 2006; Lyon et al. 1996).

There are two population centers of Colorado hookless cactus in Colorado: 1) on alluvial river terraces of the Gunnison River extending from near Delta, Colorado to southern Mesa County, Colorado, and 2) on alluvial river terraces of the Colorado River and in the Roan Plateau bisected by Roan Creek tributaries in the vicinity of De Beque, Colorado. Samples of Colorado hookless cactus were collected from 27 populations within the Colorado River and Gunnison River drainage groups to determine genetic diversity; a preliminary report indicates that all populations of Colorado hookless cactus show moderate levels of genetic diversity (McGlaughlin and Ramp-Neale 2012). The study has also identified hybridization between Colorado hookless cactus and fishhook cactus (*S. parviflorus*), but it is limited. A greater frequency of hybridization has been observed in the Gunnison River drainage group.

Denver Botanic Gardens, in collaboration with the BLM have studied ten populations across the range of the Colorado hookless cactus since 2007. Monitoring of these populations indicates the species is stable throughout its range including the BLM GJFO (Denver Botanic Gardens 2013), although in the northeastern portion of the species' range, the BLM Colorado River Valley Field Office has detected a downward trend at several locations, generally attributed to cheatgrass invasion (USFWS 2010).

Anthropogenic threats to this species include oil and gas development, which could fragment and destroy habitat, increase erosion and soil compaction, and increase fugitive dust that could accumulate on cacti and decrease plant growth, vigor, and water use efficiency (up to 300 meters from roads). Oil and gas development could increase road density, which could increase OHV use, illegal collecting, and weed invasions (USFWS 2010). Approximately 26 percent of potential habitat occurs on State, private, or local government lands that generally do not provide protection of plants; therefore, destruction of plants and habitat in these areas is a more recent recognized threat to this species (USFWS 2010).

Fire could also threaten Colorado hookless cactus, similar to effects observed for fishhook barrel cactus (*Ferocactus wislizenii*; see Matthews 1994), although the thick cortex associated with barrel cacti, especially within older individuals, may increase resistance to fire. Fire could result in mortality to cacti as a direct result of fire damage to the apex, especially within shorter plants

(less than 1 ft), or as an indirect result from burning of spines that could increase successful herbivory. Mortality generally occurs within the first 2 years of a fire, and was observed to be significantly greater within closed vegetation types rather than open areas. Climate change could also affect long-term persistence of Colorado hookless cactus, especially if more frequent or prolonged drought conditions occur (USFWS 2010). Unauthorized recreation off designated trails or creation of additional trails could increase the potential for impact to cactus plants.

A recovery outline was prepared for the Colorado hookless cactus in April 2010 (USFWS 2010). The recovery outline recommends changing the recovery priority rank to 8C rather than the recovery priority of 14C provided in the current recovery plan for the Uinta Basin hookless cactus complex (presently recognized as three distinct species – see USFWS 2009) that was released by the USFWS in 1990 (USFWS 1990). The recommended change in recovery priority from 14c to 8c recognizes that the Colorado hookless cactus faces a moderate degree of threat rather than low degree of threat considering the more limited range than the previous “Uinta Basin hookless cactus,” and continues to have a high potential for recovery (USFWS 2010). The 2010 recovery outline for Colorado hookless cactus envisions sizable, stable populations with acceptable levels of connectivity between subpopulations for pollinator movement, gene flow, and seed dispersal. Three recovery actions include: 1) survey to accurately document populations and suitable habitat, 2) protect and restore habitat including pollinator habitat and corridors to provide connectivity, and 3) protect individual plants and populations from direct and indirect threats.

Surveys for Colorado hookless cactus were conducted by WestWater (2017a) during May 2017 within 25 meters of either side of the proposed trail alignment from the terminal of the trail to approximately 7,000 ft in elevation in accordance with the GJFO Special Status Plant Species Protocol (BLM 2016a). A total of 31 cactus plants were observed during project survey efforts.

### **Forest Service and BLM Sensitive Species**

The Forest Service Region 2 (R-2) Regional Forester (Forest Service 2017a) and GMUG identified 57 species of sensitive terrestrial wildlife (12 species), birds (18 species), amphibians (two species), invertebrates (three species), fish (five species) and plants (17 species) that could occur within the GMUG (see Table 1 in Attachment B). BLM’s State Director (BLM 2015c) identified 46 species of sensitive terrestrial wildlife (seven species), birds (eight species), amphibians and reptiles (four species), fish (four species), invertebrates (one species), and plants (22 species) that are known or could occur in the GJFO management area. During 2017, WestWater (2017a) conducted surveys for the Proposed Action to determine if suitable habitat for sensitive species within the Regional Forester list (Forest Service 2017a) and the BLM’s State Director list (BLM 2015c) was present, to identify and map occurrences of sensitive plant and wildlife species, and locate raptor and migratory bird nests and/or document occurrences.

Based on habitat types present, survey results, and known distribution of sensitive terrestrial wildlife, fish, invertebrates, and plants, 27 sensitive species included on the Forest Service and BLM sensitive species lists are known or could occur in the project area. Table 13 includes summaries of habitat associations and observed or potential use by these species. Additional information on species that are included on the Forest Service sensitive list is provided in the Biological Evaluation/Management Indicator Species Report (BE/MIS Report) (Attachment B).

**Table 13**  
**GMUG and GJFO Sensitive Species with Potential for Occurrence in the Project Area**

Species and Status	Habitat Association	Agency	Potential for Occurrence?
<b>Mammals</b>			
Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> )	Widespread across shrublands and montane forests, needs caves, mines, or structures for roosts/hibernacula	FS, BLM	Suitable foraging and roosting habitat throughout project area
Spotted bat ( <i>Euderma maculatum</i> )	Wide range of habitats from desert shrub to coniferous forest	FS, BLM	Suitable foraging and roosting habitat throughout project area
Hoary bat ( <i>Lasiurus cinereus</i> )	Deciduous woodlands, roosts in dense foliage	FS	Suitable foraging and roosting habitat present below Grand Mesa
Fringed myotis ( <i>Myotis thysanodes</i> )	Ponderosa pine/pinyon-juniper woodlands and oak brush	FS, BLM	Suitable foraging and roosting habitat present below Grand Mesa
American marten ( <i>Martes americana</i> )	Montane and boreal forests with higher amounts of coarse woody debris	FS	Suitable habitat present in Grand Mesa
Pygmy shrew ( <i>Sorex hoyi</i> )	Mesic forests and riparian areas	FS	Suitable habitat present
<b>Birds</b>			
Northern goshawk ( <i>Accipiter gentilis</i> )	Montane and boreal forests	FS, BLM	Suitable nesting, roosting, and foraging habitat: occupied nest observed on National Forest System lands; foraging observed on top of mesa
Golden eagle ( <i>Aquila chrysaetos</i> )	Desert to mountain habitats, nests on large cliffs	BLM	Suitable nesting, roosting, and foraging habitat: occupied nest observed on City of Grand Junction lands; incidentally observed on National Forest System lands
Boreal owl ( <i>Aegolius funereus</i> )	Boreal forests	FS	Suitable habitat in spruce/fir forests
Northern harrier ( <i>Circus cyaneus</i> )	Moist meadows, grasslands, low shrublands	FS	Foraging habitat present on top of the Grand Mesa: nesting not suspected
Olive-sided flycatcher ( <i>Contopus cooperi</i> )	Montane and boreal forests around openings	FS	Suitable habitat present
American peregrine falcon ( <i>Falco peregrinus anatum</i> )	Widespread, needs large cliffs for nesting	FS, BLM	Nesting, roosting, foraging habitat present: occupied nest observed on BLM lands; incidentally observed on National Forest System lands
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Summers near larger rivers and reservoirs/lakes, winters along larger open rivers	FS, BLM	Foraging habitat present
Lewis's woodpecker ( <i>Melanerpes lewis</i> )	Montane deciduous woodlands (aspen and cottonwood), in ponderosa pine as well	FS	Suitable habitat present in aspen woodlands below the Grand Mesa rim
Flammulated owl ( <i>Otus flammeolus</i> )	Ponderosa pine woodlands, aspen stands on western slope	FS	Suitable nesting and foraging habitat below rim of Grand Mesa
Purple martin	Aspen stands near open water or larger	FS	Suitable habitat present across

Species and Status	Habitat Association	Agency	Potential for Occurrence?
<i>(Progne subis)</i>	wetlands		Grand Mesa
<b>Amphibians</b>			
Boreal toad <i>(Anaxyrus boreas boreas)</i>	Montane and boreal wetlands	FS, BLM	Suitable habitat present across Grand Mesa
Northern leopard frog <i>(Lithobates pipiens)</i>	Grassy wetlands in montane areas	FS, BLM	Suitable habitat present across Grand Mesa
<b>Reptiles</b>			
Midget faded rattlesnake <i>(Crotalus viridis concolor)</i>	Pinyon-juniper woodlands, sagebrush steppe, rocky canyons and outcrops	BLM	Suitable habitat present in lower portion of trail alignment; observed on BLM lands
Long-nosed leopard lizard <i>(Gambelia wislizenii)</i>	Semi-desert shrublands and areas of open junipers with rodent burrows and bare soil or sparse vegetation in lower elevations.	BLM	Suitable habitat present in lower portion of trail alignment
<b>Insects</b>			
Western bumblebee <i>(Bombus occidentalis)</i>	Widespread in areas with wildflower food sources	FS	Suitable habitat widespread
Monarch butterfly <i>(Danaus plexippus)</i>	Widespread, but requires milkweeds for caterpillars	FS	Suitable habitat present, especially on top of Grand Mesa
<b>Fish</b>			
“Blue Lineage” Colorado River cutthroat trout <i>(Oncorhynchus clarkii c.f. pleuriticus)</i>	Montane streams	FS, BLM	Present in Whitewater Creek; downstream in Brandon Ditch
<b>Plants</b>			
Narrow-stem gilia <i>(Aliciella stenothyrsa)</i>	Silty to gravelly loam soils derived from the Green River or Uinta formations. Grassland, shrubland, and P/J communities. Elev. 5,000 to 6,000 ft. Occurs in Mesa and Rio Blanco counties	BLM	Suitable habitat present; observed on BLM lands
Naturita milkvetch <i>(Astragalus naturitensis)</i>	Sandstone mesas, ledges, crevices, and slopes in pinyon-juniper woodlands; 5,000 to 7,000 ft	BLM	Suitable habitat present
Paradox moonwort <i>(Botrychium paradoxum)</i>	Grassy meadows, gravelly road sides, low herbaceous cover under small conifer saplings; probably at 5,000 to 9,000 ft; two small sites in Colorado	FS	Suitable habitat present
Aromatic Indian breadroot <i>(Pediomelum aromaticum)</i>	Open pinyon-juniper woodlands, in sand soils or adobe hills; 4,623 to 6,693 ft	BLM	Suitable habitat present
Tranquil goldenweed <i>(Pyrrocoma clematis</i> var. <i>villosa)</i>	Occurs on gravelly flats, intermountain parks, and dry limestone tundra	FS	Suitable habitat present
Sageleaf willow <i>(Salix candida)</i>	Fens and pond and stream edges in foothill/montane wetlands; 8,800 to 10,600 ft	FS	Suitable habitat present
Lesser bladderwort <i>(Utricularia minor)</i>	Occurs in shallow pools, ponds, fens, and slow moving streams; 5,500 to 9,000 ft	FS	Suitable habitat present
Colorado tansy-aster <i>(Xanthisma coloradoensis)</i>	Mountain parks, slopes, and rock outcrops and dry tundra; 8,500 to 12,500 ft; Gunnison, Hinsdale, La Plata, Lake, Mineral, Park, Pitkin, Saguache, and San Juan counties	FS	Marginal habitat present
Source: Forest Service 2017b, BLM 2015c.			

**Mammals.** Four BLM and/or Forest Service sensitive species could forage and roost in outcrops or woodlands in the project area. Townsends's big-eared bat and spotted bat could occur throughout the project area, while hoary bat and fringed myotis are likely to be limited to the deciduous and shrubby woodlands below the rim of the Grand Mesa, but may forage on the mesa and in the project area. The large rocky outcrops along the rim, and patchy aspen and oakbrush habitats below the rim provide foraging and diurnal roosting for all four bat species. No bats were observed (WestWater 2017a); however, no bat specific surveys were conducted for this project.

Potential habitat for the American marten is present along the top of the Grand Mesa in aspen woodlands and spruce-fir forests, but martens were not observed during survey efforts (WestWater 2017a). The pygmy shrew may also be present in a variety of available habitats in the project area, but were not observed (WestWater 2017a).

**Birds.** Woodland raptor nesting habitat occurs in spruce-fir forests and aspen woodlands at the upper elevations on Grand Mesa, mature oakbrush shrublands along the slopes of the Grand Mesa, and in pinyon-juniper woodlands along the lower portion of the trail. Suitable cliff nesting habitat is also available through the project area below the rim of the Grand Mesa. Raptor surveys conducted for the project observed two sensitive species nests in the vicinity of the project on BLM and National Forest System lands (WestWater 2017a) and one on private lands: one occupied northern goshawk nest on National Forest System lands approximately 584 ft from the trail alignment in an aspen stand below the rim of the Grand Mesa, and one American peregrine falcon nest 780 ft from the trail alignment on BLM-managed public lands. One golden eagle nest was documented on City of Grand Junction land approximately 635 ft from the trail. These species were also observed foraging in the project area (WestWater 2017a). No other BLM or Forest Service sensitive species were observed during survey efforts though other raptor nests were documented and the Forest Service indicated that northern harrier has been previously observed in the project area (BE/MIS Report, Attachment B).

**Reptiles and Amphibians.** Suitable habitat for the boreal toad and northern leopard frog is present along wetlands, ponds, and perennial stream banks in the project area on the Grand Mesa and near Cliff Reservoir. These species are included as sensitive on both the BLM and Forest Service lists, but neither of these species were observed during surveys (WestWater 2017a).

Suitable habitat for two BLM sensitive reptiles (midget faded rattlesnake and longnose leopard lizard) occurs in the project area. The midget faded rattlesnakes are expected where rocky outcrops and rocky slopes are present, and hibernate communally in deep crevices of rocky outcroppings and rodent dens. Surveys in 2017 observed one midget faded rattlesnake on BLM-managed public land near the bottom of the trail in a dry wash, approximately 12 ft from the trail (WestWater 2017a). Longnose leopard lizards were not observed during project surveys, but could occur in portions of the lower trail that provides flat, sparse shrublands with minimal grass and forb understory.

**Invertebrates.** The project area provides suitable habitat for two Forest Service sensitive species: the western bumblebee and the monarch butterfly where wildflower food sources are prevalent. The western bumblebee could be present in the project area year-round, foraging on a variety of native and non-native shrubs and herbaceous plants, nesting in burrows or piles of wood and downed trees in the summer, and overwintering in the ground (often in old rodent burrows). The monarch butterfly migrates and is likely present in the project area during summer

months, foraging on most flowering plants, especially the abundant flowering forbs on the top of the Grand Mesa.

**Fish.** A CPW Core Conservation Population of the Blue Lineage Colorado River cutthroat trout, a Forest Service and BLM sensitive fish species is known to occur in Whitewater Creek that is crossed by the trail, and Brandon Ditch, which diverts water from Whitewater Creek approximately 1.5 miles downstream of the Whitewater Creek trail crossing. The trail also crosses Kannah Creek and North Fork of Kannah Creek; these drainages are known to contain non-native rainbow trout and therefore would not contain genetically pure Colorado River cutthroat trout due to hybridization. Cutthroat trout spawning in the region may extend from April through July, with the peak typically occurring in May and June. Eggs hatch in the spaces between gravels, where the fry remain until emerging from August through October (depending upon the time of spawning and water temperature [Dare et al. 2011]). Given the approximate elevation of Whitewater Creek at the proposed trail crossing (approximately 8,500 ft), it is unlikely that spawning of the blue lineage Colorado River cutthroat trout occurs before June 1 (Woody 2018). To prevent the release of sediment during spawning and egg incubation, construction of the Whitewater Creek stream crossing would not occur between June 1 and September 1. Periodic monitoring of trout in Whitewater Creek and water quality monitoring would occur in collaboration with CPW so that any the effects of the trail and stream crossings to the blue-lineage Colorado River cutthroat trout would be addressed to the maximum extent possible. No other BLM or Forest Service sensitive fish species are known or suspected to occur in the project area.

**Plants.** Surveys for BLM and Forest Service sensitive plant species were conducted within 25 meters either side of the trail alignment from the trail terminus to approximately 7,000 ft in elevation; above 7,000 ft, sensitive plant surveys focused on the trail alignment due the steep, existing terrain. Of the species included in Table 13, only narrow-stem gilia was documented on BLM-managed public lands upslope from the proposed trail in open shale soils (WestWater 2017a).

### **Forest Service Management Indicator Species**

Management Indicator Species are “plant and animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent” (Forest Service Manual [FSM] 2620.5). Forest Plans developed under the 1982 National Forest Management Act Planning Rule include consideration of MIS. Important characteristics of the MIS designation include the ability to effectively monitor and understand relationships between species, habitats, and their response to management activities.

There are eight MIS identified on the GMUG, with a potential for six of those species to occur within the project area. Table 14 identifies the MIS and their targeted management indicator community, of which two of the species (American marten and northern goshawk) are also included on the Forest Service and/or BLM sensitive species lists, discussed above, and Rocky Mountain elk are discussed for big game ungulates in the Wildlife section, below. For more detailed analysis, refer to the BE/MIS Report, Attachment B.



**Table 14**  
**Forest Service Management Indicator**  
**Species Considered and Evaluated for this Project**

<b>Species</b>	<b>Management Indicator Community</b>
American marten <i>Martes Americana</i>	Late successional mixed conifer subalpine forests
Rocky Mountain elk <i>Cervus elaphus nelson</i>	Mixed conifer, Douglas-fir, lodgepole pine, aspen and shrub communities
Northern goshawk <i>Accipiter gentilis</i>	Mixed conifer and aspen forests
Merriam's turkey <i>Meleagris gallopavo merriami</i>	Mountain shrub, pinyon-juniper and low-elevation ponderosa pine
Red-naped sapsucker <i>Sphyrapicus nuchalis</i>	Mature aspen
Common trout	Aquatic habitat management

*Finding for Public Land Health Standard 4 for Special Status Species and Their Habitats:*

The Whitewater-Kannah Creek and Kannah-Plateau LHAs coincide with the project area on BLM-managed public lands. According to the LHAs, special status species in the project area are meeting Public Land Health Standard 4 (BLM 2015b), which states that special status, threatened and endangered species (federal and state), and other animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

**3.3.4.2 Environmental Consequences:**

Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved. Existing use of authorized and unauthorized trails in the area would continue and could possibly increase. Rehabilitation of 0.57 mile of existing social trails would not occur. Continued use of and proliferation of social trails near cacti could impact individual cactus plants. No project-related impacts to threatened and endangered species, BLM and Forest Service sensitive species, or MIS from activities described above for the Proposed Action would occur. Currently permitted activities and other ongoing activities in the project area such as timber management, livestock grazing, recreation, ROW maintenance, wildland fire suppression, vegetation treatments, prescribed fire, and water use would continue.

*Finding for Public Land Health Standard 4 for Special Status Species and Their Habitats:*

Land Health Standard 4 is being achieved (BLM 2015b). The No Action Alternative would not cause changes to Land Health Standard 4 from implementation of the Proposed Action. Existing activities and resource uses in the project area including but not limited to timber management, livestock grazing, recreation, and water uses could affect Land Health Standard 4.

Cumulative Effects:

Under the No Action Alternative, existing and future activities and resource uses which are likely impacting wildlife habitats would continue.

Alternative B – Proposed Action:**Federally Listed Species**

**Canada Lynx.** Potential direct effects of the project include disturbance from construction noise, locally concentrated human activities, noise from vehicles, and increased risk of collision with project-related vehicles along area roadways.

*Human Presence.* Noise from construction and recreational use is assumed to be limited to daylight hours during suitable weather and trail bike seasons, generally from late spring through mid-fall. However, because this trail would be open to all non-motorized users on National Forest System lands and in lynx habitat, the season of use could be greater or could occur when biking conditions are not optimal.

Anecdotal information suggests that lynx can be tolerant of humans and are not displaced by human presence, at least not by moderate levels of activities. In general, lynx will flee when closely approached by humans, but they become less wary during periods of low prey abundance. In other situations, lynx habitat use has not been affected by road densities or by low use of forest roads. Lynx typically cross roads and highways. However, comparisons of lynx locations and random points in relation to distance from highways in Colorado indicate that lynx selectively avoid highways.

*Vehicular Mortality.* High-speed, high-volume highways can result in lynx road-kills, fragment and restrict lynx habitat use, impair home range effectiveness, and inhibit local and dispersal movements. Highway mortality levels can increase drastically with relatively small increases in traffic volumes and speeds, and mortality by vehicle is a significant source of mortality for lynx.

There is no way to accurately estimate numbers of vehicles expected to travel on SH-65 and FSR 100 (Lands End Road) to obtain access to the Palisade Plunge Trail. However, if recreational use was similar to other large regional trails (such as the Whole Enchilada Trail in Utah), 300 mountain bike users could potentially use the trail in a single day. This would occur during the 5 month peak season and only on the weekends. A reasonable estimate would range from one to four mountain bike users per vehicle, for a median number of 125 vehicles per day expected during daylight hours in the recreational-use season. For analysis purposes, it is estimated that 75 vehicles per day would use SH-65 and 50 vehicles per day would use FSR 100 (Lands End Road). Assuming the current AADT of 520 vehicles per day on SH-65, the estimate of 75 vehicles per day would be an approximate 14 percent increase to the AADT volume because that level of project-induced traffic would not occur throughout the year and not on a daily basis. Increased use of SH-65 would not be expected to further fragment and restrict lynx habitat use, impair home range effectiveness, or inhibit local and dispersal movements beyond the existing impacts already occurring from the highway. Additionally, traffic on Lands End Road would also not be indicative of high-speed, high volume highways.

*Habitat Affected.* Impact to lynx habitat could occur during construction if a 10-ft wide corridor is necessary to potentially include tree removal or limbing, cut and fill slopes to create the trail bed, rock relocation, and other actions. The actual average disturbance width of the Palisade Plunge Trail would be approximately 4 ft, which would be a loss of lynx habitat of approximately 4.13 acres. This represents 0.04 percent loss of habitat within the analysis area.

Construction through lynx habitats would occur during the summer months, likely July through early October, to avoid snow and muddy or wet conditions.

It is likely that dense horizontal cover from coniferous tree species that provides habitat for snowshoe hares would be impacted during the construction and maintenance of the trail. The noise and human disturbance factors discussed above may also cause snowshoe hares to avoid suitable habitat that is adjacent to the trail.

On November 30, 2017, pursuant to Section 7 of the ESA, the BLM and Forest Service submitted an assessment to the USFWS Western Colorado Ecological Services Field Office to describe expected effects to the Canada lynx. The BLM and Forest Service provided an effects determination of “Not Likely to Adversely Affect” for the Canada lynx. On December 20, 2017, the USFWS returned the letter concurring with BLM’s analysis of effects to the Canada lynx. No conservation measures were proposed (USFWS 2017b).

Critical Habitat Effects. No critical habitat has been designated for this species in Colorado.

**Colorado Hookless Cactus.** The Proposed Action could affect Colorado hookless cactus plants through one or more of the following pathways:

- Destruction of seed banks during clearing and grading, and construction of the proposed project.
- Increased populations of invasive noxious weed species that interfere with growth and survival of Colorado hookless cactus.
- Damage or mortality of individual plants by dust deposited on photosynthetic surfaces during construction and use of the trail.
- Changes in characteristics (soil moisture, species composition, etc.) that alters suitable habitat.

Direct effects to Colorado hookless cactus are most likely to occur where plants are located within the footprint or close proximity of the Proposed Action, which could result in loss or degradation of cactus populations, decreased cactus seed production, decreased recruitment, and increased occurrence of plant damage or individual mortality. Impacts could include damage to individual plants or seed banks in soil during construction of the Proposed Action, or if construction workers or trail users go beyond the trail footprint. Construction of the trail would disturb 1.30 acres (2 ft disturbance width for 5.38 miles) within the 94.01 acre analysis area (25 meter buffer either side of the trail within the range of the cactus; 1.4 percent of available habitat in the analysis area), but would be below 5 percent disturbance threshold for Colorado hookless cactus (USFWS 2013).

Fugitive dust from construction of the Proposed Action or from trail traffic could directly affect Colorado hookless cactus plants; dust could increase tissue temperature and impair photosynthesis, gas exchange, transpiration, use efficiency, leaf morphology, and stomata function (Farmer 1993; Sharifi et al. 1997; Rai et al. 2009).

Potential indirect impacts to cactus plants from the Proposed Action include changes in hydrology and soil characteristics and an increase in competitive noxious weeds, resulting in alterations of vegetation cover and species composition. Soil compaction from construction of trail could result in a change in hydrology, possibly indirectly altering vegetation composition that may compete with the Colorado hookless cactus. Ground-disturbing activities and trail users

would increase the likelihood for noxious weeds to become established, which could also alter vegetation cover and species composition, potentially out-competing the cactus.

The Proposed Action would not remove or crush any Colorado hookless cactus. However, cacti have been documented within 25 meters of the Proposed Action (WestWater 2017a); therefore, direct or indirect effects to Colorado hookless cactus from construction and use of the trail may occur. Table 15 lists the 14 Colorado hookless cactus sites (16 plants) known within 25 meters of the Proposed Action.

**Table 15**  
**Summary of Colorado Hookless Cactus Plants Documented during**  
**Survey Efforts within 25 meters of the Palisade Plunge Trail Centerline <sup>1</sup>**

<b>Identified Colorado Hookless Cactus Sites</b>	<b>Number of Cactus Plants</b>	<b>Distance to Proposed Disturbance (meters)</b>	<b>Cactus Upslope/Downslope from Trail</b>	<b>Surface Ownership</b>
SCGL_1	1	13.0	Upslope	BLM
SCGL_2	1	7.5	Upslope	BLM
SCGL_3	1	8.6	Upslope	BLM
SCGL_4	1	11.8	Upslope	BLM
SCGL_5	1	20.2	Upslope	BLM
SCGL_6	1	12.2	Upslope	BLM
SCGL_7	1	10.5	Upslope	BLM
SCGL_8	1	10.6	Upslope	BLM
SCGL_9	1	14.1	Upslope	BLM
SCGL_10	1	19.3	Upslope	BLM
SCGL_11	1	9.0	Upslope	BLM
SCGL_12	3	10.1	Upslope	BLM
SCGL_13	1	5.7	Upslope	BLM
SCGL_17	1	23	Upslope	BOR

On November 30, 2017, pursuant to Section 7 of the ESA, the BLM and Forest Service submitted an assessment to the USFWS Western Colorado Ecological Services Field Office to describe expected effects to Colorado hookless cactus. The BLM and Forest Service described conservation measures that would minimize potential effects to Colorado hookless cactus and provided an effects determination of “Not Likely to Adversely Affect” (see conservation measures, below). On December 20, 2017, the USFWS returned the letter concurring with the analysis of effects to the Colorado hookless cactus.

### **Forest Service and BLM Sensitive Species**

For BLM and/or Forest Service sensitive species listed in Table 13, suitable habitat is present and the species are known or could occur in the project area. Construction of the Proposed Action and subsequent trail use could directly and/or indirectly affect sensitive species, if present in the project area through habitat loss, increased fragmentation, temporary displacement, and possible mortality/plant removal or harassment.

Additional information regarding Forest Service sensitive species effects can be found in the BE/MIS Report (Attachment B). Analyses of the Forest Service sensitive species indicated that the project may impact individuals but would not result in a loss of viability in the project area or cause a trend toward federal listing.

**Mammals.** BLM and/or Forest Service sensitive mammals that could occur in the project area include four species of bats, American marten, and the pygmy shrew. Although no bats were observed during survey efforts, the bats may forage and roost in nearby rock crevices, rock outcrops, or juniper woodlands and forage in habitats in the vicinity of the project. No potential roosts or potential hibernacula sites would be directly affected and removal of habitat potentially used for foraging would be minimal. Daytime disturbance during construction activities and eventual trail use could cause bats to flush from nearby roosts in the daytime. However, construction and daytime use of the trail would not be expected to affect nocturnal foraging activities.

Vegetation removal for trail construction may decrease available habitats for American marten and pygmy shrew. Additionally, activities along the trail may displace wildlife species from the project area during trail construction and summertime trail use. However, based on the available habitat in the project area, trail placement near existing disturbance, and the small width of the trail, effects would be negligible.

**Birds.** Raptors are particularly sensitive to disturbance during the breeding season, and as a result, project-related noise and human disturbance in the project area could disturb raptors nesting in the area. Two raptor species included on the BLM and Forest Service sensitive species lists were observed nesting on BLM and National Forest System lands during project survey efforts (WestWater 2017a) including one occupied northern goshawk nest on National Forest System lands approximately 584 ft from the trail in an aspen stand below the rim of the Grand Mesa. Human disturbances to goshawk nests have been a suspected cause of nest abandonment (Reynolds et al. 1992). Similarly, human encroachment near nest sites can cause flushing of incubating adults, reduced feeding frequency to chicks, and nest abandonment (see Section 7.2.4 in the BE/MIS Report, Attachment B). If the identified northern goshawk nest moves closer to the trail, or if the trail proves to cause substantial disturbance to the nest, the trail may be temporarily closed during the critical fledging period. The other nest is an American peregrine falcon nest on BLM-managed public lands approximately 780 ft downslope from the trail within a series of cliff bands. To minimize impacts to nesting raptors documented in the project area, no construction activities would occur within recommended spatial buffers during specific nesting seasons: no construction within 0.50 mile of northern goshawk nest from March 1 to August 15 and no construction within 0.50 mile of the peregrine falcon nest from March 15 to July 31 (see Map 5). No other sensitive bird species or nests were observed on BLM-managed public lands or National Forest System lands.

Helicopter use could occur along the trail for emergency support of trail users. Helicopter landing sites would most likely be used from the Shirttail Point (MP 11.60) to the west end of the trail. Although helispots have not been identified, noise from helicopters could disturb nesting raptors documented in the project area, as well as other BLM and Forest Service sensitive species if activity occurs during the nesting seasons. Rotor wash from helicopters could also affect nestlings if helispots are within 300 ft of nests (e.g., Teske et al. 1997). Maintenance of helispots for helicopter landing would also reduce vegetation height and possibly density. If helicopter landing locations are identified in the future these areas would undergo vegetation cutting, trimming, or mowing to limit vegetation heights within areas of approximately 100 ft by 100 ft.

**Reptiles and Amphibians.** The midget faded rattlesnake has been observed approximately 12 ft from the trail on BLM-managed public lands (WestWater 2017a). Although no rattlesnake dens

were observed during the survey efforts, the midget faded rattlesnake may den communally or individually in a variety of habitat features that offer insulation and security, including deep crevices in rocky outcroppings and rodent dens that occur in and around the project area. The long-nosed leopard lizard, boreal toad, and northern leopard frog were not observed during survey efforts but suitable habitat exists in the project area to support these species.

If present at the time of construction, the sensitive reptiles and amphibians could be affected through reduction in habitat and by crushing or entombment. Construction and trail use occurring from spring through mid-summer, when these species are more active above ground, would have the greatest potential to affect these species. However, given the mobility and/or home ranges of the species, it is not expected construction, as well as subsequent trail use, would impact local populations overall.

**Invertebrates.** Trail construction would remove suitable foraging habitat (flowering habitat) for the monarch butterfly and western bumblebee. Additionally, construction of the trail could bury adult bumble bees and larvae that may be using burrows within the trail alignment. Once the trail is constructed, other indirect impacts to foraging habitat (trampling or removal of flowering plants) could occur adjacent to the trail. Effects to these species, if any, would be minimal and would not be expected to affect the population of either species given the available foraging areas within the immediate vicinity of the trail.

**Fish.** Blue Lineage Colorado River cutthroat trout could be present in several of the drainages crossed by or downstream of the proposed trail (Whitewater Creek, Brandon Ditch, North Fork Kannah Creek, and Kannah Creek). Trail construction would remove vegetation and expose soil, and alter patterns of surface water drainage, which could increase the potential for sediment delivery into drainages used by this species, affecting reproductive success. Crossings of these drainages during trail use could also increase the potential for erosion in the creek bed and increase sediment load in the stream. Soil erosion control measures would be implemented to contain sediment and minimize these effects.

**Plants.** Construction of the trail could damage or destroy plants during creation of the trail bed or when soil is removed to create cut banks and piled on the fill slopes. Seeds within soil in the trail could be destroyed, either during construction or from soil compaction during subsequent use by bikers, hikers, and/or horses. Ground disturbance during construction and trail use could increase the risk of introduction and establishment of noxious weeds and other non-native plant species in adjacent vegetation, which could negatively impact native plant communities. To minimize threats in the project area, noxious weed populations would be treated prior to trail construction and the trail would be monitored for noxious weeds and populations treated, as needed. Other, inadvertent impacts could occur from trampling of vegetation adjacent to the trail.

Five narrowstem gilia plants, a BLM sensitive species, were located approximately 12 meters (36 ft) upslope of a proposed sharp downhill traverse portion of the trail in open shale soil. Based on the upslope position of the plants, the location of the plants relative to the traverse in the trail that would slow bikers down, and the distance of the trail to the documented plants, it is not expected that construction or use of the proposed trail by hikers or bikers would adversely impact these plants. Additionally, the portion of the trail where gilia occurs would be built with hand tools, which would further limit the potential for accidental impacts during construction. No other BLM and Forest Service sensitive plants included in Table 13 were observed.

## **Forest Service Management Indicator Species**

Construction of the trail would impact and/or modify habitat used by the MIS species considered for the GMUG, but the amount of habitat removed would be negligible when considering the available habitat in the vicinity of project area. Disturbance from construction could displace MIS, but disturbance would be short-term and local and would adhere to timing restrictions incorporated into the Proposed Action. Disturbance from trail use (bikers, hikers, and equestrian use) would be limited to the trail use season (summer to early fall) on National Forest System land, reducing impacts to Rocky Mountain elk using the project area.

The project is not expected to result in a Forest-wide decrease in trends or deter the Forest from meeting the MIS objectives in the Forest Plan for any of the MIS species provided in Table 14. Additional information regarding MIS effects can be found in the BE/MIS Report (Attachment B), and for Rocky Mountain elk in the big game discussion in the Wildlife section, below.

### *Finding for Public Land Health Standard 4 for Special Status Species and Their Habitats:*

Land Health Standard 4 is being met and it is not expected that implementation of the Proposed Action would cause Standard 4 to not be met. Effects to special status species and their habitats would be minimized with implementation of the proposed design features. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, ROW use and maintenance, vegetation treatments, wildland fire suppression, and water uses could affect Land Health Standard 4.

### Cumulative Effects:

The Proposed Action would cumulatively add to existing and future activities and disturbances to areas seeing timber management, recreation, livestock grazing, and water management projects. Cumulatively this project would add additional disturbance such as noise and human presence to the area and would have a direct impact on undisturbed large-scale habitat. The trail's additional human occupancy of the area would add to existing human activities, and for some wildlife species, negatively impact the effectiveness and availability of habitats. This is particularly evident for elk, a Forest Service MIS. The Proposed Action would not, when assessed cumulatively with these other projects, lead to the listing of any species, or negatively affect the ability for listed species to recover.

## **3.3.5 Wildlife (includes fish, aquatic and terrestrial) (includes a finding on Standard 3)**

### **3.3.5.1 Current Conditions:**

Habitats in the project area and vicinity range from subalpine forests types and montane meadows, to more mesic mixed mountain shrublands, aspen forests, and at the lower elevations desert shrublands and canyonlands. Given these vegetation types, the area provides cover, forage, breeding, and nesting habitat for a variety of big game and small game species as well as numerous nongame species.

**Big Game Ungulates.** The project area is within overall ranges of mule deer (*Odocoileus hemionus*), Rocky Mountain elk, and moose (*Alces alces*). Rocky mountain elk is also a Forest Service MIS and additional discussion is included in the BE/MIS Report (Attachment B). Most of the project area is within mapped elk, mule deer, and moose winter range and summer range, which reflects the highly migratory nature of the populations in the project area: higher elevation forests and meadows are included in the summer ranges, and lower elevations with lower snow cover are included in the winter ranges. The project occurs within mapped elk winter

concentration areas generally between MP 21 and 23 on BLM and City of Grand Junction lands, but does not occur within severe winter ranges mapped for elk or mule deer (CPW 2017). Additionally, BLM has established the Rapid Creek Wildlife Emphasis Area for additional protection for deer and elk from approximately MP 18.15 to 24.22, which also incorporates the elk winter concentration area delineated by CPW (2017). Colorado Parks and Wildlife mapping of habitat use areas for big game species is commonly referred to pinpoint areas of crucial use, but these polygons are fluid and may not represent all areas of importance for these big game species.

The project area is not within production areas (calving grounds) for Rocky Mountain elk. However, the top of the mesa near where this trail is to occur, does have mapped production areas. Colorado Parks and Wildlife has defined expected distributions of mule deer and elk on winter ranges under different winter conditions:

- Winter range is utilized by 90 percent of the population during an average five out of ten winters.
- Winter concentration areas are smaller areas within winter range where animal densities are (at least) 200 percent greater than the density on surrounding winter range during an average five of ten winters.
- Severe winter ranges are sub-areas within winter range where wintering animals are highly concentrated (severe winter ranges support 90 percent of the population) during the most severe two out of ten winters (when snowpack depths are greatest and/or temperatures are lowest).

Elk and mule deer are likely to be present on winter ranges from the first heavy snowfall (November and December) through green-up, usually in April or May. Although elk and deer are expected in the project area in the summer, especially at the higher elevations, no production areas have been mapped or identified; the closest elk production area is located 2.2 miles south of the project along Kannah Creek. As stated above, this does not preclude areas that have suitable habitat from being used that are not mapped accordingly by CPW.

Access roads to the project area (SH-65 and Lands End Road) pass through designated elk and mule deer severe and critical winter range, cross over known migration corridors, and travel through moose concentration areas (SH-65).

**Carnivores.** Large carnivores potentially present in the project vicinity include the mountain lion (*Felis concolor*), which moves seasonally with its preferred prey, the mule deer. Black bears can be quite common in the area given sufficient forest cover and suitable foods (including acorns and berries). Three smaller carnivores, the red fox (*Vulpes vulpes*) and coyote (*Canis latrans*) are also present throughout the region in open habitats within, or interspersed among, clumps of tall shrubs or trees, while the bobcat (*Lynx rufus*) generally uses broken or wooded terrain. These species hunt for small mammals, reptiles, ground-dwelling birds, or large invertebrates and feed seasonally on fruits or other plant materials. Additional small carnivores potentially present include three members of the weasel family: the long-tailed weasel (*Mustela frenata*) in a variety of habitats, the American badger (*Taxidea taxus*) in meadows or xeric shrublands, and potentially the American marten (see the section on sensitive species above) in subalpine mixed conifer forests on the mesa.



**Rodents and Lagomorphs.** Small mammals present within the project vicinity include a wide variety of rodents given the large range in elevations and habitat types along the trail alignment. These include higher elevation species such as the pine squirrel (*Tamiasciurus hudsonicus*), golden-mantled ground squirrel (*Callospermophilus lateralis*), porcupine (*Erethizon dorsatum*), beaver (*Castor canadensis*), southern red-backed vole (*Clethrionomys gapperi*), and least chipmunk (*Tamias minimus*). As the trail moves lower in elevation, other species such as the canyon mouse (*Peromyscus crinitus*), pinyon mouse (*P. truei*), desert woodrat (*Neotoma lepida*), and packrat (bushy-tailed woodrat, *N. cinerea*) become more common. Lagomorphs at higher elevations include snowshoe hare and mountain cottontail (*Sylvilagus nuttallii*), but as elevations decrease, white-tailed jackrabbit (*Lepus townsendii*), desert cottontail (*S. audubonii*), and black-tailed jackrabbit (*L. californicus*) are potentially present in higher, more mesic, or more densely wooded sites. Rodents and lagomorphs are important prey species for carnivores and raptors.

**Upland Fowl.** Four species of galliforms (upland gamebirds) are present in the project vicinity. The native Merriam's turkey (see Attachment B), is mostly associated with more mesic or densely vegetated habitats, including mixed mountain shrubs, particularly those with oakbrush or other tall species, and foothills or montane conifers. The dusky grouse (*Dendragapus obscurus*) occurs in mixed-conifer and aspen forests. Gambel's quail (*Callipepla gambelii*) occurs in desert shrublands. The introduced chukar (*Alectoris chukar*) may also be observed in the broken canyonlands near the western end of the trail alignment. These species are seasonally hunted through CPW's administered upland game bird hunting seasons.

**Reptiles and Amphibians.** Reptiles are limited in the upper elevations of the project area. Species likely to occur include the western terrestrial garter snake (*Thamnophis elegans*), smooth green snake (*Opheodrys vernalis*), and yellow-bellied racer (*Coluber constrictor*). At lower elevations the collard lizard (*Crotaphytus collaris*), plateau lizard (*Sceloporus undulates*), sagebrush lizard (*S. graciosus*), bull snake (or gopher snake) (*Pituophis catenifer*) and the midget faded rattlesnake may be observed. Amphibians using ponds, seasonally flooded areas, or wetlands—in addition to the northern leopard frog, described earlier as an Forest Service and BLM sensitive species—include the barred salamander (*Ambystoma tigrinum*), Woodhouse's toad (*Anaxyrus woodhousei*), and the northern chorus frog (*Pseudacris triseriata*). At lower elevation, red-spotted toad (*A. punctatus*), and possibly canyon treefrogs (*Hyla arenicolor*) may be heard in the spring, at dusk and nighttime after rains.

**Aquatic Habitats and Fishes.** Rainbow trout are the only non-sensitive fish expected in the project area in the North Fork of Kannah Creek. Other perennial streams in the project area are either devoid of fish or support small numbers of aquatic species.

### **Migratory Birds and Birds of Conservation Concern**

The Migratory Bird Treaty Act (MBTA) includes native passerines (flycatchers and songbirds) as well as birds of prey, migratory waterbirds (waterfowl, wading birds, and shorebirds), and other species such as doves, hummingbirds, swifts, and woodpeckers. Within the context of the MBTA, "migratory" birds include non-migratory "resident" species as well as true migrants, essentially encompassing all native bird species. For most bird species, nesting habitat is of special importance because it is critical for supporting reproduction in terms of nesting and foraging sites. Because birds are generally territorial during the nesting season, their ability to access and utilize sufficient food is limited by the quality of the territory occupied. During non-

breeding seasons, birds are generally non-territorial and able to feed across a larger area and over a wider range of habitats.

Emphasizing the need to conserve declining migratory bird species, the USFWS (2008) has published a list of Birds of Conservation Concern (BCC) for the Southern Rockies/Colorado Plateau Region. For this project, the broad regional list was narrowed to a smaller number of species with potential to nest in the area, based on known geographic ranges and habitat requirements. This section focuses on BCC species potentially present, as well as non-BCC species of special ecological concern, including raptors (birds of prey) and Neotropical (long-distance) migrants—three groups are especially vulnerable to habitat loss or habitat modification on their breeding grounds. Migratory bird species that are classified by the Forest Service and/or BLM as sensitive species are addressed under the section on Threatened, Endangered, and Sensitive Species (Section 3.3.4).

WestWater (2017a) conducted raptor surveys between mid-May and mid-July 2017 for the project. Surveys focused on cliff nesting habitat and mature pinyon-juniper woodlands along BLM portions of the trail and spruce-fir forests, aspen woodlands, mature oakbrush shrublands, and cliff nesting habitat on National Forest System lands. Ten raptor nests were documented within 0.5 mile of the project area, including two BCC species:

- golden eagle (BCC, BLM sensitive species)
  - one occupied nest documented 0.12 mile from the trail
  - one unoccupied/destroyed nest documented 0.11 mile from the trail
- peregrine falcon (BCC, BLM and Forest Service sensitive species)
  - one occupied nest documented 0.15 mile from the trail
- northern goshawk (BLM and Forest Service sensitive species)
  - one occupied nest documented 0.11 mile from the trail
- Cooper's hawk (*Accipiter cooperii*)
  - Two occupied nests documented 0.17 mile and 0.20 mile from the trail
  - One unoccupied nest documented 0.14 mile from the trail
- long-eared owl (*Asio otus*)
  - one occupied nest documented 0.14 mile from the trail
- red-tailed hawk (*Buteo jamaicensis*)
  - two unoccupied nests documented 0.04 and 0.05 mile from the trail

In addition to these, several other non-BCC raptors potentially nest and forage in the project area and vicinity. These are the American kestrel (*Falco sparverius*), Swainson's hawk (*Buteo swainsoni*), sharp-shinned hawk (*A. striatus*), great horned owl (*Bubo virginianus*), long-eared owl, northern pygmy owl (*Glaucidium gnoma*), and saw-whet owl (*Aegolius acadicus*). The kestrel nests primarily in scattered trees or on rock ledges and hunts across open country, while the others would be expected to nest in large, tree-like oakbrush, large cottonwood (*Populus deltoides* and *P. angustifolia*) and stands of aspen or conifers. During survey efforts in 2017, Swainson's hawk, long-eared owl, great horned owl, and prairie falcon were observed foraging in the area (WestWater 2017a).

Numerous migratory bird species, including BCC species were observed during survey efforts for this project, including one rock wren (*Salpinctes obsoletus*) nest (see Tables 8 and 9 in WestWater 2017a). Although no BCC nests were observed, nesting is likely for the Cassin's

finch (*Carpodacus cassinii*), gray vireo (*Vireo vicinior*), juniper titmouse (*Baeolophus griseus*), pinyon jay (*Gymnorhinus cyanocephalus*), and purple martin (*Progne subis*) (WestWater 2017a).

Other migratory birds potentially nesting or foraging in the project area, including some BCC as well as additional, non-BCC species, are listed below by habitat type.

**Mixed Mountain Shrublands.** This habitat type typically consists of a tall and dense cover of shrubs such as oakbrush and serviceberry, with chokecherry on moist soils. This habitat type can be used by one BCC species, the flammulated owl (and possibly by Lewis's woodpecker), but is commonly used for nesting by other migratory birds such as the broad-tailed hummingbird (*Archilochus platycercus*), common poorwill (*Phalaenoptilus nuttallii*), plumbeous vireo (*Vireo plumbeus*), dusky flycatcher (*Empidonax oberholseri*), Woodhouse's scrub-jay (*Aphelocoma woodhousei*), mountain chickadee (*Poecile gambeli*), MacGillivray's warbler (*Oporornis tolmiei*), American robin (*Turdus migratorius*), spotted towhee (*Pipilo maculatus*), green-tailed towhee (*Pipilo chlorurus*), black-headed grosbeak (*Pheucticus melanocephalus*), chipping sparrow (*Spizella passerina*), and house finch (*Haemorhous mexicanus*).

**Xeric Shrublands.** Areas dominated by xeric shrublands and drier pinyon-juniper shrublands support habitat for four BCC species, including the gray vireo (*Vireo vicinior*), juniper titmouse (*Baeolophus ridgwayi*), and the peregrine falcon and golden eagle, both of which was observed nesting on cliffs near the trail. Other non-BCC migratory birds such as cliff swallow (*Petrochelidon pyrrhonota*), barn swallow (*Hirundo rustica*), bank swallow (*Riparia riparia*), common swift (*Apus apus*), canyon wren (*Catherpes mexicanus*), and rock wren (*Salpinctes obsoletus*) are common in the drier canyonlands. Other non-BCC species in these xeric shrublands include western meadowlark (*Sturnella neglecta*), green-tailed towhee, sagebrush sparrow (*Artemisiopiza bellii*) and sage thrasher (*Oreoscoptes montanus*). The red-tailed hawk, kestrel, and golden eagle may hunt across these areas.

Birds potentially nesting in pinyon-juniper woodlands include three BCC species, the semi-colonial pinyon jay (*Gymnorhinus cyanocephalus*), gray vireo, and juniper titmouse. Non-BCC species associated with this habitat type include the black-chinned hummingbird (*Archilochus alexandri*), western kingbird (*Tyrannus verticalis*), ash-throated flycatcher (*Myiarchus cinerascens*), Say's phoebe (*Sayornis saya*), gray flycatcher (*Empidonax oberholseri*), Townsend's solitaire (*Myadestes townsendii*), mountain bluebird (*Sialia sialis*), gray vireo, blue-gray gnatcatcher (*Poliophtila caerulea*), black-throated gray warbler (*Dendroica nigrescens*), chipping sparrow (*Spizella passerina*), lark sparrow (*Chondestes grammacus*), lesser goldfinch (*Spinus psaltria*), and house sparrow (*Haemorhous mexicanus*).

**Aspen Woodlands.** Patches of aspen throughout the project area provide habitat for a variety of non-BCC species. These include the broad-tailed hummingbird, northern flicker (*Colaptes auratus*), hairy woodpecker (*Picoides villosus*), downy woodpecker (*Picoides pubescens*), red-naped sapsucker (see the section above on Forest Service MIS), western wood-pewee (*Contopus sordidulus*), cordilleran flycatcher (*Empidonax occidentalis*), plumbeous vireo, warbling vireo (*Vireo gilvus*), tree swallow (*Tachycineta thalassina*), violet-green swallow (*T. bicolor*), mountain chickadee (*Poecile gambeli*), white-breasted nuthatch (*Sitta carolinensis*), house wren (*Troglodytes aedon*), American robin, mountain bluebird (*Sialia currucoides*), western bluebird (*Sialia occidentalis*), western tanager (*Piranga ludoviciana*), chipping sparrow, and dark-eyed junco (*Junco hyemalis*). Another, the purple martin, a member of the swallow family, was described above as a Forest Service sensitive species.

**Mixed Conifer Forests.** One BCC species, Cassin's finch, nests and forages almost exclusively in montane and subalpine conifers, such as the scattered clumps and small stands of mixed conifer subalpine forests within the project area. A second BCC species, the brown-capped rosy finch (*Leucosticte australis*), may occur in winter as flocks move from alpine cliffs and tundra to lower elevations in search of milder conditions and more available foods. In addition to these species, there are a variety of non-BCC species potentially occurring in these habitats previously listed above as occurring in stands of quaking aspen. Among these are the broad-tailed hummingbird, hairy woodpecker, plumbeous vireo, mountain chickadee, American robin, western tanager, chipping sparrow, and dark-eyed junco. Additional non-BCC species primarily associated with conifers are the Hammond's flycatcher (*Empidonax hammondi*), brown creeper (*Certhia familiaris*), red-breasted nuthatch (*Sitta canadensis*), yellow-rumped warbler (*Dendroica coronata*), and red crossbill (*Loxia curvirostra*). The Forest Service sensitive species, olive-sided flycatcher (*Contopus cooperi*) is also likely in these stands when near water. The non-migratory corvids Steller's jay (*Cyanocitta stelleri*), grey jay (*Perisoreus canadensis*), and Clark's nutcracker (*Nucifraga columbiana*) are also common in this habitat type.

Songbirds occurring more widely in the project vicinity and less tied to specific habitat types include three residents—the common raven (*Corvus corax*), American crow (*C. brachyrhynchos*), and blackbilled magpie (*Pica hudsonia*)—and the migratory Brewer's blackbird (*Euphagus cyanocephalus*).

*Finding on Public Land Health Standard 3 for Animal Communities:*

The Whitewater-Kannah Creek and Kannah-Plateau LHAs coincide with the project area on BLM-managed public lands. According to the LHAs, the animal communities in the project area are meeting Public Land Health Standard 3 (BLM 2015b), which state that healthy, productive animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.

### **3.3.5.2 Environmental Consequences:**

Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved. No project-related impacts to wildlife from activities described above for the Proposed Action would occur. Currently permitted activities and other ongoing activities in the project area, and associated impacts, would continue. These include activities and impacts associated with timber management, livestock grazing, recreation, ROW use and maintenance, vegetation treatments, prescribed fire, wildlife fire suppression, and water use.

*Finding on Public Land Health Standard 4 for Animal Communities:*

Land Health Standard 3 is being achieved (BLM 2015b). The No Action Alternative would not cause changes to Land Health Standard 3 from implementation of the Proposed Action. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, ROW use and maintenance, vegetation treatments, prescribed fire, and water uses could affect Land Health Standard 3.

**Cumulative Effects:**

Under the No Action Alternative, existing and future activities and resource uses which are likely impacting wildlife habitats would continue. These activities, including programs which are likely to impact wildlife habitats, are also expected to continue.

Alternative B – Proposed Action:

**General Wildlife.** Direct impacts to terrestrial wildlife from the Proposed Action may include mortality, disturbance, nest abandonment and nesting attempt failure, or site avoidance and displacement from otherwise suitable habitats. These effects could result from habitat loss or modification, increased noise from trail construction and trail use, increased human presence, and collisions between wildlife and vehicles accessing trailheads. Impacts would be more substantial during critical seasons such as the spring and summer breeding season (for raptors, songbirds, and amphibians).

Impacts to wintering deer, elk and moose would not be expected because portions of the trail would be closed, either by gate and signage or due to the weather, in the winter. The trail would be closed from December 1 to May 1 from Shirttail Point (MP 11.60) through the wildlife emphasis area initially to approximate MP 27.48 (possibly extended to MP 30.41 if violations of the winter closure area occur) which includes the majority of the trail that goes through critical winter areas. This includes the early spring, when these species are coming off of a long winter with depleted energy reserves. Trail use and human disturbances can displace wildlife, depleting much-needed energy reserves and may lead to decreased over winter survival, closure through May 1 is expected to minimize these impacts. Additionally, indirect habitat loss may occur if increased human activity (e.g., traffic, noise) associated with trail use causes species to be displaced or alter their habitat use patterns. The extent of indirect habitat loss varies by species, the type, duration and timing of the disturbance, and the amount of screening provided by vegetation and topography. In general, disturbance-related impacts from use of the trail would be temporary, but due to the long-term use of the trail, wildlife use of habitat adjacent to the trail would likely change during the summer months when the trail is open because wildlife species would likely avoid these habitats due to persistent human presence. In the winter, wildlife use patterns would likely return to pre-disturbance conditions relatively quickly when trail use stops for the season. The Proposed Action increases the route density in the Rapid Creek Wildlife Emphasis Area from a mean of 0.68 miles of route per square mile to 0.74 miles of route per square mile.

Potential effects to big game by vehicle collisions to and from the project area on SH-65 and Lands End Road are expected to be minimal because construction and trail use would occur during spring, summer, and fall outside of winter range restrictions (December 1 through May 1).

**Migratory Birds and Birds of Conservation Concern.** Construction of the trail and parking areas, if conducted during the time migratory birds are constructing nests, incubating eggs, and rearing nestlings, could potentially kill individual birds. Although no migratory bird or raptor nests were observed within the area proposed for direct disturbance during survey efforts (WestWater 2017a), it is possible that nests could be constructed within the project footprint prior to construction of the trail. To minimize potential effects to migratory birds during construction of the trail, vegetation removal would not occur from May 15 to July 15 (unless a biologic monitor is present or additional surveys are conducted just prior to vegetation removal), generally the peak of the nesting period for the majority of migratory birds likely to occur in the project area. Therefore, it is not expected that construction of the project would directly take a migratory bird nest. To further minimize potential impacts to raptors nesting in the project area, construction of the trail would not occur within recommended spatial buffers and seasonal timing restrictions for individual raptor nests (see Table 16 and Map 5). Additionally, a reroute was

incorporated into the current trail alignment to reduce long-term impacts from trail use to an occupied golden eagle nest that was previously located 350 ft from the trail alignment; the trail was re-routed to avoid direct line of sight from the trail to the nest, the eagle nest is currently 635 ft from the proposed trail. This is closer than the CPW recommended 0.5 mile from the nest; however, due to topographical separation, the trail would not be visible from the nest within this buffer. Similarly, for the peregrine, the trail was designed to provide adequate visual screening with terrain and trees from the nest that is located downslope and over a cliff edge. Also, general noise associated with the trail would be minimal because of the singletrack nature of the trail through the trees.

**Table 16**  
**Seasonal Timing Restrictions and Spatial Buffers that**  
**Would Be Applied to Occupied Raptor Nests Documented in the Project Area**

<b>Common Name</b> <b>Scientific Name</b>	<b>Seasonal Restriction</b>	<b>Spatial Buffer</b>	<b>Milepost</b>	<b>Landowner</b>
Red-tailed hawk	February 15 to July 15	0.33 mile	23.6 to 24.63	BLM
			30.67 to 31.69	BLM and Private
Coopers hawk	April 1 to August 15	0.25 mile	21.85 to 21.97	City of Grand Junction
			22.93 to 23.84	Town of Palisade and BLM
Golden eagle	Dec 15 to July 15	0.5 mile	21.23 to 23.42	City of Grand Junction
Peregrine falcon	March 15 to July 31	0.5 mile	18.35 to 19.48	BLM and City of Grand Junction
Long-eared owl	March 1 to July 15	0.25 mile	15.4 to 15.82	Forest Service
Northern goshawk	March 1 to August 15	0.5 mile	11.75 to 13.63	Forest Service

The Proposed Action would also result in a loss of nesting, roosting, perching, and foraging habitat for migratory birds and BCC within the trail and associated parking areas, and reduced habitat effectiveness adjacent to areas where disturbance-related effects could be expected. These changes to the habitat could negatively affect bird species and increase habitat fragmentation that could result in increased competition, increased exposure to predators, and a higher likelihood of nest parasitism.

In addition to the physical loss of habitat and habitat fragmentation, it is possible that during construction activities and subsequent trail use, individual birds could be displaced to adjacent habitats due to noise and human presence. Effects of displacement could also increase risk of predation, or result in failure to reproduce. Impacts to migratory bird species during construction of the trail would be minimized by avoiding surface-disturbing activities during the primary nesting season (May 15 through July 15), and implementing recommended timing restrictions for nesting raptors documented in the project area (see Table 16 and Map 5).

Helicopter use could occur along the trail for emergency support of trail users. Although helispots have not been identified, noise from helicopters could disturb nesting raptors documented in the project area, as well as other BLM and Forest Service sensitive species if activity occurs during the nesting seasons. Rotor wash from helicopters could also affect nestlings if helispots are within 300 ft of nests (e.g., Teske et al. 1997). These impacts are expected to be uncommon and of short duration. If helispots are determined to be necessary, there may also be vegetation mowing and cutting, up to 5 acres could be disturbed if all of the identified helispots were used and maintained.

*Finding on Public Land Health Standard 3 for Animal Communities:*

Land Health Standard 3 is being met and it is not expected that implementation of the Proposed Action would cause Standard 3 to not be met. Impacts to animal communities would be minimized with implementation of the proposed design features described in Chapter 2 for the Proposed Action such as winter closure, no vegetation removal between May 15 and July 15 (or conducting biologic surveys for nests prior to vegetation removal) to protect migratory birds, and application of temporal and spatial buffers during construction to protect nesting raptors. Existing activities and resource uses in the project area including timber management, livestock grazing, recreation, ROW use and maintenance, vegetation treatments, prescribed fire, wildland fire suppression, and water uses could affect Land Health Standard 3.

**Cumulative Effects:**

Cumulative effects of the Proposed Action would be similar to those for the No Action Alternative. Construction and use of the trail would cumulatively add to these other activities and disturbances to areas seeing timber management, recreation, livestock grazing, ROW use and maintenance, vegetation treatments, prescribed fire, wildland fire suppression, and water management projects. Cumulatively this project would add additional noise and human presence to the area, but would only have a very minor direct impact on habitats. The trail's additional human occupancy of the area would add to existing human activities, and for some wildlife species, negatively impact the effectiveness and availability of habitats. The Proposed Action would not, when assessed cumulatively with these other projects, lead to the listing of any species, or negatively affect the ability for listed species to recover.

---

**3.4 HERITAGE RESOURCES AND HUMAN ENVIRONMENT**

---

**3.4.1 Cultural Resources****3.4.1.1 Current Conditions:**

The BLM and the Forest Service manage cultural resources on public lands in accordance with the Antiquities Act of 1906, National Historic Preservation Act (NHPA) of 1966, Native American Graves Protection and Repatriation Act of 1990, the Archaeological Resources Protection Act of 1979, and various other laws and Executive Orders. The management process is also governed by the Colorado BLM's Protocol with the State Historic Preservation Officer (SHPO), implementing the BLM's National Programmatic Agreement with the Advisory Council on Historic Preservation. Section 106 of NHPA applies to consideration of the presence of and effect to cultural resources on both public and private lands in the area of potential effect (APE).

A cultural resource inventory was completed during summer 2017 (Flattops Archaeological Consultants [Flattops] 2017). The objective of the cultural resource inventory was to locate and record any cultural resources that are within the APE of the proposed project, to relocate and reevaluate previously recorded cultural resources, to provide recommendations of eligibility to the National Register of Historic Places (NRHP), and to make management recommendations for those cultural resources.

A files search was conducted through the Colorado Office of Archaeology and Historic Preservation Compass database on June 25, 2017, and the files of the BLM GJFO were consulted on June 27, 2017. Additional site and project information for the GMUG was supplied on June

26, 2017. Previously recorded sites and isolated finds located within a 1-mile radius of the current project area, summary information for sites located within or in proximity to the surveyed corridor, and previous Class III cultural resource inventories conducted within a 1-mile radius of the proposed project were detailed. These included Class III cultural resource inventories for infrastructure, vegetation management, and oil and gas development. Although the proposed trail alignment crosses through areas previously inventoried, because of the linear nature of the trail, most all portions of the trail were surveyed. A corridor measuring 150 ft (50 meters) wide (75 ft or 25 meters on either side of the centerline) was inventoried for the trail for a total of 549.6 acres inventoried. An approximate 2.7 mile section (between MP 26.00 and MP 28.7) of the trail alignment was not inventoried because it exceeded a 30 percent slope gradient.

Thirteen isolated finds, seventeen prehistoric sites, eight historic structures, eight historic sites, and fifteen historic linear resources and associated segments were recorded during the Class III cultural resource inventory (Flattops 2017).

The thirteen isolated finds are field evaluated not eligible for inclusion on the NRHP. No further work is recommended. Of the seventeen prehistoric sites, eleven are field evaluated not eligible and no further work is recommended. Seven of the historic structures are field evaluated not eligible. All eight historic sites are field evaluated not eligible for inclusion on the NRHP and no further work is recommended.

Eight new linear sites were recorded during the survey of which four sites (5ME21906/Colorado Ute Electric Association 135 kV Electric Transmission Line, 5ME22173/Hallenbeck Cow Camp Road, 5ME22174/Raber Cow Camp Road, 5ME22201/Lands End Road) are field evaluated eligible for inclusion on the NRHP. Five previously recorded linear sites including 5ME4677 (OMPC), 5ME7351 (Denver & Rio Grande Railroad), 5ME12922.5 (U.S. Highway 6 & 24), 5ME17996 (Shoshone-Palisade Overhead Transmission Line), and 5ME13956 (Wild Rose Trail) were field evaluated eligible for inclusion on the NRHP. Segments of each of these linear sites were recorded where the proposed trail alignment crosses them.

Ten historic linear segments are field evaluated as not contributing to the overall eligibility of the recorded linear resource and no further work is recommended. Four historic linear segments including 5ME4677.6, 5ME7351.37, 5ME12922.5, and 5ME13956.2 are field evaluated as supporting the overall eligibility of the recorded linear resource. Three of these segments (5ME4677.6, 5ME7351.37, and 5ME12922.5) are part of the existing infrastructure. Site 5ME13956.2 is a historic linear segment of the Otto Trail and supports the eligibility of the linear resource.

Three addendum reports were completed by the BLM and Forest Service archaeologists to reroute around three historic properties (cultural resources evaluated as eligible to the NRHP) found in the initial survey. Addendum A found two additional isolated finds and Addendum B found five isolated finds. All the isolated finds were field evaluated to be not eligible to the NRHP.

Portions of the proposed construction and access routes have been previously surveyed through other projects. Route O14 was partially surveyed under report ME.LM.R86. About 2,000 ft of this route still need to be inventoried for cultural resources. Survey ME.LM.R972 inventoried the proposed segments of 057 and 083. No cultural resources were found on those segments and no further work is required.



Cultural resource inventory and completion of Section 106 consultation would occur before maintenance would be authorized on the unsurveyed portions of the access roads. Additionally, any other ancillary surface disturbing actions such as the construction of fence crossings, the removal of social trails, etc. would be surveyed and consulted on prior to implementation or monitored during construction if they are outside of the surveyed corridor.

### **3.4.1.2 Environmental Consequences:**

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved. No project-related impacts to cultural resources from activities described above for the Proposed Action would occur. Currently permitted activities and other ongoing activities in the project area that could potentially impact cultural resources would continue. These include activities and impacts associated with timber management, livestock grazing, recreation, ROW use and maintenance, vegetation treatments, prescribed fire, wildland fire suppression, and water use.

#### Cumulative Effects:

Cumulative effects of the No Action Alternative include those effects from ongoing and future activities and resources in the project area including those from use of existing authorized and unauthorized trails. Unauthorized collection or damage to cultural resources could occur under the No Action Alternative.

#### Alternative B – Proposed Action:

Impacts to cultural resources from the Palisade Plunge Trail would be the same as the overall recreation impacts analyzed in Section 4.3.8 (page 4-205) of the 2012 GJFO Resource Management Plan Environmental Impact Statement. Direct impacts from the Proposed Action have the potential to irreparably damage or destroy subsurface sites that are culturally sensitive. Impacts that affect the physical setting could result in a loss of characteristics that make a cultural resource significant for listing in the NRHP. Indirect impacts to cultural resources could result from increased human presence and access, both during construction and trail use. Additionally, there is the potential for visual impacts that the trail might introduce to other sites present in the viewshed of the trail.

One eligible prehistoric site (5ME269) is located outside the corridor and would not be affected by the Proposed Action. Eligible prehistoric site 5ME271 is located within the corridor and the trail was rerouted to avoid the site. Bi-annual monitoring of site 5ME4947 is recommended and if damage occurs to the site area, it is recommended that access to the site be limited by fencing or other means. Eligible prehistoric sites 5ME22192, 5ME22193, and 5ME22195 are located on National Forest System lands and the trail has been rerouted to avoid these sites. The GMUG archaeologist conducted a Class III cultural resource inventory of proposed trail reroutes to avoid and protect these sites.

One historic structure (5ME2427) is field evaluated eligible for inclusion on the NRHP. Although the structures are within the survey corridor, the trail would not have an impact on existing architecture.

The Proposed Action would not impact the three historic linear segments (5ME4677.6, 5ME7351.37, and 5ME12922.5) that are part of the existing infrastructure. Site 5ME13956.2 is a historic linear segment of the Wild Rose Trail built by John Otto. It is planned to be a part of the

trail alignment and therefore would be adversely affected by trail construction. A portion of the trail that has been washed away would be reconstructed. Further mitigation on this trail would be completed through additional consultation with the SHPO and the creation of an MOA.

Design features would be implemented to mitigate potential impacts to cultural resources. These include informing all persons associated with the project that federal laws protect cultural resources, conducting additional Class III cultural resource inventories if proposed disturbance is outside surveyed areas, further consultation with SHPO and preparation of an MOA prior to work on the Wild Rose Trail Segment (5ME13956.2), monitoring of Site 5ME4947, and creation of interpretive signage on kiosks at trailheads or websites to inform the public about cultural resources.

#### Cumulative Effects:

Cumulative effects under the Proposed Action would be similar to those under the No Action Alternative. Unauthorized collection or damage to cultural resources could occur from ongoing and future activities in the project area. All additional access to previously inaccessible lands offers the possibility for additional negative impacts to cultural resources.

### **3.4.2 Paleontological Resources**

#### **3.4.2.1 Current Conditions:**

Paleontological (fossil) resources include the remains or traces of any prehistoric organism preserved by natural processes in the earth's crust. BLM manages paleontological resources for their scientific, educational, and recreational values in compliance with the Paleontological Resources Preservation Act (PRPA) of 2009. The PRPA affirms the authority for many policies the BLM has for managing resources, such as issuing permits for collecting and curating paleontological resources, and confidentiality of their locations. The law also defines prohibited acts, such as damaging or defacing paleontological resources, and establishes both criminal and civil penalties.

BLM classifies geologic formations to indicate the likelihood of significant fossil occurrence (usually vertebrate fossils of scientific interest) according to the PFYC System for Paleontological Resources on Public Lands (BLM 2016). These classifications, Classes 1 to 5, determine the procedures to be followed prior to granting a paleontological clearance to proceed with a project.

A paleontological resource survey was conducted by Paleo Solutions, Inc. during September 2017 for approximately 6 miles of the trail alignment (Paleo Solutions, Inc. 2017) where geologic formation support the potential occurrence of paleontological resources. The scope of the paleontological survey was developed in consultation with the BLM. The BLM requested that surveys be conducted where the trail alignment intersects with exposures of the Wasatch and Hunter Canyon formations. The PFYC ranking of the Hunter Canyon Formation is 3, meaning that it is considered to have moderate paleontological potential, and the PFYC ranking of the Wasatch Formation is 5, meaning that it is considered to have very high paleontological potential. The paleontological survey included approximately 10 kilometers (6 miles) of the trail corridor with a 20 meter (66 ft) buffer on BLM-managed public lands.

Five fossil localities were recorded during the field survey, all of which were deemed non-significant due to the poor preservation of the fossils and/or the fact that they are relatively common and well documented at other localities. The recorded fossil localities contain palm and

other leaf fragments and dinosaur bone fragments within the Hunter Canyon Formation. No fossils were observed in the Wasatch Formation. All new fossil localities documented within the survey area were deemed non-significant and the overall density of well-preserved fossils in the Wasatch and Hunter Canyon formations in the general area appears to be low.

During the determination of the trail pathway, a 2-ft long dinosaur bone was discovered within 10 ft of the path on very steep slopes above the Palisade Rim portion of the trail. The bone and containing rock was displaced from outcropping Cretaceous Hunter Canyon Formation as much as 500 vertical ft above where it was discovered. BLM coordinated with a permitted Paleontologist for mitigation of this paleontological resource by conducting surface collection and subsequent curation at the Dinosaur Journey Museum in Fruita, Colorado. Additional bone fragments were not found in surveys of the immediate surroundings; thus, BLM concludes this was an isolated resource.

### **3.4.2.2 Environmental Consequences:**

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but existing trails in the area would continue to be used. Impacts to paleontological resources from implementation of the Proposed Action would not occur. However, existing impacts related to unauthorized collection or damage from other activities or resource uses such as timber management, livestock grazing, recreation, ROW use and maintenance, wildland fire suppression, and water use would continue.

#### Cumulative Effects:

Cumulative effects of the No Action Alternative include those effects from ongoing and future activities and resources in the project area including those from use of existing authorized and unauthorized trails. Unauthorized collection or damage to paleontological resources could occur under the No Action Alternative.

#### Alternative B – Proposed Action:

Although surveys have indicated no significant fossils occur along the trail alignment within the surveyed area, surface-disturbing activities and increased human access could produce unexpected discoveries and potential paleontological resource damage. Direct impacts could include damage or destruction during construction, with subsequent loss of information. Indirect impacts could include fossil damage or destruction by erosion due to surface disturbance. The greatest potential for impacts would be associated with surface and shallow bedrock disturbance.

#### Cumulative Effects:

Cumulative effects under the Proposed Action would be similar to those under the No Action Alternative. Unauthorized collection or damage to paleontological resources could occur from ongoing and future activities in the project area.

### **3.4.3 Tribal and Native American Religious Concerns**

#### **3.4.3.1 Current Conditions:**

American Indian religious concerns are legislatively considered under several acts and Executive Orders, namely the American Indian Religious Freedom Act of 1978 (Public Law [PL] 95-341), the Native American Graves Protection and Repatriation Act of 1990 (PL 101-601), and Executive Order 13007 (1996; Indian Sacred Sites). In summary these require, in concert with

other provisions such as those found in the NHPA and Archeological Resources Protection Act (ARPA), that the federal government carefully and proactively take into consideration traditional and religious Native American culture and life and ensure to the degree possible, that access to sacred sites, the treatment of human remains, the possession of sacred items, the conduct of traditional religious practices, and the preservation of important cultural properties are considered and not unduly infringed upon. In some cases, these concerns are directly related to “historic properties” and “cultural” or “archaeological resources.” In some cases elements of the landscape without archaeological or other human material remains may be involved. Identification of these concerns is normally completed during the land use planning efforts, reference to existing studies, or via direct consultation.

### **3.4.3.2 Environmental Consequences:**

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but existing authorized and unauthorized social trails in the area would continue to be used. Access to many portions of the project area are behind locked gates or are restricted to the public and likely tribal members.

#### Cumulative Effects:

Under the No Action Alternative, there would be no known cumulative impacts to Native American Religious Concerns beyond the existing infrastructure impacts in the current landscape.

#### Alternative B – Proposed Action:

The Ute have a generalized concept of spiritual significance that is not easily transferred to Western models or definitions. As such, it is recognized that the Ute have identified sites that are of concern because of their association with Ute occupation of the area as part of their traditional lands. Properties of a type previously identified as being of interest to local tribes, were identified during the cultural resources inventory of the project area. BLM met with representatives of the Ute Mountain Ute Tribe and the Ute Indian Tribe of the Uintah and Ouray Reservation on April 18, 2017 in Craig, Colorado. BLM met with tribal representatives from the Ute Indian Tribe of the Uintah and Ouray Reservation at the trail alignment on October 12, 2017. On October 24, 2017, the BLM met with the Ute Indian Tribe of the Uintah and Ouray Reservation, the Ute Mountain Ute Tribe, and the Southern Ute Indian Tribe in Kremmling, Colorado. Consultation is ongoing and BLM sent letters to tribal councils/business committees, and cultural representatives on February 23, 2018. During previous in-person consultation, tribes have mentioned that they would be interested in interpretation kiosks along the trail that discuss Ute heritage and the Ute usage of the area and landscape. They have expressed concern about increased visitation to a rock art sites in the area (5ME4947) that could increase as a result of this project. The project would not alter or limit any access if there were traditional uses that are not known to the agency and in fact, may increase access to areas that were previously inaccessible due to fences and gates on private land.

#### Cumulative Effects:

In previous consultation, some tribes have expressed concern with landscape fragmentation from trails and roads. Trails such as the Palisade Plunge Trail would contribute to landscape fragmentation and loss of the landscape that would have been present for earlier Ute people.

### 3.4.4 Visual Resources

#### 3.4.4.1 Current Conditions:

BLM lands in the project area include lands designated as Visual Resource Management (VRM) Class II and Class III. Class II areas are managed to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Class III areas are managed to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate (BLM 2015a). National Forest System lands in the project area have a high existing scenic integrity level (Forest Service 2017b). Areas with high scenic integrity appear unaltered, and although changes are present, they blend in with the scenic character so closely that they are not evident. Lands End Road (FSR 100) from SH-65 to the Lands End Observatory is part of the Grand Mesa Scenic and Historic Byway, which is recognized for its high quality scenery viewing opportunities.

#### 3.4.4.2 Environmental Consequences:

##### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved. No project-related impacts to visual resources from implementation of the Proposed Action would occur. Currently permitted activities and other ongoing activities in the project area that could potentially impact visual resources would continue. These include activities and impacts associated with timber management, livestock grazing, recreation, ROWs, vegetation treatments, prescribed fire, wildland fire, and water use.

##### Cumulative Effects:

Cumulative effects to visual resources would include impacts associated with the use of existing authorized and unauthorized roads and trails, ROWs, vegetation treatments, prescribed fire, and ongoing recreation, grazing and other activities in the project area.

##### Alternative B – Proposed Action:

The Palisade Plunge Trail and associated facilities during construction and trail use are expected to meet the BLM's VRM objectives and the Forest Service's scenic integrity objectives. Portions of the trail would be visible from Lands End Road especially as the trail crosses Lands End Road at three locations. The trail is likely to be most visible in the initial years following its construction, but would become less visible as vegetation from the construction area continued to fill in and the trail edges soften with time. The cleared area for helispots, the storage shed, and bolts for lowering the rescue motorcycle would be visible; however, impacts would be reduced by painting the shed and bolts a color that would blend with the rock. The new graveled trailhead at Shirrtail Point would also be visible. Visible trail markers would be limited to a small number unless it is determined that additional markers are necessary for user safety. Although segments of the Palisade Plunge Trail would be visible, the size of the trail's footprint would be small compared to the scale of the surrounding landscape and would be similar to lines from existing roads, trails, and other man-made features.

##### Cumulative Effects:

Cumulative effects under the Proposed Action would be similar to those under the No Action Alternative. The Proposed Action would help disperse recreationists across the project area, thereby lowering the potential for concentrated visual impacts at any single location.

### 3.4.5 Social, Economic, and Environmental Justice

#### 3.4.5.1 Current Conditions:

The project area covers approximately 34 miles between the Grand Mesa into the Town of Palisade in Mesa County. Palisade is located approximately 12 miles east of Grand Junction, which, with a 2016 population of 64,629, is the largest city in northwest Colorado and a regional center for trade and government services (Colorado Department of Local Affairs [CDOLA] 2018). Known as the peach and wine capital of Colorado, Palisade has several orchards and wineries and offers a range of outdoor recreational opportunities, including bicycle touring, mountain biking, and river floating.

For the first decade of the current century, the rate of population growth in Mesa County exceeded the statewide average. Between 2000 and 2010, Colorado's population increased 17.4 percent, Mesa County's population increased 26.6 percent, and Palisade's population increased 6.2 percent (see Table 17). Growth in Mesa County has slowed since 2010, and between 2010 and 2016, Colorado's population increased 9.7 percent, Mesa County's population increased 2.4 percent, and Palisade's population decreased 0.7 percent (CDOLA 2018).

**Table 17**  
**Population and Population Change, 2000 – 2016<sup>1</sup>**

Location	2000	2010	2016
Colorado	4,301,261	5,050,332	5,538,180
Mesa County	116,255	147,155	150,731
Palisade	2,579	2,738	2,718

<sup>1</sup> CDOLA 2018.

In 2016, the largest employment sectors in Mesa County according to Colorado Department of Labor and Employment (CDLE) report included the following categories: Health Care & Social Assistance, Retail Trade, Accommodations & Food Services, and Educational Services. Annual wages in Mesa County averaged \$40,906 in 2016 and were highest in the Management of Companies & Enterprises (\$88,145) and Mining (\$77,262) sectors and lowest in the Arts, Entertainment & Recreation (\$17,304) and Accommodation & Food Services (\$17,281) and sectors (CDLE 2018).

In 2016, the largest employment sectors in Palisade included Health Care & Social Assistance, Educational Services, Retail Trade, Accommodation & Food Services, and Arts, Entertainment & Recreation. Palisade's workforce is characterized by management and business occupations (32 percent), sales and office occupations (23 percent) and service occupations (21 percent) (Census Bureau 2018a).

Travel and recreation-based tourism also contribute to employment in Mesa County. Tourism in the Grand Valley can be partly attributed to the prevalence and use of public lands. The travel industry is not represented by a single industrial sector, but includes businesses in several industries, primarily the Accommodation & Food Services, Transportation, and Retail sectors. According to a 2017 study commissioned by the Colorado Tourism Office, the total economic impacts of travel spending by overnight visitors to Mesa County increased from \$133 million in 2002 to \$282 million in 2016. The employment supported by this spending increased from 2,481 jobs in 2002 to 3,105 jobs in 2016. In 2016, annual earnings in the travel industry averaged \$22,641 in Mesa County (Dean Runyan Associates 2017).

A 2018 study conducted by researchers at Colorado Mesa University investigated the economic impact of visitors to the BLM's Kokopelli, 18 Road, and Lunch Loops trail systems in Mesa County. The study found that, in 2017, spending associated with use of these trails contributed \$14.6 million to Mesa County's economy and created 345 full- and part-time jobs with average annual earnings of \$26,101 (Casey et al. 2018).

Between 2010 and 2016, the unemployment rate fell from 8.7 to 3.3 percent in Colorado and from 11.0 to 5.4 percent in Mesa County (Bureau of Labor Statistics 2018). In 2016, the median household income was \$62,520 in Colorado, \$50,070 in Mesa County, and \$39,890 in Palisade (Census Bureau 2018a).

Executive Order 12898 requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies and activities on minority populations and low-income populations (defined as those living below the poverty level). In 2016 racial minorities, including persons of African American, American Indian, Asian, Pacific Islander descent, and some other race or two or more races, comprised 16 percent of the population in Colorado, 6 percent of the population in Mesa County, and 11 percent of the population in Palisade. Persons of Hispanic origin, who may be of any race, comprised 21 percent of the population in Colorado, 14 percent of the population in Mesa County, and 10 percent of the population in Palisade (Census Bureau 2018b). In 2016, low income populations comprised 11 percent of Colorado's population and 15 percent of Mesa County's population (Census Bureau 2017).

The Council on Environmental Quality (CEQ) provides guidance for addressing environmental justice (CEQ 1997). In accordance with this guidance, the potential for environmental justice impacts associated with the Palisade Plunge Trail was evaluated against a "meaningfully greater" criterion population analysis in which minority and low income populations greater than 120 percent of the relevant statewide population were identified as "environmental justice" populations that have the potential to be disproportionately affected by the proposed project. This criterion level was selected because it is commonly used for NEPA compliance with federal agencies. Racial minority populations in Palisade exceed 120 percent of racial minority populations in Mesa County and low income populations in Mesa County exceed 120 percent of Colorado's low income population, and these populations were identified as "environmental justice" populations.

### **3.4.5.2 Environmental Consequences:**

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but existing trails in the area would continue to be used. Economic conditions, including the structure of the economy and employment trends, would be unaffected. The draw of tourists to the Palisade area would likely remain similar to current conditions if the trail is not constructed. The No Action Alternative would have no impacts on minority and low income populations.

#### Cumulative Effects:

Cumulative effects associated with this alternative would be minimal. The number of users visiting the area is not expected to decrease if the Palisade Plunge Trail is not approved. Some

additive cumulative impacts may be forgone if this project is not approved, especially if users' experiences on existing trails start to decline because of increased crowding.

Alternative B – Proposed Action:

The Proposed Action would not result in changes to regional population levels or trends. Construction of the Palisade Plunge Trail would require a temporary workforce that is expected to come from the local area. The Proposed Action would not result in an influx of workers, nor would it affect regional employment trends. As such, measurable costs to the community for low-income housing, food assistance programs, free school lunch, and other government services are not expected. The proposed trail corridor is not immediately adjacent to any residences and would not have disproportionate effects on environmental justice populations.

Financial impacts to the local community from construction spending would be limited because of the trail's relatively short construction schedule. During trail operations, local and visiting recreationists using the trail would stimulate spending at local businesses. Using recent research conducted by the Natural Resource Center at Colorado Mesa University (NRC) regarding the economic value of mountain biking in the Grand Valley, the economic impact can be expressed by both market and non-market impacts (Casey et al. 2018).

The market impacts would be the amount of new money that would flow into the Mesa County economy from tourists, cyclist from outside Mesa County that visit the trail. The NRC study found 68.5 percent of visitors at the popular mountain biking trailheads in Mesa County were tourists. These tourists created a total economic impact of \$14 million (Casey et al. 2018). The overall visitation at the trailheads included in the study was 198,000 (BLM). Because the market value is based on out-of-town visitors, the economic impact of each out-of-town visitor is roughly \$104. (total visitors multiplied by 0.685 divided by 14 million).

That percentage varied at different trailheads. For the purpose of this analysis, the higher percentage at the Kokopelli Loops Trailhead is used. The rationale for using the higher number is the new trail is expected to attract more tourists. The NRC study found 80 percent of mountain bikers at the Kokopelli Loops Trailhead were from outside Mesa County. The total annual visitation on the new trail is expected to be 30,000. The expected out-of-town visitation is 24,000, and the expected market impact from the new money brought into the Mesa County economy would be roughly \$2.5 million. (total out-of-town visitors multiplied by \$104).

The NRC study also conducted a non-market analysis to better understand the value of mountain bike trails that included both tourists (out-of-town visitors) and local visitors (residents in Mesa County). The study used a revealed preference methodology. The study looked at what visitors spend to access the different trail systems. This method allows for inclusion of local visitors into the overall analysis of the value of the trails expressed in economic terms. The study found the average annual expenditure of each visitor to access trails was \$174. As such, the non-market value of the new trail would be roughly \$5.2 million. (total visitation multiplied by \$174).

Gross regional product for the Grand Junction metropolitan area has been estimated at \$5.4 billion (Bureau of Economic Analysis [BEA] 2017). The percent change in gross regional product from the trail would be a fraction of 1 percent of the overall economy and therefore, the direct economic impact of the trail to the overall economy would be minor.



A quantitative analysis of the social impacts of the trail is difficult. That said, recent research indicates an important factor in people's decisions to either move to or continue to stay in Mesa County is the diversity of outdoor recreation (Natural Resource Center: Rural Colorado Migration Study). When respondents in the study were asked how different features of public lands affected their quality of life, over 90 percent said the diversity of recreational opportunities on public lands either greatly improved or somewhat improved their quality of life (NRC). The Grand Valley has a wide diversity of mountain biking options. The Palisade Plunge would add to that diversity. As such, the unique opportunity associated with a trail that descends from the top of the Grand Mesa to the valley floor is expected to enhance the quality of life in Mesa County.

#### Cumulative Effects:

The proposed project in combination with other existing and planned projects could enhance the local economy by enhancing mountain biking opportunities and other experiences on the Grand Mesa and in the Palisade area. Existing mountain biking trails draw tourists from the Colorado Front Range and across the world to recreate in this area. Each additional enhancement to mountain biking infrastructure and opportunities would be likely to result in a cumulative increase in visitors to and outside spending in the Grand Valley.

### **3.4.6 Transportation and Access**

#### **3.4.6.1 Current Conditions:**

From the north, the Mesa Top Trailhead would be accessed by exiting Interstate 70 (I-70) at Exit 49 and travelling southeast on SH-65 for approximately 30 miles. From downtown Palisade, the access route to Mesa Top Trailhead would travel east on North River Road for approximately 2 miles to U.S. Highway 6 and 24 and continue north on U.S. Highway 6 and 24 for approximately 0.3 mile to I-70. The access route would proceed north on I-70 for approximately 5 miles to Exit 49. From here, access to the trail would be as described above.

From the south, access to the Mesa Top Trailhead would be gained by travelling approximately 20 miles northwest out of Cedaredge. Lands End Road is located approximately 0.5 mile west of the Mesa Top Trailhead, and travels south from the Grand Mesa approximately 19 miles to join Kannah Creek Road and continue another 3 miles to U.S. Highway 50 south of Grand Junction. Lands End Road is FSR 100 as it crosses National Forest System lands. Beyond Forest Service boundaries, Lands End and Kannah Creek roads are Mesa County roads.

The lower end (western terminus) of the Palisade Plunge Trailhead would be located in the Town of Palisade downtown area. The end of the trail would be accessed from I-70 at Exit 44 and following North River Road to the Town of Palisade.

In 2016, AADT on I-70 between Palisade and Exit 49 ranged between 16,000 and 18,000 vehicles. 2016 AADT on SH-65 ranged between 1,400 and 2,300 vehicles on segments between I-70 and the Grand Mesa, between 460 and 850 vehicles on roadway segments on the Grand Mesa, and between 2,400 and 5,400 vehicles on segments between Cedaredge and the Grand Mesa. 2016 AADT on U.S. Highway 6 and 24 from North River Road to I-70 was 1,300 vehicles (CDOT 2018). Mesa County reported 2016 average daily traffic of 78 vehicles on Lands End Road, approximately 919 ft west of its intersection with SH-65 (Frazier 2017), and 2016 average daily traffic of 200 vehicles on North River Road, just east of its intersection with Troyer Road (Pobirk 2018).

On BLM-managed public lands, there are several routes and trails with various designations including routes designated as “closed”, “limited to bicycle only”, and “open to all uses.” Some of the routes have seasonal closures.

The proposed trail alignment crosses several existing trails on National Forest System lands including the Whitewater Basin Trail and the Coal Creek Trail. Also on National Forest System lands, the trail alignment would cross the Kannah Creek Roadless Area for approximately 2.5 miles (MP 11.8 to MP 14.30) as shown on Map 7.

### **3.4.6.2 Environmental Consequences:**

#### Alternative A – No Action:

Under this alternative, the Palisade Plunge Trail and associated facilities would not be approved and resulting recreational user traffic accessing the trail would not occur. Existing social trails (0.57 mile) would not be rehabilitated under this alternative, and potential impacts to Colorado hookless cactus from use of the social trails would continue. Existing traffic associated with currently permitted and ongoing activities such as timber management, livestock grazing, recreation, ROWs, wildland fire suppression, vegetation treatments, prescribed fire, public utility infrastructures, and water use would continue on roads in the project area including I-70, U.S. Highway 6 and 24, SH-65, Lands End Road, and North River Road.

#### Cumulative Effects:

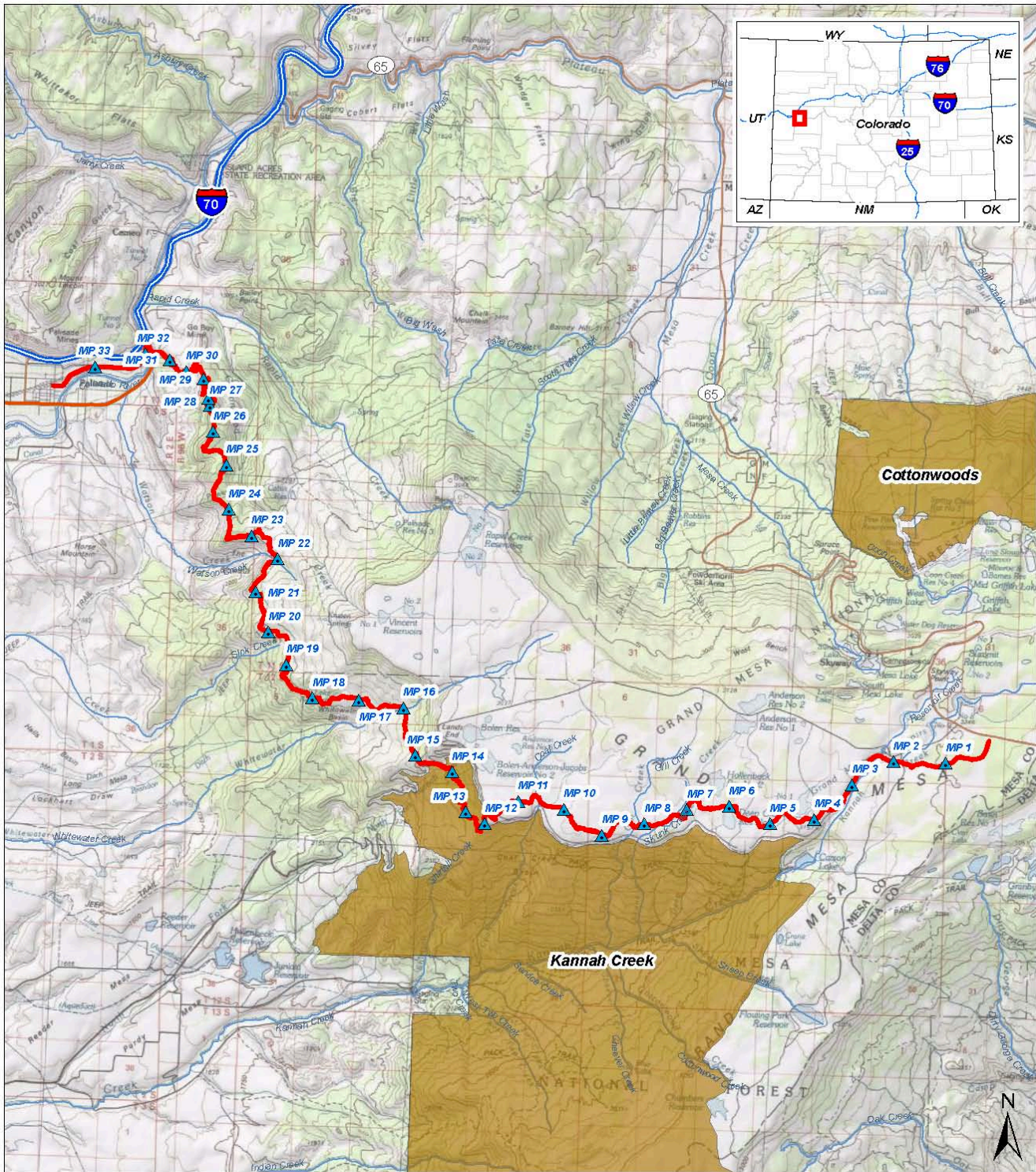
Cumulative effects associated with this alternative would be minimal. Traffic volumes on I-70, U.S. Highway 6 and 24, SH-65, Lands End Road, and North River Road are not expected to decrease if the Palisade Plunge Trail is not approved.

#### Alternative B – Proposed Action:

The Palisade Plunge Trail would begin at the existing Mesa Top Trailhead, which is located off SH-65, approximately 0.5 miles east of Lands End Road. A second access point is proposed at the Shirttail Point Trailhead, which would be located approximately 10 miles west of SH-65 and 0.6 miles south of Lands End Road. Parking for trail users would be available in the existing Mesa Top Trailhead parking area, an existing parking area adjacent to U.S. Highway 6 and 24, near North River Road, and a proposed parking area at the Shirttail Point Trailhead.

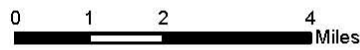
The number of vehicles that would travel on SH-65 and Lands End Road to use the Palisade Plunge Trail is unknown. Usage patterns reported for a similar mountain bike trail (the Whole Enchilada Trail) in Moab, Utah include up to 300 mountain bike riders in a single day approximately 5 months of the year for the entire trail. Large portions of the trail would also be closed from December 1 to May 1 to protect big game winter range. Rider groups on that trail frequently use commercially-licensed shuttles to access the trailhead. If recreational use of the Palisade Plunge Trail is similar to that reported for the Whole Enchilada Trail, 125 vehicles per day could access the trail during the peak summer and autumn recreational-use season, assuming a carpooling rate of 2.5 passengers per vehicle. The current analysis assumes that some bike riders would use shuttle services to access the trailheads, and that 75 vehicles per day would use SH-65 and 50 vehicles per day would use Lands End Road to access the Palisade Plunge Trail. Local trail users may also use the lower portion of the Palisade Plunge Trail that connects to the Palisade Rim Trail on a more year-round basis.





**Legend**

-  Palisade Plunge Trail
-  Milepost
-  Streams
-  Forest Service Roadless Area



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project was developed through digital means and may be updated without notice.

**Palisade Plunge Trail**  
**Mesa County, Colorado**

**Map 6**  
**Roadless Areas**

The analysis assumes that half of the trail's recreationists would access the Mesa Top and Shirttail Point trailheads from the north and that the other half would access the trailheads from the south. Compared to 2016 AADT, these usage levels could result in peak project-related traffic increases of less than 1 percent on affected segments of I-70 and 6 percent on affected segments of U.S. Highway 6 and 24. Peak project traffic could increase traffic on SH-65 between 3 and 5 percent on roadway segments between I-70 and the Grand Mesa, between 9 and 16% on segments on the Grand Mesa, and between 1 and 3 percent on segments between Cedaredge and the Grand Mesa. Compared to 2016 average daily traffic levels, peak project traffic could result in traffic increases of 37 percent on North River Road and 129 percent on Lands End Road near the top of the Grand Mesa. (The estimated impact on Lands End Road is high, in part, because of the relatively low level of background traffic. Under the current set of assumptions, the project would increase traffic on Lands End Road from 78 vehicles to 128 vehicles per day for approximately 5 months of the year). Peak traffic impacts could be expected to occur on some summer and early autumn weekends. Traffic impacts on weekdays and throughout the remainder of the year are likely to be lower. Increased usage of shuttle services by cyclists and pedestrians to access the Mesa Top and Shirttail Point trailheads would result in lower traffic impacts.

Approximately 0.57 mile of existing social trails at the west end of the project area would be rehabilitated, which would reduce the potential for impacts to Colorado hookless cactus. On BLM-managed public lands, route designations would be changed to allow for use of these routes during construction (see Map 2).

The Deputy Regional Forester determined that the proposed trail is consistent with the 2012 Colorado Roadless Rule (Forest Service 2012b and 2017c). The nine roadless area characteristics were reviewed as follows:

- High Quality, undisturbed soil, water or air resource: There are 45 miles of existing trail within the Kannah Creek area. The addition of 2.5 miles would result in less than a 6 percent increase to the total miles within the area.
- Sources of public drinking water: The City of Grand Junction's municipal watershed encompasses the entire Kannah Creek Roadless area. The City of Grand Junction has and would continue to be heavily involved with the project to ensure that the project does not result in any adverse impacts to the watershed.
- Diversity of plant and animal communities: The area does include a diversity but not to an extent greater than the surrounding lands outside of the roadless area.
- Habitat for threatened and endangered species dependent: The area has been surveyed and all impacts associated with threatened and endangered species are identified and mitigated as part of the BE/MIS Report (Attachment B).
- Primitive and semi-primitive classes: The area has been and would continue to be managed for a semi-primitive non-motorized recreation experience.
- Reference landscapes for research: The Kannah Creek Roadless area has not been identified as a reference landscape for research study or interpretation.
- Landscape Character and Integrity: The project would not result in a negative impact to the landscape character or overall scenic qualities.
- Cultural Properties and Sacred Sites: A cultural resource survey has been completed along the proposed route and a report submitted to SHPO.

- Other unique characteristics: The area is popular during the fall big game hunting season. The proposed trail has been located in coordination with local CPW staff and in an area to minimally impact existing hunting opportunities.

#### Cumulative Effects:

The proposed project in combination with other existing and planned projects could result in cumulative traffic increases on highways, county roads, and town streets in the project area. Potential increases in traffic levels could result in occasional traffic delays during peak usage periods.

### **3.4.7 Wastes, Hazardous or Solid**

#### **3.4.7.1 Current Conditions:**

Hazardous and solid wastes are not a part of the natural environment but could be introduced to the environment as a result of implementation of the Proposed Action.

#### **3.4.7.2 Environmental Consequences:**

##### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but existing trails in the area would continue to be used. Impacts to resulting from use or disposal of wastes from implementation of the Proposed Action would not occur.

#### Cumulative Effects:

There would be no new cumulative effects associated with the proposal under the No Action Alternative.

##### Alternative B – Proposed Action:

The use of motorized equipment could result in the release of fuel or hydraulic fluids. Use of motorized equipment during construction of the trail would be limited to areas with flat to low grade terrain where a trail dozer could be operated. Most of the trail on BLM-managed public land would be constructed by hand crews. Care would be taken when refueling equipment and any spills of petroleum hydrocarbons should be reported and cleaned up promptly. There is the potential for hazardous materials to be introduced into the environment if motorized equipment is used for administrative purposes during construction or maintenance activities or during emergency evacuation operations. Design features have been added to the Proposed Action to protect waterbodies and allow for quick reporting and remedy of any spills.

#### Cumulative Effects:

Cumulative effects would be expected to be minor because the negative effects from the spillage of fuels and hydraulic fluid are uncommon and can be cleaned up or otherwise remediated with little or no long-term impact.



---

## 3.5 LAND RESOURCES

---

### 3.5.1 Recreation

#### 3.5.1.1 Current Conditions:

The proposed non-motorized trail spans a distance of 34 miles from the top of the Grand Mesa to the Town of Palisade, all in Mesa County, Colorado. The proposed trail passes through areas with a variety of recreation settings, characteristics, and activities. It is located near communities and existing routes and would be accessible to residents and visitors for recreation. This area is popular for mountain biking, hiking, horseback riding, trail running, hunting, and OHV use.

The Palisade Plunge Trail begins on National Forest System lands off of SH-65, a National and State designated Scenic and Historic Byway. Recreation opportunities for roaded natural, semi-primitive motorized, and semi-primitive non-motorized recreation experiences exist on this part of the Forest. The “Mesa Top Trailhead”, an existing paved parking area providing parking for over 75 vehicles, restroom, and change room facilities would serve as the easternmost termini for the proposed trail. Current permitted commercial activities adjacent to or within the project area on National Forest System lands include three competitive recreation events, one resort with summer horseback, mountain bike, and fishing services, two resorts with winter snowmobile tours, and one outfitter/guide with summer packing and fall big game hunt services. Frequent proposals to conduct noncommercial group use for over 75 people at a time are processed by the Grand Valley Ranger District. The Grand Valley Ranger District utilizes documented capacity analysis for three seasons (summer, fall and winter) to determine available commercial Outfitter and Guide use on National Forest System lands.

The first 11.60 miles of the trail would cross the relatively flat top of the Grand Mesa through small stands of conifers and large open meadows until reaching the Shirrtail Point area. At this location, the Forest Service is proposing to construct a new trailhead to provide additional parking for approximately 25 vehicles and, to address sanitation concerns, a new double-vault toilet building. From the Shirrtail Point area, the trail would descend off the rim of the Grand Mesa for 0.5 mile following a section of historic trail initially constructed by John Otto. This trail would provide access into the northwestern portion of the Kannah Creek Basin. The reconstruction of this route would involve the engineering and construction of rock retaining walls. The height of retaining walls would be limited as best possible to not impede the movement patterns of mule deer and elk. Once the descent off the Grand Mesa rim is complete, the trail would contour under the rim of the Grand Mesa in a northwesterly direction for the approximately 2.8 miles until crossing the Lands End Road for the final time. The route would then drop into and traverse across the Whitewater Basin drainage until crossing into lands administered by the BLM at MP 18.24.

The proposed trail alignment continues on BLM-managed public land for dispersed recreation, including both motorized and non-motorized recreational opportunities. The primary recreation use in this area is big game and lion hunting.

Of the 10.90 miles of the proposed trail that crosses BLM-administered public lands, 5.8 miles are within the Palisade Rim SRMA and 5.1 miles are within the Rapid Creek Wildlife Emphasis Area. In the recreation area, management is focused providing opportunities for mountain biking, hiking, trail running, dog walking, and horseback riding. The beneficial visitor results of these activities include close to home opportunities to appreciate the outstanding scenery of the Grand

Valley, to improve physical and mental fitness, and build stronger relationships with friends and family. Off-site, the results to local communities include an improved quality of life and a stronger economy through tourism and increased desirability as a place to live. The current management of the setting to support these activities and outcomes includes a naturally appearing physical landscape with a designated singletrack trail system where visitors can expect to encounter up to seven other groups. These groups generally have fewer than eight people, but can occasionally be larger. The existing designated trail system is signed to help visitors navigate and encourage on-trail use. The recreation area is closed to overnight camping, campfires, and target shooting. Recreation in the wildlife emphasis area is managed to achieve wildlife objectives (see Section 3.3.5, Wildlife).

Currently, the BLM estimates 19,000 annual visits to the SRMA and 200 annual visits to the wildlife emphasis area. The majority of use in the recreation area is pedestrian use (hiking, trail running, and dog walking). Currently, the BLM assumes there is a minimal level of negative user interactions (user conflict) in the area based on monitoring of similar types of trail systems and public comment received during scoping for this project. That said, the intensity of these interactions is necessarily low due to low visitation.

The BLM authorizes commercial use in both the recreation area and the wildlife emphasis area. Permits are issued for guided mountain bike tours in the recreation area. No use has been reported under those permits. Commercial hunting operations are authorized in the wildlife emphasis area. Post-use reporting for commercial hunting operations is for a larger area that includes the proposed trail corridor along with other nearby BLM-administered public lands. For that larger area, less than 15 commercial user days have been reported annually in each of the past three years. The BLM does not currently issue any recreation permits for events in the recreation area. Guidance in the 2015 RMP for recreation permitting limits permits to low and medium impact activities (Class I and II). Additionally, recreation permits for the area should have support from local communities and be coordinated with the Town of Palisade. A livestock grazing and hunting guide permit with the City is held by the Van Winkles.

The proposed trail passes through remote terrain with limited vehicle access. Sections of the trail traverse very steep terrain (slopes >40 percent). The combination of steep terrain and limited vehicle access add challenges to search and rescue operations. TMesa County SARC completed 86 missions in 2017 on public lands within the county. They use a combination of ground crews (pedestrian), ATV teams (including UTVs), a technical rope team, and a communications team to conduct search and rescue operations in remote, steep terrain such as the terrain in which the new trail is proposed. Mesa County SARC has not been called to respond to an incident on the current Palisade Rim Trail since it was constructed.

The proposed trail would cross lands adjacent to BOR-administered public lands. The OMID has a ROW across the BOR-administered public lands for the power canal. The existing Palisade Rim Trail crosses the BOR-administered property and the OMIPC. The trail crosses the canal where it is in a concrete pipe. Just upstream of the trail crossing, the canal is open. A fence along the west side of the canal was installed when the Palisade Rim Trail was constructed. The east side of the canal would also be fenced as part of the safety measures associated with the Palisade Rim Trail crossing. The water in the canal is swift, and if a human or a pet fell into the open part of the canal, it would be very difficult to get out before being swept into the concrete pipe. Upstream of the existing trail crossing and open canal, is a siphon that crosses Stokes Gulch. Upstream of the siphon, the canal is open. Both open sections of the canal are in close proximity

to the new proposed trail and would be fenced. As such, the canal crossing is considered an important public safety issue for this project.

Along with the safety issues associated with the canal crossing, there are issues associated with visitors interfering with canal operations by parking on the east side of U.S. Highway 6 and 24 within the canal ROW. Along with blocking access, visitors have also vandalized canal facilities since the Palisade Rims Trail was constructed. There is the potential for additional vandalism as well as trespassing.

### **3.5.1.2 Environmental Consequences:**

#### Alternative A – No Action:

Under the No Action Alternative, the new Palisade Plunge Trail would not be constructed. Visitation to the recreation area would likely increase slightly over time as the population of the Grand Valley grows. Proliferation of social trails may increase and use of existing social trails would continue. The individual and community benefits that currently result from the Palisade Rim Trail would continue. If permitted outfitters do start to conduct guided trips in the recreation area, it is expected those numbers would be minimal. Search and rescue challenges in the area would remain unchanged. The fencing along the east side of the open canal would be completed, and the current canal crossing for the Palisade Rim Trail would remain unchanged. Public interference with canal operations, vandalism, and trespassing would be addressed through separate, future decisions and actions (e.g., additional fencing, signage, enforcement, etc.).

#### Cumulative Effects:

The cumulative effects of the No Action Alternative would be the same or similar to those described above in the direct effects. The incremental growth in visitation associated with population growth could result in crowding on the exiting trail system, which could also result in increasing negative interactions between trail users which could result in displacement of current users. It is expected that this would be minimal and would occur over a longer period of time (greater than 10 years). Additional trails outside the scope of this project may be constructed in the project area in the future.

#### Alternative B – Proposed Action:

Under the Proposed Action, the new Palisade Plunge Trail along with two connectors to the existing Palisade Rim Trail and the Shirttail Point Trailhead would be constructed. As described in other parts of this document, the new trail would be a unique attraction. Because there are few other long-distance decent trails in the region or nationally, the new trail is expected to attract a large number visitors, potentially 300 riders per day but this would occur during peak riding times in the summer and on weekends. The riding season is expected to be 5 months but could be 7 months if there is no snow. It is expected that a majority of the new use would be associated with tourists from outside the Grand Valley. The new trail would add to the existing close-to-home trail opportunities in the Grand Valley. Individual users would have new high-quality trail opportunities where they could enjoy time with friends and family and improve their physical and mental health. Local users would have new loop opportunities created by the connections between the new trail and the existing Palisade Rim Trail along with a new, unique long-distance opportunity. The addition of trail opportunities would enhance the quality of life for local residents and add value to the local economy by making the Grand Valley more attractive as a place to live and work and by directly increasing economic activity associated with tourism (see Section 3.4.5, Social, Economic, and Environmental Justice).



There would be minimal change to the physical setting (only the new trails and associated signage). The social setting of area would change. Though it is hard to predict the increase in visitation that would result from the new trail, use would likely more than double from current use levels during certain time periods. Any use in the winter (which is only allowed for a portion of the trail in the Palisade Rim SRMA) would be much less than in the summer months. As such, there would likely be more negative interactions between trail users. The design of the new trail and its relationship to the existing Palisade Rim Trail could reduce these potential impacts. Visitors using the long-distance trail from the top of the Grand Mesa would be separated from Palisade Rim Trail users. It is expected that use of the Palisade Rim Trail would continue to be primarily by local visitors, especially during non-peak riding times for the Palisade Plunge Trail; however, some Palisade Plunge Trail riders may choose to stay for a few days and also ride the Palisade Rim Trail. Palisade Rim Trail users could avoid interactions with new trail users by not using the connection trails and the lower end of the new trail. Additionally, the terminus of the new trail is designed to be in downtown Palisade. This would reduce crowding in the parking areas used by current trail users.

The new trail would create new opportunities for outdoor recreation businesses that provide services to participants (e.g., shuttles, guide services, and events). As noted above, there are currently businesses permitted to provide guide services on the existing Palisade Rim Trail that are not attracting customers. The addition of the new trail could provide the necessary infrastructure to change that. Because the trail would attract more out-of-town visitors, the demand for guided services would likely create increased business opportunities. Limiting overall use for permitted activities to no more than 25 percent of overall use would ensure permitted activity would not displace casual, non-permitted users. The amount of commercial Outfitter and Guide use on the Forest would be issued in accordance with the most current capacity analysis. Likewise, limiting the number of events (one per month), limiting events to only one weekend day (Fridays or Mondays would be used for two day events), the size of events (no more than 150 participants), and prohibiting aid stations and spectators areas inside the SRMA would reduce the impacts to Palisade Rim Trail users and minimize impacts to casual users on the new trail.

The new trail would create new opportunities and challenges for search and rescue operations. As mentioned above, search and rescue operations are more difficult in remote, steep terrain. The new trail would have both characteristics. Adding the design features of signage at the beginning of the trail about the nature and risks of the trail would help users more fully understand the inherent risks of using the trail. Signing mile markers along the trail and making geo-referenced digital maps available to users would help those that do need search and rescue services better communicate their location to rescuers. Trail mile markers would initially be placed at intersections with other routes and in a few other locations where large gaps between intersections exist. Trail mile markers would be placed at closer intervals if trail users are not able to accurately report their location to emergency personnel. Mile marker placement could be increased to a 1-mile interval in areas where trail users frequently need emergency support or are struggling with accurately reporting their location during emergencies. Constructing a storage shed for rescue equipment and designating access routes for administrative use would add efficiency to rescue operations. The exact location of the storage shed would be determined based upon monitoring to determine where trail users most often need emergency support. The storage shed would be placed in areas with existing resource surveys that do not have sensitive resources. If surveys have not been completed at the site and if it is located in an undisturbed

area then surveys would be conducted prior to constructing the facility. Combined, these design features would reduce the impacts to visitor safety along the trail.

The new proposed trail would create a new, additional crossing of the Orchard Mesa Canal. Adding additional visitors to the area around the canal would increase the potential for an accident (people or pets falling into the canal). Additionally, increased visitation could increase interference with canal operations and vandalism to canal facilities. The proposed fencing and signage in the area of the canal crossing would reduce these potential impacts. Construction of the fence across the entrance to the canal from U.S. Highway 6 and 24 would reduce unauthorized parking that would interfere with accessing the canal for maintenance and inspection. Fencing that extends from the open canal south of the siphon would direct visitors away from the open ditch downstream of the siphon. Fencing that blocks access to the upstream side of the siphon would also direct visitors away from the open canal. As mentioned above, the terminus of the trail would be in downtown Palisade. The fencing and jersey barriers and boulders would reduce congestion at the parking areas adjacent to the canal and canal operations, and also provide increased line of sight for trail users crossing U.S. Highway 6 and 24. The staging areas and stop signs that would be placed on both sides of the U.S. Highway 6 and 24 crossing would also increase safety for trail users. Combined, these design features would reduce the potential safety issues around the canal crossing and minimize interference with canal operations. The trail may also need to be closed to allow for canal maintenance activities or for maintenance of other ROWs that the trail would cross.

The proposed adaptive management associated with the location of the winter closure on the west end of the trail would allow for enhanced user experience by providing an additional 2.93 miles of trail that could be used year-round as long as the east end of the closure is observed. If trail users travel to the east past the winter closure (December 1 to May 1) then the BLM would move the trail closure location to the west. The trail closure location could be moved as far west as the intersection of the Palisade Plunge Trail and Palisade Rim Connector at MP 30.41.

#### Cumulative Effects:

The long-term impact of increased visitation associated with the new trail would be changes to the character of the existing area. There would be more people, more traffic, increased potential for conflicts with the canal operations, and increased potential for search and rescue operations. As noted above in the direct effects, these impacts would be reduced with the associated design features of the project. Combined with other close-to-home outdoor recreation opportunities in the Grand Valley, the new trail would provide a unique attraction that not only enhances the quality of life for residents, but could also attract migration into the area and potentially increase tourism in the area. Additional trails outside the scope of this project may be constructed in the project area in the future.

### **3.5.2 Wilderness and Wilderness Characteristics**

#### **3.5.2.1 Current Conditions:**

The BLM GJFO, in accordance with the BLM policy on conducting wilderness characteristics inventories on BLM-managed public lands under Section 201 of the FLPMA, updated its inventory of lands with wilderness character found within the GJFO planning area in the RMP. The Palisade Plunge Trail passes through one area that was inventoried for wilderness characteristics in the GJFO. The Blowout was a wilderness characteristics inventory unit

(WCIU) identified in the RMP and includes 5,105 acres. Approximately 9.22 miles of the Palisade Plunge Trail would pass through this unit. The Blowout was not found to have wilderness characteristics in the BLM Wilderness Characteristics Inventory (RMP, Appendix F, page F-4). The BLM manuals 6310 and 6320 issued in March 2012 identify specific circumstances where BLM will update or initiate a wilderness characteristics inventory, including the following:

- The public or BLM identifies wilderness characteristics as an issue during the NEPA process.
- The BLM has new information concerning resource conditions, including wilderness characteristics information submitted by the public that meets the BLM's minimum standard (as described in BLM Manual 6310).
- A project that may impact wilderness characteristics is undergoing NEPA analysis.

### **3.5.2.2 Environmental Consequences:**

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but existing trails in the area would continue to be used. Impacts to Wilderness or Lands with Wilderness Characteristics would not occur.

#### Cumulative Effects:

There would be no cumulative impacts for wilderness characteristics under the No Action Alternative.

#### Alternative B – Proposed Action:

There is no new information concerning resource conditions or wilderness characteristics in the Blowout since the RMP was finalized. The increased number of visitors in the Blowout may affect opportunities for solitude in this area. It would provide additional opportunities for primitive types of non-motorized recreation such as hiking and equestrian use. The trail would be a natural surface trail thereby minimizing negative impacts to the naturalness of the area. There would be no negative cumulative impacts to Wilderness or lands with wilderness characteristics because the trail does not pass through any wilderness or lands with wilderness characteristics according to the GJFO RMP, Appendix F.

#### Cumulative Effects:

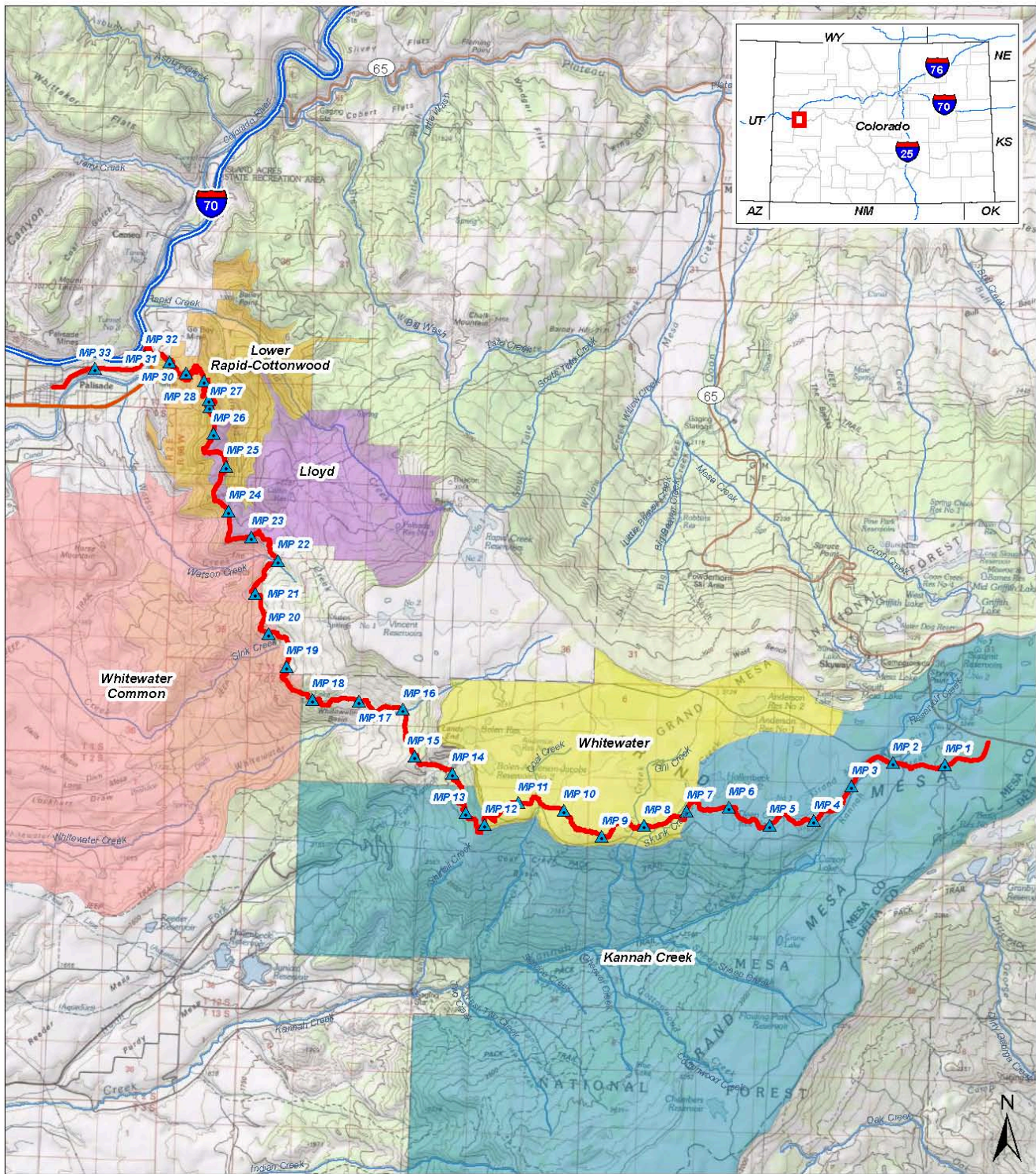
There would be no new cumulative impacts under the Proposed Action.

### **3.5.3 Range Management**

#### **3.5.3.1 Current Conditions:**

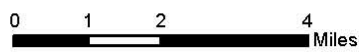
Three BLM and two Forest Service grazing allotments would be crossed by the trail alignment (Map 8). All allotments are permitted for cattle. Table 18 describes the number of cattle, Animal Unit Months (AUMs) and the period of seasonal use in each allotment. There are three permitted users in the BLM Whitewater Common allotment. The proposed trail alignment crosses several range improvements such as fences and ponds (see Table 6 in Chapter 2).





**Legend**

- Palisade Plunge Trail
- Milepost
- Streams
- Grazing Allotments**
- Allotment Name**
- Kannah Creek
- Whitewater
- Lloyd
- Lower Rapid-Cottonwood
- Whitewater Common



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This project was developed through digital means and may be updated without notice.

**Palisade Plunge Trail**  
**Mesa County, Colorado**

**Map 7**  
**Grazing Allotments**

**Table 18**  
**Grazing Allotments in the Project Area**

<b>Allotment Name</b>	<b>Cattle Number (Animal Units)<sup>1</sup></b>	<b>AUMs<sup>2</sup></b>	<b>Seasonal Use Period</b>
BLM Lloyd <sup>3</sup>	21	113	May 22 – Oct 31
BLM Lower Rapid-Cottonwood <sup>3</sup>	148	167	Apr 15 – May 14 and Oct 1 – Nov 15
BLM Whitewater Common <sup>3</sup>	152	185	Apr 20 – May 20 and Dec 4 – Jan 24
	12	27	Apr 20 – Jun 14 and Sep 15 – Dec 15
Forest Service Kannah Creek <sup>4</sup>	410	479	Apr 20 – Jun 1 and Dec 1 – Jan 15
Forest Service Kannah Creek <sup>4</sup>	622	2,483	Jul 1 – Sep 30 <sup>5</sup>
Forest Service Whitewater <sup>4</sup>	246	982	Jul 1 – Sep 30 <sup>5</sup>

<sup>1</sup> An animal unit consists of one cow and one calf.  
<sup>2</sup> An AUM is the amount of forage needed by an animal unit for one month.  
<sup>3</sup> Source: BLM 2018.  
<sup>4</sup> Source: Surber 2018.  
<sup>5</sup> On and off dates can vary provided the AUMs are not exceeded and rangeland conditions are stable.

### 3.5.3.2 Environmental Consequences:

#### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but existing authorized and unauthorized trails in the area would continue to be used. Impacts to range resources from implementation of the Proposed Action would not occur. However, existing impacts to range resources from other activities or resource uses including timber management, recreation, and water uses would continue. Conflicts between cattle and recreationists would continue to be low due, in large part, to cattle grazing in areas that are away from recreational activities and grazing seasons that lie outside peak recreational use periods.

#### Cumulative Effects:

Under the No Action Alternative, cumulative effects to grazing and livestock management include recreationists using existing trails and effects from other activities and resource uses including timber management, recreation and water uses.

#### Alternative B – Proposed Action:

On National Forest System lands in the Kannah Creek and Whitewater allotments, recreation (bike) use would coincide with the peak season of use on the grazing allotments, increasing the potential for conflict between recreationists and livestock.

The Proposed Action is likely to result in minimal conflicts between recreationists and cattle and livestock management on BLM-managed public land. The grazing period in the BLM Lower Rapid-Cottonwood Allotment is in the early spring and late autumn and does not overlap with recreationists' peak usage periods, thereby lowering opportunities for recreationist-livestock encounters.

Existing fences (see Table 6 in Chapter 2) have been identified and cattleguards or gates would be installed at these locations and possibly other locations; however, gates may be left open allowing cattle to drift into unauthorized areas. Fence crossings would be designed to mitigate this concern through the use of cattleguards, self-closing gates, or similar structures.

Conflicts between trail users and livestock would be minimized at fence crossings by installation of cattleguards or other limiters that allow cyclists and pedestrians to pass fences but prohibit

cattle from crossing. Damage to the function of range improvements would be repaired immediately.

#### Cumulative Effects:

Cumulative effects under the Proposed Action would be similar to those under the No Action Alternative. The Proposed Action would help disperse recreationists across the project area, thereby lowering the potential for concentrated effects at any single location. Trail maintenance would continue to lower cumulative effects.

### 3.5.4 Land Tenure, Rights of Way and other Uses

#### 3.5.4.1 Current Conditions:

The Forest Service Land Status and Encumbrance viewer was reviewed for authorized ROWs on National Forest System lands in the vicinity of the proposed trail (Forest Service 2018). The trail would parallel Lands End Road for about 11 miles along the mesa. At MP 6.30, the trail crosses a route that is open for administrative purposes by the City of Grand Junction. No other authorized ROWs occur on National Forest System lands along the trail alignment.

The BLM Land and Mineral System (LR2000) and Master Title Plats were reviewed for ROWs and other land uses in the sections crossed by the trail alignment and associated facilities (BLM 2017). Eighteen ROWs, two oil and gas leases, and two oil and gas exploratory units are currently authorized on BLM-managed public lands, as well as a Secretarial Order withdrawing public lands by the BOR:

- Transco - buried natural gas pipeline (COC051280)
- Ute Water - water transmission pipeline (COC046593)
- Public Service - East Palisade Meter Station and two overhead transmission lines and a substation (COC014003, COC035161, COC055993)
- Tri-State Generation & Transmission – transmission line (COC029423)
- CO Department of Transportation – Road F-001-1 (COC0000737)
- City of Grand Junction – Hallenbeck Reservoir #2 (COC070313)
- Grand Mesa Reservoir Co. – Reservoir #9 (COC059422)
- Town of Palisade – Two water pipelines, ditch, access road, reservoir (COC0061181, COD0042938, COD0043008, COD0051377, COD0051519, COD0057185)
- Fram – oil and gas exploratory unit – Whitewater (COC073038X)
- Genesis Oil –oil and gas leases (COC069404 and COC069408)
- Genesis Oil – oil and gas exploratory unit – The Breaks West (COC077133X)
- Bolen and Laurent - reservoirs and ditches (COD 0036042, COM0006266, COM0016503)
- BOR – withdrawal, Grand Valley Reclamation Project (SO 02/28/1908)

#### 3.5.4.2 Environmental Consequences:

##### Alternative A – No Action:

Under the No Action Alternative, the proposed Palisade Plunge Trail and associated facilities would not be approved, but existing authorized and unauthorized trails in the area would continue to be used. Rehabilitation of 0.57 mile of social trails would not occur. No impacts to existing ROWs would occur by implementation of the Proposed Action. Impacts to existing ROWs and other authorized facilities from other activities or resource uses such as timber



management, recreation grazing, vegetation treatments, prescribed fire, wildland fire suppression activities, and water use would continue. There would be no impacts to land tenure. The BLM would not acquire a parcel of land and an easement from the Town of Palisade.

#### Cumulative Effects:

Cumulative effects on existing ROWs would include recreationists using existing trails and other activities taking place in the project area.

#### Alternative B – Proposed Action:

The trail would be designed to avoid or otherwise ensure the protection of existing ROWs and other authorized facilities within the project area. The BLM and cooperating agencies have worked with existing ROW holders to create design features to mitigate the concerns of existing ROW holders. The BLM and cooperating agencies have worked extensively with the BOR and OMID for the proposed crossing of the Stokes Gulch Siphon at the OMID OMPC. Several design features (discussed in Chapter 2 and shown on Map 4) are proposed including installation of fencing, gates, block landscaping walls, and barriers. Implementation of the design features would allow for safety of the trail user as well as protection of the existing facilities at the crossing of the OMPC.

As part of the maintenance for the existing Palisade Rim Trail, implementation of measures would allow for safety of the trail user when crossing U.S. Highway 6 and 24. These measures would consist of either grading or placement of acceptable barriers according to CDOT specifications. A description of the work proposed within the clear zone would be detailed in the Special Use Permit issued by CDOT to Mesa County for the crossing of U.S. Highway 6 and 24.

Existing ROW holders have valid exiting rights and the Palisade Plunge Trail could be closed for maintenance of facilities associated with these existing ROWs. This could be for a prolonged period of time near the larger structures with existing rights. Existing ROW holders would be notified prior to construction. The BLM attempted to contact TransColorado Pipeline but has not received a response.

The BLM would acquire a 1-acre parcel of land and a 0.22-acre public easement from the Town of Palisade for construction, maintenance, and public use of the trail.

#### Cumulative Effects:

Cumulative effects under the Proposed Action would be similar to the No Action Alternative and would include recreationists using existing trails and other activities taking place in the project area.

### **3.5.5 Fire and Fuels**

#### **3.5.5.1 Current Conditions:**

The BLM and Forest Service take several steps to reduce the risk of fire associated with the use of public lands. During Colorado's fire season, which typically extends between May and September, the federal agencies routinely work with the Mesa County Sheriff's department to implement fire restrictions based on moisture content of vegetation, weather outlooks, and human risk factors. Additional fire prevention activities include fuels reduction projects and educating the public on wildfire prevention and hazard mitigation. Signs are posted at trailheads and campsites informing the public of any fire restrictions that are in place.

Camping is not allowed within the Palisade Rim SRMA that the BLM manages in the project area. Camping is allowed on National Forest System lands as described in their regulations.

### **3.5.5.2 Environmental Consequences:**

#### Alternative A – No Action:

Under this alternative, the Palisade Plunge Trail and associated facilities would not be approved. Mountain bikers and other recreationists would continue to access public lands on existing trails and in existing campgrounds, and the associated fire risks would remain. Fire prevention measures implemented by the BLM, Forest Service, and Mesa County are expected to keep effects low.

#### Cumulative Effects:

Cumulative effects on fire and fuels would include the fire risks associated with recreationists using existing trails and campgrounds and other activities taking place in the project area. Ongoing fire prevention measures are expected to keep cumulative effects low.

#### Alternative B – Proposed Action:

The Proposed Action would not be likely to increase the fire risks associated with public access to forested land and wooded areas. The risk of fire associated with campfires would be low because overnight camping would not be allowed on BLM-managed public lands within the Palisade Rim SRMA and camping opportunities would be limited by steep terrain on much of the public land managed by the BLM outside of the SRMA. Camping is not restricted to designated campsites on National Forest System lands and would be allowed in accordance with Forest Service regulations. Fire prevention measures and restrictions are posted at major entrances into the National Forest. The likelihood of additional campfires resulting from the Proposed Action is low because mountain biking is typically a day activity and most mountain bikers do not haul camping gear. The risk of fires associated with vehicles would be low because motorized vehicles would not be allowed on the trail.

#### Cumulative Effects:

Cumulative effects under the Proposed Action would be similar to those under the No Action Alternative. Ongoing fire prevention measures would continue to lower cumulative effects.



## CHAPTER 4 - CONSULTATION AND COORDINATION

### 4.1 LIST OF PREPARERS AND PARTICIPANTS

#### BLM INTERDISCIPLINARY REVIEW

NAME	TITLE	AREA OF RESPONSIBILITY
Alissa Leavitt-Reynolds	Archaeologist	Cultural Resources, Native American Religious Concerns
Andy Windsor	Supervisory Outdoor Recreation Planner	Access, Transportation, Recreation
Dan Ben-Horin	National Conservation Land Specialist	Wilderness, Wild and Scenic Rivers, Wilderness Study Areas, National Historic Trails, Visual, Wilderness Characteristics
Chris Pipkin	Outdoor Recreation Planner	Lead for Recreation Projects
Bob Price	Range Management Specialist	Range, Forestry, Vegetation
Jim Dollerschell	Range Management Specialist	Wild Horse & Burro Act
Eric Eckberg	Geologist	Geology, Paleontology
Alan Kraus	Hazardous Materials Specialist	Hazardous Materials
Robin Lacy	Realty Specialist	Land Tenure/Status, Realty Authorizations
Jeff Starosta/Heidi Plank/Anna Lincoln	Wildlife Biologist	T&E Species, Migratory Bird Treaty Act, Terrestrial and Aquatic Wildlife, Land Health Assessment, Special Status Plants, Riparian and Wetlands
Kevin Hyatt	Hydrologist	Soils, Air Quality, Water Quality, Hydrology, Water Rights
Jeff Phillips	Fire Ecologist Natural Resource Specialist	Fire Ecology, Fuels Management
Bob Price	Range Management Specialist	Weed Coordinator, Invasive, Non-Native Species
Christina Stark	Assistant Field Manager (Resources Programs/Planning and Environmental Coordination)	Environmental Justice, Socioeconomics, ACECs, Prime & Unique Farmlands, P&EC, Renewable Resources Supervisor
Wayne Werkmeister	Associate Field Manager	Non-Renewable Resource Program Supervisor

**FOREST SERVICE INTERDISCIPLINARY REVIEW**

<b>NAME</b>	<b>TITLE</b>	<b>AREA OF RESPONSIBILITY</b>
Catie Freels	Archaeologist	Cultural and Historical Resources
Mike Surber	Range Management Specialist	Vegetation, Range
Beth Andersen	Forest Soil Scientist	Soils, Water Quality
Eric Freels	District Wildlife Biologist	T&E Species, Terrestrial & Aquatic Wildlife
Melvin Woody	Forest Fisheries Biologist	Fisheries, Aquatics
Craig Warren	District Fuels Specialist	Fire and Fuels
Kimberlee Phillips	Civil Engineering Tech	Roads
Doug Marah	Forest Civil Engineering Tech	Roads and Trails
Jonathan Hare	District Realty Specialist	Land, Non-Recreation Special Uses
Christie LaDue	District Forester	Timber
Loren Paulson	District Recreation Manager	Travel Management, Recreation
Ryan Fricke	Recreation, Special Use Permits	Special Use Permits
Chris Foreman	Trails Coordinator	Trails

**INTERDISCIPLINARY REVIEW**

<b>NAME</b>	<b>COMPANY</b>	<b>AREA OF RESPONSIBILITY</b>
Mary Bloomstran	Edge Environmental, Inc.	Project Manager
Carolyn Last	Edge Environmental, Inc.	Assistant Project Manager
Amie Wilsey	WestWater Engineering	Biological Surveys/Wetland Delineation
Kae McDonald	Flattops Archaeological Consultants	Cultural Resources/Native American Religious Concerns
Paul Murphy	Rocky Mountain Paleo Solutions	Paleontological Resources
Amy Sharp	Sparrow Trails	Recreation, Lands with Wilderness Characteristics
Rebecca Buseck Eric Petterson	Edge Environmental, Inc.	Invasive, Non-Native Species, Soils, Special Status Species, Vegetation, Wetlands, Wildlife
Nikie Gagnon	Edge Environmental, Inc.	Land Tenure/Status
Jenna Friesen	Edge Environmental, Inc.	Geographic Information System/Maps
Gabriele Walser	Edge Environmental, Inc.	Water Quality, Hydrology,
Sandra Goodman	Edge Environmental, Inc.	Environmental Justice, Social and Economic Resources, Transportation/Access, Visual, Fire and Fuels

---

**4.2 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED**

---

Ute Mountain Ute Tribe  
Ute Indian Tribe of the Uintah and Ouray Reservation  
Southern Ute Indian Tribe  
U.S. Fish and Wildlife Service  
U.S. Bureau of Reclamation  
State Historic Preservation Officer  
Colorado Parks and Wildlife  
Mesa County  
Town of Palisade  
City of Grand Junction  
Colorado Town of Palisade  
Colorado Plateau Mountain Bike Trail Association  
Mesa County Search and Rescue Control  
Van Winkles

## CHAPTER 5 - REFERENCES

- Ackerfield, J. 2015. Flora of Colorado. Colorado State University Herbarium, Brit Press.
- Bureau of Economic Analysis (BEA). 2017. Regional Economic Accounts, Gross Domestic Product (GDP) by Metropolitan Area, 2016. Data release date: September 20, 2017. Accessed online: [https://www.bea.gov/newsreleases/regional/gdp\\_metro/2017/pdf/gdp\\_metro0917.pdf](https://www.bea.gov/newsreleases/regional/gdp_metro/2017/pdf/gdp_metro0917.pdf).
- Bureau of Labor Statistics. 2018. Local Area Unemployment Statistics. Accessed online: <https://data.bls.gov/cgi-bin/dsrv?la>. January 18, 2018.
- Bureau of Land Management (BLM). 1989. BLM Handbook H-1741-1, Fencing.
- \_\_\_\_\_. 2004. Trail Design Criteria. Grand Junction Field Office.
- \_\_\_\_\_. 2006. Land Health Assessment Report for the Whitewater Common and North Fork Kannah Creek Allotments and City of Grand Junction Property within the Allotments. Prepared by Grand Junction Field Office 2006, Finalized 2010.
- \_\_\_\_\_. 2007. Internal Memorandum 2008-009. Attachment 1: Potential Fossil Yield Classification System for Paleontological Resources on Public Lands.
- \_\_\_\_\_. 2010. Implementation of the Guidelines for a Quality Built Environment. IM 2012-010 Instruction Memorandum. Department of the Interior. October 25, 2011.
- \_\_\_\_\_. 2015a. Record of Decision and Approved Resource Management Plan. BLM/CO/PL-15/016. Grand Junction Field Office, Colorado. August 10.
- \_\_\_\_\_. 2015b. Record of Decision and Approved Resource Management Plan. BLM/CO/PL-15/016. GIS Database for Land Health.
- \_\_\_\_\_. 2015c. Colorado BLM State Director Sensitive Species List.
- \_\_\_\_\_. 2016a. BLM Grand Junction Field Office (GJFO) Standards for Contractor Inventories for Special Status Plants, Significant Plant Communities, and Noxious Weeds. U.S. Bureau of Land Management, Grand Junction, Colorado.
- \_\_\_\_\_. 2016b. Instruction Memorandum No. 2016-124: Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public land. Washington, D.C. 20240. July 8.
- \_\_\_\_\_. 2017. Land and Mineral Legacy Rehost 2000 System (LR2000). Accessed online: <https://www.blm.gov/lr2000/>. March.
- \_\_\_\_\_. 2018. Rangeland Administrations Systems Reports. Accessed online: <https://reports/blm/gov/report/RAS/1/Allotment-Information>. January 19, 2018.
- Capesius, J.P. and Stephens, V.C. 2009. Regional Regression Equations for Estimation of Natural Streamflow Statistics in Colorado: U. S. Geological Survey Scientific Investigations Report 2009-5136, 32 p.
- Casey, T., C. Castenada, and N. Perry. 2018. Grand Valley Public Trail Systems Socio-Economic Study: Mesa County, Colorado. Colorado Mesa University. Natural Resource Center, Department of Social and Behavioral Science.

- Census Bureau. 2017. Small Area Income and Poverty Estimates. Data release date: December 2017. Accessed online: <https://www.census.gov/programs-surveys/saipe.html>. January 18, 2018.
- \_\_\_\_\_. 2018a. 2012-2016 American Community Survey 5-Year Estimates. Table DP03: Selected Economic Characteristics. Accessed online: [https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_16\\_5YR\\_DP03&src=pt](https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_DP03&src=pt). January 18, 2018.
- \_\_\_\_\_. 2018b. 2012-2016 American Community Survey 5-Year Estimates. Table DP05: ACS Demographic and Housing Estimates. Accessed online at: [https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_16\\_5YR\\_DP05&src=pt](https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_DP05&src=pt). January 18, 2018.
- Chafee County Visitors' Bureau. 2007. Letter to Greg Warren, CDNST Administrator, U.S. Forest Service, regarding Continental Divide National Scenic Trail (CDNST) draft directive. Transmitted via e-mail communication between Scott Winans, President, Colorado Plateau Mountain Bike Trail Association and Edge Environmental, Inc. August 14, 2017.
- Colorado Department of Labor and Employment. 2018. Labor Market Information - Data Trends - Employment and Wage Data - Industry Data. Quarterly Census of Employment and Wages - 2016 Annual. Accessed online: <https://www.colmigateway.com/vosnet/lmi/default.aspx?pu=1&plang=E>. January 18, 2018.
- Colorado Department of Local Affairs (CDOLA). 2018. State Demography Office. Population estimates for Colorado counties and municipalities. Data release date: October 2016. Accessed online: [demography.dola.colorado.gov/population/](http://demography.dola.colorado.gov/population/). January 18, 2018.
- Colorado Department of Public Health and Environmental (CDPHE). 2107a. Regulation 35: Classifications and Numeric Standards for Gunnison and Lower Dolores River Basins. Water Quality Control Commission Regulations. Amended August 7, 2017. Effective December 31, 2017. Accessed online: [https://www.colorado.gov/pacific/sites/default/files/35\\_2017%2812%29.pdf](https://www.colorado.gov/pacific/sites/default/files/35_2017%2812%29.pdf). Accessed December.
- \_\_\_\_\_. 2017b. Regulation 37: Classifications and numeric Standards for Lower Colorado River Basin. Water Quality Control Commission Regulations. Amended January 9, 2017. Effective June 30, 2017. Accessed online: [https://www.colorado.gov/pacific/sites/default/files/37\\_2017%2806%29.pdf](https://www.colorado.gov/pacific/sites/default/files/37_2017%2806%29.pdf). Accessed December.
- \_\_\_\_\_. 2018. Regulation 31: The Basic Standards and Methodologies for Surface Water. Water Quality Control Commission Regulations. Amended December 11, 2017. Effective January 31, 2018. Accessed online: [https://www.colorado.gov/pacific/sites/default/files/31\\_2018%2801%29.pdf](https://www.colorado.gov/pacific/sites/default/files/31_2018%2801%29.pdf). Accessed January.
- Colorado Department of Transportation. 2018. Online Transportation Information System - Traffic Data. Accessed online: <http://dtdapps.coloradodot.info/otis>. January 18, 2018.

- Colorado Natural Heritage Program (CNHP). 2014. Element Global Rank Report: *Sclerocactus glaucus* (Colorado hookless Cactus). Colorado State University, Colorado Natural Heritage Program. March.
- \_\_\_\_\_. 2017. Colorado Natural Heritage Program. 1997+. Colorado Rare Plant Guide. Accessed online: [www.cnhp.colostate.edu](http://www.cnhp.colostate.edu).
- Colorado Parks and Wildlife. 2017. Colorado parks and Wildlife – species Activity Data. Accessed online: <http://www.arcgis.com/home/group.html?id=0e6f9051b06146018038e9a929ab4910#overview>.
- Colorado Weed Management Association (CWMA). 2013. A. Doran, S. Anthony, C. Shelton. Noxious Weeds of Colorado, Eleventh Edition. Colorado Weed Management Association, Centennial.
- Council on Environmental Quality. 1997. Environmental Justice – Guidance Under the National Environmental Policy Act. December 10.
- Dare, M., M. Carrillo, and C. Speas. 2011. Cutthroat trout (*Oncorhynchus clarkii*) Species and Conservation Assessment for the Grand Mesa, Uncompahgre, and Gunnison National Forests. USDA Forest Service, Grand Mesa, Uncompahgre, and Gunnison National Forests, Delta, Colorado. March.
- Dean Runyan Associates. 2017. Colorado Travel Impacts 1996 to 2016p. June 2017. Accessed online: <http://www.deanrunyan.com/index.php?fuseaction=Main.TravelstatsDetail&page=Colorado>. August 4, 2017.
- Denver Botanic Gardens. 2013. Demographic monitoring of *Sclerocactus glaucus*, an endemic species of western Colorado. Population Monitoring 2007 to 2013. Technical Report to Bureau of Land Management. November.
- Farmer, A.M. 1993. The Effects of Dust on Vegetation – A Review. *Environmental Pollution* 79:63-75.
- Flattops Archaeological Consultants. 2017. Palisade Plunge Singletrack Trail, A Class III Cultural Resource Inventory for the Bureau of Land Management and the Grand Mesa, Uncompahgre, and Gunnison National Forest in Mesa County, Colorado, Kae McDonald, Principal Investigator, October.
- Forest Service. 1988. Missoula Technology and Development Center. Range Structural Equipment. Publication No. 5E42D31. July. Second Printing February 1999. Accessed online: <https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf88242803/pdf88242803dpi300.pdf>.
- \_\_\_\_\_. 1991. Amended Land and Resource Management Plan - Grand Mesa Uncompahgre and Gunnison National Forests. Accessed online: [https://www.fs.usda.gov/detail/gmug/landmanagement/planning/?cid=fsbdev7\\_003229](https://www.fs.usda.gov/detail/gmug/landmanagement/planning/?cid=fsbdev7_003229).
- \_\_\_\_\_. 1994. Decision Notice and Finding of No Significant Impact. Grand Mesa National Forest Travel Plan Revision. December 12. Accessed online: [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd489385.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd489385.pdf)
- \_\_\_\_\_. 2007. Trail Construction and Maintenance Notebook. 2007 Edition. July.

- \_\_\_\_\_. 2012a. National Best Management Practices for Water Quality Management on National Forest System Lands. FS-990a. Volume 1: National CORE BMP Technical Guide. April.
- \_\_\_\_\_. 2012b. Colorado Roadless Rule. Roadless Area Conservation; National Forest System Lands in Colorado. Final rule and record of decision.
- \_\_\_\_\_. 2017a. Regional Forester's list of Sensitive Species for the Rocky Mountain Region. Accessed online: <https://www.fs.usda.gov/detail/r2/landmanagement/?cid=stelprdb5390116>. January.
- \_\_\_\_\_. 2017b. Grand Mesa, Uncompahgre, and Gunnison National Forests. Draft Forest Assessments: Scenic Character. November. Accessed online: [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd563169.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd563169.pdf). January 2018.
- \_\_\_\_\_. 2017c. Roadless Consultation Form. Grand Mesa, Uncompahgre and Gunnison NF; Grand Valley Ranger District. January 19.
- \_\_\_\_\_. 2018. Automated Lands Program Land Status and Encumbrance Viewer. Lands and Realty Management. Accessed online: <https://www.fs.fed.us/land/ALPLandStatusandEncumbrance>. January.
- Frazier, N. 2017. Records Technician. Mesa County Traffic Department. E-mail communication with Edge Environmental, Inc. October 26, 2017.
- Interagency Lynx Biology Team (ILBT). 2013. Canada lynx conservation assessment and strategy. 3rd edition. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication R1-13-19, Missoula, Montana. 128 pp.
- International Mountain Biking Association (IMBA). 2004. Trail Solutions, IMBA's Guide to Building Sweet Singletrack.
- Kaliszewski, N. 2011. The Jackson Hole Trails Project Economic Impact Study. Thesis submitted to the Dept of Geography, Haub School of Environment and Natural Resources. University of Wyoming. Laramie Wyoming. May. Accessed online: [https://headwaterseconomics.org/wp-content/uploads/Trail\\_Study\\_16-jackson-hole-trail-project.pdf](https://headwaterseconomics.org/wp-content/uploads/Trail_Study_16-jackson-hole-trail-project.pdf). September 13, 2017.
- Kershaw, L. A. MacKinnon, and J. Pojar. 1998. Plants of the Rocky Mountains. Lone Pine Publishing, Auburn, Washington.
- Koehler, G.M. 1990. Population and habitat characteristics of lynx and snowshoe hares in north central Washington. *Canadian Journal of Zoology* 68:845-851.
- Koehler, G.M. and K.B. Aubry. 1994. Lynx. In: Ruggiero, L. F., K.B. Aubrey, S.W. Buskirk, L.J. Lyon and W.J. Zielinski, eds. The scientific basis for conserving forest carnivores: American marten, fisher, lynx and wolverine in the western United States. pp. 74-98. U.S. Forest Service General Technical Report RM-254.
- Lyon, P., C. Pague, R. Rondeau, L. Renner, C. Slater, and C. Richard. 1996. Natural Heritage Inventory of Mesa County, Colorado. Colorado Natural Heritage Program, Ft. Collins, Colorado. Prepared for Mesa County Commissioners.

- Matthews, Robin F. 1994. *Ferocactus wislizenii*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Accessed online: <http://www.fs.fed.us/database/feis/>. July 2, 2012.
- McGlaughlin, M. and J. Ramp-Neale. 2012. A Genetic Investigation of *Sclerocactus glaucus* (Colorado Hookless Cactus) Genetic Diversity and Taxonomic Relations in Western Colorado; Draft. May.
- Metcalf, J.L., S.L. Stowell, C.M. Kennedy, K.B. Rogers, D. McDonald, J.Epp. K. Keepers, A. Cooper, J.J. Austin, and A.P. Martin. 2012. Historical Stocking Data and 19th Century DNA Reveal Human-induced Changes to Native Diversity and Distribution of Cutthroat Trout. *Molecular Biology* 21(21):5194-5207.
- National Oceanic and Atmospheric Administration (NOAA). 2018. Point precipitation frequency estimates (inches), NOAA Atlas 14 Volume 8 Version 2, Accessed online: [https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html?bkmrk=co](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=co). Accessed January 30, 2018.
- Natural Resources Conservation Service (NRCS). 2004. United States Department of Agriculture, Natural Resources Conservation Service, Part 630 Hydrology National Engineering Handbook, Chapter 10 Estimation of Direct Runoff from Storm Rainfall, 210-VI-NEH, July 2004
- \_\_\_\_\_. 2017a. CO660 Grand Mesa to West Elk Area, Colorado Parts of Delta, Garfield, Gunnison, Mesa and Montrose Counties. Tabular and Spatial Data. October 10.
- \_\_\_\_\_. 2017b. CO680 Mesa County Area. Tabular and Spatial Data. October 12.
- \_\_\_\_\_. 2017c. CO682 Douglas Plateau Area, Colorado, Parts of Garfield and Mesa Counties. Tabular and Spatial Data. October 12.
- \_\_\_\_\_. 2018. Web Soil Survey. Soil Survey Geographic (SSURGO) Database. Accessed online: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. January.
- Osmundson, D.B. and L.R. Kaeding. 1991. Recommendations for Flows in the 15-mile Reach During October-June for Maintenance and Enhancement of Endangered Fish Populations in the Upper Colorado River. U.S. Fish and Wildlife Service, Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.
- Paleo Solutions, Inc. 2017. Paleontological Technical Study Palisade Plunge, Mesa County, Colorado. October.
- Pobirk, B. 2018. Traffic Supervisor. Mesa County Public Works –Traffic Department. Personal communication with Edge Environmental, Inc. January 22, 2018.
- Rai, A., K. Kulshreshtha, P.K. Srivastava, and C.S. Mohanty. 2009. Leaf Surface Structure Alterations due to Particulate Pollution in Some Common Plants. *Environmentalist* (published online June 3, 2009).
- Rechel, E.A., R.G. Ballard and T.J. Novotny. 1999. Ecology of the threatened cactus, *Sclerocactus glaucus*. *Cactus and Succulent Journal* 71(3): 143-145.



- Ruediger, B., J. Claar, S. Gniadek, B. Holt, L. Lewis, S. Mighton, B. Naney, G. Patton, T. Rinaldi, J. Trick, A. Vandehey, F. Wahl, N. Warren, D. Wenger, and A. Williamson. 2000. Canada Lynx Conservation Assessment and Strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, Montana.
- Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, G. M. Koehler, C. J. Krebs, K. S. McKelvey, and J. R. Squires. (Technical Editors). 1999. Ecology and Conservation of Lynx in the United States. University Press of Colorado. Boulder, Colorado.
- Sharifi, M.R., A.C. Gibson, and P.W. Rundel. 1997. Surface Dust Impacts on Gas Exchange in Mojave Desert Shrubs. *Journal of Applied Ecology* 34:837-846.
- Shenk, T.M. 2004 to 2009. Post release monitoring of lynx (*Lynx canadensis*) reintroduced to Colorado. Colorado Division of Wildlife, Ft. Collins, Colorado. (used with permission).
- Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Kratz, and C. Spurrier. 1997. Colorado Rare Plant Field Guide. Prepared for the U.S. Bureau of Land Management, the U.S. Forest Service and the U.S. Fish and Wildlife Service by the Colorado Natural Heritage Program.
- Squires, J.R. and T. Laurion. 2000. Lynx home range and movements in Montana and Wyoming, preliminary results. Pages 337-349 In Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, G.M. Koehler, C.J. Krebs, K.S. McKelvey and J.R. Squires, eds. Ecology and conservation of lynx in the United States. Univ. Colorado Press and USDA Rocky Mtn. Res. Stn., USDA Gen. Tech. Rep. RMRS-GTR-30WWW. 480pp.
- Surber, M. 2018. Rangeland Specialist. USFS Grand Mesa Uncompahgre and Gunnison National Forests, Grand Junction office. E-mail communication with Edge Environmental, Inc. January 19.
- Teske, M.E., A.E. Kaufman, C.W. George, and G.M. Johnson. 1997. Field Measurements of Helicopter Rotor Wash in Hover and Forward Flight. *Journal of Aircraft* 34(6):813–814.
- U.S. Fish and Wildlife Service. 1979. Endangered and Threatened Wildlife and Plants; Determination that *Sclerocactus glaucus* is a Threatened Species. *Federal Register* 44 (198): 58868 - 58870.
- \_\_\_\_\_. 1990. Uinta Basin Hookless Cactus *Sclerocactus glaucus* Recovery Plan. U.S. Fish and Wildlife Service Region 6, Denver, Colorado
- \_\_\_\_\_. 2006. *Federal Register* 71 (240): Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to Remove the Uinta Basin Hookless Cactus From the List of Endangered and Threatened Plants; 90-Day Finding on a Petition to List the Pariette Cactus as Threatened or Endangered. 75215-75220.
- \_\_\_\_\_. 2007. Endangered and Threatened Wildlife and Plants; 12-month Finding on a Petition To List *Sclerocactus brevispinus* (Pariette cactus) as an Endangered or Threatened Species; Taxonomic Change From *Sclerocactus glaucus* to *Sclerocactus brevispinus*, *S. glaucus*, and *S. wetlandicus*. *Federal Register* 72(180):53211-53222.
- \_\_\_\_\_. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia.

- \_\_\_\_\_. 2009. Endangered and Threatened Wildlife and Plants; Taxonomic Change of *Sclerocactus glaucus* to Three Separate Species. Federal Register 74(177): 47112-47117.
- \_\_\_\_\_. 2010. Recovery Outline for the Colorado Hookless Cactus (*Sclerocactus glaucus*). Colorado Ecological Services Field Office, Grand Junction, Colorado. April. Accessed online:  
[http://ecos.fws.gov/docs/recovery\\_plan/CO%20hookless%20cactus\\_recovery%20outline\\_Apr%202010.pdf](http://ecos.fws.gov/docs/recovery_plan/CO%20hookless%20cactus_recovery%20outline_Apr%202010.pdf).
- \_\_\_\_\_. 2013. DRAFT Guidance for Section 7 Consultations that Include Plants within the State of Colorado. U.S. Fish and Wildlife Service, Western Colorado Ecological Services Office, Colorado. March.
- \_\_\_\_\_. 2017a. Official Species List for the Palisade Plunge Trail. August 29.
- \_\_\_\_\_. 2017b. Stamped Letter returned to BLM concurring with Determination of Not Likely to Adversely Affect. Kurt Broderdorf. TAILS#06E24100-2017-I-0296. December 20.
- U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Consultation Handbook. Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act. Accessed online:  
<http://www.fws.gov/endangered/consultations/index.html>.
- U.S. Geological Survey (USGS). 1995. Groundwater Atlas of the United States: Arizona, Colorado, New Mexico, Utah. HA 730-C. Accessed online:  
[https://pubs.usgs.gov/ha/ha730/ch\\_c/](https://pubs.usgs.gov/ha/ha730/ch_c/). Accessed in September.
- \_\_\_\_\_. 2017. National Water Information System. Current Water Data for Colorado. USGS Station 09152000 - Kannah Creek Near Whitewater Colorado.  
<https://waterdata.usgs.gov/co/nwis/qw>. Accessed in December.
- Weber, W. A. and R.C. Wittmann. 2012. Colorado Flora – Western Slope; a field guide to the vascular plants. 4th Ed. University Press of Colorado. Boulder.
- WestWater Engineering (WestWater). 2017a. Palisade Plunge Trail Project, Biological Survey Report, Mesa County, Colorado. September.
- \_\_\_\_\_. 2017b. Palisade Plunge Aquatic Resource Delineation Report, Mesa County, Colorado. Prepared for Bureau of Land Management Grand Junction Field Office and U.S. Forest Service, Grand Valley Ranger District. October.
- Whitson, T. D. (editor), L. C. Burrill, S. A. Dewey, D. W. Cudney, B. E. Nelson, R. D. Lee and R. Parker. 2006. Weeds of the West – 9th edition. Western Society of Weed Science in cooperation with Cooperative Extension Services, University of Wyoming, Laramie.
- Woody, M. 2018. Aquatic Biologist, Forest Service – Grand mesa, Uncompahgre & Gunnison National Forests, Supervisor’s Office. Response to public comment. May.

## **Attachment A**

### **Responses to Public Comments on the Preliminary EA**

## **Attachment B**

# **Biological Evaluation and Management Indicator Species Report**